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Working Paper

Time use, unemployment, and well-being: an empirical analysis using British time-use data

CESifo Working Paper, No. 7581

Provided in Cooperation with:

Ifo Institute – Leibniz Institute for Economic Research at the University of Munich

Suggested Citation: Hoang, Thi Truong An; Knabe, Andreas (2019) : Time use, unemployment, and well-being: an empirical analysis using British time-use data, CESifo Working Paper, No. 7581, Center for Economic Studies and ifo Institute (CESifo), Munich

This Version is available at:

<https://hdl.handle.net/10419/198941>

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Impressum:

CESifo Working Papers

ISSN 2364-1428 (electronic version)

Publisher and distributor: Munich Society for the Promotion of Economic Research - CESifo GmbH

The international platform of Ludwigs-Maximilians University's Center for Economic Studies and the ifo Institute

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Editor: Clemens Fuest

www.cesifo-group.org/wp

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Abstract

We use nationally representative data from the UK Time-Use Survey 2014/2015 to investigate how a person's employment status is related to time use and cognitive and affective dimensions of subjective well-being. We find that unemployed persons report substantially lower levels of life satisfaction than employed persons. When looking at specific types of activities, the unemployed enjoy most of the activities they engage in less than the employed. However, the employed consider working to be one of the least enjoyable activities. They also spend a large share of their time at work and with work-related activities, while the unemployed spend more time on leisure and more enjoyable activities instead. When looking at duration-weighted average affective well-being over the entire waking time of the day, our results suggest that the benefit of having to spend less time at work outweighs the negative emotional effect of unemployment during leisure episodes, such that the unemployed experience, on average, more enjoyment during the day than the employed.

JEL-Codes: I310, D910, J600, J220.

Keywords: unemployment, happiness, affective well-being, time use, Day Reconstruction Method.

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1. Introduction

The economics of happiness has become a thriving area of empirical research with a central focus on revealing the impacts of various socio-economic and political factors on subjectively perceived well-being. It is largely based on extensive surveys in which people are asked to evaluate how happy or satisfied they are and applies econometric tools to estimate the impact of socio-economic factors (e.g. income, health, marital status, or unemployment) on subjective well-being. While subjective well-being studies in economics have traditionally used life satisfaction as the main measure of well-being, more recently, and mainly due to improved data availability, also actually experienced emotions (affective well-being) have received more interest among economists.

Our study examines the relationship between a person's labour market status and two different dimensions of subjective well-being: cognitive well-being and affective well-being. In particular, we analyse how general life satisfaction and affective enjoyment experienced during specific activities differ between employed and unemployed people.

Previous studies about the relationship between affective well-being and unemployment have produced conflicting findings. Knabe et al. (2010) conduct a survey among unemployed and employed persons in Germany, collecting data on time use and emotions using the Day Reconstruction Method (Kahneman et al. 2004b). They find that employed persons are more satisfied with their life than the unemployed and report more positive and less negative feelings when engaged in similar activities. Weighting these activities with their duration shows, however, that average emotional well-being does not differ between the two groups. Although the unemployed feel worse when engaged in similar activities, they can compensate this by using the time the employed are at work in more enjoyable ways. Krueger and Mueller (2012) analyse data from the American Time-Use Survey (ATUS), which contains questions about emotional experiences in its 2010-2013 waves, to compare the time use and well-being of employed and unemployed persons. They also find that the unemployed feel worse during leisure activities than the employed. Contrary to Knabe et al. (2010), they find that the unemployed feel significantly worse, in particular sadder and more in pain, than the employed also when calculating day-averages of emotional well-being. However, for some other emotions (happy, stressed), they report no differences between the two groups, and the employed feel more often tired than the unemployed. Other recent studies also find evidence that unemployment is not necessarily negatively related to subjective well-being. Flèche and Smith

(2017) report that unemployed men in France experience less unpleasantness during the day than employed men, while they do not find a difference in the experienced well-being between employed and unemployed women. Using ATUS data from 2012 and 2013, Dolan et al. (2017) find that cognitive well-being (“Cantril ladder”) is lower for the unemployed, while affective well-being does not significantly differ between employed and unemployed persons.

In this paper, we use data from the latest wave of the UK Time-Use Survey (2014/2015), a nationally representative survey of time use and well-being in the UK. The UKTUS differs from the ATUS in two important aspects. First, the UKTUS contains data about self-assessed enjoyment for all reported activities, while the ATUS gathers information on only three randomly chosen activities for each respondent. Second, the UKTUS asks respondents a broad question about their “enjoyment” of each activity, whereas ATUS contains separate questions about different emotions. While this comes at the cost of less detailed information about specific emotions, it has the advantage that asking just one question about general “enjoyment” of an activity helps circumventing the problem of having to aggregate the different emotions into a unidimensional measure (as with, e.g., the net affect or U-index; cf. Kahneman and Krueger 2006). If respondents evaluate their general “enjoyment” of an activity by subjectively weighing positive and negative affects, answers to the enjoyment question can be interpreted as a representation of their overall experienced well-being during this time.

Our empirical results show that the unemployed have substantially lower levels of life satisfaction than the employed in the UK. The unemployed spend more time sleeping, watching TV, playing games, and looking for jobs than the employed, who spend more time working and commuting. The comparisons of enjoyment in different activities reveal that the unemployed enjoy most activities less than the employed. The employed rate working as one of the least enjoyable activities. Over the entire day¹, however, the unemployed are experiencing, on average, even more enjoyment than the employed. This result stands in stark contrast to the findings by Krueger and Mueller (2012), but is supportive of the findings by Knabe et al. (2010) and Flèche and Smith (2017) that unemployed persons are able to “have a good day” despite being dissatisfied with life.

This paper is structured in six sections. In Section 2, we will provide a brief literature review on the relationship between employment status and subjective well-being, with a focus on its

¹ Throughout the analyses of well-being, we focus on the waking part of the day and exclude times during which respondents are asleep. The terms “over the entire day”, “over total waking time of the day” and “over the course of the day” will be used interchangeably.

affective dimension. Section 3 contains the data description. The empirical results are presented in Section 4. Section 5 contains robustness checks, and Section 6 concludes.

2. Literature review

Subjective well-being is a multidimensional concept. While cognitive well-being refers to a person's own judgement of his or her quality of life, either in general or with respect to specific life domains, affective well-being captures people's emotional experiences during the engagement in particular activities, i.e. at specific points in time.

Happiness research in economics has predominantly focused on cognitive well-being. Cognitive well-being is a psychological construct that people form when asked to evaluate their life in general, or certain aspects of it. To make such an evaluation implicitly requires choosing one's own criteria for a good life and to compare them to one's actual life achievements. Empirical data on cognitive well-being are obtained by directly interviewing respondents in large-scale social surveys. In the UK Time-Use Survey, as in many other social surveys, cognitive well-being is measured by a life satisfaction question. Respondents are asked: "How satisfied are you with your life, all things considered?" and can answer on a numerical scale between 0 ('not at all satisfied') and 10 ('completely satisfied').

One of the most consistent findings of the happiness literature is that unemployment is negatively related to life satisfaction. Panel studies that observe the same people over longer periods of time have shown that becoming unemployed substantially reduces life satisfaction, suggesting that unemployment causes unhappiness instead of generally unhappy people becoming unemployed more often. This loss in life satisfaction is much larger than what can be explained by the associated income loss (Clark and Oswald, 1994; Knabe and Rätzl, 2011a; Winkelmann and Winkelmann, 1998). Furthermore, although it has been found that people's happiness fully adapts to many positive and negative life events, unemployment is a noticeable exception. After a job loss, life satisfaction drops substantially and remains at this lower level even when staying unemployed for long periods of time (Clark, 2006; Lucas et al., 2004). Unemployment "scars", i.e. the life satisfaction of a formerly unemployed person is lower than that of a continuously employed person even after the unemployed person finds a new job (Clark et al., 2001; Knabe and Rätzl, 2011b). A person's unemployment has also been found to affect the life satisfaction of his or her partner (Knabe et al., 2016) and of other people living in the same region (Clark, 2003; Clark et al., 2010; Shields et al., 2009). One explanation is that an increase in the unemployment rate typically increases anxiety among the employed, who might fear to lose their current job too, while making the cognitive well-being loss of the

unemployed smaller as unemployment becomes more common and the unemployed deviate less from the social norm.

Contrary to the more global, cognitive construct of satisfaction with life in general, affective well-being reflects individuals' emotional situation on a moment-to-moment basis (momentary well-being). It measures how people feel and which emotions they experience at specific points in time. While responses to the life satisfaction question might suffer from various behavioural biases (cf. Kahneman, 1999), momentary well-being measures the strength of people's emotions at specific points in time and does not require normative judgements of what should constitute a good or satisfying life. The most direct way to measure affective well-being is the Experience Sampling Method (ESM) introduced by Larson and Csikszentmihalyi (1983). The ESM is a real-time emotion-tracking method where respondents carry a technical device, e.g. a smartphone, reminding them various times a day to stop and answer some questions about what they do, where and with whom they are, and how they feel. The ESM is often seen as the "gold standard" to measure momentary well-being. Nevertheless, it also has some inevitable disadvantages. Conducting ESM on a large scale appears prohibitively costly and places considerable burden on respondents. The ESM could miss some important events of the day due to its momentary sampling and disrupt the experience during activities when individuals have to stop and respond to the device.

