The Structure of Well-Being in Two Cities

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Abstract

A study using the Day Reconstruction Method (DRM) was carried out to identify the determinants of two aspects of well-being: experienced happiness and life satisfaction. Participants were 770 women in Columbus, Ohio and 700 women in Rennes, France. Results are generally similar in the two countries. Life satisfaction reflects the global circumstances of the individuals life (marital status, income), but happiness reflects the hedonic value of the activities and social interactions to which she allocates her time. The circumstances of a satisfying life have hedonic costs as well as benefits and are associated more consistently with activation/arousal than with happiness.

Introduction

The questions that motivated this study are familiar: Are the rich happier than the poor? Are the married happier than the single? We will show that the answer to these questions depends on how happiness is defined -- by the prevalence of good mood and positive affect as they experience their lives or by the satisfaction that people report when asked to evaluate them. The conditions and achievements that make people satisfied do not necessarily make them happier moment to moment.

The distinction we draw between experienced happiness and life satisfaction reflects the consensus opinion that well-being has both judgmental and affective aspects. In Diener's (1994) authoritative statement "Subjective well-being (SWB) comprises people's longer-term levels of pleasant affect, lack of unpleasant affect, and life satisfaction." (p. 103). This definition implicitly requires separate measurement of affective experience and life satisfaction and separate analysis of their determinants, but this requirement has been neglected in well-being research. We describe a large-scale study, conducted in two cities in different countries, which highlights the distinct determinants of the two aspects of well-being.

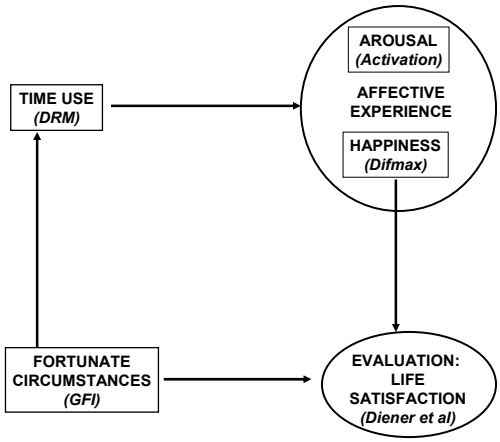
Our study is made possible by a recent development in the measurement of the affective experience of daily life. The gold standard for such measurements is the Experience Sampling Method (ESM) or Ecological Momentary Assessment (EMA)), in which the participant is prompted at irregular intervals to record her current circumstances and feelings (Csikszentmihalyi & Larsen, 1987; Stone, Shiffman & DeVries, 1999). This method of measuring affect minimizes the role of memory and interpretation, but it is expensive and difficult to implement in large samples. Consequently, we use the Day Reconstruction Method (DRM), in which participants are instructed to think about the preceding day, break it up into episodes, and describe each episode by selecting from several menus (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004). The DRM involves memory, but it is designed to increase the accuracy of emotional recall by inducing retrieval of the specifics of successive episodes (Robinson & Clore, 2002; Belli, 1998). Evidence that the two methods can be expected to yield similar results was presented earlier (Kahneman et al., 2004). A major advantage of the DRM is that it provides data on time-use – a valuable source of information, traditionally the province of sociologists (Michelson, 2006), which has rarely been applied to the study of well-being (exceptions are Lawton et al., 1999; Robinson & Godbey, 1999).

We report a DRM study of one day in the lives of women, conducted concurrently in Columbus, Ohio, and in Rennes, France. A comparison of the *level* of well-being in the two cities will be reported elsewhere. This paper addresses the *structure* of well-being, which we find to be

remarkably similar in the two countries, and the *content* of well-being, where we find some differences.

Theory

Our view of the structure of well-being is shown in Figure 1, which identifies two qualitatively distinct constituents. (1) *Experienced happiness* is the average of a dimension of subjective experience over a period of time. (2) *Life satisfaction* is an evaluative judgment that the subject makes about her life.



