Published in final edited form as:
J Popul Ageing. 2014 March 1; 7(1): 55–79. doi:10.1007/s12062-014-9093-8.

Snapshots of Mixtures of Affective Experiences in a Day: Findings from the Health and Retirement Study

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Abstract

In 2009, a representative subsample of participants in the Health and Retirement Study (HRS: N = 5333; Age 50–101) responded to a short day reconstruction self-administered questionnaire that asked about their time and experiences on seven activities the previous day. We evaluate the quality and reliability of responses to this 10-minute measure of experienced well-being and compare the properties and correlates of three intensity-based composites reflecting mixtures of activity-linked affective experiences (Mean Activity-Positive Affect, Activity-Negative Affect, and Net Affect), and a frequency-based index, Activity Affective Complexity, that summarizes the proportion of activities that include a mixture of positive and negative affective experiences regardless of intensity. On average, older adults reported that 36% of the activities in their day provided some mixture of feelings (e.g., interested and frustrated). Regression models revealed differential associations for the four constructs of affective well-being with socio-demographic factors, physical and mental health, and proximal indicators of the day's context. We conclude that the HRS short day reconstruction measure is reliable and discuss the conceptual issues in assessing, summarizing, and interpreting the complexity of emotional experience in older adults.

Keywords

Experienced well-being; Subjective well-being; DRM; Health and Retirement Study; Older Adults

> Happiness is not achieved by the conscious pursuit of happiness; it is generally the by-product of other activities.
>
> Aldous Huxley

Introduction

The number of hours in a day to fill with activities is constant throughout life but factors such as age, gender, social status, employment, health, and individual characteristics (e.g., personality and preferences) influence how time is used. It is well-known that people's feelings about the activities that fill their time are important immediate and long-term predictors of behavior and health. Affective experiences linked to activities guide decisions about future engagement and invested effort, although decisions may not always prove to be optimal or accurate (Kahneman, 2011; Loewenstein, O'Donoghue, & Rabin, 2003; Wilson & Gilbert, 2003). Much research focuses on the tangible benefits (e.g., income, wealth, productivity, health) derived from the time invested in particular activities, such as education, work, physical exercise, and the impact of public policy on time investment budgets (e.g., Juster & Stafford, 1985; Powell, Paluch, & Blair, 2011; Robinson & Godbey,

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1997; Ver Ploeg, Altonji, Bradburn, DaVanzo, Nordhaus, & Samaniego, 2000). There is currently a renewed cross-disciplinary interest in understanding the relation between time use and less tangible outcomes, in particular subjective well-being (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004; Krueger, Kahneman, Schkade, Schwarz, & Stone, 2009a; Stiglitz, Sen & Fitoussi, 2009).

Subjective well-being is uniquely associated with valued outcomes such as healthy longevity, immune functioning, and productivity (Diener & Chan, 2011; Chida & Steptoe, 2008; Pressman & Cohen, 2005). Following seminal early research by Bradburn (1969), Campbell, Converse, and Rodgers (1976), and Andrews and Withey (1976), many large surveys collect global evaluations of life satisfaction and domain satisfaction. Kahneman et al. (2004) and Krueger et al. (2009a) now advocate the importance of collecting multiple indicators of subjective well-being and propose that surveys include both the traditional evaluations of life satisfaction together with “on-line” measures of affective experiences linked to daily activities. Kahneman et al. (2004) developed and tested the Day Reconstruction Method (DRM), or time diary of yesterday’s activities, in which each respondent recalls the chronology of his or her activities in the previous 24-hours. This method adapts the assessments of time use in national and international population surveys (Belli et al, 2009; Juster et al, 2003; Robinson & Godbey, 1997).

We introduce and evaluate a short day reconstruction measure piloted in the Health and Retirement Study (HRS) in 2009. This measure was developed to address a critical constraint to including the DRM in HRS and similar large multidisciplinary longitudinal studies of older adults, namely its length (reported to take from 30 to 75 minutes). The 10-minute HRS measure retains a limited set of the original DRM features but it is nevertheless designed to provide important information about the patterns of activities in the daily lives of older adults and the affective experiences associated those activities. The measure targets categories of activities identified by previous experience sampling and time use research as being typical for midlife and older adults (e.g., work, volunteer, hobbies, exercise socializing with friends, helping others, going out for dining or entertainment, reading, watching television, taking pleasure trips; Krantz-Kent & Stewart, 2007; Larson, Zuzanek, & Mannell, 1985; Moss & Lawton, 1982; Robinson & Godbey, 1997). These activities are also known to be associated with well-being. Carstensen (1993), for example, suggested that older adults strategically and selectively invest their time in pleasurable activities with close companions to enhance a sense of well-being. Research focusing on late-life health and cognitive outcomes has drawn particular attention to the benefits of time and effort invested in physical and mental exercise together with work, volunteering, and social activities (e.g., Carlson, Parisi, Xia, Xue, Rebok, Bandeen-Roche, & Fried, 2012; Fratiglioni, Paillard-Borg, & Winblad, 2004; Hertzog, Kramer, Wilson, & Lindenberger, 2009; Wilson & Bennett, 2003). To date, little is known about the affective experiences associated with these health-related and cognitive activities in old age.

Affective Experiences Linked to Activities

Affective well-being is typically assessed on two primary dimensions, Positive Affect (PA) and Negative Affect (NA). Positive affect refers to feelings of pleasure experienced in interactions with others (e.g., love, joy, pride), in association with activities and events (e.g., interest, excitement, surprise), as well as general mood states (e.g., happiness, contentment, feeling calm/relaxed). Negative affect denotes unpleasant moods and experiences associated with interpersonal interactions, activities, and events. Major components of negative affect include anger, sadness, worry, fear, boredom, frustration, disappointment, shame, and anxiety.

Although the terms positive and negative suggest opposite ends of a pleasant-unpleasant continuum, PA and NA items form distinct hierarchical dimensions and clusters associated, for example, with activation (versus quiescence), excitement (versus disengagement), and distress, that are differentially related to health and other outcomes (Cacioppo & Bernston, 1994; Cacioppo & Gardner, 1999; Kuppens et al., 2012; Watson & Clark, 1997; Watson, Wiese, Vaidya, & Tellegen, 1999). In short, the experience of emotion is typically more complex and granular than reflected in a simple distinction between PA and NA (e.g., Lindquist & Barrett, 2008). Indeed, negative affect can be an important catalyst for action. Fluctuations in positive and negative affect within and across days reflect reactions to changes in situations, activities, and daily hassles (e.g., Carstensen, Pasupathi, Mayr, & Nesselroade 2000; Röcke, Li, & Smith 2009; Stone, Schwartz, Broderick, & Deaton, 2010).

Survey researchers typically selectively sample feelings from the Affect Circumplex (Russell, 1980) with the aim to include some positive and some negative emotions. Table 1 reviews the list of feelings applied in several surveys that have used either the original DRM or a variation of this day reconstruction method. Apart from the inclusion of “happy” and “stressed” there is currently minimal overlap in the selection procedure across surveys of experienced well-being and authors rarely provide information about the theoretical basis for their selection and aggregation within the positive and negative valence dimensions. For example, Kahneman et al. (2004; Stone, Schwartz, Schwarz, Schkade, Krueger & Kahneman, 2006) assessed 12 adjectives on a 0–6 intensity scale. This list was reduced to six in the Princeton Affect and Time Survey (PATS: Krueger et al, 2009a). The PATS selection was justified by the need to reduce interview time and to enhance the applicability of the feelings to most activities. Five of the six PATS feelings were subsequently applied in a 2010 ATUS day reconstruction module. A study comparing women in Columbus and Rennes collected ten feelings but used only four in analyses (Kahneman, Schkade, Fischler, Krueger, & Krilla, 2010; Krueger, Kahneman, Fischler, Schkade, Schwarz, & Stone, 2009b). Whereas psychological research on affective well-being typically uses multiple emotions to assess multiple subcomponents of positive and negative affect (e.g., Carstensen et al, 2000; Lindquist & Barrett, 2008; Watson et al., 1999), Krueger et al (2009a) concluded that it is sufficient to assess three to four feelings in order to answer questions about the social and individual value of activities.