A potential alternative to ESM is the Day Reconstruction Method (DRM), which has been introduced by Kahneman et al. (2004b). It extends traditional time-use studies with emotional reports. Respondents in DRM surveys are asked to first recall what they did on the day preceding the interview and reconstruct this day via a diary consisting of a time-ordered sequence of episodes. For each episode, respondents describe what they did, where and whom they were with. In addition to traditional time-use surveys, the DRM asks respondents to also state for each episode how strongly they experienced each emotion from a list of positive and negative emotions. This yields a profile of the time use and flow of emotions over an entire day. Since the time gap between the interview and the reconstructed events is rather short, the DRM reduces potential recall biases relative to other retrospective evaluations that ask respondents about the presence or frequency of certain emotional experiences over a longer period in the past (e.g. in the last four weeks). Studies have shown that the emotions reported in the DRM correspond well to those measured using ESM (Kahneman et al., 2004b; Kahneman and Krueger, 2006). Hence, the DRM provides a more cost-efficient way to collect data on affective well-being than the ESM.

There are different aggregation methods to form a unidimensional affective well-being measure from time-use and affect data. For example, the Net Affect is calculated as the difference between the average strengths of all positive and all negative emotions in the survey (Bradburn, 1969). The U-Index (Kahneman and Krueger, 2006) measures the proportion of time during which the strongest emotion experienced by a person is a negative one. A simple and straightforward alternative to aggregating separate emotions is to ask only one affective question for each episode – for example, “All things considered, how satisfied are you with this episode?” (White and Dolan, 2009) – which implicitly leaves the aggregation to the respondent. The measurements at episode level using Net Affect, U-Index, or Episode Satisfaction can be temporally integrated over an entire day to obtain a measure of what Kahneman (1999) calls “objective happiness”.

Although there is an extensive literature on the relationship between unemployment and cognitive well-being, only a few studies have looked at unemployment and affective well-being. These studies suggest that the effect of unemployment on affective well-being can be decomposed in two parts. First, there is a *saddening effect* of being unemployed. When engaged in similar activities, the unemployed feel worse than the employed. Collecting their own DRM data with phone surveys in the US, 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 second main finding is that there is a *time-composition effect* because the unemployed and the employed differ in how they spend their time. In their first DRM study (with employed women in Texas), 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. This finding has been confirmed, *inter alia*, by Krueger and Mueller (2008) with US data, by White and Dolan (2009) with British DRM data, and – more recently – by Bryson and MacKerron (2017) with ESM data collected via a smartphone app in Britain. Becoming unemployed thus implies that people can substitute more enjoyable leisure activities for less enjoyable working 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.

Knabe et al. (2010) conduct a DRM survey in Germany, collecting data about daily time use and emotional states of about 1,000 respondents. Their results show that unemployed persons declare lower levels of life satisfaction than the employed. They also find that employed people rank work and work-related activities among the least enjoyable activities but experience more

positive feelings than the unemployed when engaged in similar activities. While these results are in line with previous research, their main finding is that the duration-weighted average emotional state of an unemployed person does not differ from that of an employed person. This result shows up for different aggregate measures of momentary experienced utility (Net Affect, U-Index, Episode Satisfaction). The unemployed seem to be able to compensate the affective well-being gap in similar activities by spending the time the employed have to spend on work and work-related activities in more enjoyable ways.

Krueger and Mueller (2012), when examining the first wave of the American Time-Use Survey's (ATUS) well-being module, find that the daily moods of respondents are substantially affected by their labour market status. The unemployed feel sadder than the employed not only when they engage in the same type of activities, but also on average over the entire day. This supports their earlier findings (Krueger and Mueller, 2008). They speculate about the reasons for this saddening effect, mentioning that the abundance of free time might lead the unemployed to think more about their situation or that the marginal utility of leisure might diminish with respect to the additional leisure time the unemployed have. However, they also find that the employed feel more often tired than the unemployed. Contrary to Knabe et al. (2010), Krueger and Mueller (2008, 2012) do not aggregate the strength of the different emotions to a unidimensional measure.

Dolan et al. (2017) analyse ATUS data (the same dataset as Krueger and Mueller, 2012, but later waves) and show that the well-being effect of unemployment differs between different types of subjective well-being. They find that the unemployed have significantly lower cognitive well-being ("Cantril ladder"), but there are no differences in their reported experience of episodic happiness over the day. Average scores of negative affect (aggregate of tired, stressed, sad, in pain) are even weaker among unemployed than among employed persons. Similar observations are made by Flèche and Smith (2017). They analyse French time-use data and find that negative emotions are less intensive for unemployed men compared to employed men, whereas they are similar for employed and unemployed women. Von Scheve et al. (2017) analyse panel data from the German Socio-Economic Panel in which respondents are asked to report how often they felt certain emotions in the past four weeks. They find that unemployment causes reductions in life satisfaction, but that becoming unemployed has negative effect on emotional experiences only in the short run, but not in the long run.

The relative scarcity of studies, and their often-contradictory findings, leaves plenty of room for further research. The recent availability of large-scale, nationally representative surveys with affective well-being information opens the possibility to test the cross-country transferability of

findings, to analyse why previous studies have obtained contradicting results, and to extend the analysis to deepen our understanding why cognitive and affective well-being might react so differently to unemployment.

3. Data description

We use data from the UK Time-Use Survey (UKTUS) 2014/15 to investigate how unemployment relates to cognitive and affective well-being among the UK population. The UKTUS is a nationally representative survey of how UK residents spend their daily time. It has been conducted in 2000/01 and 2014/15. At the beginning of the interview, respondents are asked questions about their socio-economic and life circumstances. They are then asked to individually complete two time-use diaries during the following days, for which one weekday and one weekend day were randomly chosen for each household. For each of the two diary days, respondents report all activities they engaged in, how long these lasted, what exactly they did, and whom they were with. A random subsample of respondents are asked to also rate their enjoyment during their daily activities, while the others only fill out information about their time use.

The UKTUS 2014/15 was collaboratively collected by NatCen Social Research, the Center for Time-Use Research at the University of Oxford and the Northern Ireland Statistics and Research Agency. This large-scale survey comprises participating households from England, Scotland, Wales and Northern Ireland, and surveys randomly selected household members aged 8 or older. In total, the sample covers 4,239 household interviews with 9,388 individuals who reported on 16,550 diary days. In the 2014/15 wave, the UKTUS was enhanced with cognitive well-being questions in the individual questionnaire. For example, respondents were asked to evaluate how satisfied they are with their life in general (on a scale from 0 to 10) and to what extent they feel that the things they do in their life are worthwhile (on a 1-7 scale). A subsample of all respondents also received affective well-being questions in which they were enquired to rate, for each episode of their time-use diary, how much they enjoyed what they were doing on a scale from 1 (“not at all”) to 7 (“very much”). The diary design of UKTUS 2014/15 can be considered a modification of the DRM by Kahneman et al. (2004b). The affect question consists of only one, rather general emotion (“enjoyment”) for each diary episode. Such question design implicitly leaves the aggregation of the multitude of specific emotional experiences to the respondents themselves. Thus, researchers avoid the need to aggregate separate emotions, but lose information on specific positive and negative affects.

Since we are interested in the relationship between employment status and well-being, this study will not utilise the entire dataset, but restricts the analysis to the subset of respondents who responded to the enjoyment questions. We only consider adult respondents who were either employed and unemployed. In the UKTUS, respondents self-declare their work status. They also answer various questions about their labour market history and future prospects, which are used to generate their employment status based on the ILO definition. A person is considered to be in employment if he/she is at least 16 years old and reports to have been in paid work in the last 7 days or is holding a job from which he/she was taking time off at the time of the interview. Unemployed persons are those who are at least 16 years old, have not been working for pay in the last 7 days, are not just temporarily away from a job or business, have been searching for jobs in the last 4 weeks, and would be able to start working immediately when given a job offer. In the main part of our analysis, we use this generated employment status to classify the employed and the unemployed. We also examine the robustness of our findings with respect to the employment status classification in Section 5.

