DAILY ACTIVITIES AND HAPPINESS IN LATER LIFE
The role of work status

Maja Tadic [1], Wido G.M.Oerlemans [2], Arnold B.Bakker [3], Ruut Veenhoven [4] .

Journal of Happiness Studies, online since 28 september 2012
DOI 10.1007/s10902-012-9392-9

ABSTRACT
The aim of this study was to examine the role of work status (i.e. working versus not working) in the relationship between time-use and momentary happiness. We employed a longitudinal research design using monthly assessments via the day reconstruction method over 3 years among 579 older adults. In total, participants reported 84,247 daily activities and accompanying momentary happiness levels. Hierarchical linear modeling results revealed that working older individuals are not happier than nonworking individuals in the overall. However, involvement in work as a daily activity does coincide with higher levels of momentary happiness. Furthermore, working older individuals experience more happiness during relaxing activities, and during weekends, whereas nonworking older individuals experience more happiness during administrative activities. These findings provide novel information on intraindividual differences in lifestyle relating to the everyday happiness between working and nonworking older people which cannot be accurately captured by global survey methods.

Keywords: Aging, Happiness, Day reconstruction method, Retirement, Time-use

1 M. Tadic, Institute of Social Sciences Ivo Pilar, Zagreb, Croatia e-mail: maja.tadic@pilar.hr
2 W. G. M. Oerlemans,Erasmus University Rotterdam, Rotterdam, RISBO
3 A. B. Bakker, Erasmus University Rotterdam, Rotterdam, Dpt. of Psychology
4 R.Veenhoven, Erasmus University Rotterdam, Rotterdam, The Netherlands and North-west University, South Africa.

1 INTRODUCTION

Although many studies explored changes in time-use following retirement (e.g., Gauthier and Smeeding 2003; McKenna et al. 2007; Stanley 1995), to date only few studies explored the role of older adults' work status in daily activities and happiness on a within-person level (e.g., Oerlemans et al. 2011; Carstensen et al. 2011; Nimrod 2007; Rosenkoetter et al. 2001). Specifically, work status (i.e. whether a person is working or not) may influence the way older adults experience daily activities; and in turn, those activities might of daily activities of older adults on a within-person level. More concretely, using the Day Reconstruction Method (DRM; Kahneman et al. 2004), we focused on momentary happiness felt during specific daily activities as a function of work status. In other words, the current study captured the direct affective experience (i.e. happiness) related to specific daily activities on a within-person and within-day level. This adds to the existing literature as it shows the potential influence of work status on happiness experienced during very specific daily activities in later life.

1.1 Theoretical Background

1.1.1 Happiness

Research on subjective well-being investigates how an individual judges the quality of his or her life (Veenhoven 2009); thus, subjective well-being is considered to be one of the important indicators of successful aging (Herero and Extremera 2010). In order to assess the quality of their lives, people typically rely on two different types of information. On the one hand, people asses how well they meet their own standards of good life, which relates both to intra-individual and interindividual comparisons (Pavot and Diener 2008). On the other hand, people also assess how well they feel, that is, the degree to which positive emotional experience outweighs negative ones (Diener et al. 1991). In this paper we focus on the definition of happiness as a pleasurable and mildly activated emotional state experienced during everyday activities, as an indicator of momentary well-being (Russell 2003). This emotional state can be described as mood (Fredrickson 2001; Lyubomirsky et al. 2005; Russell 2003), and in this study we particularly focus on the hedonic aspect of the mood (pleasantness level) (Veenhoven 2009).

Most of the previous studies on the relationship between work status and happiness analyzed the differences in happiness between working and retired individuals at one point in time, or in a follow-up over time as participants pass from being employed to being retired (e.g., Calvo 2006; Jaeger and Holm 2004). These studies often relied on global happiness assessments, which have proven to be informative, but susceptible to various retrospective biases, such as the focusing illusion (Kahneman and Krueger 2006; Kahneman et al. 2006), mood and context effects, and the effects of comparison standards (Schwarz et al. 2009). In addition, growing evidence documents incongruence between people's concurrent and retrospective reports of emotional experience (Miron-Shatz et al. 2009; Schwarz et al. 2009).

Hence, in order to gain more accurate happiness reports, rather than assessing how older adults "usually" feel, in this study the participants filled out a happiness diary based on a DRM once a month throughout a three-year time period. In that way, we managed to capture how older people experienced daily activities from moment-to-moment, as have different immediate affective consequences for working versus nonworking older adults.

Hence, the role of older adults' work status in their affective experiences of everyday time-use (activities) requires further examination. More specifically, getting more insight into the differences in subjective experiences of daily activities between working and nonworking older adults on a within-person level can provide us with information on what might be the optimal time-use for working versus nonworking adults; and, in the long run, these insights can

be used for developing empirically based intervention strategies for enhancing older adults' well-being. Therefore, the main purpose of this study was to examine the role of work status in the subjective experience reflected in happiness that accompanied these activities, and also as a function of their work status.

1.1.2 Daily Activities and Happiness in Later Life

The importance of daily activities for a person's happiness has been acknowledged both in theory and empirical findings. For instance, Lyubomirsky et al. (2005) emphasized that, although dispositional factors account for a large portion of happiness variance, there is still up to 40 % of happiness variance in individual differences that is not accounted for by circumstances and dispositions, suggesting a substantial link between happiness and intentional activities people engage in (Herero and Extremera 2010).

However, the extent to which individuals experience happiness during specific activities in daily life might also depend on their situational context (work status). Accordingly, the existing theoretical frameworks on aging (e.g., Baltes 1997; Kim and Moen 2001, 2002; Wang 2007) conceptualize retirement as a dynamic process and emphasize the importance of the interaction between various environmental and personal variables unique to each individual (Bye and Pushkar 2009; Wang 2007). For example, a life-course ecological model (Kim and Moen 2002; Schulz and Heckhausen 1996) outlines retirement as a normative life transition, which occurs within a specific context including not only sociodemographic characteristics, but also specific activities individuals engage in throughout their everyday life.
Similarly, the selection, optimization, and compensation model (SOC; Baltes and Baltes 1990; Baltes 1997) emphasizes that it is not necessary that individuals continue engage- ment in the same specific activities they engaged in before retirement, but rather that individuals experience continuity in levels of engagement in meaningful activities, which they regard as important (Pushkar et al. 2010). In addition, activity theory (Lemon et al.1972) also posits that happiness largely depends on what people do and how active they are in their everyday life.

Indeed, previous studies reveal that older adults are happier when they are more active (Herzog et al. 1998; Inal et al. 2007; Lawton et al. 1999). For example, Menec (2003) showed that greater activity level at the beginning of the study was positively related to happiness 6 years later, which is in good agreement with activity theory (Lemon et al. 1972). Similarly, Pushkar et al. (2010) found that increased activity frequency, ability and future intentions were related to higher positive affect.

Although these studies provide important and useful insights on the time-use and lifestyle patterns in later adulthood, several issues demand further examination. People differ not only in the amount and type of the activities they engage in, but also in the subjective experience of those activities; namely, people differ in the psychological meaning they assign to specific daily activities (Oerlemans et al. 2011; Reis et al. 2000). Moreover, none of the studies mentioned above analyzed the variations in time-use in terms of momentary affective experience older adults derive from such activities. Thus, in order to gain more insight into these matters, the present study aimed to investigate the role of work status in the subjective experience of older adults' specific daily activities.

1.2 The Present Study

The present study built upon the notion that one of the main differences in everyday life of working and nonworking older adults can be seen in time use: Retirement implies freedom from work obligations, which provides older adults with more time available and new

time-management challenges (Rosenkoetter et al. 2001). While working older adults are occupied with work obligations almost every day, nonworking older adults can sustain an active life-style through involvement in various meaningful and effortful activities, such as volunteer work, and administrative activities (Bäckman and Dixon 1992).