The most potent determinant of well-being is not shown in Figure 1. Much of the variance of both experienced happiness and life satisfaction is explained by variation in a personal disposition that has a significant genetic component (Lykken, 1999). We focus here on two other determinants: the general circumstances of people's lives (marital status, age, income), and the specifics of how they spend their time.

Determining one's *Life satisfaction* requires a difficult judgment. Like other hard judgments, the evaluation of one's life is accomplished by consulting heuristics -- the answers to related questions that come more readily to mind (Kahneman, 2003). Experimental demonstrations of priming and context effects provide the evidence for the role of such heuristics in reports of life satisfaction (Schwarz and Strack, 1999). Figure 1 identifies two heuristic questions: 'How fortunate am I?' and 'How good is my mood?' The first involves a comparison of the individual's circumstances to conventional or personal standards, while the second calls her attention to recent affective experience.

Affect and mood are largely determined by the immediate context and vary accordingly during the day; most people are happier sharing lunch with friends than driving in heavy traffic. We define an individual's happiness (or arousal) on a given day by the average value of these dimensions of experience for that day. Happiness, so defined, is influenced by the individual's

allocation of time: a longer lunch and a shorter commute make for a better day. A person's use of time, in turn, reflects her circumstances. Age and employment, income and education, marital status and child-rearing obligations -- all impose a structure on an individual's use of time, and indirectly on her experiences.

The most interesting feature of Figure 1 is an arrow that is missing from it: a direct link from life circumstances to experienced happiness. Contrary to a widespread belief (Kahneman et al, 2006), we argue that favorable life conditions do not automatically induce a generally sunny mood, and that the effects of circumstances on affective experience are mostly mediated by time use. As we shall see, these effects are complex, and perhaps surprising.

Method

Participants. Professional survey firms recruited 810 women in Columbus, Ohio and 819 in Rennes, France, using random-digit dialing. The acceptable age range was 18-60, and all participants spoke the dominant language at home. Fulltime students under age 30 are excluded from the present analysis; the remaining Ns are 770 (Columbus) and 700 (Rennes). Respondents were paid about $75 each. The demographics of the samples generally matched the statistics for the two cities. Details of sample demographics, procedures and all questionnaires are posted on URL xxx.

Procedure. The DRM protocol described by Kahneman et al. (2004) was followed. Groups of participants were invited for a weekday evening (excluding Fridays) to a central location, where they completed a series of questionnaires. The first questionnaire included general satisfaction and demographic questions. Next, the respondents were asked to construct a diary of the previous day[1] as a series of episodes, noting the content and the beginning and end time of each. The average number of episodes described was 13.3 in Columbus and 14.4 in Rennes.

In the third questionnaire, respondents completed a form to describe each of the episodes they had previously listed. The form included a list of 22 activities and 8 interaction partners, with an instruction to mark all that apply. In a significant refinement of the original DRM protocol, respondents who had checked multiple activities were required to indicate the one that "seemed the most important to you at the time" (we call it *focal*) . Unless specifically noted, all analyses below refer to focal activities.[2] The form also included 10 rating scales of feelings, ranging from 0 (Not at all) to 6 (Very Strongly): 'Impatient for it to end', ' 'Competent/confident', 'Tense/stressed',

[1] About 300 participants in each country were recruited for Mondays to describe a weekend day. Half of them were instructed to describe the Saturday.

[2] When a respondent mentioned multiple activities without choosing a focal one (xx% of all episodes), a set of rules based on a hierarchy of attention were applied (e.g., love-making dominant, listening to music peripheral) to designate a focal choice. Details found on URL.

'Happy', 'Depressed/blue', 'Interested/focused', 'Affectionate/friendly', 'Calm/relaxed', 'Irritated/angry', 'Tired".

Results and Discussion

We first introduce our measures of well-being and discuss their relationship. Subsequent sections describe the correlates of life circumstances and of time-use. The findings in Columbus and Rennes were qualitatively similar, and we mostly report pooled results. The final section discusses differences between the cities.