Having selected feelings to target, the next question is how best to construct a summary score. The literature includes multiple examples of composites that summarize mixtures of feelings within a day or across activities but to date there is no consensus about the pros and cons of each (Diener & Tay, 2013). Traditionally, survey researchers have used constructs such as Positive Affect (PA) and Negative Affect (NA) as unit-weighted means of intensity ratings on items that characterize a single valence. In addition, Net Affect (formed by subtracting mean NA from mean PA) is often used to summarize overall emotional well-being. Kahneman and colleagues (2010) introduced two varieties of Net Affect, one to reflect the pleasure dimension of the Affect Circumplex (DIFMAX) and a second reflecting the arousal/activation dimension (ACT). When detailed 24-hour diary information is available, researchers also weight feelings by time spent on activities. Krueger et al (2009a; 2009b), for example, derived a U-index, or so-called misery index, that reflects the proportion of time spent on unpleasant tasks. This is calculated as the proportion of time in which the maximum rating of any negative affect is greater than the maximum level of positive affect.

These six composites (PA, NA, Net Affect, DIFMAX, ACT, U-Index) all assess mixtures of feelings based on intensity ratings. In the case of PA and NA, the mixtures are within a category (i.e., only positive or only negative feelings) whereas the remaining four indicate a mixture of positive and negative feelings. Specific mixtures of positive, negative, or positive

and negative feelings may be functional in that they evoke action or behavioral change. The behavioral consequences of feeling frustrated and bored (e.g., avoidance) may differ from feeling frustrated and angry (e.g., approach). Similarly, the behavioral consequences of mixtures of positive feelings such as enjoyment and calm (e.g., passivity) may differ from feeling enthusiastic and happy (e.g., activation). Different mixtures of positive and negative feelings associated with an activity could be indicative of ambivalence or stress depending on personal characteristics, the activity, and distribution in time (Cacioppo & Gardner, 1999). Chronic and cumulative episodes of negative emotions and moods interfere with effective psychological functioning, reduce overall subjective well-being, and are potentially symptomatic of poor mental health.

Organization of this Paper

This paper reports findings from the Health and Retirement Study about the mixtures of affective experiences associated with daily activities in the lives of older adults in the US. The paper is organized in three sections.

To begin, we evaluate the pilot HRS short day reconstruction measure included in a 2009 mail survey sent to a subsample of panel participants. Specifically, we report a) the response distributions for activity participation, time spent on activities, activity-specific affect intensity and the percent of participants who report each feeling; and b) the internal consistencies for the affective ratings. We also compare activity participation rates and time estimates to findings from ATUS in the literature.

In the second section, we compare the properties of intensity-based measures of positive and negative affect, and Net Affect, with a new composite, *Activity Affective Complexity* (AAC), which is a frequency-based measure. AAC summarizes the proportion of an individual's activities in a day that involved a mixture of positive and negative feelings regardless of subjective intensity. Intensity scores can be influenced by individual differences in rating scale usage. Moreover, researchers point to the statistical issues associated with taking the difference between the mean intensity of positive and negative feelings (e.g., Bradburn, 1969; Tay, Chan, & Diener, 2013). For example, individuals who report low intensities of positive and negative feelings receive the same Net Affect score as those who report high intensity in both, effectively losing information on intensity level. Because of these issues, several researchers suggest the advantages of using measures that reflect the frequency of positive and negative experiences (e.g., Bradburn, 1969; Diener, Sandvik & Pavot, 2009). We examine the associations among these four composites of affective experiences, their association with global life satisfaction, and report relationships with socio-demographic factors. For this paper, we have not adjusted these composites for time spent on the activities because unlike the DRM, PATS, and ATUS, the 2009 pilot HRS measure did not collect either 24-hour information or wake/sleep times that enable calculations of the proportion of a waking day spent on each activity.

Finally, we examine if these four different composites of activity-linked experienced-well-being show unique associations with socio-demographic (e.g., age, gender, education, income), health (e.g., functional limitations, self-reported health), and proximal context (day-of-the-week, number of activities, day's health) indicators. Previous day reconstruction studies suggest that indicators of experienced well-being may show weaker, discrepant, or unique associations with these typical predictors of life satisfaction (Bradburn, 1969; Diener & Tay, 2013; Kahneman, Schkade, Fischler, Krueger, & Krilla, 2010). Bradburn (1969), for example, reported that although higher education and income were associated with higher positive affect and Net Affect, their associations with negative affect were not significant.

Method

The HRS Short Measure of Activity-linked Experienced Well-being

In Fall of 2009, HRS included a self-administered day reconstruction questionnaire in an off-year mail survey of prescription medicine usage, renamed the Health and Wellbeing Survey (HWB). The experienced well-being questionnaire (HRS HWB1-SAQ) is available online: http://hrsonline.isr.umich.edu/modules/meta/pds/hwb2009/qnaire/HWB2009_English_Questionnaire_Sep2012.pdf. This pilot measure was modeled after the original DRM and a modified day reconstruction method proposed by the ROBUST project (Smith, Ryan, Gonzalez, & Weir, 2009; Smith, Ryan, Queen, Becker, & Gonzalez, 2011). The original DRM self-administered questionnaire was too long to include in the multi-disciplinary HRS mail survey.

HRS researchers aimed to shorten and simplify but retain some of the DRM elements to enable comparative work. Kahneman et al. (2004, p. 1779), for example, suggested that generic DRM assessments should: 1) elicit a detailed description of the previous day in the respondent's life; 2) approximate the results of continuous real-time experience measurement; 3) include procedures to support accurate retrieval of specific episodes; 4) collect information about the objective circumstances of episodes; and 5) obtain a multidimensional description of the affect experienced in each episode. The HRS HWB1-SAQ partially meets several of these criteria (especially the latter three criteria). For example, in order to ease cognitive burden for older adults, the HRS measure cues memory retrieval by *activity participation*. Explicit cues for activity retrieval are known to be a less difficult task for older adults than free recall (Craik & Rose, 2011). Participants are asked if they spent time on a set of activities. This is followed by questions about their affective experiences during these activities. The original DRM and several fine-grained variants of it (e.g., PATS and ATUS) cue memory retrieval by *time of day*: Participants are instructed to reconstruct their day chronologically in episodes (DRM) or 15-minute units (PATS, ATUS) and to recall their activities at these times. This recall is followed-up with questions about the contexts and activity-linked affective experiences. All methods collect information about activities, time, and affective experiences but the order of retrieval cues prior to affective ratings differ.

The HWB1-SAQ begins with a short day reconstruction instruction. *Please think now about the things you did yesterday. Think about how you spent your time and how you felt*. This is followed by a series of questions about participation in seven activities selected from the ATUS taxonomy for their relevance to social engagement, physical and mental health, and cognition in the population over age 50: *watching TV, eating meals, managing or spending money (e.g., shopping, banking, balancing a checkbook, paying bills), doing health-related activities (e.g., visit doctor, take medications, doing treatments), walking or exercising, socializing with friends, neighbors, or family (not counting your spouse or partner), and working or doing volunteer work away from home*. For each activity, participants are asked to estimate the total time spent on the activity [*How long did you spend yesterday (e.g., watching TV)?*] and to rate how strongly they felt *happy, interested, frustrated, nervous, calm, bored,* and *sad* (in the order listed) while doing the activity (rating scale from 0 = *Did not experience the feeling at all* to 6 = *the feeling was extremely strong*). The selection of feelings was guided by earlier day reconstruction studies (see Table 1) and EMA studies with older adults (e.g., Carstensen et al., 2010). The HRS measure also asks about time spent alone.