Accordingly, working older adults have more time-pressure—and other types of physical, cognitive, or emotional work-related demands—from which they need to recover in their daily lives (Demerouti et al. 2009; Meijman and Mulder 1998), whereas such demands are more or less absent in the group of nonworking older adults. Hence, in order to live a balanced and fulfilling life, working older adults might be more occupied with how to combine work obligations and relaxation, whilst nonworking older adults might be more focused on how to stay active and maintain a sense of usefulness and engagement in everyday life.

Therefore, in this study we particularly focused on effortful activities on the one hand, and relaxing daily activities on the other hand. Specifically, we aimed to see whether engagement in effortful and relaxing activities might have different affective consequences for working versus nonworking older adults. We conceptualized effortful daily activities as meaningful productive activities that aimed to provide a product or a service (Herzog et al. 1998). As such, effortful activities have the potential to elicit a sense of usefulness and competence (i.e. volunteer work). In this study we focus on administrative and work (either paid or voluntary) activities as examples of effortful activities in particular.

According to the continuity theory (Atchley 1999), maintaining engagement in autonomously chosen activities established earlier in life fosters well-being among older adults, because it helps to maintain and express identity across life stages (Atchley 1999, p. 103; Hoppmann et al. 2007). Time spent in active leisure activities has been positively associated with long-term well-being in old age (e.g., Menec 2003).

Given this context, we expect a positive relationship between work-related daily activities and momentary happiness for both working and nonworking older adults. Therefore, we formulate our first hypothesis:

1.2.1 Hypothesis 1

Working as a daily activity (either paid or voluntary) is positively related to momentary happiness.

We also investigated the role of work status for the subjective experience of administration activities, which represent productive activities aimed at fulfilling diverse responsibilities (e.g., such as paying the bills, working with an accountant). In line with Atchley's (1999) continuity theory, after withdrawal from working life and with the loss of the work role in retirement, administrative activities might provide a sense of meaning and structure in the daily life of nonworking older adults (Calvo et al. 2009). Conversely, working older adults might not need a sense of meaning and structure from administrative activities because they receive it in through their formal work obligations.

Administrative activities can be described as task-related activities, which are often cognitively demanding (Sonnentag 2001). Hence, working older individuals, who have less time and cognitive resources available in their leisure time and have a higher need for recovery from work, might experience administrative activities as a burden and hindrance (Meijman and Mulder 1998; Sonnentag 2001). In contrast, nonworking older adults may experience administrative activities as opportunities for cognitive involvement, which might to help them have a sense of engagement and usefulness in everyday life. Thus, we predicted that the more time nonworking older individuals spend in administrative activities, the happier they will be while engaging in them, whereas, the more time working older individuals

spend in administrative activities, the less happy they will be, as assessed on a within-person level. Stated in a more formal way:

1.2.2 Hypothesis 2

Work status moderates the relationship between time spent on administrative activities and happiness felt during those activities. More concretely, nonworking (vs. working) older adults will be significantly happier whilst spending time on administrative activities.

Furthermore, we expected that daily relaxation activities might serve different functions for older adults who work and for those who do not work. Based on the effort-recovery model (Meijman and Mulder 1998), we define relaxing activities as restful activities involving little or almost no effort (e.g., taking a nap, watching TV, reading; Oerlemans et al. 2011; Sonnentag 2003). More specifically, the effort-recovery model (Meijman and Mulder 1998) posits that investing efforts (whilst working) leads to specific load reactions, such as physiological, behavioral, and subjective responses. These reactions are reversible, if the individual is no longer confronted with the (work) demands. The opportunity to rest and recover from activities that are more active in nature appears to have positive effects on individual health and well-being, because psychobiological systems previously affected by the demands return to their baseline level (Demerouti et al. 2009; Meijman and Mulder 1998; Sonnentag and Bayer 2005).

Thus, we assume that working older adults will gain more benefit from relaxing activities than nonworking adults because they have higher need for recovery. Therefore, our third hypothesis states that psychological detachment from work, that is, spending time in relaxation activities, relates positively to momentary happiness (cf. Sonnentag and Bayer 2005), particularly among working older adults:

1.2.3 Hypothesis 3

Work status moderates the relationship between the time spent on relaxing activities and happiness felt during those activities. In particular, working (vs. nonworking) older adults will be significantly happier whilst spending time on relaxing activities.

1.3 The Role of Work Status in the Weekend Peak Effect

In addition, we also addressed the association of work status and fluctuations of happiness as a function of day of the week. Previous research consistently shows a weekend peak effect: weekend days being associated with a more positive mood than weekdays (e.g., Egloff et al. 1995; Reis et al. 2000). The weekend peak effect could be explained by more time available for engagement in desirable activities of one's own choice, whereas scheduled, obligatory activities such as work tasks are less prominent (Kennedy-Moore et al. 1992).

Consequently, we expected differences in the weekend peak effect between working and nonworking older adults. Specifically, older adults who are engaged in their jobs throughout the week might feel especially liberated during the weekend, so their happiness level increases significantly, as demonstrated in previous diary studies (e.g., Egloff et al. 1995; Reis et al. 2000). In contrast, older adults who do not work might not show a weekend peak, since they have more freedom in choosing the activities they want to engage in all week long. Thus, we expected that working older adults will experience the weekend peak effect, while not working older adults do not, as formulated in our fourth hypothesis:

1.3.1 Hypothesis 4

Work status moderates the effect of the day of the week on happiness: Working (vs. nonworking) older adults will be happier during the weekend compared to weekdays.

2 METHOD

2.1 Participants

The data reported in this paper comes from the project Lifestyle and Life Satisfaction in the Third Age executed in The Netherlands (Veenhoven and Vermeulen 2008). The original number of participants in the project was 587. However, 8 persons (1 %) were omitted from the analysis because they only filled out the trait-questions, but did not complete the diary. Of the 579 participants, 65,8 % of were male and 34,2 % female. Moreover, 82,4 % reported being married, cohabiting or having a romantic relationship, and 18,6 % was single. Participants' age ranged from 51 to 88 years old ($M = 65.32$; $SD = 7.78$). Please note that although the official retirement age in The Netherlands is 65, it is common to retire before that age early retirement.

The participants in our study are mainly highly educated older adults who were recruited at the university where they followed courses specifically designed for older population. According to the Dutch Centraal Bureau voor de Statistiek (CBS 2012), the higher the income of older age groups (50–80 years), the better their physical and mental health is likely to be. Moreover, in the Netherlands education deficiency has been found to be related with lower income (CBS 2012). Therefore, we can assume that most of our participant had relatively high degree of autonomy in quitting their job or continue to work at older age.

2.2 Procedure

The study sample is a convenience sample. Older adults were first recruited at a senior education program at a university in the Netherlands. However, the recruited adults were later free to invite others to participate. Altogether, 81 persons were original senior students, and 498 persons were not associated with the senior education program whatsoever.

Upon agreement, participants received an e-mail once every month throughout three years (2006–2008) in which they were invited to fill in the internet diary called Yesterday's diary, based on the Day Reconstruction Method (DRM; Kahneman et al. 2004). The emails were sent on different days of the week, in order to get sufficient data on both weekdays and weekends. The reminder was the same for all participants, and it was sent to all participants on a same day.

Yesterday's diary (Fig. 1) is an internet application by Veenhoven (2008a), based on the DRM proposed by Kahneman et al. (2004). Compared to experience sampling method, DRM imposes fewer burdens on the participants, while still providing an assessment of continuous episodes over the course of the full day, rather than a sampling of moments. Several studies documented close congruence between the DRM reports and results from experience sampling method (e.g., Dockray et al. 2010; Kahneman et al. 2004; Stone et al. 2006). In other words, they showed that DRM produces very similar diurnal cycles of affect—especially for happiness—as compared to experience sampling, which has proven to be substantially less susceptible to various retrospective biases (Bakker and Oerlemans 2011; Kahneman and Krueger 2006; Robinson and Clore 2002; Schwarz et al. 2009).