Experienced Happiness. We defined *Experienced Happiness* for an episode as:

(1) Difmax (episode) = 'Happy' – Max ('Tense', 'Depressed', 'Angry')

The range of Difmax is -6 to +6. We chose Difmax over the more conventional measure of "Net affect" (the difference between averages of positive and negative ratings) because Difmax reflects the intuition that an episode can be very aversive if even one of the negative feelings is intense. The conclusions we report are generally robust to the choice of definition, because Difmax and Net Affect are highly correlated: .95 over the 20,277 episodes in the data set. The happiness experienced by an individual is a *duration-weighted* average of the values of Difmax(episode) for the day, where each episode is weighted by its duration. The average Difmax was xx in Columbus and xx in Rennes (SD = xx and xx, respectively), but these differences are not necessarily interpretable because of translation issues. In the analyses below Difmax is standardized separately within each sample.

Activaction. Difmax is offered as a measure of Evaluation, the first dimension in the familiar circumplex model of affect (Russell, 1980). The second dimension of the circumplex is Activation/Arousal. We defined a measure of *Affective Activation* for each episode as:

(2) Activation (episode) = ('Tense' – 'Depressed') + ('Happy' – 'Calm')

The measure of experienced activation/arousal for an individual is again the duration-weighted average of the episode scores. As expected from the circumplex structure, the linear correlation between Difmax and Activation (separately standardized in the two samples) was close to zero (r = -.04, N = 1470). However, we also observed a highly significant quadratic trend (r = .20, p<.001): the high and low extremes of the Activation scale are respectively associated with high levels of tension and depression, but the happiest women report low levels of both forms of negative affect.

Life Satisfaction. Life satisfaction was measured by the Diener-Emmons scale (Diener et al., 1985), which consists of 5 items (e.g., "my life is close to ideal"), rated from 7 (Strongly Agree) to

1 (Strongly Disagree). Very similar results were obtained with the frequently used question "Taking all things together, how satisfied are you with your life as a whole these days?", but the longer scale is slightly more reliable.

The correlation between Life Satisfaction and Experienced Happiness is positive, but modest: .37 in the pooled data. The correlation drops to .21 when two markers for depression are controlled: problems in getting things done and poor sleep quality. Life satisfaction is also significantly correlated with both components of the Activation measure, ($r = .14$ with 'Tense – Depressed', $p<.001$, and $r = .17$ with 'Happy – Calm', $p< .01$), and with the combined measure ($r = .19$). The correlation between Life Satisfaction and Activation ($r = .22$) is not reduced by controlling Experienced Happiness and the depression markers. The quadratic component is significant ($r=.12$, $p<.001$), even when controlling for depression markers ($r=.10$, $p<.001$).

In accord with the main theme of this paper these results establish Life Satisfaction and Experienced Happiness as distinct aspects of well-being. In addition, they identify a moderate or high level of affective activation as a concomitant of both happiness and life satisfaction. A satisfying life is not always particularly enjoyable, but it is likely to be high on the dimension of activation -- tense as well as happy, less depressed but also less calm. These conclusions will not surprise proponents of positive psychology.

Correlates of Life Circumstances

The first column of Table 1 displays the relationship between various life circumstances and the Diener-Emmons Life Satisfaction scale. The results confirm previous findings (Argyle, 1999). Consistent with the concept of a Good-Fortune heuristic, the correlates of life satisfaction are plausible reasons for a person to consider herself relatively fortunate or privileged. The Table also shows standardized multiple regression coefficients, which we used to define a Good Fortune Index (GFI), separately for each city. Although few of the individual coefficients are impressively large, the overall amount of the variance of life satisfaction explained by life circumstances is substantial in the present study (18% in Columbus, 25% in Rennes). This value is somewhat higher than the 8-15% reported in previous research (Argyle, 1999; Diener et al., 1999), perhaps because our samples are relatively homogeneous in gender, age and location. We return later to some interesting differences between the GFI equations in the two samples.