The subsample of employed and unemployed respondents with questionnaires containing enjoyment questions comprises 7415 diaries of 3709 individuals. There are 51 individuals who report enjoyment scores for activities during waking time in only one of their two diaries. Thus, we exclude the other 51 diaries for which they did not report enjoyment information. We maintain diaries in which only some activities during waking time have missing enjoyment information, which concerns 29,660 out of a total of 268,542 episodes. While these diaries are fully exploited in the investigation of time use, the episodes with missing enjoyment information cannot be included in the analysis of affective well-being. We directly use the enjoyment rating for each episode reported in the time-use diaries of UKTUS 2014/15 as the emotional well-being measure. The episodic enjoyment scores are then duration-weighted over the entire waking time of the day. The UKTUS provides an individual weight variable to balance the sample of this survey with the UK population. Since each individual completes two diaries, there is also a diary weight variable which not only matches the sample to the UK population, but also weights diaries by weekdays and weekend days. We apply the diary weight when analysing time-use and enjoyment across all diaries of all individuals. The individual weights are used for analyses at the individual level, e.g. when examining life satisfaction or average daily enjoyment of individuals.

Table 1: Descriptive Statistics

		Subsample with enjoyment ratings		Full sample	
		Empl.	Unempl.	Empl.	Unempl.
		(1)	(2)	(3)	(4)
<i>Mean</i>					
Age		41.35 (0.28)	34.07 (1.30)	42.52 (0.20)	34.70 (0.93)
Number of Children in Household		0.60 (0.02)	0.51 (0.09)	0.65 (0.01)	0.62 (0.06)
Number of Household Members		3.06 (0.04)	2.93 (0.14)	2.99 (0.02)	3.00 (0.10)
Monthly Household Income (in GBP, OECD equivalence scale)		2928 (624.5)	1252 (180.5)	2475 (156.7)	1132 (123.0)
Weekly Working Hours in Main Job		35.06 (0.23)	. .	34.68 (0.21)	. .
Unemployment Duration (days)		. .	1437 (207)	. .	1402 (160)
Number of Diary Episodes		36.55 (0.22)	34.61 (1.10)	36.01 (0.15)	34.17 (0.68)
Episode Duration (minutes)		39.40 (0.23)	41.61 (1.33)	39.99 (0.11)	42.14 (0.51)
<i>Shares (in %)</i>					
Gender	Male	52.05	54.20	55.64	56.23
	Female	47.95	45.80	44.36	43.77
Marital Status	Single (Never Married)	24.37	52.94	24.69	50.12
	Married/Cohabiting	66.76	33.85	66.83	41.16
	Divorced/Widowed	8.85	13.21	8.49	8.72
Highest Qualification	Degree/Higher Education	51.07	35.19	46.31	32.20
	A-Level/Equivalent	19.81	24.84	22.12	35.03
	Secondary	23.21	30.18	24.34	23.34
Number of Individuals		3553	156	4232	229
Number of Diaries		7056	308	8461	457
Number of Episodes		257883	10659	304675	15615

Notes: Standard errors in parentheses. All observations are weighted using the individual weights provided by UKTUS.

Table 1 shows the descriptive statistics of the diary data collected in UKTUS 2014/15. We differentiate between employed and unemployed persons. Columns 1 and 2 present statistics for the subsample of adult respondents whose diaries contain responses to enjoyment questions.

Columns 3 and 4 contain data for the full sample of all adult respondents, regardless of whether they were given enjoyment questions or not. We use the individual weights provided in the UKTUS data, which account for differences in non-response rates across subgroups and for months of the year. After weighting, months of the year in the data are uniformly distributed; and for each month, the distributions of age, gender, and region of residence in the sample matches those of the UK population. In that sense, the employed and unemployed in the full sample are representative of all employed and unemployed persons in the UK population.

Within the relevant subsample of questionnaires with enjoyment reports, there are 3,553 employed and 156 unemployed individuals having completed 7,056 and 308 time-use diaries, respectively. Table 1 contains information on various socio-demographic characteristics, e.g. age, gender, marital status, highest qualification achieved, number of persons in the household, number of children in the household, equivalent monthly net household income, weekly working hours in the main job (for the employed), unemployment duration² (for the jobless), number of episodes per diary, and average episode duration.

Table 1 indicates that the subsample used in our study and the full sample exhibit very similar characteristics. The differences between them are statistically insignificant for most of the characteristics, such as net household income, unemployment duration, number of children in the household, marital status or highest qualification. Although the subsample contains slightly larger households and more women than the full sample, the differences are small. Overall, the subsample appears to represent the UK adult population well. There are, however, substantial differences between the employed and the unemployed in both samples. Employed persons are generally older, have more than twice as much equivalent net household income, have more often obtained a degree or attended higher education institutions and are more often married or cohabitating than the unemployed. Among the employed, the shares of married/cohabitating persons and of highly educated individuals are significantly larger than among the unemployed. In each considered subgroup, more than 50 percent of respondents are male, although statistics of gender structure in the UK in 2014 indicate that the female-male ratio is, for the most part, larger than 1 beyond the age of 27 (Office of National Statistics, 2014). This could be due to the fact that women leave the labour force more often (temporarily) and become economically inactive.

² Respondents are asked when they left their last job. Unemployment duration is then calculated as the number of days between the date of the interview and the answer to this question.

4. Empirical results

We now turn to the analysis of the differences in cognitive and affective well-being between employed and unemployed persons. We start with a comparison of cognitive well-being measures that ask respondents to evaluate their overall life. We then examine time-use patterns of the employed and the unemployed and compare their daily hedonic well-being. We analyse mean enjoyment scores by activities and the duration-weighted enjoyment over the total waking time of the day. Finally, we conduct regression analyses of cognitive well-being (life satisfaction) and affective well-being (day-average enjoyment) on employment status and a set of socio-demographic control variables.

4.1. Cognitive well-being measures

In the UKTUS, there are various well-being questions that capture different aspects of people's lives. In Table 2, we show how the employment status is related to two of those cognitive well-being measures that capture people's evaluation of life as a whole. The first question asks respondents about their satisfaction with their life (0-10 scale). A second question asks how much respondents feel that the things they do in their life are worthwhile. The designated scale of life satisfaction is from 0 (worst) to 10 (best). The second cognitive measure is scaled between 1 and 7, but we convert it to the 0-10 scale by linearly normalizing scores to ease comparison and interpretation.³

Table 2: Cognitive Well-Being Measures

	E	UE	Difference
Life satisfaction	7.65 (0.04)	6.54 (0.19)	1.11***
"Overall, to what extent do you feel that the things you do in your life are worthwhile?"	7.79 (0.05)	7.04 (0.27)	0.75***

Notes: E – Employed, UE - Unemployed. Significance level: * p<0.10, ** p<0.05, *** p<0.01
Standard errors of means in parentheses.

Table 2 shows that the cognitive well-being of the employed is significantly higher than that of the jobless. The gap between employed and unemployed persons for self-evaluated life satisfaction is 0.95 and statistically significant at the 1% level. This is in line with the general finding in the happiness literature that unemployment is detrimental to life satisfaction. There are different reasons for this negative relationship. On the one hand, unemployment causes a loss of income, which reduces consumption opportunities and, thus, life satisfaction. On the

³ In the beginning of the survey period (April-September 2014), life satisfaction was elicited on a scale from 1 to 7. We rescale these answers linearly to the 0-10 scale.

other hand, unemployment implies a deviation from the social norm, which encompasses the expectation that able persons should work for a living and should not depend on society for their support. Cognitive well-being depends strongly on how well one meets one's own and society's expectations and norms. Unemployment constitutes a norm deviation and thus reduces cognitive well-being (see Hetschko et al. 2014).

The subjective assessment of whether one is doing worthwhile things in life also exhibits a statistically significant difference of 0.73 points between working and jobless persons. This also corresponds to previous findings that people in employment feel to have a purpose in life and that working is perceived as a meaningful, albeit not very enjoyable, activity in life (White and Dolan, 2009).

4.2. Analysis of time-use data

Before looking into how much individuals actually enjoy their time, we analyse how employed and unemployed persons allot their daily time to different activities. Table 3 provides a comprehensive picture of typical time use, differentiated by employment status.

Employed persons spend, on average, 4 hours and 16 minutes per day working and 44 minutes commuting. The unemployed, instead, do not engage in working and spend this time on other activities. According to Table 3, unemployed persons devote a significantly larger amount of time to leisure, e.g. sleeping, playing games, watching TV, computing and other mass-media. In each of these activities, they spent between a half and one hour longer than employed persons. The differences are statistically significant at the 1% level. Job-seeking takes up, on average, 29 minutes of an unemployed person's day, but only one minute for the employed. The considerable difference implies that the employed spend only little time with on-the-job-search and/or that only a small fraction of the employed spends time searching for jobs. Unemployed persons also devote a significantly larger amount of time per day (+35 minutes) to study and training activities. However, they do not seem to spend considerably more time on household management, personal care, reading and social life than the employed. The differences in time spent on these activities are less than 10 minutes and statistically insignificant.