Other Measures Reported in this Paper

Our evaluation of scores derived from the HRS measure considered the potential associations with global life satisfaction, trait measures of PA, NA and personality, and indicators of socio-demographics, health, and specific characteristics of the day.

Global Life Satisfaction—The HWB1-SAQ began with a satisfaction with life-as-a-whole item from Andrews and Withey (1976). Specifically, participants were asked: *Please think about your life-as-a whole. Taking all things together, how satisfied are you with your life-as-a-whole these days?* This was rated 1 *completely satisfied*, 2 *very satisfied*, 3 *somewhat satisfied*, 4 *not very satisfied*, 5 *not at all satisfied*. The item was reverse coded for analyses.

Trait Affect—The Positive and Negative Affect Schedule (PANAS; Watson & Clark, 1994) was included in the self-administered psychosocial questionnaire in 2008 core interview (Smith et al., 2013). In this measure of trait affect, respondents are asked to rate the degree to which they experienced 13 positive and 12 negative emotions on a 5-point scale (1 = not at all, 5 = very much). Indices of positive (α = .92) and negative affect (α = . 90) were created by averaging across scores for the respective items.

Five Personality Traits—Scores for the so-called Big-Five traits of personality, Conscientiousness, Openness to experience, Extraversion, Neuroticism, and Agreeableness, came from a measure included in the HRS 2008 core interview (see Smith et al., 2013: scale adapted from the Midlife Development Inventory by Lachman & Weaver, 1997). Openness to experience was scored as an average across seven items, conscientiousness, agreeableness, and extraversion were each an average of five items, and neuroticism was assessed by four items. The questions asked participants to indicate how well a series of adjectives describes her/him on a 4 point scale where 1 = A lot and 4 = Not at all. Responses were reverse scored where appropriate and reliabilities were within acceptable ranges (Cronbach's alpha for Conscientiousness = 0.66; Openness alpha = 0.79; Extraversion alpha = .74; Agreeableness = .78; Neuroticism = .72).

Demographic, Health, and Day Covariates—Information about age, gender, race, marital status, work status, education, household income, depressive symptoms, self-reported health, and functional limitations were drawn from the HRS 2008 core interview. For analyses, dummy variables were used to categorize gender (1 = *women*; 0 = *men*), race (1 = *white*; 0 = *other*), marital status (1 = *married*; 0 = *not married*) and work status (1 = *employed*; 0 = *retired*). Age cohorts were coded: 1 = *50–59 years*; 2 = *60–69* years; 3 = *70–79 years*; 4 = *80–89; and 5 = 90+*). Education was coded in five categories (1 = *Less than high school*; 2 = *Some high school*; 3 = *High school graduate*; 4 = *Some college*; 5 = *College and beyond*). For regressions, the 70s age cohort group (3) and high school graduate (3) were the referent groups. We created quintiles from the RAND imputed variable for total household income in 2008 (1 = lowest; 5 = highest) and used the third quintile as the referent in regression models. Depressive symptoms in HRS are assessed with eight items adapted from the original Center for Epidemiologic Studies Depression (CESD) scale. Following Steffick (2000), we formed a dichotomous score to indicate the severity of symptoms (0 = less than 4; 1 = 4 or more symptoms). Self-reported health is assessed with a single item: *Would you say your health is excellent, very good, good, fair, or poor*? This is coded on a 5-point scale (5=excellent to 1= poor). To complement this global measure, we included an indicator of the potential impact of physical functioning on the ability to perform daily activities. In the HRS, physical functioning is assessed by items adapted from scales developed by Rosow and Breslau (1966), Nagi (1976), Katz, Ford, Moskowitz, Jackson, and Jaffe (1963), and Lawton and Brody (1969). Participants are asked if they have

difficulty with a series of activities because of a health problem. The items range from running or jogging a mile, walking one block, and climbing one flight of stairs, to picking up a dime, shopping for groceries, dressing, and bathing (max = 23). We created a dichotomous score to reflect level of physical functioning (0 = *3 or less*; 1 = *4 or more limitations*).

Three characteristics of the day were examined that are relevant to affective experiences. This information was collected in the 2009 HWB1-SAQ. Given that previous day reconstruction research (e.g., Krueger et al, 2008) reports differences between weekday and weekend experiences, an indicator for this was included (1 = weekday; 0 = weekend). This was coded from participant's self reports of the day of the week reconstructed. Health and sleep patterns are known to be strong predictors of global well-being in older adults but relatively little is known about their proximal impact on day-to-day affective experience. The 2009 HRS-HWB1 included two single item indicators: Self-reported health for yesterday (*How was your health yesterday? Was it excellent, very good, good, fair, or poor)* and an item about sleep quality (*Did you feel well-rested yesterday morning, that is you slept well the night before - yes/no*). To avoid potential collinearity with the other health indicators, only the sleep quality item was included in regression models. Health and sleep quality yesterday were correlated ($r = 0.39$, $p < .001$) and both day reports were correlated with self-reported health in 2008 ($rs = 0.56$ and 0.21, $p < .001$ respectively).

Statistical Procedures

Data Preparation—As is often the case for self-administered mailed questionnaires, some participants did not respond to all questions for each activity. We adopted the following criteria to determine activity participation and to deal with missing responses to questions about the time spent on an activity and affective experiences during the activity. If time spent on an activity was missing, we coded activity participation as "no - not done the previous day". If a response about time was entered, we coded activity participation as "yes - done the previous day" conditional on at least one feeling for that activity being rated 1 or higher. Although one end-point (0) of the rating scale for affective experiences was labeled *not experienced at all*, not all participants used the option and instead skipped ratings. If time was not missing for an activity and at least one emotion was rated 1 or higher for that activity, we recoded all affect ratings for that activity that were missing as a "0" in order to calculate the aggregate Net Affect and AAC scores for this paper. This replacement procedure was applied more often on ratings of negative emotions and also differed by activity. For example, missing ratings of happy were coded as 0 for 11.5% of participants who watched TV but only 5.3% of those who worked or volunteered. In contrast, missing ratings of frustrated were coded as 0 for 16.6% of participants who watched TV and for 14.9% of people who reported working or volunteering.

Construction of Composites of Affective Experiences Across Activities—Individual-level scores were computed for each activity and aggregated across all activities to construct four composites of different mixtures of affective experiences: Activity-Positive Affect, Activity-Negative Affect, Net Affect, and Activity Affective Complexity. For the Activity-Positive Affect score (Activity-PA), we first calculated individual-level mean ratings for positive feelings (happy, interested, calm; max = 6) for each activity the person reported then averaged across all the activities that he/she reported. A similar procedure was applied to form a score of Activity-Negative Affect (Activity-NA: frustrated, nervous, bored, sad; Max = 6). Net Affect for each activity was calculated by subtracting Activity-NA from Activity-PA. The grand mean of Net Affect for the activities in the day per person was averaged across the activities he/she reported.

To create our new AAC score, we first counted for each activity the number of positive feelings rated ≥ 1 (range 0 to 3) and the number of negative feelings rated ≥ 1 (range 0 to 4). Using these counts, we determined for each activity the subgroup of individuals who had nonzero scores for both positive and negative feelings (i.e. suggesting that they experienced a mixture of positive and negative feelings). For the Activity Affective Complexity (AAC) score for the day, we calculated for each person the proportion of activities on which both positive and negative feelings were reported (i.e., # activities for which positive and negative feelings are reported divided by # activities reported).

Statistical Procedures—General linear models and logistic regressions were conducted to examine factors related to the number and types of activities reported. Cronbach's alphas were calculated for positive and negative affect for each activity as an initial estimate of inter-item consistency (reliability). Intraclass correlations were computed for each affect across activities and for composite positive and negative affect to determine the nested sources of variance associated with between-person and intra-individual differences across activities. Score distributions were examined for evidence of skew and excess use of scale endpoints (0 or 6).