The lay theory of well-being assumes that life conditions such as being rich or divorced have a pervasive effect on daily mood (Kahneman et al., 2006a). Table 1 shows that the lay theory is wrong: the correlations between favorable life circumstances and Difmax (our measure of Experienced Happiness) are consistently much smaller than the corresponding correlations with Life Satisfaction (see also Kahneman et al, 2004). Life circumstances account for little of the

variance of Difmax (1% and 2% respectively in Columbus and in Rennes. Furthermore, the small correlations vanish altogether when the indicators of depression are controlled. The question that introduced this article has a simple answer: being rich or married makes women more satisfied with their lives, but barely contributes to the happiness they experience.

Favorable life circumstances are correlated with Activation more strongly than with Experienced Happiness. The correlations between Activation and GFI in Columbus and Rennes are highly significant (.21 and .18), and they remain significant (.22 and .14) when the depression markers are controlled. The women whose circumstances are favorable – married, better off financially, employed – are significantly more likely to feel tense than depressed and more likely to feel happy than calm. The association between tension and favorable circumstances is not an isolated finding. A large-scale study using experience sampling in the workplace (N = 374) showed no relationship of income with ratings of Happiness (r = .01), but significant correlations with Anger/Hostile (r=.14), Anxious/Tense (r=.14) and Excited (r=.18). [3]

Analyses of Time-Use

Correlations between life circumstances and affective experience arise in different ways. Thus, affect can be a cause as well as a consequence of life outcomes (depression is a familiar example), and some conditions (e.g., age) influence affect both directly and indirectly. The model of Figure 1 focuses on another path, in which life circumstances influence affective experience through their effects on the use of time.

To introduce the analyses of this section, we consider a particular condition of life: having a mate[4]. Compared to others, women who have a mate spend less time alone (3.2 hrs vs 5.4 hours), but also less time with friends (21 min vs 1.25 hours). They spend more time in intimate relations (9 min vs 6 min), but also more time doing obligatory activities (4.5 hours vs. 3.7 hours), preparing food (32 min vs. 20 min) and caring for children (63 min vs. 31 min). They are much less likely to eat alone on weekends (a relatively unpopular activity – 5 min vs 23 min), but they have less time for passive leisure (1.8 hours vs 2.2 hours). Evidently, the lack of correlation between marriage and experienced happiness that we reported above occurs not because marriage makes no difference, but because the emotional effects balance out.

Table 2 presents results for several sets of activities, ordered by the average value of Difmax for the pooled sample (expressed in standard scores computed separately for the two samples). The ranking of activities by Difmax confirms previous DRM findings (Kahneman et al,

[3] The study was reported by xxx. The analysis was carried out by Arthur Stone (see Kahneman et al, 2006).

[4] Note that this contrast identifies divorced and single mothers as “no mate.”

2004): work, commuting, compulsory activities at home and being alone are associated with low experienced happiness. A different pattern is found for Activation, where work, compulsory activities *and* social interaction are associated with high arousal.

The last two columns of Table 2 show the average difference in time allocation between the top and bottom thirds of the distribution of the Good Fortune Index, separately for the two samples. In both countries, satisfying life circumstances are associated with a mix of hedonic costs and benefits. Work and Obligatory activities are distinctly less pleasant than the Passive Discretionary activities that they mostly replace. On the other hand, spending more time with others provides a hedonic gain. In contrast, the time use of high-GFI women (more obligations, more social interaction) is consistently associated with relatively high arousal. The puzzle of the affective correlates of satisfying circumstances is largely solved by the analysis of time-use. A satisfying life is not always particularly enjoyable, but it is likely to be high on the dimension of activation -- tense as well as happy, less depressed but also less calm.