Table 3: Time Use by Employment Status and Activities

Activity	Employed		Unemployed		Differences
	Time Use	Std. Err.	Time Use	Std. Err.	E - UE
Working/Employment-Related Activities	256	4	0	.	256***
Breaks at Work	9	0	0	.	9***
Commuting to Work	44	1	0	.	44***
Sleeping	499	2	550	9	-51***
Eating	79	1	80	5	-1
Personal Care	56	1	57	3	-1
Job Seeking	1	0	29	7	-28***
Study/Training	6	1	42	10	-36***
Cooking/Baking	31	1	36	3	-5*
Household Management/Shopping & Services	84	1	92	9	-8
Gardening and Pet Care	15	1	15	4	0
Childcare	24	1	24	5	0
Helping Household Members	6	0	9	4	-3
Volunteer/Participatory Activities	6	0	13	4	-7
Social Life	45	1	46	6	-1
Entertainment/Sport/Outdoor Activities	42	1	51	6	-9
Free Time Learning/Art & Hobbies	5	0	12	3	-7**
Playing Games	18	1	41	6	-23***
Computing & Other Mass-media	10	1	43	11	-33***
Reading	13	1	15	3	-2
TV/Video	117	2	179	14	-62***
Radio/Music	3	0	10	4	-7*
Travel (Other purposes)	54	1	71	5	-17***
Other Time Use	19	1	26	5	-7

Notes: in minutes; average time spent in each activity is not conditional on participating in that activity

To sum up, the investigation of daily time use indicates substantial differences in how time is allotted to specific daily activities depending on individuals' labour market statuses. While the employed spend more time working, the jobless sleep longer, spend more time on leisure, engage more in job search and more often attend study and training programs.

4.3. Affective well-being by employment status

We perform analyses of emotional well-being at the episode level and at the diary level. The former refers to comparing the average enjoyment scores reported by the employed and the unemployed when engaged in the same kind of activities. The latter compares the temporal integral of momentary enjoyment over the total waking time, which takes into account the relative time composition of different activities within the day.⁴ Furthermore, we will also compare how the levels of duration-weighted enjoyment over total waking time of employed and unemployed persons differ between weekdays and weekends.

Table 4 reveals how much enjoyment is experienced by the employed and the unemployed, on average, when engaged in similar activities. By definition, the jobless do not spend any time on commuting to work, working, and other working-related activities, which are observed only among the employed. In the following, we will analyse and compare the reported affective well-being during the engagement in specific activities within and across the employed and the unemployed.

In general, the employed as well as the unemployed tend to assign relatively high enjoyment scores to active leisure activities, while they do not seem to enjoy performing duties, such as household management or job seeking. Employed persons feel best when playing games, whereas the unemployed report the highest average enjoyment scores when volunteering or engaging in participatory activities. Playing games also ranks second among the most enjoyable activities for the unemployed, and thus appears to be one of the most favourite things to do for both groups. Regardless of their employment status, people report the lowest enjoyment when engaging in job search activities. The observation that unemployed persons feel particularly bad when looking for a job confirms the findings by Knabe et al. (2010) for Germany and Krueger and Mueller (2012) for the US. Work-related activities (working and commuting) also belong to the least enjoyable activities of the day for employed persons. This supports previous evidence that working is one of the worst daily activities for employed persons, as shown, *inter alia*, by Bryson et al. (2017) with British ESM data and by Kahneman et al. (2004a,b) for working women in Texas.

⁴ To obtain the average enjoyment score for a particular type of activity, we aggregate enjoyment scores of all episodes of that type of activity across all diaries of the employed and the unemployed, respectively. Each episode is weighted by the product of the share of total waking time spent on this episode in the respective diary and the diary weight provided by UKTUS.

Table 4: Enjoyment Score Across Individuals by Employment Status & Activities

Activity	Employed		Unemployed		Differences
	Enjoyment	Std. Err.	Enjoyment	Std. Err.	E - UE
Playing Games	6.22	0.06	6.17	0.17	0.05
Entertainment/Sport/ Outdoor Activities	6.17	0.03	6.14	0.13	0.03
Social Life	6.15	0.03	5.92	0.14	0.23*
Reading	6.02	0.04	5.77	0.27	0.26
Eating	5.95	0.02	5.92	0.12	0.04
Radio/Music	5.85	0.10	6.12	0.41	-0.28
TV/Video	5.84	0.02	5.79	0.11	0.06
Volunteer/ Participatory Activities	5.80	0.10	6.18	0.41	-0.38
Childcare	5.77	0.05	5.85	0.24	-0.09
Gardening and Pet Care	5.73	0.05	5.73	0.24	0.00
Free Time Learning/Art & Hobbies	5.66	0.14	5.74	0.25	-0.08
Other Time Use	5.52	0.08	5.31	0.25	0.22
Computing & Other Mass-media	5.51	0.05	5.02	0.21	0.49**
Helping Household Members	5.48	0.09	4.85	0.27	0.63**
Breaks at Work	5.41	0.06	.	.	.
Cooking/Baking	5.29	0.03	5.04	0.15	0.26*
Personal Care	5.27	0.03	5.32	0.16	-0.05
Travel (Other Purposes)	5.11	0.03	5.06	0.15	0.05
Household Management/ Shopping & Services	4.72	0.03	4.54	0.14	0.18
Working/ Employment Related Activities	4.63	0.04	.	.	.
Study/Training	4.57	0.17	4.83	0.30	-0.26
Commuting to Work	4.53	0.05	.	.	.
Job Seeking	3.39	0.42	3.57	0.54	-0.18
Day-Average Enjoyment	5.28	0.02	5.44	0.08	-0.16*

Notes: E: Employed, UE: Unemployed. Significance level: * p<0.10, ** p<0.05, *** p<0.01

Socialising belongs to the most enjoyable times of the day. The unemployed do not experience as much enjoyment during socialising as the employed, though. This enjoyment difference is statistically significant at the 10% level. Nonetheless, episodes of social life appear to have higher mean enjoyment scores than many other entertainment and leisure activities that

unemployed persons undertake, for instance, watching TV/video, reading, gardening and pet care, or free-time learning and hobbies, although the differences are not statistically significant.

When comparing enjoyment ratings across all activities, we find that there are more categories of activities that the employed enjoy more than the unemployed than the other way around. For most activities, however, the enjoyment gap is statistically insignificant. Yet, in those cases where we do find statistically significant differences, the employed feel better than the unemployed (social life, helping other household members, computing/mass-media use). This provides additional, although statistically weak evidence for what has been called the *saddening effect* of being unemployed (Knabe et al. 2010).

At the bottom of Table 4, we present the duration-weighted average enjoyment score over the total waking time. We find that, averaged over their entire day, the jobless experience even more enjoyment than the employed. The difference is statistically significant at the 10%-level. Although the unemployed are less satisfied with their life and, in general, do not enjoy themselves as much as the employed do in the same specific daily activities, they report higher average affective well-being when taking account of how they actually spend their time over the entire day. This can be explained by the strength of emotional experiences and the duration that a person experiences it. As described before, the daily time composition of the employed and the unemployed differs substantially. The unemployed spend far more time on leisure and entertainment than the employed, because the latter group has to go to work. Working, however, is counted among the least enjoyable activities of the day. Our findings suggest that the, already rather weak, *saddening effect* is reversed and dominated by the stronger *time-composition effect*, resulting in a higher diurnal hedonic well-being experience of unemployed persons compared to the employed. This is supportive of the findings by Knabe et al. (2010) and Flèche and Smith (2017).

Table 5: Day-Average Enjoyment on Weekdays and Weekends

	Weekday	Weekend Day	Difference (WD – WE)
Employed	5.18 (0.02)	5.53 (0.02)	-0.35***
Unemployed	5.39 (0.09)	5.57 (0.08)	-0.18***
Difference (E – UE)	-0.21**	-0.04	

Notes: E – Employed, UE - Unemployed. Significance level: * p<0.10, ** p<0.05, *** p<0.01

Standard errors of means in parentheses.

The time composition of employed persons might differ between weekdays and weekends, because they typically allot much more time to (less enjoyable) working hours on weekdays than on weekends. In Table 5, we further differentiate the diurnal affective well-being by weekdays and weekends. The employed enjoy weekend days substantially more than weekdays, as indicated by the statistically significant difference of 0.35 points in their reported daily enjoyment scores. The unemployed also feel significantly better on weekends, but the gap is significantly smaller than that for the employed. The average enjoyment level of employed and unemployed persons is rather similar during weekends. On weekdays, however, the unemployed experience higher affective well-being levels than the employed. The difference is statistically significant at the 5% level. This is, again, supportive of what we have found regarding the time-composition effect.

We also look further into how employed and unemployed persons spend their time and experience specific activities during weekdays and weekends (Tables A2 and A3 in the Appendix). In general, we find that time use by the employed differs substantially between weekdays and weekends. Most of the time spent working on weekdays is used for leisure activities on weekends, e.g. sleeping and watching TV. The time use of unemployed persons remains comparatively stable between weekdays and weekends. The only statistically significant differences we observe are that the unemployed sleep more and socialise more on weekends, whereas they spend more time on job search and study or training programs during weekdays. When looking at affect ratings, we see that the employed enjoy most of the activities, except playing games and working, significantly more on weekends than on weekdays. In contrast, unemployed persons do not seem to enjoy their activities differently on weekdays and weekends (except playing games, which they rate significantly more enjoyable on weekends).