In the Yesterdays 'diary participants first reported in chronological order every activity they engaged in during the previous day in chronological order, starting with getting up and ending with going to bed. Thereafter, participants were redirected to a second screen which showed all of the activities they listed in a chronological order. Here, people rated their happiness during each reported activity. During the first session, participants filled out a general background questionnaire, consisting of sociodemographic information, such as marital status and age, and they reported their physical health in general.

2.3 Measures

2.3.1 Happiness

For each activity listed in the diary, participants rated how they felt using a one-item, graphical faces scale that ranged from 1(extremely unhappy) up to 10 (extremely happy). A single item for happiness has good temporal stability and concurrent, convergent, and divergent validity (Abdel-Khalek 2006). Moreover, it is quite common to have to rate one item affective experiences in DRM studies (e.g., Dockray et al. 2010; Kahneman et al. 2004; Stone et al. 2006).

2.3.2 Work Status

Working status of the participants was derived from the background questionnaire; in which participants simply stated whether they had a paid job. Accordingly, 49 older adults stated to have a paid job, whereas 530 stated not to have such a paid job. We asked participants for yearly changes in their profile which included an update on their work-status (e.g., being retired or not). However, only a very small group of individuals (10 persons) changed their status from work to retired. A longer follow-up period is needed to assess large groups of adults in their change from paid work to (forced/voluntary) retirement. The current study is therefore limited to assessing differences in momentary happiness during different daily activities on a within-person level, which is a novel approach as it shows which kind of daily lifestyle fits older adults best in terms of happiness, depending on their work status.

2.3.3 Daily Activities

In the current study, we refer to activities as intentional behavioral practices in which participants engage in daily life. Participants reported the activities they were engaged in during the previous day in a chronological order, starting with *getting up* and ending with *going to bed*. Participant chose the activities from a drop-down menu of activities, which included various daily activities, such as household chores, eating, relaxing, commuting, rest/sleeping, TV/Internet, Caring for grandchildren, working, shopping etc. For each of the activities they listed, participants also reconstructed the times at which an activity began and ended. The participants reported on average number 15 activities per day ($M = 14.83$; $SD = 5.22$).

In this study we particularly focused on administrative, relaxing and work-related activities, as global categories that incorporate specific activities. More concretely, *work-related activities* refer to paid work and voluntary work. *Relaxation activities* include watching TV, reading (e.g., newspaper or books), surfing on the internet, resting and taking a nap. *Administration activities* include task-oriented, productive activities aimed at fulfilling diverse obligations (e.g., paying the bills, working with an accountant). Respondents reported the amount of time spent on each of the activities, and afterwards. We analyzed the categories of activities in order to avoid overly complex analyses. This strategy of incorporating specific similar activities into categories is commonly used in diary and time-use studies (e.g., Oerlemans et al. 2011; Sonnentag 2001).

2.3.4 Control Variables

We controlled for *marital status, gender, age, and physical health*. Being married generally has a positive effect on happiness (Seligman 2002). Furthermore, gender and age do not appear to have a substantial effect on average happiness (Cheng and Furnham 2003; Shmotkin 1990). However, women appear to experience positive and negative emotions more intensely compared to men (Fujita et al. 1991). Similarly, the experience of positive and

negative emotions generally becomes less intense (e.g., Diener et al. 1985) and more positive (Carstensen et al. 2011) with age.

Finally, ill physical health appears to result in lower happiness levels, but only when the illness is severe (Seligman 2002). Physical health was measured on a five-point scale ranging from 1 = very unhealthy, through 3 = *neutral* to 5 = *very healthy*. None of the control variables in this sample was related to happiness during specific activities.

2.4 Analysis

The data has a hierarchical structure with days nested within persons and activities nested within days. Therefore, as recommended, we used hierarchical linear modeling to analyze the data (Hox 2002; Snijders and Bosker 1999). We centered the person-level variables (work status, marital status, gender, age, and physical health) at the grand mean. All activity types—as variables that fluctuate on a within-person level—were centered at the person mean. We used the MLwin program for data analysis (Rasbash et al. 2000).

We built a two-level model with between person level variables, like paid job versus no job, and within person variables such as time spent on activities, weekend versus weekday activities, and cross-level interactions (see Table 3). We handled multilevel modeling, including the cross-level interactions as suggested by Preacher, Curran and Bauer (2006). For further explanation, please see Preacher, Curran and Bauer (2006) and their website (2012), referring to case 3, which argues how to handle cross-level interactions in multi-level modeling.

3 RESULTS

Table 1 reports means, standard deviations, and zero-order correlations. Before testing the hypotheses, we examined the variability of happiness on a between-person and a within person level. Of the total variance, 35 % (0.988/(0.988 + 1.867)) was *between* persons, and 65 % (1.867/(0.988 + 1.867)) *within* persons, which demonstrated the importance of performing multi-level analyses.

As Table 2 shows, the degree of participation in particular activities does not differ significantly between the sample of working and non-working older adults. Moreover, non-working people appear to spend more time on some leisure activities compared to working people. Working people tend to be a little happier during a range of activities compared to non-working people.

3.1 Testing Hypotheses

To test our hypotheses, we started with a Null model that included the intercept as the only predictor and momentary happiness (as derived from activities) as the outcome variable. In Model 1, we entered person-level variables (age, gender, marital status, paid job, and physical health). In Model 2, we added within-person level variables that are related to daily activities (work-related, relaxation-related and administration-related activities) and time (weekend). In Model 3, we entered the interaction terms for having a paid job on the one hand, and work-related activities, relaxation, administrative duties and weekend peak effect on the other hand. The findings related to each of the models can be found in Table 3.

We tested the improvement of each model over the previous one by computing the differences of the respective log-likelihood statistic −2*log and submitting this difference to a Chi^2-test. Model 1 did not show an improved model fit over the Null (intercept only) model ($\Delta - 2 \times \log = 0.056$, $\Delta df = 6$, $p < 0.001$). Model 2 was compared to Model 1 ($\Delta - 2 \times \log = 8216.12$, $\Delta df = 4$, $p < 0.001$) and Model 3 was compared to Model 2 ($\Delta - 2 \times \log$

= 58.41, $\Delta df = 2$, $p < 0.001$) and both models showed an improved model fit over the previous one.

3.1.1 Hypothesis 1

Our first hypothesis stated that work (either paid for working participants or voluntary for nonworking participants) as a daily activity would be positively related to momentary happiness. Indeed, the results from the Table 3 demonstrated that paid work ($z = 0.23$; $p < 0.01$) and voluntary work ($z = 0.46$; $p < 0.01$) are both daily activities that make older adults significantly happier on a within-person level, thus confirming our Hypothesis 1.

3.2 Cross-Level Interactions

3.2.1 Hypothesis 2

The second hypothesis stated that work status moderates the relationship between time spent in administrative activities and momentary happiness. Specifically, we predicted that, when compared to working older adults, nonworking older adults will be significantly happier when engaging in administrative activities. Table 3 shows that the interaction effect between having a paid job and engaging in administrative activities was indeed significant ($z = -0.35$; $p < 0.01$).

This interaction effect is displayed in Fig. 2. To examine the interaction pattern in more detail, we ran simple slope tests as suggested by Preacher, Curran and Bauer (2006). Simple slope tests showed that for older adults without a paid job, spending more time on administrative duties (1 SD above the mean) had no significant effect on their happiness ($\gamma = -0.78$, SE = 0.47, $z = 1.658$; n.s.). However, for older adults with a paid job, spending more time on administrative duties was negatively associated with their happiness level ($\gamma = -0.43$, SE = 0.04, $z = -10.53$; $p < 0.001$). This confirms our Hypothesis 2.