Zero-order bivariate correlations were conducted to examine associations among the composites of affective experiences and between these composites and global life satisfaction. Mean comparisons of the composites at the zero-order level were computed for socio-demographic factors. We also computed partial bivariate correlations between AAC and socio-demographic, health, and proximal day context factors controlling for Activity-PA, Activity-NA, and Net Affect. Multiple OLS regression models were subsequently conducted to examine patterns of unique predictors for the intensity-based affect composites. Because the AAC composite is based on a count score, we used a Poisson regression model. Throughout our analyses we follow the convention of treating predictor variables as linear (e.g., the income quintile variable was treated as a centered predictor ranging from −2 to 2).

Participants

The base sample for HWB 2009 included a subsample of HRS participants who had previously completed mail surveys about Prescription Drug Use in 2005 and 2007. This sample was supplemented with an additional 22% random selection of respondents who completed the 2008 HRS Core interview but were not included in another off-year survey in 2009. The final eligible sample size for HWB 2009 was 7417 respondents. It was determined that 337 persons died prior to the October 2009 start of the field period. Of the 7080 remaining eligible cases, 5333 returned questionnaires, for an overall study response rate of 75% (September 2012 release). The potential sample for the present analyses was reduced to 4810 because we found 148 respondents to be age ineligible and 375 surveys were completed by proxy informants. An additional 205 respondents did not provide valid data for activities and experiences. The final study sample included 4605 participants. Table 2 provides unweighted descriptive information for the characteristics of these participants. At the time of writing, HRS had not released weights for this questionnaire but information about data access and the codebook are published online: http://hrsonline.isr.umich.edu/index.php?p=shoavail&iyear=9B

Results

The results are reported in three sections. After evaluating the quality of data obtained from the HRS measure in the first section, we compare the properties of the intensity-based and frequency-based composite scores of affective experiences in section two. The final section

presents findings of multivariate models that examined the associations between each of these composites with socio-demographic, health, and proximal factors. Table 3 provides descriptive data for activity participation and time use together with activity-specific intensity ratings for each affective experience. Table 4 gives the activity-specific descriptive data for the frequency-based affective scores.

Evaluation of the HRS-HWB Measure

Activities—As can be seen in Table 3, participation in meals (91%) and watching TV (86%) were reported by most HRS respondents. Socializing (74%) and walking/exercising (61%) were also prevalent activities. Only 23% reported having worked or volunteered. In part this arose because the responses for 35% of the older workers in the sample referred to a weekend day. On average, participants reported participation in 4.47 activities (*SD* = 1.42; range 1–7).

Whereas 67% of participants' responses referred to a weekday, each day of the week was not equally reflected in the sample (Monday 13.6%, Tuesday 9.6%, Wednesday 9.5, Thursday 15.5%, Friday 18.5%, Saturday 14.8%, and Sunday 18.6%). To evaluate the effects of day of the week and workforce participation on the number of activities reported, we computed a univariate general linear model with Bonferroni adjustments. This model revealed that fewer activities were reported on Sundays ($M = 4.02$; $p < .001$) compared to all other days and that older workers reported more activities than retirees ($M = 4.56$ vs $M = 4.2$; $p < .001$). The interaction between day and workforce participation was not significant. A similar model was computed entering gender instead of workforce participation. Neither the effect for gender ($p = .09$) or the gender x day of the week interaction ($p = .37$) was significant. A logistic regression predicting participation in health-related activities revealed that younger age groups and people in better health were less likely to report participation ($p < .001$). These groups, however, were more likely to report having spent time walking or exercising ($p < .001$).

Time Estimations—As expected, participants who worked or volunteered reported spending the most time on that activity (*M* = 4.8hrs, *SD* = 2.12hrs) and those who watched TV also reported many hours (*M* = 3.6hrs, *SD* = 2.6hrs). The least hours spent on an activity were reported by those who did health-related (*M* = 0.8hrs, *SD* = 1.58hrs) or exercised-related (*M* = 1.4hrs, *SD* = 1.6hrs) activities. Considerable hours were also reported by those who socialized (*M* = 3.2hrs, *SD* = 2.9hrs). These time estimates seem plausible given the age range of the sample. Preliminary examination of weighted data (i.e. using sample weights from 2008 core) for watching TV and working suggest that the time estimates given by HRS participants are similar to times calculated from detailed time diaries collected by ATUS for the older population. For example, using ATUS data from 2003 and 2004 Kranz-Kent and Stewart (2007) report that the time spent watching TV ranged from 2.8hrs in men aged 55–59 to 4.2hrs in the age group 70–80. Time spent working by men ranged from 5hrs (age 55–59) to 0.6hrs (age 70–80). To estimate the total time in a day accounted for by the measure at the sample level, for each activity we multiplied the average length of time by the percent of the sample that engaged in the activity. We then summed these "sample adjusted" times to get a score for the mean hours in a day covered by the measure. At the sample level, 9.78 hours in a day are accounted for by the 2009 HWB1-SAQ.

Affect Measures—As reported in Table 3, overall the highest activity-linked mean intensity ratings (range 0 to 6) for the positive feelings (happy, interested, and calm) were given by participants who reported socializing, working/volunteering and watching TV. The rank ordering of activities varied. Overall, negative feelings were somewhat higher for TV and money-related activities. Figure 1a shows the distribution of intensity ratings (0 to 6) to

the question about feeling happy on four activities, watching TV, managing/spending money, work, and socializing. Figure 1b illustrates the distribution for feeling frustrated on the same activities. The skew varied by activity for ratings of happy, from normal to slightly skewed to the left. The distributions for frustrated were skewed to the right as expected from previous studies (Krueger et al., 2009). Mean ratings for the negative feelings across activities [frustrated 0.65 (*SD* =16%), nervous 0.49 (*SD* =16%), bored 0.58 (*SD* =16%), and sad 0.49 (*SD* =16%)] were significantly lower (all t-tests: $p < .001$) than for positive emotions [happy 3.4 (*SD* =1.6), interested 3.2 (*SD* =1.7), and calm 3.1 (*SD* =1.8).

In contrast to Table 3, which reports mean intensity, Table 4 summarizes the percent of participants who reported experiencing each feeling for each activity (i.e. who gave a rating of 1 or higher). The pattern of reports of positive versus negative feelings for each activity is similar to Table 3. On average, participants reported feeling happy on 76% (*SD* =27%) of the activities they did, interested on 73% (*SD* =30%), and calm on 68% (*SD* =32%). The mean percent of activities on which negative feelings were reported was lower: frustrated 23% (*SD* =30%), nervous 17% (*SD* =28%), bored 21% (*SD* =30%), and sad 17% (*SD* =28%). Table 4 also provides activity-specific information for the percent of participants who reported experiencing some mixture of 1–3 positive and 1–4 negative feelings. On all activities, more than 25% of participants reported some mixture of positive and negative experiences. The top four activities on which participants reported mixed affective experiences were watching TV (55.1%), managing/spending money (43.6%), working/volunteering (39.2%), and health-related activities (33.6%).

Cronbach alphas calculated for the positive (happy, interested, calm) and negative (frustrated, nervous, bored, sad) items for each activity revealed moderate to high inter-item consistencies (reliability). These ranged from $\alpha = .71$ (TV) to $\alpha = .82$ (Work) for positive affect and $\alpha = .70$ (TV) to $\alpha = .83$ (Socializing) for negative affect. To determine the relative sources of variance (between-person versus within-person) in affective experiences associated with patterns of activities across the day, we restructured the data to nest activities within individuals. Higher ICCs in these analyses indicate that the variance in affective experience is associated more with personal characteristics (e.g., between-person characteristics such as personality) than with particular activities. The intraclass correlations (ICCs) obtained from multilevel models conducted for each affective experience across activities were as follows: Calm: *ICC* = 0.55; Interested: *ICC* = 0.50; Happy: *ICC* = 0.48, Sad: *ICC* =. 0.43, Nervous: *ICC* = 0.36; Bored: *ICC* = 0.35; Frustrated: *ICC* = 0.32. Overall, roughly half of the variance in the intensity of positive affect (calm, interested, and happy) is associated with between-person differences and half with within-person variability across activities. The between-person variance in reported negative affect is lower (around 35% across the different adjectives) suggesting that the specific activities done throughout a day contribute more to variance in intensity of negative affect.