4.4. Regression Analysis

In the preceding section, we compared (unconditional) mean enjoyment scores between the employed and the unemployed. Since the two groups differ not only in their employment status, but also in other socio-demographic characteristics (see Table 1), it is possible that the observed differences are caused by factors other than the employment status. To verify our results, we regress different measures of well-being as dependent variables on employment status and a set of controls that are observable characteristics of respondents. To have the same number of observations in every specification, we restrict the sample to respondents who report all the variables we consider (non-missing observations).

We estimate a regression model with three different specifications. The baseline specification includes only a dummy variable indicating the person's employment status. The second specification is extended with various personal and sociodemographic characteristics, such as gender, marital status, education, age, household size, and number of children. The final specification adds the log of (equivalised) monthly household income to separate monetary from non-monetary effects of unemployment. We adjust net household income to the size of the household, using the modified OECD equivalence scale. As a first step, we want to compare how unemployment is related to the life satisfaction and day-average enjoyment reported by individuals. Since life satisfaction is measured at the individual level, we also construct an enjoyment score at the individual level by aggregating the enjoyment scores of both diaries of the same person (Table 6). We also conduct regressions of average enjoyment scores at the diary level to distinguish between days on which the employed were working or not working (Table 7) as well as between weekdays and weekends (Table 8).

Life Satisfaction and Individual Diurnal Enjoyment

The results of the regression of life satisfaction on employment status and socio-demographic control variables are presented in the first three columns of Table 6. They are in line with the literature and confirm our earlier descriptive findings. Unemployed people are less satisfied with their life than the employed. The relationship between unemployment and life satisfaction is negative and statistically significant at the 1%-level. The magnitude of the estimated coefficient becomes smaller (in absolute terms) as control variables are added. This suggests that the factors we control for in the latter two specifications capture part of the negative relation between life satisfaction and employment status.

Concerning the control variables, we find a U-shaped relationship between individuals' age and their level of self-evaluated life satisfaction, where life satisfaction is decreasing with age in the early years, reaching a low around the mid-40s, and then rising again in the latter years of life. Similar findings have been reported by other studies, e.g. Clark and Oswald (1994), Frey and Stutzer (2002), Di Tella et al. (2003), Blanchflower and Oswald (2008) and Stone et al. (2010). Women and persons living with a partner, either married or cohabiting, have a higher life satisfaction than comparable men or non-partnered individuals (singles/divorced/widowed), respectively. While a larger household size (more adults and/or more children) is associated with higher life satisfaction, higher educational degrees are, *ceteris paribus*, negatively related to the assessment of cognitive subjective well-being.

The third specification indicates that higher income is, *ceteris paribus*, associated with higher life satisfaction, as shown by the positive and highly significant coefficient of income. Being unemployed is usually associated with a loss of income, so this explains part of the negative relation between unemployment and life satisfaction. In line with the life satisfaction literature, unemployment is still associated with a lower level of life satisfaction even after controlling for various socio-demographic characteristics and household income, which suggests that unemployment also has non-monetary, psychological cost.

Columns 4-6 of Table 6 show the results of regressing daily affective well-being on employment status and various socio-demographic characteristics at the individual level. To construct the day-average enjoyment at individual level, we weight the weekday and weekend diaries of the same person at the ratio 5:2.⁵

Table 6 reveals that, in all specifications, unemployment is positively related to the average affective well-being experienced over the day. In Column 4, the relationship is statistically significant at the 10%-level. In the two specifications with further control variables, the coefficients of the unemployment dummy are smaller than in the first specification (and statistically insignificant in the third specification). The point estimates remain positive, though. Our earlier findings, obtained by comparing unconditional means, are thus supported by the multivariate regression analysis. Even though unemployment lowers people's life satisfaction, there is no evidence for a negative relationship between unemployment and diurnal affective well-being. If anything, the affective well-being perceived on average during the day is positively associated with unemployment.

⁵ There are a small number of respondents who only report on one day or on two days which are both weekdays or weekend days (60 out of 3709 individuals of our sample). For respondents from the former group, we simply treat their average enjoyment during the report-day as their individual daily emotional well-being. With respect to the latter, since both diaries have the same relative position of days of the week, each diary day is given a weight of one-half when calculating the average daily enjoyment of that individual. The results remain qualitatively unchanged if we restricted the sample to individuals who report one weekday and one weekend diary.

Table 6: Regression Results: Life Satisfaction and Daily Enjoyment at Individual Level

	Life Satisfaction			Daily Enjoyment		
	(1)	(2)	(3)	(4)	(5)	(6)
Unemployment	-0.945*** (0.205)	-0.878*** (0.196)	-0.749*** (0.205)	0.169** (0.082)	0.138* (0.083)	0.062 (0.087)
Female		0.135* (0.070)	0.149** (0.070)		0.102*** (0.028)	0.098*** (0.027)
Age		-0.111*** (0.018)	-0.111*** (0.018)		-0.022*** (0.007)	-0.022*** (0.007)
Age ² × 10 ⁻³		1.198*** (0.217)	1.196*** (0.215)		0.288*** (0.084)	0.286*** (0.083)
Married/Cohabiting		0.696*** (0.104)	0.654*** (0.102)		-0.020 (0.043)	0.004 (0.043)
Degree/Higher Education		-0.078 (0.083)	-0.149* (0.084)		-0.130*** (0.035)	-0.088** (0.035)
Number of Adults in Household		0.010 (0.049)	0.005 (0.048)		-0.011 (0.020)	-0.009 (0.020)
Number of Children in Household		0.059 (0.042)	0.097** (0.043)		0.022 (0.022)	-0.002 (0.022)
Log (Equivalised) HH Income			0.191*** (0.055)			-0.117*** (0.029)
Constant	7.638*** (0.041)	9.444*** (0.379)	8.066*** (0.551)	5.285*** (0.021)	5.689*** (0.160)	6.535*** (0.278)
Observations	2782	2782	2782	3388	3388	3388
R ²	0.01	0.05	0.06	0.00	0.02	0.03

Notes: OLS Regressions. Standard errors in parentheses. Individual weights applied. Significance level: * p<0.10, ** p<0.05, *** p<0.01.

For some control variables, including income, gender, age and education level, we find statistically significant relationships with daily affective well-being. Women have higher diurnal well-being compared to men with otherwise identical characteristics. Better education, having a partner or having more adult members in the household is not related to more daily enjoyment. Instead, these coefficients are negative, and even highly statistically significant in case of education. Age has a U-shaped relationship with diurnal affective well-being. Day-average well-being falls with age until people are in their late 30s, and increases afterwards.

Contrary to its relation with life satisfaction, we find that net household (log) income is significantly negatively associated with the level of daily affective well-being of individuals. This corresponds to other findings in the literature that show that the positive relationship between income and cognitive well-being cannot be found for daily experienced happiness (Kahneman et al. 2006; Knabe et al. 2010; Kushlev et al. 2015; Stone et al. 2018), although these studies do not find a significantly negative relationship. The coefficients of the equivalised household income variable remain negative, but become very small and insignificant for individual daily enjoyment if we run regressions on linear income instead of log income. When we exclude potential outliers from our regressions on linear income, i.e. we analyse only individuals with equivalised net household income between the 5th and 95th percentile of the sample, the income coefficient is again negative and statistically significant. In all these regressions, the coefficients of the other variables remain practically unchanged.

The number of individual observations in the life satisfaction regressions is smaller than that in the individual daily enjoyment regressions (2782 vs 3388 persons, resp.). The difference is caused by UKTUS' household and individual interviewing procedures. The individual questionnaire, which also contains the life satisfaction question, can be answered by one household member also on behalf of other household members if these are absent on the date of the interview (so-called "proxy interviews"). In that case, all the questions relating to the other member's subjective assessments of well-being must then be skipped. However, the absent persons were still given the diaries to complete later on their own. Thus, there are more persons for which there are diaries than persons with life satisfaction information. When we compare the subsamples of individuals for whom there is life satisfaction information and for whom there is not, we see that employed persons in the latter group are younger, live in larger households, are less educated, earn less income but work more hours in their main job. More than 70 percent of them are men. We also run regressions of individual daily enjoyment on a subsample of respondents who had reported their life satisfaction. We find that the

unemployment dummy remains positive but statistically insignificant in all specifications. This is in line with our main finding that unemployed persons do not experience less average enjoyment than employed persons. The estimated coefficients of other socio-demographic factors remain qualitatively unchanged compared to the regression using all available observations.