3.2.2 Hypothesis 3

Our third hypothesis stated that work status moderates the relationship between time spent in relaxation and happiness. Specifically, we hypothesized that working individuals will derive significantly more happiness from relaxation, when compared to nonworking individuals. Results in Table 3 demonstrate that the cross-level interaction between work status and relaxation was significant ($z = 0.16$; $p < 0.01$).

Figure 3 demonstrates that both older adults with and without a paid job experienced higher levels of momentary happiness when they were relaxing (1 standard deviation above the mean). However, the positive effect of relaxation on momentary happiness was stronger for older adults who had a paid job ($\gamma = 0.51$, SE = 0.02, $z = 22.58$, $p < 0.001$) compared to older adults without a paid job ($\gamma = 0.67$, SE = 0.11, $z = 6.03$, $p < 0.001$).

3.2.3 Hypothesis 4

Finally, our fourth hypothesis stated that work status moderates the weekend peak effect: Working older adults will show significantly higher momentary happiness levels during the weekend, compared to weekdays, whereas nonworking older adults will not.

In order to analyze the results regarding this hypothesis, we coded Monday to Friday as weekdays, and Saturday and Sunday as weekend. Table 3 shows that the cross-level interaction between paid job and weekend-days on happiness was significant ($z = 0.11$; $p < 0.001$). Figure 4 shows this interaction pattern in more detail. Simple slope tests revealed that older adults with a paid job experienced a significant increase in their happiness level during weekends compared to working days ($\gamma = 0.07$, SE = 0.01, $z = 21.82$, $p < 0.001$). In

contrast, the happiness of the older adults without a paid job was similar on weekdays compared to weekend-days ($\gamma = 0.18$, SE $= 0.10$, $z = 1.73$, n.s.), confirming Hypothesis 4.

4 DISCUSSION

The central aim of this study was to explore how work status relates to the subjective experience of specific daily activities among older adults, by using the day reconstruction method (DRM; Kahneman et al. 2004). Specifically, we aimed to investigate how work status relates to the experience of positive affect during effortful and relaxing daily activities for working versus nonworking older adults. In that way, this study contributes to the literature as most of the research in this field used global measures of happiness, which may be inaccurate to assess how older adults feel on a moment-to-moment basis.

Our study expands existing findings in several ways. First, our three-year follow-up research design resulted in 84,247 reported daily activities and accompanying happiness levels, which presents a particularly rich dataset. Second, the methodology used in the study—the DRM—enabled us to gain more accurate happiness reports and to minimize the reconstructive biases involved in global reports (Kahneman et al. 2004). Hence, this study provides new insights on the momentary happiness levels during specific daily activities among older adults, and the role of work status in those within-day experiences.

4.1 Daily Activities and Happiness in Later Life: The Role of Work Status

Our study showed that, although being retired is not associated with lower levels of happiness, working (either paid or voluntary) as a daily activity is very important because time spent on paid or voluntary work activities relates positively to momentary happiness. This finding is in line with the activity theory (Lemon et al. 1972), as well as with previous findings, which reveal positive relations of social, physical and cognitive activities with happiness (Kahneman and Krueger 2006; Penedo and Dahn 2005).

Specifically, successful aging has been related to high levels of social, physical and cognitive resources (Baltes and Lang 1997), and work related activities (both paid and voluntary) might serve as means to sustain those resources later in life (Wang et al. 2006). Bearing in mind that working as a daily activity is often related to effort and concentration; it may provide the sense of usefulness and mastery. Moreover, when working, an individual usually also engages in social activities; hence, work-related activities can pre- sumably also function as a means for connecting with the community through providing opportunities for social interactions.

Furthermore, work may help in maintaining one's social network and general fitness due to involvement in challenging tasks (Herzog and House 1991; Oerlemans et al. 2011). These notions are consistent with previous empirical findings that showed positive association between involvement in effortful activities and various positive outcomes in later life, such as reduced mortality risk, reduced risk of cognitive impairment, and improved physical health (Dawson et al. 1999; Silverstein and Parker 2002).

Hence, daily work might be associated with affective benefits because it may help older adults to satisfy various needs, such as the need for relatedness, autonomy and competence (Ryan and Deci 2000), which, in turn enhances positive emotional experiences and also helps them build and/or sustain personal resources (Fredrickson 2001). Although this is not new, the present study adds to the literature by showing that work activity also enhances *momentary* happiness within a sample of older adults on a within-person and day-to-day level.

Moreover, we also hypothesized and found that work status of the older adults moderates the experience of administration activities in everyday life. The analysis confirmed our

predictions demonstrating that nonworking older adults enjoy those types of activities significantly more than working older adults do, as expressed in momentary happiness levels. These results can be interpreted in terms of time-pressure issues: Working older adults have to do administration activities in their leisure time, and, thus, have higher time pressure; whilst nonworking individuals do not have work-related obligations and have generally more time available. However, these findings also imply that administration activities serve different functions for working and nonworking individuals.

More concretely, administration activities are predominantly performed in order to achieve specific outcomes (Maier and Klumb 2005). These findings clearly contribute to the literature because they show on a within-person level that administrative activities may present another way of maintaining the sense of competence and usefulness for the non-working older adults (Schulz and Heckhausen 1996). Indeed, according to the model of selection, optimization, and compensation (SOC model; Baltes 1997), these kind of compensatory mechanisms become increasingly important as people age, because old means become less available, and new means are needed in order to reach goals, so compensatory mechanisms allow people to maintain psychological well-being when faced with age-related losses (Menec 2003).

Furthermore, our results demonstrate that, compared to nonworking individuals, working older adults derive significantly more momentary happiness from relaxation. One explanation is that working older adults need time to recover from their work: Relaxation enables a person to recover from various daily demands, especially when challenged with work obligations (Sonnentag and Bayer 2005). Relaxation may be particularly beneficial when combined with an active lifestyle like being socially, cognitively and/or physically active (Demerouti et al. 2009; Meijman and Mulder 1998; Oerlemans et al. 2011). These findings contribute to the literature on recovery (Demerouti et al. 2009) by showing that the same activities can have different functions for individuals with different work status.

4.2 Weekend Peak Effect: The Moderating Role of Work Status

Finally, the results of our analysis revealed an interesting and important addition to the literature on the weekend peak effect—significantly higher positive happiness during weekend than weekdays—identified by several researchers (e.g., Egloff et al. 1995). Our study shows that the weekend peak effect is moderated by work status: Working older adults are happier during weekends compared to weekdays; while nonworking older adults do not show that pattern.

The interpretation of these results can be found in the notion that the weekend‘s main characteristic is usually being free from work, which provides more possibilities for autonomously chosen activities, such as hobbies, sports, being with family, friends, which, in turn, can enhance a person‘s momentary happiness (Calvo 2006; Reis et al. 2000). Hence, weekends (as opposed to weekdays) seem to be particularly important for older adults who are still working. In contrast, nonworking older adults do not have work obligations during weekdays, so weekends do not add much more to their freedom of autonomously choosing their activities; thus, specific days of the week do not significantly change their daily happiness fluctuations. These results do not pertain only to older adults (e.g., Reis et al. 2000); however, weekend peak effect has not yet been investigated among older adults with regard to their work status. Hence, our results contribute to the existing literature by providing additional insights on the weekend peak effect.

4.3 Limitations and Concluding Remarks

This study has some particular limitations. First of all, the sample of respondents is not a probability sample, and the working and nonworking group sizes are unequal. However, we justify the comparison between the two groups because of the nature of our data: repeated measures throughout 3 years, which yielded no less than 84,247 momentary happiness reports. In other words, we have very rich within-person and activity-level data on happiness, which may arguably be more accurate compared to a happiness measure filled out only once per year in global reports.

Second, this study used only one well-being measure, namely, momentary happiness. Other well-being measures such as life satisfaction, marital satisfaction were not used. Nevertheless, previous findings demonstrate that happiness is a valuable and important well-being indicator because it is not only correlated with, but also precedes various successful life outcomes, such as relationships satisfaction, income, work satisfaction, performance, and health (e.g., Fredrickson 2001; Lyubomirsky et al. 2005).