The Composites of Mixtures of Affective Experiences

The four composites constructed from the 2009 HWB1-SAQ showed different distributions. Activity-PA (*M* = 3.35; *SD* = 1.4; range 0 to 6) was normally distributed whereas Activity-NA (*M* = 0.55; *SD* = 0.8; range 0 to 6) was skewed to the right. The scale endpoints included 16.7% of participants for Activity-PA (6.4% were between 0 to 1; 10.3% between 5 and 6) and 32.8% for Activity-NA (32.7% were between 0 to 1; 0.1% between 5 and 6). Net Affect (*M* = 2.7; *SD* = 1.7; range −5.25 to 6) was skewed to the left and AAC (*M* = 0.36; *SD* = 0.36; range 0 to 1) had an excess of scores at both endpoints (37.3% at 0 and 15.7% at 1) but was normally distributed between these points.

The composites Activity-PA and Activity-NA were correlated, $r = -0.09$ ($p < .001$) and as expected both were correlated with Net Affect (*rs* = 0.89 and −0. 54, $p < .001$ respectively).

AAC was not correlated with Activity-PA, $r = -0.03$ ($p = .075$), but it was with Activity-NA, $r = -0.73$ ($p < .001$). Net Affect and AAC were correlated, $r = -0.32$, $p < .001$. All composites were correlated with global life satisfaction (Life Satisfaction with Activity-PA $r = 0.28$; $p < .001$; Activity-NA $r = -0.30$; $p < .001$; Net Affect $r = -0.38$; $p < .001$; and AAC $r = -0.24$; $p < .001$). We also examined correlations of the four composites with trait measures of positive and negative affect and the Big-5 personality factors (extraversion, conscientiousness, neuroticism, agreeableness and openness to new experiences). As expected, all correlations were small to moderate (ranging from −0.13 to 0.41). Although the size of correlations was similar across the affect composites, the directional pattern of correlations differed. For example, Activity-PA and Net Affect were positively correlated with extraversion (*rs* = 0.20 and 0.24, $p < .001$ respectively) whereas the correlations with Activity-NA and AAC were negative (*rs* = −0.16 and −.17, $p < .001$ respectively). This pattern was reversed for neuroticism: the correlations with Activity-PA and Net Affect were in a negative direction (*rs* = −0.22 and −0.32, $p < .001$ respectively) and a positive direction for Activity-NA and AAC (*rs* = 0.28 and 0.23, $p < .001$ respectively).

Table 5 reports the zero-order bivariate associations for the new frequency-based AAC measure with socio-demographic, health, and proximal day factors known to be associated with affective well-being and life satisfaction. All correlations were significant with the exception of the relationship with marital status, employment status, and type of day (weekend). Given that AAC shares variance with the other composites, we also examined if these associations with known predictors remained significant after controls for the intensity-based affect composites and for life satisfaction. Overall, the pattern of relationships with AAC remained unchanged, although some correlations were reduced and others increased in size.

Sociodemographic Gradients in Mixtures of Affective Experiences—Table 6 provides the socio-demographic subgroup means and 95% confidence intervals for each of the composite scores of affective experiences. The social gradients in affective well-being were more evident in Activity-PA and Net Affect than in AAC and Activity-NA, especially in relation to age cohort, income, and education. As listed in Table 6, mean Activity-PA for people in the 50s group was 3.35 (95% *CI* = 3.25,3.45) and the mean Net Affect in this age cohort was 2.63 (95% *CI* = 2.50, 2.77). In contrast, for those aged 90, mean Activity-PA was 2.69 (95% *CI* = 2.43, 2.95) and Net Affect was 2.20 (95% *CI* = 1.92, 2.49). At this raw data level, people in their 80s show 4% lower Net Affect compared to people aged 50–59 and for those aged 90 and over Net Affect is 16% lower. AAC was also lower in the older cohorts: compared to people aged 50 to 59, AAC was reduced 27% on average in the group aged 80 to 89 and 32% in the group aged 90 and over. Whereas 44% of the activities reported by people in their 50s were affectively complex, the 90+ group reported only 30% on average. In addition the AAC of the college educated was 41% higher than older adults with less than a high school degree.

The direction of these age group differences is counter to that found for global life satisfaction in this sample (not shown in Table 6). Mean life satisfaction (max = 5) for people in the 50s group was 3.47 (95% *CI* = 3.41, 3.54) whereas, for those aged 80 and over, the mean was 3.61 (95% *CI* = 3.55, 3.66). Although the oldest age cohorts report high global well-being, their proximal activity-related affective experiences were not only less positive but also less negative than younger age groups. People in the 50s group, in contrast, reported high Activity-PA and the highest Activity-NA (*M* = 0.72).

Multivariate Predictors of Experienced Well-being

For a more fine-grained examination of these socio-demographic predictors together with health and day context correlates, we conducted OLS multiple regressions for the three intensity-based composite scores of experienced well-being, Activity-PA, Activity-NA and Net Affect, and a Poisson regression for AAC. Table 7 summarizes the nonstandardized regression estimates for these four models.

The three health indicators (self-rated health, functional limitations, and depression) together with education are uniquely associated with all of the composite scores. With the exception of employment status, which as not significant in any model, the composites showed different patterns of unique associations with age, gender, marital status, and income. Because measures of experienced well-being are designed to focus individuals' attention on feelings linked to activities in a specific day, we expected to find significant indicators of the day's context. Indeed, feeling well-rested in the morning uniquely contributed to higher Activity-PA and Net Affect and less Activity-NA and AAC. Responding on a weekday contributed to lower Activity-PA and Net Affect but was not uniquely related to Activity-NA or AAC.

Discussion

The HRS Measure

Our analyses revealed that the response quality for the HRS pilot measure of experienced well-being is good and that composite scores derived from aggregations of positive and negative feelings are reliable and uniquely associated with socio-demographic, health, and proximal indicators of the day's context. Missing data are typical in self-administered questionnaires, especially in heterogeneous samples of older adults. Older adults are less familiar with survey formats and heterogeneous samples of older participants include people with low education, as well as sensory-motor and cognitive limitations. In this context, it is notable that 64% of the 580 age-eligible HRS respondents were excluded from the present analyses because their questionnaire was completed by a proxy. The remaining 36% of age-eligible participants who were not included in our analyses had either reported time spent on activities without rating feelings or, more frequently, rated feelings linked to an activity without reporting the time allocated to that activity. Follow-up analyses of the 15% of participants who reported a time but checked only one discrete affect term for multiple activities, showed that this subgroup was significantly older and had fewer years of education than people who provided more complete data about experiences.

Previous research reported the test-retest reliability of single affect items and composite scores on weekdays versus weekends or over several days for day reconstruction measures (e.g., Tay, Chan, & Diener, 2013; Krueger & Schkade, 2008). However, as Tay et al. (2013) point out, it is also important in day reconstruction measures to determine the inter-item reliability of the experience ratings (i.e. positive and negative feelings) by activity because affect experience composites are derived from different activities. We found internal scale consistencies (Cronbach's Aphas) above .70 for ratings of both positive (3 items) and negative (4 items) affect for all activities. Given the small number of items in each scale, these results indicate that the measure captures reliable variance. It is especially noteworthy that the inter-item consistency for negative affect was similar to that for positive affect. Many researchers consider, for example, that the negative dimension of affective well-being involves multiple subfacets whereas positive affect is more narrowly defined (e.g., Fredrickson, 1998; Watson & Clark, 1992). We also found that activities contribute to situational variance in the ratings of single feelings. This activity effect is more pronounced

for negative (frustrated, bored, nervous, sad) than for the positive feelings (happy, interested, calm).