Daily Affective Well-Being and Working Hours

Above, we found that income is negatively related to day-average enjoyment of individuals. A potential explanation for this finding could be that individuals who earn more are, in fact, those working more. Spending more time on working, one of the least enjoyable activities of the day, could then lead to lower duration-weighted daily enjoyment, which would result in a negative correlation between income and daily enjoyment. The validity of this argument can be tested by taking the presence and extent of work activities during the diary day into account.

Table 7 reports the regression results at the diary level. We pool all diaries regardless of which day of the week the diary represents and add control variables for the presence of work activities. In particular, we add a dummy variable that indicates the presence of working episodes, i.e. taking value 1 if the person works on that day and 0 otherwise, as well as a continuous variable capturing the total number of working hours if the person actually works.

Similarly to the daily enjoyment regression at the individual level (Table 6), our estimates at the diary level yield an unemployment coefficient that is not only positive but also statistically significant at the 5% level when we do not control for other variables. When we add the working day dummy and working hours as regressors, however, this coefficient becomes negative and statistically insignificant (Column 2). Having had to work on that day and the total number of working hours during that day are both negatively related to the average level of enjoyment experienced over the entire day. Each additional working hour is associated with 0.05 points less of average enjoyment on that day. This supports our earlier findings that there is a *saddening effect*. The perceived enjoyment level of unemployed persons is lower than that of employed persons on a day off, as shown by the negative unemployment coefficient in specifications (2) to (4). The negative working time coefficients reflect the *time-composition effect*, i.e. the jobless are doing more enjoyable activities when the employed are working.

Table 7: Regression Results: Day-Average Affective Well-being (Diary Level)

	Daily Enjoyment			
	(1)	(2)	(3)	(4)
Unemployment	0.181** (0.081)	-0.094 (0.083)	-0.122 (0.083)	-0.185** (0.087)
Working Day (Dummy)		-0.080 (0.057)	-0.085 (0.055)	-0.094* (0.054)
Working Time (in hours)		-0.053*** (0.008)	-0.051*** (0.008)	-0.050*** (0.008)
Female			0.044 (0.028)	0.041 (0.028)
Age			-0.016** (0.007)	-0.016** (0.007)
Age ² × 10 ⁻³			0.206** (0.083)	0.206** (0.082)
Married/Cohabiting			-0.031 (0.043)	-0.011 (0.043)
Degree/Higher Education			-0.123*** (0.035)	-0.087** (0.035)
Number of Adults in Household			-0.004 (0.022)	-0.002 (0.021)
Number of Children in Household			0.010 (0.022)	-0.011 (0.022)
Log (Equivalent) HH Income				-0.103*** (0.030)
Constant	5.285*** (0.021)	5.561*** (0.024)	5.877*** (0.162)	6.615*** (0.281)
Observations (Diaries)	6753	6753	6753	6753
R ²	0.00	0.07	0.07	0.08

Notes: OLS Regressions. Standard errors in parentheses. Diary weights applied. Significance level: * p<0.10, ** p<0.05, *** p<0.01.

In the last specification, in which the presence and extent of work activities on the diary day and the equivalent household income are taken into account, being unemployed is significantly negatively related to day-average well-being. As before, we find a negative and significant relationship between the equivalent log income of the household and the reported duration-weighted affective well-being. Unemployed persons typically earn lower income, so including the negative income control results in an even lower (more negative) unemployment coefficient. Compared to Table 6, the income coefficient appears to be slightly smaller (in absolute terms) but remains negative and significant even when we control for working. This

implies that working more is only partly the reason why persons with higher income enjoy their day less, *ceteris paribus*.

Daily Affective Well-Being by Weekday/Weekend

As was shown in Table 5, the differences in average affective well-being between the employed and the unemployed are not the same on weekdays and on weekends. In particular, we found that unemployed persons enjoy weekdays more than the employed and that both groups enjoy their weekends equally. Both groups enjoy their weekends more than weekdays, but the enjoyment gap is larger for the employed. We now want to examine whether this observation persists when we control for other confounding factors. Table 8 presents regressions results for daily enjoyment at the diary level, differentiated between weekdays and weekends. We restrict our sample to individuals who provided a weekday as well as a weekend diary.

The first column in Table 8 indicates that unemployment is significantly positively associated with the day-average assessment of subjective enjoyment on weekdays. When the presence and extent of work activities (Column 2), other socio-demographic characteristics (Column 3), and income (Column 4) are controlled for, this coefficient becomes smaller and statistically insignificant. We observe a similar pattern in the regression on the subsample of weekend diaries (Columns 5-8). The unemployment coefficient is positive but statistically insignificant in the first specification and negative in the latter three. Before controlling for any other factors, the unemployment coefficient in the weekend regression is smaller than in the weekday regression, most likely because fewer employed persons have to work on weekends than on weekdays. In the last specification of the weekend regression (Column 8), being unemployed is significantly negatively associated with enjoyment. Working time has a negative and highly significant relationship with enjoyment in all the specifications on both types of days. A comparison between weekday and weekend regressions suggests that having to work on weekends is perceived worse than working on weekdays, although the difference is not statistically significant.

Table 8: Regression Results: Daily Affective Well-Being by Weekday/Weekend (Diary Level)

	Daily Enjoyment							
	Weekday			Weekend				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Unemployment	0.231** (0.096)	-0.061 (0.101)	-0.074 (0.102)	-0.144 (0.106)	0.053 (0.076)	-0.060 (0.076)	-0.101 (0.076)	-0.188** (0.080)
Working Day (Dummy)		-0.031 (0.070)	-0.035 (0.067)	-0.047 (0.067)		-0.087 (0.078)	-0.080 (0.077)	-0.083 (0.076)
Working Time		-0.051*** (0.009)	-0.047*** (0.009)	-0.044*** (0.009)		-0.051*** (0.013)	-0.055*** (0.013)	-0.056*** (0.013)
Female			0.070** (0.032)	0.068** (0.032)			0.014 (0.030)	0.009 (0.030)
Age			-0.018** (0.008)	-0.018** (0.008)			-0.014* (0.008)	-0.014* (0.008)
Age ² × 10 ⁻³			0.244*** (0.093)	0.245*** (0.092)			0.0163* (0.000)	0.0160* (0.000)
Married/Cohabiting			-0.041 (0.048)	-0.016 (0.048)			-0.001 (0.043)	0.026 (0.044)
Degree/Higher Education			-0.129*** (0.040)	-0.087** (0.041)			-0.124*** (0.032)	-0.081** (0.031)
Number of Adults in Household			-0.004 (0.023)	-0.003 (0.022)			-0.003 (0.026)	-0.002 (0.026)
Number of Children in Household			0.018 (0.025)	-0.006 (0.026)			0.001 (0.020)	-0.025 (0.021)
Log (Equivalized) Net HH Income				-0.123*** (0.035)				-0.129*** (0.026)
Constant	5.188*** (0.024)	5.480*** (0.038)	5.798*** (0.182)	6.678*** (0.324)	5.526*** (0.019)	5.639*** (0.020)	5.987*** (0.181)	6.921*** (0.259)
No. of Obs.	3348	3348	3348	3348	3348	3348	3348	3348
R ²	0.00	0.05	0.06	0.06	0.00	0.05	0.05	0.06

Notes: OLS Regressions. Standard errors in parentheses. Diary weights applied. Significance level: * p<0.10, ** p<0.05, *** p<0.01.

The multivariate regressions support the results of the comparison of means (Table 5). As we had seen in the descriptive analysis, employed persons consider working and employment-related activities among the least enjoyable activities, and being unemployed allows substituting more agreeable activities for less pleasant working hours. During weekdays, the unemployed obtain higher day-average enjoyment than the employed, whereas the daily affective well-being is not significantly different for the two groups on weekends. These findings point to the importance of the time-composition effect. On weekdays, employed persons devote time on labour market activities while unemployed persons use more of their available time for leisure. On weekends, when also the employed are able to allocate more time to leisure, the employment status is no longer related to people’s ability to spend their time in enjoyable ways.

4.5. Correlations between well-being measures

We now examine the correlations between the different cognitive and affective well-being measures more closely. As shown in Table 8, there are positive pairwise correlations between all the well-being measures considered. However, the correlations between daily enjoyment and the other two measures are rather weak. The strongest correlation is found between life satisfaction and people’s assessment whether they feel that the things they do in their life are worthwhile. Life satisfaction is a cognitive measure that is formed when people think of what constitutes a satisfying life and evaluate their life circumstances based on these abstract criteria. The observed correlations could be interpreted as an indication that spending one’s time in a worthwhile way is a criterion for life satisfaction, or that the two measures have similar underlying criteria. The weak correlation with daily enjoyment suggests, however, that affective well-being captures a quite different dimension of subjective well-being. This emphasizes the need to examine both well-being dimensions separately.

Table 8: Correlations between Well-Being Measures

	Life Satisfaction	Life Worthwhile	Daily Enjoyment
Life Satisfaction	1	-	-
Life Worthwhile	0.66	1	-
Daily Enjoyment	0.25	0.26	1

5. Robustness Checks

Our findings are robust to different sample restrictions and different definitions of employment statuses (see Table A4 in the Appendix).