Third, in our study we did not find differences in happiness when looking at trait work status. This might be explained by the degree of autonomy people have in quitting their job or continue to work at older age. This might be an interesting issue to examine in future research. Please note, however, that the poverty in the Netherlands among elderly is quite low at about 2.6 % (CBS 2012). Moreover, the Netherlands has a social security system in place that guarantees people without work a net-income of 909.33 euros a month. Moreover, our sample was mainly highly educated. Thus, we expect that reasons for older adults to continue work in this sample are motivational rather than financial.

In addition, our study did not focus on the change from work to nonwork status per se, but on the daily lifestyle that brings most happiness on a within person level, depending on peoples work/non-work status. We feel that this line of research is important, as it shows the kind of lifestyle fits makes older adults happy, depending on their life circumstances. Also, only a very small number of people ($N = 10$) changed their work status from paid work to retirement in the 3 years of follow up. Therefore, we were unable to explore the effects of the change from paid work to retirement on a between-person level. We acknowledge that these research questions would indeed be interesting to explore in future research.

Finally, our approach does not allow us to distinguish cause and effect, that is, in we can only say whether our working and nonworking older adults differ in their happiness levels during different daily activities, but not exactly whether the transition from work to retirement in itself changes the everyday life experiences at the older age. Also, we do not have information about substantial changes in health status during the 3 years we followed the participants.

Nevertheless, we did control for the self-rated health at the beginning of the study, and some studies show that changes in health do not affect happiness. For example, a recent meta-analysis revealed that the correlations between physical health and happiness (which usually vary between +0.10 and +0.40 in the existing literature) can be largely attributed to a causal effect of happiness (Veenhoven 2008b).

Still, this study provides new insights in the everyday life of the older adults, namely, the relationship between daily activities and happiness, as well as the role of working status in that relationship. As predicted, we found that whereas being retired versus still working is not associated with lower levels of happiness in the overall, working as a daily activity corresponds with higher levels of momentary happiness. Yesterday's diary used in the present study proved to be a very useful and detailed method that enables an in-depth analysis of the everyday life experiences of the older adults. Altogether, this study provides a substantial addition to research on the role of work in the older age, illustrating the way work status changes some of the aspects of everyday life, that is, the subjective experience of various types of activities.

4.4 Practical Implications

Our study has several practical implications, namely, the results obtained in this study reveal that contextual variables (i.e. work status) have substantial impact on the subjective experience of daily activities; hence, they should be taken into account when developing strategies for enhancing well-being of older adults' everyday life. In other words, what works for working older adults is not necessary suitable for nonworking adults. As this study shows, it seems that working older adults derive more happiness from relaxing activities in their leisure time, whereas nonworking older adults derive more happiness from effortful activities in their leisure time. Therefore, it could be advised that working older adults invest more time in relaxing recovery time after work, and nonworking older adults invest more time in constructive, effortful activities in order to keep an active life-style and feel useful and happy.

Acknowledgments
The data reported in this paper are from a panel study among older adults people in The Netherlands: Levensstijl en Levensvoldoening in de derde Levensfase [Life-style and Life-satisfaction in the Third Age]. This project was initiated by Ruut Veenhoven and Lyanda Vermeulen-Kerstens of the Erasmus University of Rotterdam. The project is still going on, the current managing investigators are Sanne van Herpen and Wido Oerlemans. Information is available at www.risbo.org/levensstijl/info. (Vermeulen-Kerstens, and Veenhoven 2008).
De levensstijl van vijftig-plussers (Life-style and Life-satisfaction in the Third Age). Erasmus University of Rotterdam, Rotterdam.

REFERENCES

Abdel-Khalek, A. M. (2006)
Measuring happiness with a single-item scale
Social Behavior and Personality, 34, 139–150.

Atchley, R. C. (1999)
Continuity Theory, Self, and Social Structure
In C. D. Ryff & V. Marshall (Eds.), The self and society in aging processes (pp. 94–121). New York: Springer.

Bäckman, L. & Dixon, R. A. (1992).
Psychological compensation: A theoretical framework
Psychological Bulletin, 112, 259–283.

Bakker, A. B., & Oerlemans, W. (2011)
Subjective well-being in organizations
In K. S. Cameron & G.M. Spreitzer (Eds.), The Oxford handbook of positive organizational scholarship (pp. 178–189). NewYork: Oxford University Press.

Baltes, P. B. (1997)
On the incomplete architecture of human ontogeny: Selection, optimization, and compensation as foundation of developmental theory.
American Psychologist, 52, 366–380

Baltes, P. B., & Baltes, M. M. (1990)
Psychological perspectives on successful aging: The model of selective optimization with compensation.
In E. B. Baltes & M. M. Baltes (Eds.), Successful aging: Perspectives from the behavioral sciences (pp. 1–34). New York: Cambridge University Press.

Baltes, M. M., & Lang, F. R. (1997)
Everyday functioning and successful aging: The impact of resources.
Psychology and Aging, 12, 433–443.

Bye, D., & Pushkar, D. (2009)
How need for cognition and perceived control are differentially linked to emotional outcomes in the transition to retirement.
Motivation and Emotion, 33, 320–332.

Calvo, E. (2006)
Does working longer make people healthier and happier? Work opportunities for older Americans series.
Chestnut Hill: Center for Retirement Research at Boston College.

Calvo, E., Haverstick, K., & Sass, S. A. (2009)
Gradual retirement, sense of control, and retirees' happiness.
Research on Aging, 31, 112–135.

Carstensen, L. L., Turan, B., Scheibe, S., Ram, N., Ersner-Hershfield, H., Samanez-Larkin, G. R., et al. (2011).
Emotional experience improves with age: Evidence based on over 10 years of experience sampling.
Psychology and Aging, 26, 21–33.

Centraal Bureau voor de Statistiek. (2012)
*Statistics Netherla*nds
Retrieved from http://www.cbs.nl/en- GB/menu/themas

Cheng, H., & Furnham, A. (2003)
Personality, self-esteem, and demographic predictions of happiness and depression
Personality and Individual Differences, 34, 921–942.

Dawson, D., Winocur, G., & Moscovitch, M. (1999)
The psychological environment and cognitive rehabilitation in the elderly
In D. T. Stuss, G. Winocur, & I. H. Robertson (Eds.), Cognitive neurorehabilitation (pp. 94–108). Cambridge, UK: Cambridge University Press.

Demerouti, E., Bakker, A. B., Geurts, S. A. E., & Taris, T. W. (2009)
Daily recovery from work-related effort during non-work time
In S. Sonnentag, P. L. Perrewe´, & D. C. Ganster (Eds.), Current perspectives on job-stress recovery: Research in occupational stress and well being (Vol. 7, pp. 85–123). Bingley, UK: JAI Press.

Diener, E., Sandvik, E., & Larsen, R. J. (1985)
Age and sex effects for emotional intensity
Developmental Psychology, 21, 542–546.

Diener, E., Sandvik, E., & Pavot, W. (1991)
Happiness is the frequency, not the intensity, of positive versus negative affect
In F. Strack, M. Argyle, & N. Schwarz (Eds.), Subjective well-being: An interdisciplinary perspective. New York: Pergamon.

Dockray, S., Grant, N., Stone, A. A., Kahneman, D., Wardle, J., & Steptoe, A. (2010)
A comparison of affect ratings obtained with ecological momentary assessment and the day reconstruction method
Social Indicators Research, 99, 269–283.

Egloff, B., Tausch, A., Kohlmann, C., & Krohne, H.W. (1995)
Relationships between time of day, day of the week, and positive mood: Exploring the role of the mood measure.
Motivation and Emotion, 19,99–110.

Fredrickson, B. L. (2001)
The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions
American Psychologist, 56, 218–226.