The various day reconstruction methods in the survey literature differentially sample activities in a day. One advantage of the HRS method is that it provides individual-level information about participation in a small set of targeted activities. Selection of these targeted activities is flexible and can be theoretically guided. The specific goal in the 2009 HRS survey, for example, was to target activities associated with social engagement, and physical and mental health. An active engaged lifestyle that includes a variety of activity categories (e.g., leisure, physical exercise, work or volunteering, and socializing) is considered important for cognitive and physical health in older adults (e.g., Carlson et al., 2012; Fratiglioni et al., 2004; Hertzog et al., 2009; Wilson & Bennett, 2003). If repeated over several waves in longitudinal panel research, the HRS measure would enable researchers not only to trace individual-level changes over time in activity decisions (participation and time allocation) but also changes in affective experiences associated with activities and time use.

Despite the HRS-HWB1 being a broad self-completed stylistic measure, it is important to note that the activity participation rates and time estimates compare favorably with more fine-grained detailed telephone reports of time use by older adults, such as those collected in ATUS. Waidmann and Freedman (2006), for example, reported that the fine-grained 24-hour ATUS diary had revealed that 87% of adults over 65 watched TV for an average of 3.5 hours a day. Krantz-Kent and Stewart (2007) reported similar viewing hours from an earlier 2002–2003 ATUS survey. They found that men spent more time watching TV than women and that older adults in the workforce spent less time than retirees. We found that HRS participants aged 50 to 98 on average spent 3.6 hours watching TV. Whereas the hours reportedly spent at work or volunteering by the HRS participants correspond with the information reported by Krantz-Kent and Stewart (2007), the HRS averages for time spent socializing and walking/exercising are double. Although these discrepancies may be reduced when sample weights are applied to the HRS data, they could be due to measurement and coding differences.

The Complexity of Affective Experiences Associated with Activities

Our findings highlight conceptual issues in assessing and interpreting the complexity of affective experience in older adults (Diener & Tay, 2013; Lindquist & Barrett, 2008; Watson et al., 1999). The particular activities targeted in this study on average filled at least one hour in the day so that the potential for several feelings to be experienced during this time arises. Each activity is also associated with a different pattern of feelings and individuals differ in the experiences they report (see for example Tables 3 and 4). As found in previous day reconstruction research (e.g., Krueger et al., 2009a), the highest ratings of feeling happy were for socializing, followed by work/volunteering and exercise (see also Fig. 1). Although a considerable proportion of the day is spent watching TV, consuming TV appears to contribute less to overall positive well-being in older adults than other activities that involve more social, cognitive, and physical engagement. Indeed, among HRS participants, TV also evokes high ratings for feeling frustrated, nervous, bored, and sad. Only managing and spending money is ranked higher than TV for experiences of frustration and feeling nervous. Given that this HRS survey was collected during an economic slump when discussions about the economy were prominent, these negative ratings associated with finances seem plausible.

Older adults, especially retirees, generally self-select the routine activities that characterize their days. Among other factors, this selection process is likely shaped to some extent by individual differences in personality and preferences for emotion regulation. For example,

some happy people may report similar levels of happiness on all the activities in their day regardless of the actual activity content and duration. Others, however, may report feeling happier on activities that they particularly like and indeed might structure their day to always end with activities like socializing that they expect will cheer them up. Interestingly, we found that roughly 50% of the variance in the intensity of positive affect (calm, interested, and happy) was associated with between-person differences, whereas the variance in negative affect associated with individual differences was much lower, around 35% across the different adjectives. This suggests that more of the variance in intensity of negative affect throughout a day is associated with the specific activities and activity-related contexts people encountered on a target day rather than their personal characteristics.

We compared four composites of affective experiences: three are aggregates of intensity ratings (Activity-PA, Activity-NA, Net Affect) across activities and the other is a frequency-based score (AAC) that captures the proportion of activities that included a mixture of positive and negative feelings. Our findings for these composites are of course constrained by the survey instrument (particularly the activities and feelings targeted), mode, and the cross-sectional design. The four composites are related to each other but do show different patterns of associations with predictors. Indeed, the frequency-based AAC that we introduced in this paper showed unique relationships with socio-demographic, health, and situation-specific factors after controls for the intensity-based composites and also for global life satisfaction. This finding is in line with previous proposals by Diener, Sandvik and Pavot (2009) and Schimmack and Diener (1997) that frequent experiences are important for subjective well-being.

In this paper, we only reported the frequency-based mixture of positive and negative experiences that is analogous to the intensity-based mixture, Net Affect. However, frequency-based proportion scores can also be calculated for other conjunctions of feelings: namely a) only two or more positive and no negative feelings; and b) only two or more negative and no positive feelings. When watching TV, for example, 31.5% of HRS participants reported experiencing some mixture of 2–3 positive feelings. A small percent (0.5%; n = 18) reported experiencing only a mixture of 2 or more negative feelings when watching TV.

The associations of the affect composites reported in this study are consistent with previous studies of predictors of life satisfaction in older adults (e.g., George, 2010) and demographic associations reported by Bradburn (1969). The gradients of Net Affect and AAC were similar for education and income (see Table 6). Interestingly, inspection of these gradients reveal that, despite the overall negative association between Net Affect and AAC, higher education and higher income are associated with both higher activity-related Net Affect and higher affective complexity. This finding provides some support for the idea that social advantage is linked to opportunities for a more varied and interesting life (Bradburn, 1969: Hamermesh, 2005).

Indeed, we found unique associations with education as well as the three health variables (self-rated health, number of functional limitations, and depressive symptoms), after controls for all remaining variables in the regression models. Furthermore, we found that all composites were uniquely associated with sleep quality, a proximal health indicator. Given the particular salience of health for well-being in older adults and the increased likelihood that health problems occur more frequently and interfere more with daily life than is the case for young adults, this finding is plausible. Surprisingly little research to date has examined the proximal context effect of health or sleep quality on experienced well-being. Instead the focus has been on effects linked to day-of-the-week. The significant proximal effect for

number of activities revealed in the regression models is consistent with proposals that an active engaged lifestyle contributes to positive well-being.

Limitations

The HRS 2009 measure sampled only a small set of activities and affective experiences. We need to learn much more about the validity of these particular activities and feelings as snapshots of a day's affective experiences in older adults. Unlike the DRM and the 24-hour diary studies of experienced well-being, the short HRS measure provides only a partial coverage of an individual's waking hours in a day. It also assumes that individual's categorize activities in similar ways. Although focus groups and cognitive testing of the HRS pilot measure were conducted in an affiliated project, more work is needed especially to determine appropriate ways to describe activities such as exercise, health-related activities, managing/spending money, household chores, and computer use, which occupy time in an older adult's day. Further research is also needed to determine specific limitations due both to the restricted set of feelings included in the HRS measure and to the bounded recall and other memory biases involved in remembering activity-specific experiences from the previous day (e.g., Bradburn, Rips, & Shevell, 1987: Tourangeau, Rips, & Rasinski, 2000). For example, in ratings of health-related activities (e.g., doctor's visits, treatments), in particular, we may have missed feelings such as fear, anxiety, hope, or pain. In the context of other activities, feeling annoyed, irritated, impatient, cheerful, excited, or amused may have been relevant for some older participants. In addition, unlike previous day reconstruction studies, we did not weight the composites of experience for time. The extent that time allocation may contribute to differences in findings about associations with correlates awaits future research (see also Diener & Tay, 2013).

Future studies should compare the HRS HWB1-SAQ directly with the original DRM or one of the 24-hour day reconstruction measures in a heterogeneous sample of older adults and determine effects associated with mode (e.g., paper versus telephone). It will also be important to extend our within-measure of reliability with an investigation of test-retest reliability over time. Moreover, the present study considered only concurrent correlates with health indicators. It will be important to examine long-term associations with these correlates and other outcomes.