Our results continue to hold when we exclude part-time employees. Compared to fulltime employees only, the unemployed exhibit higher daily affective well-being. The difference is even larger and statistically significant at the 1% level than when comparing the unemployed to all employees. That we obtain even stronger results when we exclude part-time employees from our analysis supports the view that the time-composition effect matters for emotional well-being in everyday life.

In another robustness test, we use different definitions of unemployment. When we use people's self-reported employment status to identify the unemployed, i.e. we consider all persons who say that they are unemployed instead of using the ILO definition of unemployment, the life satisfaction reported by the unemployed turns out to be even lower. In this case, the unemployed still show higher perceived day-average enjoyment, but the gap between them and the employed is smaller and statistically insignificant. When we restrict our analysis to persons who declare themselves to be unemployed and who are unemployed according to the ILO definition, we see that their life satisfaction is even lower, but their affective well-being is higher than for the other classifications of unemployment. Comparing the employed and the unemployed for whom the ILO classification and their self-declared employment status coincide, we observe the largest well-being gaps between the two groups – in favour of the employed when looking at life satisfaction, but in favour of the unemployed when considering affective well-being.

All in all, our findings appear robust to alternative sample restrictions.

6. Conclusion

In this study, we investigated the relationship between employment status, time use, and multiple dimensions of subjective well-being, using the most recent wave of the UK Time-Use Survey (UKTUS 2014 – 2015). Our main results indicate that employment status plays an important role for individuals' well-being. While this is a common finding in the research on subjective well-being, we find that it is critical to differentiate between different kinds of subjective well-being. Our findings indicate that unemployment is negatively related to cognitive well-being (life satisfaction), but not to diurnal affective well-being (average momentary enjoyment). Jobless persons appear to experience less enjoyment compared to the employed when they engage in the same kind of daily activities. This suggests that unemployment is negatively related also to affective well-being (saddening effect). However, the employed also report that working belongs to one of the least enjoyable experiences of the

day. When considering total waking time, the employed spend, on average, more than 4 hours per day at work, while the unemployed allot this time to more enjoyable activities, e.g. playing games or watching TV (time-composition effect). Our analysis suggests that the time-composition effect is strong enough to compensate and even reverse the saddening effect. On balance, the unemployed have a higher duration-weighted diurnal affective well-being than the employed. These results are in line with, and even stronger than, what has been found in previous studies by Knabe et al. (2010), Dolan et al. (2017), and Fleche and Smith (2017).

This study contributes to understanding the relationship between employment status and well-being by providing further empirical evidence from nationally representative UK data. Our findings suggest that unemployment makes people dissatisfied with their life. This could be the consequence of internal pressure, e.g. self-actualisation, or external pressure, e.g. social norms. However, when looking at enjoyment of everyday life, we do not find a negative relation. If anything, the unemployed are able to enjoy their days more than the employed by not experiencing the displeasure at work while spending their time in more enjoyable ways.

Future research could examine more thoroughly the aspects that are most relevant to individuals' experienced utility, and study the channels through which they affect well-being. For example, one could investigate to what extent the loss of social contacts at work, the possibility of diminishing marginal enjoyment of leisure, or norm deviance drive the saddening effect. This opens rooms for further research on labour market experiences and subjective well-being.

References

- Blanchflower, D. G., and Oswald, A. J. (2004). Well-being over time in Britain and the USA. *Journal of Public Economics*, 88(7-8), 1359–1386.
- Blanchflower, D. G., and Oswald, A. J. (2008). Is well-being U-shaped over the life cycle? *Social Science & Medicine*, 66(8), 1733–1749.
- Bradburn, N. M. (1969). *The Structure of Psychological Well-being*. Aldine, Chicago.
- Bryson, A., and MacKerron, G. (2017). Are You Happy While You Work? *Economic Journal*, 127(599), 106–125.
- Clark, A. E. (2003). Unemployment as a Social Norm: Psychological Evidence from Panel Data. *Journal of Labour Economics*, 21(2), 323–351.

- Clark, A. E. (2006). A Note on Unhappiness and Unemployment Duration. *Applied Economics Quarterly*, 52(4), 291-308
- Clark, A. E., and Oswald, A. J. (1994). Unhappiness and Unemployment. *Economic Journal*, 104(424), 648.
- Clark, A., Georgellis, Y., and Sanfey, P. (2001). Scarring: The Psychological Impact of Past Unemployment. *Economica*, 68(270), 221–241.
- Clark, A., Knabe, A., and Rätzel, S. (2010). Boon or bane? Others' unemployment, well-being and job insecurity. *Labour Economics*, 17(1), 52–61.
- Dolan, P., Kudrna, L., and Stone, A. (2017). The Measure Matters: An Investigation of Evaluative and Experience-Based Measures of Wellbeing in Time Use Data. *Social Indicators Research*, 134(1), 57–73.
- Flèche, S., & Smith, C. (2017). *Time use surveys and experienced well-being in France and the United States*. OECD Statistics Working Papers, 2017/07.
- Frey, B. S., and Stutzer, A. (2002). What Can Economists Learn from Happiness Research? *Journal of Economic Literature*, 40(2), 402–435.
- Hetschko, C., Knabe, A., and Schöb, R. (2014). Changing Identity: Retiring From Unemployment. *Economic Journal*, 124(575), 149–166.
- Kahneman, D. (1999). Objective happiness, in D. Kahneman, E. Diener and N. Schwarz (eds.), *Well-being: The foundations of hedonic psychology*, New York: Russell Sage Foundation, 3-25.
- Kahneman, D., and Krueger, A. B. (2006). Developments in the Measurement of Subjective Well-Being. *Journal of Economic Perspectives*, 20(1), 3–24.
- Kahneman, D., Krueger, A. B., Schkade, D. A., Schwarz, N., and Stone, A. A. (2004b). A survey method for characterizing daily life experience: The day reconstruction method. *Science*, 306(5702), 1776–1780.
- Kahneman, D., Krueger, A. B., Schkade, D., Schwarz, N., and Stone, A. (2004a). Toward National Well-Being Accounts. *American Economic Review*, 94(2), 429–434.
- Kahneman, Daniel, Alan B. Krueger, David Schkade, Norbert Schwarz, and Arthur A. Stone (2006). Would You Be Happier If You Were Richer? A Focusing Illusion, *Science*, 312(5782), 1908-1910.
- Kahneman, D., Wakker, P. P., and Sarin, R. (1997). Back to Bentham? Explorations of Experienced Utility. *Quarterly Journal of Economics*, 112(2), 375–406.

- Knabe, A., and Rätzel, S. (2011a). Quantifying the psychological costs of unemployment: The role of permanent income. *Applied Economics*, 43(21), 2751–2763.
- Knabe, A., and Rätzel, S. (2011b). Scarring or Scaring? The Psychological Impact of Past Unemployment and Future Unemployment Risk. *Economica*, 78(310), 283–293.
- Knabe, A., Rätzel, S., Schöb, R., and Weimann, J. (2010). Dissatisfied with Life but Having a Good Day: Time-use and Well-being of the Unemployed. *Economic Journal*, 120(547), 867–889.
- Knabe, A., Schöb, R., and Weimann, J. (2016). Partnership, Gender, and the Well-Being Cost of Unemployment. *Social Indicators Research*, 129(3), 1255–1275.
- Krueger, A. B., and Mueller, A. I. (2008). *The Lot of the Unemployed: A Time Use Perspective*. IZA Discussion Paper, No. 3490, Bonn.
- Krueger, A. B., and Mueller, A. I. (2012). Time Use, Emotional Well-Being, and Unemployment: Evidence from Longitudinal Data. *American Economic Review*, 102(3), 594–599.
- Kushlev, K., E. W. Dunn, and R. E. Lucas (2015). Higher Income Is Associated With Less Daily Sadness but not More Daily Happiness, *Social Psychological and Personality Science*, 6(5), 483-489.
- Larson, R., and Csikszentmihalyi, M. (1983). The Experience Sampling Method. *New Directions for Methodology of Social and Behavioral Science*, 15, 41–56.
- Lucas, R. E., Clark, A. E., Georgellis, Y., and Diener, E. (2004). Unemployment alters the set point for life satisfaction. *Psychological Science*, 15(1), 8–13.
- Office for National Statistics of the UK (2016). *Overview of the UK population: February 2016*, (11). London: Office for National Statistics.
- Shields, M. A., Wheatley Price, S., and Wooden, M. (2009). Life satisfaction and the economic and social characteristics of neighbourhoods. *Journal of Population Economics*, 22(2), 421–443.
- Stone, A. A., Schwartz, J. E., Broderick, J. E., and Deaton, A. (2010). A snapshot of the age distribution of psychological well-being in the United States. *Proceedings of the National Academy of Sciences*, 107(22), 9985-9990.
- Stone, A. A., Schneider, S., Krueger, A., Schwartz, J. E., and Deaton, A. (2018). Experiential Wellbeing Data from the American Time Use Survey: Comparisons with Other Methods and Analytic Illustrations with Age and Income, *Social Indicators Research*, 136(1), 359-378.