Fujita, F., Diener, E., & Sandvik, E. (1991)
Gender differences in negative affect and well-being: The case for emotional intensity
Journal of Personality and Social Psychology, 61, 427–434.

Gauthier, A. H., & Smeeding, T. M. (2003)
Time-use at older ages: Cross-national differences
Research on Aging, 25, 247–274.

Herero, V. G., & Extremera, N. (2010)
Daily life activities as mediators of the relationship between personality variables and subjective well-being among older adults
Personality and Individual Differences, 49, 124–129.

Herzog, A. R., Franks, M. M., Markus, H. R., & Holmberg, D. (1998)
Activities and well-being in older age: Effects of self-concept and educational attainment
Psychology of aging, 13, 79–85.

Herzog, A. R., & House, J. S. (1991)
Productive activities and aging well. Generations:
Journal of the American Society on Aging, 15, 49–54.

Hoppmann, C. A., Gerstorf, D., Smith, J., & Klumb, P. L. (2007)
Linking possible selves and behavior: Do domain-specific hopes and fears translate into daily activities in very old age?
Journal of Gerontology: Psychological Science, 62B, 104–111.

Hox, J. (2002)
Multilevel analysis: Techniques and applications. NJ: Lawrence Erlbaum Associates; Mahwah.

Inal, S., Subasi, F., Ay, S. M., & Hayran, O. (2007)
The link between health-related behaviours and life satisfaction in elderly individuals who prefer institutional living
BMC Health Services Research, 7, 30–37.

Jaeger, M. M. & Holm, A. (2004)
How stressful is retirement? New evidence from a longitudinal, fixed-effects analysis
Center for applied microeconomics working paper, 2004-19. Retrieved on March 12, 2011. From: http://www.econ.ku.dk/CAM/

Kahneman, D., & Krueger, A. B. (2006)
Developments in the measurement of subjective well-being
Journal of Economic Perspectives, 20, 3–24.

Kahneman, D., Krueger, A. B., Schkade, D. A., Schwarz, N., & Stone, A. A. (2004)
A survey method for characterizing daily life experience: The day reconstruction method
Science, 3, 1776–1780.

Kahneman, D., Krueger, A. B., Schkade, D., Schwarz, N., & Stone, A. A. (2006)
Would you be happier if you were richer? A focusing illusion.
Science, 312, 1908–1910.

Kennedy-Moore, E., Greenberg, M. A., Newman, M. G., & Stone, A. A. (1992)
The relationship between daily events and mood: The mood measure may matter
Motivation and Emotion, 16, 143–155.

Kim, J. E., & Moen, P. (2001)
Is retirement good or bad for subjective well-being? Retirement as a life course transition in time and in ecological context.
Current Directions in Psychological Science, 10, 83–86.

Kim, J. E., & Moen, P. (2002)
Retirement transitions, gender, and psychological well-being: A life-course, ecological model
Journal of Gerontology: Psychological Sciences, 57B, 212–222.

Lawton, M. P., Winter, L., Kleban, M. H., & Ruckdeschel, K. (1999)
Affect and quality of life
Journal of Aging and Health, 11, 169–198.

Lemon, B. W., Begtson, V. L., & Peterson, J. A. (1972)
An exploration of the activity theory of aging: Activity types and life satisfaction among in-movers to a retirement community
Journal of Gerontology, 27, 511–523.

Lyubomirsky, S., King, L. A., & Diener, E. (2005a)
The benefits of frequent positive affect
Psychological Bulletin, 131, 803–855.

Lyubomirsky, S., Sheldon, K. M., & Schkade, D. (2005b)
Pursuing happiness: The architecture of sustainable change
Review of General Psychology, 9, 111–131.

Maier, H., & Klumb, P. L. (2005)
Social participation and survival at older ages: Is the effect driven by activity content or context?
European Journal of Ageing, 2, 31–39.

McKenna, K., Broome, K., & Liddle, J. (2007)
What older people do: Time use and exploring the link between role participation and life satisfaction in people aged 65 years and over
Australian Occupational Therapy Journal, 54, 273–284.

Meijman, T. F., & Mulder, G. (1998)
Psychological aspects of workload. In P. J. Drenth, H. Thierry, & C. J. de Wolff (Eds.)
Handbook of work and organizational psychology (2nd ed., pp. 5–33). Hove, UK: Psychology Press.

Menec, V. H. (2003)
The relation between everyday activities and successful aging: A 6-year longitudinal study
The Journals of gerontology Series B, Psychological sciences and social sciences, 58, 74–83.

Miron-Shatz, T., Stone, A., & Kahneman, D. (2009)
Memories of yesterday's emotions: Does the valence of experience affect the memory-experience gap?
Emotion, 9, 885–891.

Nimrod, G. (2007)
Expanding, reducing, concentrating and diffusing: Post retirement leisure behavior and life satisfaction
Leisure Sciences, 29, 91–111.

Oerlemans, W. G. M., Bakker, A. B., & Veenhoven, R. (2011)
Finding the key to happy aging: A day reconstruction study of happiness
Journal of Gerontology: Psychological Sciences, 66B, 1–10.

Pavot, W., & Diener, E. (2008)
The satisfaction with life scale and the emerging construct of life satisfaction
The Journal of Positive Psychology, 3, 137–152.

Penedo, F. J., & Dahn, J. R. (2005)
Exercise and well-being: a review of mental and physical health benefits associated with physical activity
Current Opinion in Psychiatry, 18, 189–193.

Preacher, K. J., Curran, P. J., & Bauer, D. J. (2006)
Computational tools for probing interactions in multiple linear regression, multilevel modeling, and latent curve analysis
Journal of Educational and Behavioral Statistics, 31, 437–448.

Preacher, K. J. Curran, P. J., & Bauer, D. J. (2012)
Simple intercepts, simple slopes, and regions of significance in HLM 2-way interactions
Retrieved from http://www.quantpsy.org/interact/hlm2.htm

Pushkar, D., Chaikelson, J., Conway, M., Etezadi, J., Giannopoulus, C., Li, K., et al. (2010)
Testing continuity and activity variables as predictors of positive and negative affect in retirement
The Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 65B, 42–49.

Rasbash, J, Browne, W. J., Healy, M., Cameron, B., & Charlton, C. (2000)
The MLwin software package, version 1.10
London: Institute of Education.

Reis, H. T., Sheldon, K. M., Gable, S., Roscoe, J., & Ryan, R. M. (2000)
Daily well-being: The role of autonomy, competence, and relatedness
Personality and Social Psychology Bulletin, 26, 419–435.

Robinson, M. D., & Clore, G. L. (2002)
Belief and feeling: Evidence for an accessibility model of emotional self- report
Psychological Bulletin, 128, 934–960.

Rosenkoetter, M. M., Garris, J. M., & Engdahl, R. A. (2001)
Postretirement use of time: Implications for pre-retirement planning and postretirement management
Activities, Adaptation & Aging, 25, 1–18.

Russell, J. A. (2003)
Core affect and the psychological construction of emotion
Psychological Review, 110, 145–172.

Ryan, R. M., & Deci, E. L. (2000)
Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being
American Psychologist, 55, 68–78.

Schulz, R., & Heckhausen, J. (1996)
A life span model of successful aging
American Psychologist, 51, 702–714.

Schwarz, N., Kahneman, D., & Xu, J. (2009)
Global and episodic reports of hedonic experience
In R. Belli, F. P. Stafford, & D. F. Alwin (Eds.), Calendar and time diary methods in life course research (pp. 157–174). Newbury Park, CA: Sage.

Seligman, M. E. P. (2002)
Authentic happiness: Using the new positive psychology to realize your potential for lasting fulfillment
New York: Free Press.

Shmotkin, D. (1990)
Subjective well-being as a function of age and gender: A multivariate look for differentiated trends
Social Indicators Research, 23, 201–230.

Silverstein, M., & Parker, M. G. (2002)
Leisure activities and quality of life among the oldest old in Sweden
Research on Aging, 24(5), 528–547.