Conclusions

Despite these limitations, our findings suggest the potential value of including short measures of experienced well-being in longitudinal panel studies to complement information obtained from global indicators of life satisfaction. Furthermore, at this early stage in research on experienced well-being in older age groups, it seems especially important to consider different ways to aggregate the complexities of both positive and negative affective experiences in the context of activities (e.g., Cacioppo & Gardner, 1999; Kuppens, Tuerlinckx, Russell, & Feldman Barrett, 2012). Within the day reconstruction context, it will also be important to examine the effects of activity categories (e.g., leisure, health) together with the extent that they are regular versus novel occurrences and also experiential variations associated with socio-environmental contexts (e.g., time of day, season, social, geographical).

In sum: We consider that the 2009 HRS pilot provides reliable information about experienced well-being and that our new strategy of summarizing the proportion of activities in the day that involved some mixture of positive and negative affective experiences indeed shows promise for survey researchers. It may be especially useful in longitudinal and cross-national comparative survey research designs because it avoids the difficulties associated with response bias and comparability of subjective ratings.

Acknowledgments

This work was supported by funding from the National Institute of Aging at the National Institutes of Health (grant number R01 AG040635: PI Smith). The HRS (Health and Retirement Study) is sponsored by the National Institute on Aging (grant number NIA U01AG009740) and is conducted by the University of Michigan.

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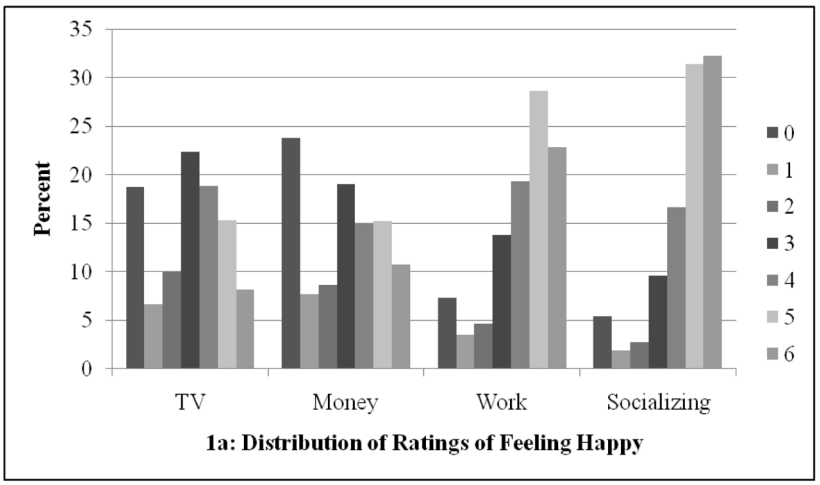

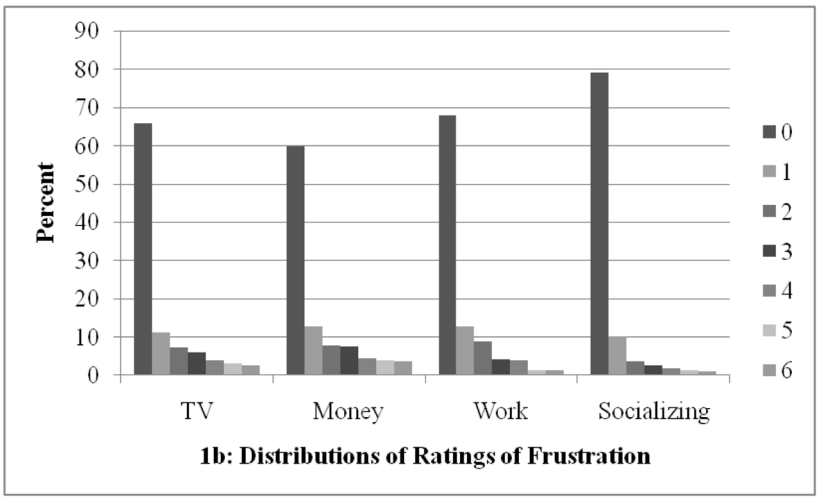

Figure 1.

Distributions of ratings of feeling happy (1a) and frustrated (1b)on a scale from zero (not at all) to six (very much). Percent of participants who reported each scale point for four activities they reported having spent time on the previous day: watching TV, managing/ spending money, working or volunteering, and socializing.

Table 1

Overview of Feelings Examined in the DRM and Survey Day Reconstruction Research

	Kahneman (2004); Stone (2006)	Krueger (2009a)	Krueger (2009b)	ATUS (2010)	Dockray (2010)	Miret (2012)
Positive affect						
Calm/relaxed			+			X
Enjoying myself	X					X
Happy	X	X	X[a]	X	X	
Interested		X				
Interested/focused			+			
Warm/Friendly	X					
Affectionate/Friendly			+			
Competent	X					
Competent/Confident			+			
Meaningful				X		
Negative affect						
Angry/Hostile	X					
Angry					X	
Criticized/Put down	X					
Depressed/Blue	X		X			X
Frustrated/Annoyed	X					
Frustrated					X	
Hassled/Pushed around	X					

	Kahneman (2004); Stone (2006)	Krueger (2009a)	Krueger (2009b)	ATUS (2010)	Dockray (2010)	Miret (2012)
Hassled					X	
Irritated/angry			X			X
Impatient	X		+			
Pain		X		X		
Rushed						X
Sad		X		X		
Tense/Stressed			X	X		X
Stressed		X			X	X
Tired	X	X	+	X	X	
Worried/Anxious	X					
Worry					X	X

Note: + Collected but not used in analyses;

[a]French item was Content/Happy

Table 2

Participant Characteristics in the 2009 HRS HWB (N = 4605).

Participant Characteristics	
Mean Age (Range)	70 (51–98)
% age 50–59	15
% age 60–69	32
% age 70–79	35
% age 80–89	16
% age 90+	2
% White	85
% High School or less	55
Mean Household Income	$65,303
% women	60
% married	63
% working	34
% 4 or more limitations	38
% 4 or more depressive symptoms	16
% good-excellent health	76
% good-excellent health yesterday	80
% who spent time alone > 8 hours	34
Mean number of activities	4.3
% weekday	67

Table 3

Activity Participation, Time Use and Mean Affect Intensity (N = 4605).

Activity	% Report	Mean Hours	Net Affect	Activity-Linked Mean Affect Intensity (Scale 0 to 6)						
				Happy	Interested	Calm	Frustrated	Nervous	Bored	Sad
Watch TV/DVD	85.8	3.64	2.38	2.95	3.56	3.10	0.90	0.56	1.01	0.80
Meals	90.5	1.47	2.93	3.65	3.05	3.34	0.42	0.37	0.50	0.39
Socialize	73.8	3.17	3.67	4.54	4.12	3.49	0.46	0.39	0.33	0.36
Manage/Spend Money	45.5	1.43	2.21	2.82	3.11	2.93	1.10	0.72	0.54	0.59
Health-related	51.8	0.77	2.31	2.80	2.67	3.13	0.65	0.56	0.57	0.44
Work/Volunteer	23.0	4.80	3.29	4.12	3.97	3.20	0.72	0.46	0.39	0.29
Walk/Exercise	61.3	1.37	3.02	3.77	3.28	3.24	0.49	0.41	0.42	0.30

NOTE: Affect was rated on a scale from 0 (did not feel at all) to 6 (feeling was extremely strong). Time and affect means are calculated only for participants who reported time spent on the activity.

Table 4

Percent of Participants Reporting Each Type of Affective Experience for Each Activity (N = 4605).