Well-being in Two Countries

The analyses we reported here did not attempt to solve the problem of translating expressions of feelings across the language barrier, and focused on the correlational structure of results. For analytic convenience we assumed that life satisfaction and overall experienced happiness were similarly distributed in the two cities and standardized the main variables separately in the two samples, We had expected to find substantial differences between the determinants of life satisfaction and experienced happiness in the two cities, and were surprised by the the remarkable similarity of results, which is illustrated in the following examples. The correlation between Life Satisfaction and Difmax was .37 in both samples. The correlation between the values of Difmax associated with the 20 activities in the two samples was .90. When the same activities were ranked by the amount of focal time spent on each, the correlation was .92 The correlation between the Good-Fortune indices computed for the separate cities (see Table 1) was .91 over the entire sample. [5]

On the background of this general similarity, a few differences are worth noting. As can be seen in Table 1, marital status is more predictive of life satisfaction in France, but the country x status interaction is statistically marginal in spite of the large sample ($t(1447) = 2.09$). The interaction of marital status and country was in the same direction for Difmax, but even weaker ($t = 1.57$). A rather larger difference was observed in the enjoyment of child care and of interactions with children. The American mothers spent more time focused on child care (18% vs. 14% of the waking day), but enjoyed it less. In the standardized units that were used in Table 2, the mean of Difmax during childcare is -.22 in Columbus, .09 in Rennes ($t = 2.76$). The

[5] For this analysis the GFI for the US was computed without the variable “white”

difference in the enjoyment of children spills into the response to family occasions. Women in both samples enjoyed one-on-one interaction with their spouse about equally (Difmax averages were .32 and .33), but the corresponding values when children were present were -.05 and .22, suggesting that the presence of the spouse hardly makes American children less annoying to their mother. The relative unhappiness of American mothers obviously demands further study. Our French team member suggested that French children are simply better, but other hypotheses should also be considered.

The allocation of focal time is broadly similar in the two cities, and the differences confirm cultural stereotypes. As expected, French women spend less time working and commuting (among working women on working days, 5.4 vs 6.3 hours) and more time walking (19 min vs 7 min for the entire sample) and reading (48 min vs. 33 min), while the Americans allocate much more time to praying (19 min vs 3 min). A striking difference in the time spent eating (117 min vs 52min) is mainly due to differences in the attention paid to that activity. Episodes in which eating was mentioned covered almost as much of the day in Columbus (17.1%) as in Rennes (20.8%), but eating was more often focal for the French (56% vs 30%). On the whole, as Table 2 shows, the French women spent slightly more time on the more enjoyable activities – the significance of these differences will be explored in another article.

The conclusion of the present comparison is straightforward. The basic structure of well-being is the same for women in the two cities, but the content – the specific sources from which they draw happiness – is slightly different, reflecting cultural norms and existing social arrangements.

General Discussion

We started out by raising familiar questions about the happiness of the rich and the married. To find an answer, we applied a methodology that provides complementary descriptions of people's lives: by life circumstances (e.g., income, employment, marital status) that may be more or less conducive to satisfaction; and by the time spent in activities that may be more or less enjoyable or arousing. Our first conclusion was that the rich and the married are indeed somewhat more satisfied with their lives, but not happier. An aggregate of favorable circumstances that explained about 20% of the variance of life satisfaction explained less than 2% of the variance of experienced happiness.

Perhaps more important, the availability of a detailed description of people's lives suggests a new approach to the standard questions. The classic puzzle involves the limited long term hedonic effects of outcomes that are greatly desired in anticipation and evoke intense emotions when they occur. Winning the lottery and getting married are happy events, and it appears natural to ask why the happiness does not endure. Almost inevitably, this formulation

invites the idea of a potent process of hedonic adaptation that eventually returns people to a set point determined by their personality (see Diener, Lucas and Scollon, 2006 for a discussion). Our findings suggest two corrections to this model. First, although personality surely matters, the claim that an individual's experienced happiness must return to a set-point that is independent of her local circumstances is probably false. For someone who enjoys socializing much more than commuting, a permanent reallocation of time from one of these activities to the other can be expected to have a permanent effect on happiness (Lyubomirsky, Sheldon & Schkade, 2005). Second, there may be no need for a concept of hedonic adaptation to explain why life-changing events sometimes have little hedonic effect in the long run. The answer is simple: desirable circumstances such as marriage or high income have costs as well as benefits. Married women have more sex and more companionship, but they also spend much more time in chores and much less time with their friends than single women do. The fact that they are not much happier in steady state does not need another explanation. The duration bias – an unjustified expectation that intense affective states will endure – is the central mistake of affective forecasting (Gilbert, 2006; Gilbert and Wilson, xxx). Perhaps we – the community of students of well-being – have been suffering all along from the same duration bias that we study in others. By invoking a process of adaptation to explain why extreme affective states do not persist, we reveal our naïve expectation that they should do so.