- Tella, R. D., MacCulloch, R. J., and Oswald, A. J. (2003). The Macroeconomics of Happiness. *Review of Economics and Statistics*, 85(4), 809-827.
- Veenhoven, R. (1991). Is happiness relative? *Social Indicators Research*, 24(1), 1-34.
- Veenhoven, R., Ehrhardt, J., Ho, M. S., and Vries, A. D. (1993). Happiness in nations: Subjective appreciation of life in 56 nations 1946–1992. *World Database of Happiness*, Erasmus University Rotterdam.
- Von Scheve, Ch., Esche, F., and Schupp, J. (2017). The Emotional Timeline of Unemployment: Anticipation, Reaction, and Adaptation. *Journal of Happiness Studies*, 18(4), 1231-1254.
- White, M. P., and Dolan, P. (2009). Accounting for the richness of daily activities. *Psychological Science*, 20(8), 1000–1008.
- Winkelmann, L., and Winkelmann, R. (1998). Why Are the Unemployed So Unhappy? Evidence from Panel Data. *Economica*, 65(257), 1–15.

APPENDIX

Table A1: Share of Participants, by Employment Status and Activities

	E	UE
Working/Employment-Related Activities	0.80	0.00
Breaks at Work	0.32	0.00
Commuting to Work	0.71	0.00
Sleeping	1.00	1.00
Eating	0.99	0.98
Personal Care	0.01	0.29
Job Seeking	0.04	0.19
Study/Training	0.80	0.79
Cooking/Baking	0.94	0.92
Household Management/Shopping & Services	0.34	0.25
Gardening and Pet Care	0.31	0.24
Childcare	0.16	0.15
Helping Household Members	0.10	0.14
Volunteer/Participatory Activities	0.74	0.67
Social Life	0.64	0.67
Entertainment/Sport/Outdoor Activities	0.10	0.15
Free Time Learning/Art & Hobbies	0.45	0.43
Playing Games	0.17	0.28
Computing & Other Mass-media	0.33	0.29
Reading	0.92	0.92
TV/Video	0.09	0.13
Radio/Music	0.99	0.97
Travel (Other purposes)	0.88	0.85
Other Time Use	0.49	0.51

Notes: E - Employed, UE - Unemployed. The table shows the share of individuals who report having engaged in the respective activities in their diaries. Individual weights applied.

Table A2: Time Use by Weekday/Weekend, Employment Status and Activities

	E		UE		Differences			
	WD	WE	WD	WE	(1) - (2)	(3) - (4)	(1) - (3)	(2) - (4)
	(1)	(2)	(3)	(4)				
Working/Employment-Related Activities	317	105	0	0	212***	0	317***	105***
Breaks at Work	11	3	0	0	8***	0	11***	3***
Commuting to Work	55	15	0	0	40***	0	55***	15***
Sleeping	485	534	539	579	-49***	-40***	-54***	-46***
Eating	73	93	77	89	-20***	-11	-4	5
Personal Care	55	57	57	56	-2*	2	-2	1
Job Seeking	1	0	35	12	1**	24***	-34***	-11***
Study/Training	7	4	55	7	3***	48***	-48***	-3
Cooking/Baking	30	34	37	32	-4***	4	-7**	1
Household Management/Shopping & Services	73	112	92	93	-39***	-1	-19*	20**
Gardening and Pet Care	13	19	16	13	-6***	3	-3	6
Childcare	23	27	26	20	-4***	6*	-3	7
Helping Household Members	5	8	7	12	-3***	-5	-2	-4
Volunteer/Participatory Activities	5	8	13	13	-3***	0	-8*	-5
Social Life	36	66	37	68	-30***	-31***	-1	-2
Entertainment/Sport/Outdoor Activities	35	61	46	62	-26***	-16	-11	-1
Free Time Learning/Art & Hobbies	4	6	13	8	-2**	5	-9**	-2
Playing Games	17	20	46	30	-3***	16**	-29***	-9*
Computing & Other Mass-media	9	13	39	53	-4***	-16	-30***	-40***
Reading	11	16	14	17	-5***	-3	-3	-1
TV/Video	104	148	180	177	-44***	2	-75***	-29**
Radio/Music	3	3	10	12	0	-2	-7	-9*
Travel (Other purposes)	48	68	72	70	-20***	2	-23***	-2
Other Time Use	19	20	29	20	-1	9	-10*	1

Notes: E – Employed, UE - Unemployed, WD - Weekday, WE - Weekend Day. Diary weights applied. Significance level: * p<0.10, ** p<0.05, *** p<0.01. in minutes; average time spent in each activity is not conditional on participating in that activity.

Table A3: Enjoyment Scores by Weekday/Weekend, Employment Status and Activities

	E		UE		Differences			
	WD	WE	WD	WE	(1) - (2)	(3) - (4)	(1) - (3)	(2) - (4)
	(1)	(2)	(3)	(4)				
Playing Games	6.24	6.17	6.05	6.41	0.07	-0.36**	0.20	-0.24
Entertainment/Sport/Outdoor Activities	6.15	6.21	6.13	6.16	-0.06***	-0.03	0.01	0.05
Social Life	6.11	6.20	5.89	5.97	-0.09***	-0.08	0.22	0.24
Reading	6.01	6.05	5.83	5.60	-0.04	0.24	0.18	0.45
Eating	5.87	6.10	5.95	5.84	-0.23***	0.11	-0.08	0.26
TV/Video	5.83	5.87	5.78	5.81	-0.05***	-0.02	0.04	0.07
Radio/Music	5.75	6.06	6.18	6.00	-0.31***	0.18	-0.43	0.07
Gardening and Pet Care	5.74	5.72	5.75	5.67	0.02***	0.08	-0.02	0.05
Childcare	5.73	5.84	5.79	6.04	-0.11***	-0.24	-0.06	-0.19
Volunteer/Participatory Activities	5.66	6.00	6.09	6.42	-0.34	-0.33	-0.42	-0.42
Free Time Learning/Art & Hobbies	5.57	5.83	5.76	5.65	-0.26**	0.11	-0.19	0.18
Computing & Other Mass-media	5.52	5.48	4.96	5.25	0.04***	-0.29	0.56	0.24
Other Time-Use	5.49	5.59	5.35	5.10	-0.10***	0.25	0.14	0.49
Helping Household Members	5.46	5.51	4.70	5.12	-0.06***	-0.42	0.76	0.40
Breaks at Work	5.39	5.53	.	.	-0.14	.	.	.
Cooking/Baking	5.28	5.32	4.97	5.24	-0.03***	-0.27	0.32*	0.08
Personal Care	5.21	5.41	5.39	5.15	-0.20	0.24	-0.17	0.26
Travel (Other Purposes)	5.03	5.24	5.07	5.02	-0.21***	0.05	-0.04	0.22
Household Management/Shopping & Services	4.70	4.74	4.53	4.56	-0.04	-0.04	0.17	0.18
Working/Employment Related Activities	4.63	4.62	.	.	0.01	.	.	.
Study/Training	4.53	4.75	4.84	4.63	-0.22	0.20	-0.31	0.11
Commuting to Work	4.52	4.68	.	.	-0.16*	.	.	.
Job Seeking	3.31	4.99	3.46	4.62	-1.68***	-1.17	-0.14	0.36
Day-Average Enjoyment	5.18	5.53	5.39	5.57	-0.35***	-0.18***	-0.21**	-0.04

Notes: E – Employed, UE - Unemployed, WD - Weekday, WE - Weekend Day. Diary weights applied. Significance level: * p<0.10, ** p<0.05, *** p<0.01.

Table A4: Well-Being of the Employed and the Unemployed With Respect to Definitions of Employment Status

	Employed		Unemployed		Difference (E - UE)
	Estimate	se	Estimate	se	
<i>Panel A: Day-Average Enjoyment</i>					
ILO Definition	5.28	0.02	5.44	0.08	-0.16**
ILO Definition (Only Fulltime Employees)	5.21	0.02	5.44	0.08	-0.23***
Self-Declared Employment Status	5.27	0.02	5.37	0.09	-0.10
Intersection of ILO Definition and Self-Declared Status	5.26	0.02	5.50	0.10	-0.24**
<i>Panel B: Life Satisfaction</i>					
ILO Definition	7.65	0.04	6.54	0.19	1.11***
ILO Definition (Only Fulltime Employees)	7.63	0.05	6.54	0.19	1.09***
Self-Declared Employment Status	7.62	0.05	6.11	0.22	1.51***
Intersection of ILO Definition and Self-Declared Status	7.63	0.05	6.06	0.26	1.57***

Notes: E – Employed, UE - Unemployed. Significance level: * p<0.10, ** p<0.05, *** p<0.01