Activity	N Report	% Mixed Positive and Negative	Percent Who Rate Each Feeling 1(a little) or Higher						
			Happy	Interested	Calm	Frustrated	Nervous	Bored	Sad
Watch TV/DVD	3950	55.1	82	90	78	34	23	40	29
Meals	4169	29.8	89	79	80	19	16	21	15
Socialize	3398	28.8	95	87	77	21	16	15	15
Manage/Spend Money	2093	43.6	76	81	76	40	28	23	22
Health-related	2385	33.6	72	71	78	25	22	22	17
Work/Volunteer	1057	39.2	93	88	78	32	21	18	13
Walk/Exercise	2824	29.7	89	80	77	21	17	18	12

Note: Percentages include only participants who reported time spent on the activity.

Table 5

Bivariate Associations of AAC with sociodemographic, Health and Day Characteristics: Zero-order and Partialed 1) for Net Affect, 2) for Activity-Positive Affect and Activity-Negative Affect, and 3) for Global Life Satisfaction.

	Zero-order	Partial[1]	Partial [2]	Partial [3]
Age Decade	−.11***	−.13***	−.61***	−.09***
Women	−.04**	−.05***	−.06***	−.05***
Married	.01	.05***	.03*	.04**
Currently Working	−.03	−.07***	−.07***	−.03*
Income Quintiles	.05***	.11***	.11***	.09***
Level of Education	.11***	.17***	.17***	.13***
Self-rated health	−.10***	−.01	.04**	−.02
Functional limitations	.10***	.03*	−.03	.05***
Depression (CES-D)	.14***	.07***	−.03	.08***
# Activities yesterday	.06***	.14***	.09***	.08***
Well-rested yesterday	−.18***	−.11***	.05**	−.13***
Health yesterday	−.19***	−.08***	−.03*	−.09***
Weekend	.02	.00	.01	.02

Note:

[1] controlling for Net Affect;

[2] controlling for Activity-Positive and Activity Negative Affect;

[3] controlling for Global Life Satisfaction

*** $p < .001$,

** $p < .01$,

* $p < .05$

Table 6

Means (95% CI) of High, Low, and Overall Net Affect and Activity Affective Complexity for Socio-demographic Groups

	N	Mean PA	95% CI	Mean NA	95% CI	Net Affect	95% CI	AAC	95% CI
Age Decade									
50s	709	3.35	3.25 – 3.45	0.72	0.65 – 0.79	2.63	2.50 – 2.77	0.44	0.42 – 0.47
60s	1492	3.36	3.29 – 3.43	0.54	0.51 – 0.58	2.82	2.73 – 2.90	0.38	0.36 – 0.39
70s	1593	3.24	3.17 – 3.32	0.52	0.48 – 0.56	2.72	2.64 – 2.81	0.34	0.32 – 0.35
80s	701	3.02	2.90 – 3.13	0.49	0.44 – 0.54	2.53	2.40 – 2.65	0.32	0.30 – 0.35
90s	110	2.69	2.43 – 2.95	0.48	0.34 – 0.63	2.20	1.92 – 2.49	0.30	0.23 – 0.37
Men	1862	3.30	3.24 – 3.37	0.55	0.52 – 0.59	2.74	2.67 – 2.82	0.38	0.37 – 0.40
Women	2743	3.22	3.16 – 3.27	0.55	0.52 – 0.58	2.66	2.60 – 2.73	0.35	0.34 – 0.36
Married	2899	3.37	3.31 – 3.42	0.54	0.51 – 0.57	2.83	2.76 – 2.89	0.37	0.35 – 0.38
Not Married	1706	3.06	2.99 – 3.12	0.58	0.54 – 0.62	2.48	2.40 – 2.56	0.36	0.34 – 0.37
Older Worker	1613	3.47	3.40 – 3.53	0.50	0.47 – 0.54	2.96	2.88 – 3.04	0.38	0.36 – 0.39
Retiree	2992	3.13	3.08 – 3.19	0.58	0.55 – 0.61	2.56	2.49 – 2.62	0.36	0.34 – 0.37
Household Income									
Lowest Quintile	921	2.81	2.71 – 2.91	0.61	0.55 – 0.67	2.20	2.08 – 2.31	0.34	0.31 – 0.36
2	921	3.17	3.07 – 3.26	0.56	0.50 – 0.61	2.61	2.49 – 2.72	0.34	0.32 – 0.36
3	921	3.31	3.22 – 3.40	0.58	0.52 – 0.63	2.73	2.62 – 2.84	0.37	0.34 – 0.39
4	921	3.41	3.32 – 3.50	0.56	0.51 – 0.60	2.86	2.75 – 2.96	0.39	0.37 – 0.42
Highest Quintile	921	3.56	3.48 – 3.64	0.46	0.42 – 0.51	3.09	3.00 – 3.19	0.38	0.35 – 0.40
Education									
Less than HS	341	2.51	2.34 – 2.67	0.54	0.45 – 0.63	1.97	1.79 – 2.15	0.27	0.23 – 0.31
Some HS	551	2.94	2.81 – 3.07	0.59	0.51 – 0.67	2.35	2.21 – 2.50	0.31	0.28 – 0.34
HS	1637	3.27	3.20 – 3.34	0.58	0.54 – 0.62	2.68	2.60 – 2.77	0.36	0.34 – 0.38
Some college	1020	3.34	3.26 – 3.43	0.56	0.51 – 0.61	2.78	2.68 – 2.88	0.38	0.35 – 0.40
College degree +	1047	3.54	3.46 – 3.61	0.48	0.45 – 0.52	3.05	2.96 – 3.15	0.41	0.39 – 0.44

Table 7

Relationship of Socio-demographic, Health, and Day Characteristics to Four Indicators of Experienced Well-being (Unstandardized Coefficients and Standard Errors)

Correlates	**Activity-PA** *Beta (SE)*	**Activity-NA** *Beta (SE)*	**Net Affect** *Beta (SE)*	**AAC**[a] *Beta (SE)*
Sociodemographic				
Age Decade	−,07*** (.02)	.08*** (.01)	−.01 (.03)	−.10*** (.01)
Gender (women = 1)	.04 (.04)	−.07** (.02)	.10* (.05)	−.15*** (.02)
Married	.12** (.05)	.02 (.02)	.14* (.06)	−.05 (.03)
Older Worker (1 = yes)	.01 (.01)	.01 (.01)	−.01 (.06)	.00 (.01)
Income Quintile	.04* (.01)	−.00 (.01)	.04* (.02)	0.03* (.01)
Education	.08*** (.02)	.03* (.01)	.05*** (.02)	.11*** (.01)
Health				
Self-rated health	.16*** (.02)	.06*** (.01)	.22*** (.03)	−.05*** (.01)
Functional Limitations	−.02 (.03)	.09*** (.01)	−.10** (.04)	.11*** (.02)
Depressive Symptoms	−.26*** (.06)	.34*** (.03)	−.60*** (.07)	.26*** (.03)
Situation Yesterday				
# Activities	.19*** (.01)	−.00 (.01)	.20*** (.02)	---
Well-rested (1 = yes)	.38*** (.04)	−.28*** (.03)	.66*** (.05)	−.26*** (.03)
Weekday (1 = yes)	−.22*** (.04)	.04 (.02)	−.26*** (.05)	.03 (.03)
Intercept (SE)	2.08 (.12)	0.72 (.07)	0.40 (.15)	−.75 (06)
n	4472	4472	4472	4472
Total Adjusted R^2	.14***	.11***	.18***	[b].19***

Note:

[a] AAC Results from a Poisson Regression with # Activities treated as an offset (i.e., slope fixed to unit constant) included as a constant. The coefficients for the Poisson regression are on the log scale.

[b] Cragg and Uhler pseudo R2 tested with likelihood ratio test (Maddala, 1983). Age Decade reference 0 = 70s. Household Income Quintile reference = 3; Education reference: 0 = high school degree. Functional Limitations reference: 0 = 1–3; Depressive Symptoms: 0 =≤ 3; 1 =≥ 4.

*** $p < .001$,

** $p < .01$,

* $p < .05$