Other questions become central in this framework. Why do people desire outcomes that will not make them happy in the long run? Why are they temporarily happy when desired life changes occur? The simple model we have discussed here must be enriched to answer these questions. So far we have explained people's experienced happiness by the joint effects of their personality and the situations they encounter. But something else happens around major life changes such as marriage, a crippling accident, or sudden bereavement. The normal influence of the immediate situation on affect is reduced, and in that temporary state one can be deliriously joyous while stuck in traffic, or miserable at a feast. In these special states attention is constantly drawn back from the current situation to one's preoccupations, and affect follows attention. However, the basic rule of attention is that it tends to be withdrawn from stimuli (or thoughts) as they become familiar. Although there are exceptions in which a recurrent thought can become self-sustaining, the normal outcome is a return of control to the immediate situation. The notions of hedonic treadmill and set point may not be the best way to explain the decline of passionate love, or the withdrawal of attention from life circumstances that have lost their novelty.

Finally, we address a frequently raised and intuitively compelling objection to our approach: why should anyone care about duration-weighted experienced happiness? After all, it is generally agreed (and we join the consensus) that people care very much about the narrative of their life and the satisfaction and meaning they can find in it. The natural point of view for evaluating life is retrospective. In that view, what matters are the memorable and meaningful

moments (Frederickson, 200x) – it seems almost absurd to assign equal weight to such moments and to the time spent in routine activities. Time counts for little in narratives. If the quality of the story matters, achieving satisfaction with one's life is the proper criterion of well-being. We share this intuition, but find another idea almost equally compelling: why do we think it so valuable to extend people's lives, even when their life story will not be improved? Clearly, time of life is intrinsically valued. And if we care about extending people's lives when they are old, we should care no less about the time that they spend commuting in middle age. Time is the ultimate finite resource and the question of how well people spend it is a legitimate issue in the study of well-being.

Table 1

	Z score Corr	Betas		Z scores Correlation	
	D-E Scale	*US*	*France*	Difmax	Arousal
household income	0.33**	.24**	.15**	0.09**	0.10**
has mate	0.32**	.08*	.25**	0.08**	0.16**
education	0.23**	.11**	.12**	-0.03	0.09*
white (US)	0.10**	.09**		0.04	0.05
employed	0.18**		.19**	0.06*	0.06*
lives with child < 6 yrs	0.17**	.12**	.12**	0.03	0.17**
no medical treatment	0.10**	.08*		0.03	0.05
age	-0.03		-.08*	0.02	-0.13**
BMI	-0.10**			-0.02	-0.05

* p < .05. ** p < .01

Table 2

Time Use and Emotions for Weekday

			US		*France*	
Activity	**zDifmax**	**zArousal**	**Time**	**Time/GFI**	**Time**	**Time/GFI**
active	0.29	-0.19	86.9	-17.9	94.7	-2.5
eating	0.25	-0.24	48.4	4.5	88.1	-5.9
talking	0.17	-0.01	72.6	-1.8	87.5	1.7
passive	0.18	-0.67	100.7	-56.0	97.2	-45.2
compulsory	-0.21	0.14	257.3	68.6	230.2	-26.3
work commute	-0.50	0.38	293.1	30.9	247.3	104.0
other	-0.09	-0.08	80.0	-28.3	51.9	-25.9
social	-0.08	0.16	717.2	77.6	620.9	98.6
alone	-0.21	-0.25	221.8	-77.6	276.1	-98.6

NOTE: Time/GFI is the top third GFI- bottom third GFI propdays (multiplied by 939 min US and 897 min France to account for average weekday lengths). Z-scores are created separately by country for our whole sample (N=1470)