Snijders, T. A. B., & Bosker, R. J. (1999)
Multilevel analysis: An introduction to basic and advanced multilevel modeling
Thousand Oaks, CA: Sage.

Sonnentag, S. (2001)
Work, recovery activities, and individual well-being: A diary study
Journal of Occupational Health Psychology, 6, 196–210.

Sonnentag, S. (2003)
Recovery, work engagement, and proactive behavior: A new look at the interface between nonwork and work
Journal of Applied Psychology, 88, 518–528.

Sonnentag, S., & Bayer, U. (2005)
Switching off mentally: Predictors and consequences of psychological detachment from work during off-job time
Journal of Occupational Health Psychology, 10, 393–414.

Stanley, M. (1995)
An investigation into the relationship between engagement in valued occupations and life satisfaction for elderly South Australians
Journal of Occupational Science, 2, 100–114.

Stone, A. A., Schwarz, N., Schkade, D., Krueger, A., & Kahneman, D. (2006)
A population approach to the study of emotion: Diurnal rhythms of a working day examined with the day reconstruction method.
Emotion, 6, 139–149.

Vermeulen, L. ,Veenhoven, R. & (2008)
Levensstijl en levensvoldoening in de derde levensfase [Lifestyle and life-satisfaction in the third age].
Research report, RISBO, Erasmus University Rotterdam www.risbo.org/levensstijl

Veenhoven, R (2008a)
Yesterday's diary
RISBO contract research, Erasmus University Rotterdam.
Retrieved from: http://www.risbo.org/happinessmonitor/ on April 15, 2009.

Veenhoven, R. (2008b)
Healthy happiness: effects of happiness on physical health and the consequences for preventive health care
Journal of Happiness Studies, 9, 449–469.

Veenhoven, R. (2009)
How do we assess how happy we are?
In A. K. Dutt & B. Radcliff (Eds.), Happiness, economics and politics: Towards a multi-disciplinary approach (pp. 45–69). Cheltenham, UK: Edward Elger Publishers.

Wang, M. (2007)
Profiling retirees in the retirement transition and adjustment process: Examining the longitudinal change patterns of retirees' psychological well-being
Journal of Applied Psychology, 92, 455-474.

Wang, J. Y. J., Zhou, D. H. D., Li, J., Zhang, M., Deng, J., Tang, M., et al. (2006)
Leisure activity and risk of cognitive impainnent: The Chongqing aging study
Neurology, 66, 911-913.

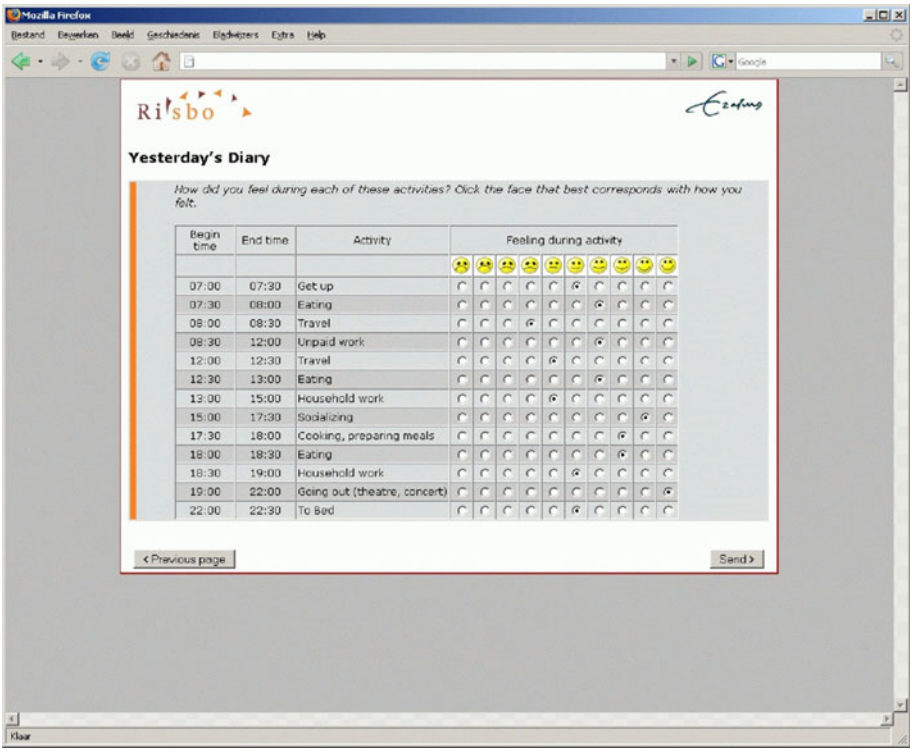

Fig. 1 Example of a completed Yesterday's Diary (Veenhoven 2008a)

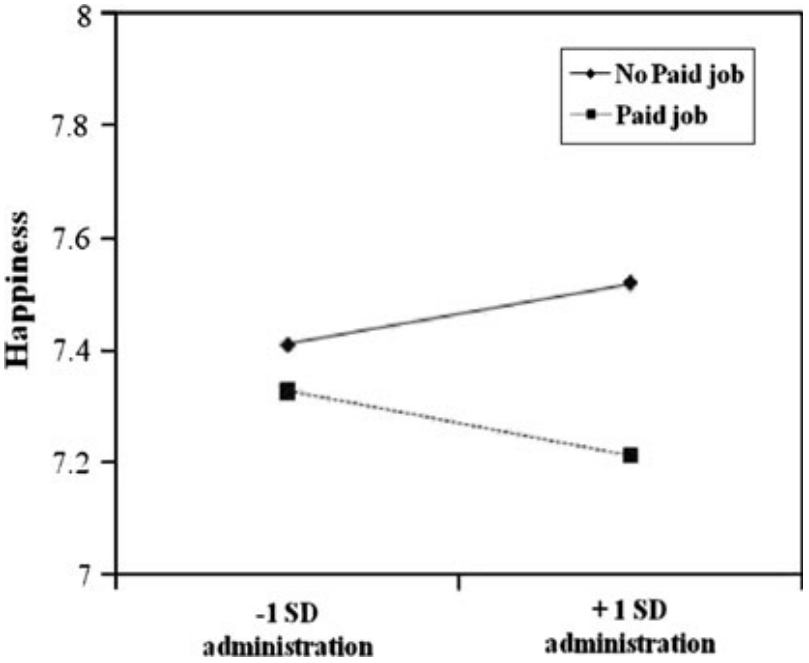

Fig. 2 Interaction effect of work status and time spent on administration activities on happiness. *Note*. −1 SD = 1 standard deviation below the mean; +1 SD = 1 standard deviation above the mean

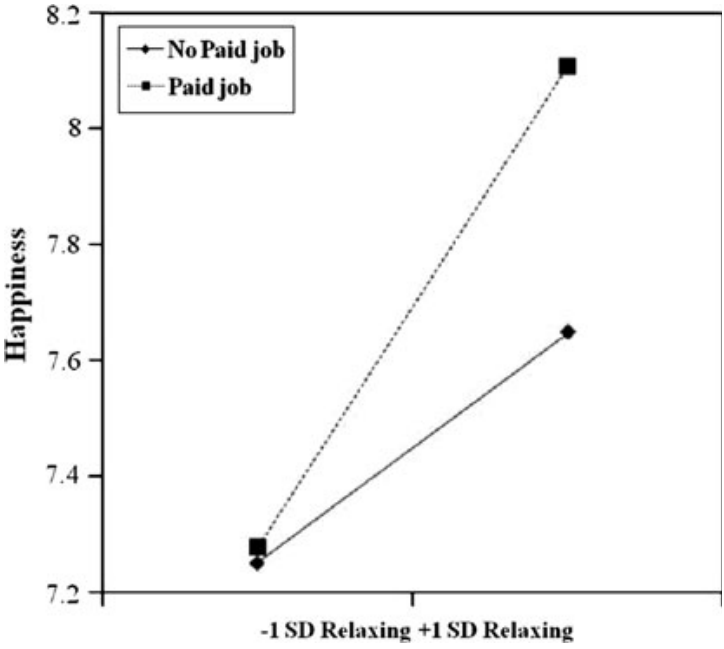

Fig. 3 Interaction effect of work status and time spent on relaxation activities on happiness. *Note*. −1 SD = 1 standard deviation below the mean; +1 SD = 1 standard deviation above the mean

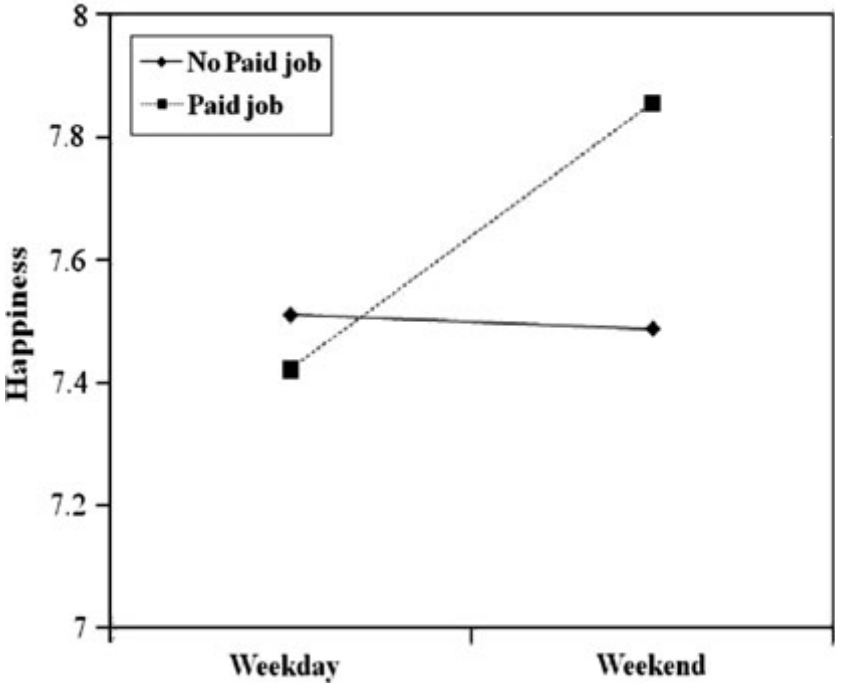

Fig. 4 Interaction effect of work status and weekend (vs. weekday) on happiness. *Note.* −1 SD = 1 standard deviation below the mean; +1 SD = 1 standard deviation above the mean

Table 1 Means, standard deviations and correlations between study variables

	Variables	*N*	*M*	SD	1	2	3	4	5	6	7	8	9	10	11	12
1	Paid job (0 = no; 1 = yes)	579	0.14	0.35												
2	Age	579	65.33	7.78	−0.38											
3	Gender (0 = female; 1 = male)	579	0.66	0.47	0.01	−0.09										
4	Married*	579	0.74	0.44	0.05	−0.06	−0.24									
5	Cohabiting*	579	0.04	0.19	0.00	−0.07	0.02	−0.32								
6	Relationship*	579	0.04	0.20	−0.06	0.02	−0.03	−0.35	−0.04							
7	Physical health	579	2.07	1.16	−0.02	0.05	0.04	−0.15	0.06	−0.04						
8	Time spent working	1299	0.02	0.05	0.28	−0.32	0.06	−0.01	0.05	−0.01	−0.07		−0.02	−0.03	−0.02	0.05
9	Time spent in voluntary work	1508	0.02	0.03	−0.11	0.01	−0.06	0.04	−0.04	−0.03	−0.03	−0.11		−0.03	−0.02	0.06
10	Relaxation	4663	0.05	0.04	0.02	−0.02	0.03	0.03	−0.04	0.00	0.02	−0.08			−0.03	0.08
11	Administrative duties	1343	0.01	0.02	−0.13	0.18	−0.20	−0.03	−0.03	0.16	−0.01	−0.05				−0.05
12	Momentary happiness	8424	7.56	1.11	0.08	−0.05	−0.06	0.04	0.00	0.02	−0.18	0.01	0.05	0.02	−0.01	

Correlations below the diagonal are between-person level correlations with correlations $r \geq |0.10|$ being significant at $p < 0.05$ and $r \geq |0.13|$ being significant at $p < 0.01$. Correlations above the diagonal are within-person correlations with correlations $r \geq |0.04|$ being significant at $p < 0.01$.* Reference group = single. Please note that not all participants filled in all the data, but not all participants were involved in the same types of activities throughout 3 years, hence the different *N* for different activities

Table 2 Participation and average mood during activities for working ($N = 49$) and non-working ($N = 530$) sample of older adults

Activities	Average minutes spent on activity				Average mood			
	Non-work	Work	*F*	*p*	Work	Non-work	*F*	*p*
Relaxation								
relaxing	50	50	0.001	0.977	8.45	7.91	10.180	0.002**
Rest/sleep	27	15	4.185	0.041*	7.94	7.69	0.976	0.324
Internet/email	52	64	2.646	0.104	7.96	7.65	4.013	0.046*
Watching tv	43	37	1.589	0.208	7.76	7.56	1.344	0.247
Reading newspaper	30	22	6.332	0.012*	7.68	7.35	3.705	0.055
Administration								
Administrative activities	15	6	9.470	0.002**	6.73	6.78	0.037	0.847
Time spent working								
Working	34	172	116.137	0.000***	7.68	7.68	0.000	0.996
Volunteering work	22	9	10.539	0.001***	7.81	7.86	0.033	0.857

Significance level; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 3 Multilevel estimates for models predicting happiness, $N = 579$ older adults

	Daily happiness			Daily happiness			Daily happiness		
	Estimate	SE	t	Estimate	SE	t	Estimate	SE	t
Constant	7.57	0.09	86.00***	7.57	0.09	86.01***	7.57	0.09	86.01***
Between-person level									
Age	−0.01	0.01	−0.29	−0.01	0.01	−0.29	−0.01	0.01	−0.29
Gender (reference = male)	0.03	0.11	0.29	0.03	0.11	0.29	0.03	0.11	0.29
Married	0.18	0.12	1.48	−0.06	0.23	−0.27	−0.06	0.23	−0.27
Cohabiting	0.10	0.21	0.46	0.10	0.21	0.46	0.10	0.21	0.46
Relationship	0.28	0.23	1.20	−0.18	0.12	−1.48	−0.18	0.12	−1.48
Paid Job	0.10	0.15	0.69	0.10	0.15	0.69	0.10	0.15	0.69
Physical Health	−0.09	0.05	−1.80	0.09	0.05	1.76	0.09	0.05	1.73
Within-person level									
Working a paid job				0.19	0.04	4.57***	0.23	0.06	3.814
Working a voluntary job				0.47	0.04	12.60***	0.46	0.04	12.49***
Administration				−0.46	0.04	−11.85***	−0.44	0.04	−10.61***
Relaxation				0.53	0.02	24.14***	0.51	0.02	21.04***
Weekend				0.09	0.01	7.17***	0.07	0.01	5.31***
Two-way cross-level interactions									
Paid job × relaxation							0.16	0.06	2.65**
Paid job × administration							−0.35	0.14	−2.47**
Paid job × weekend							0.11	0.03	3.46***
−2*log (l h)	251694.79			243478.67			243420.26		
Diff-2*log	0.06	n.s.		8216.12***			58.41**+		
Df		6			4		2		
Between-person variance	0.99	0.07	0.00	0.99	0.07	−0.01	0.99	0.07	−0.00
Within-person variance	1.87	0.01	0.00	1.67	0.01	0.07	1.66	0.01	0.07

Significance level; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$