

# **Toward a Science of Well-Being**

**June 12, 2004**

## **Motivating questions**

- **“Are people happier in California?”**
- **“How happy was Helen in March?”**
- **How will we find out?**
  - ▶ should we ask her in April?
  - ▶ should we ask her every day?
  - ▶ should we ask her every minute?
  - ▶ should we measure her brain?

## Outline

1. **Conceptual Preliminaries – how should we think about well-being?**
2. **Some illustrative lines of research**
  - ▶ wanting money and getting it
  - ▶ the puzzle of adaptation
  - ▶ measuring experience
  - ▶ the puzzle of country differences

## 1. Conceptual puzzlements

**Too many selves:  
Whose well-being do we care for?**

**Too many selves:  
Whose well-being do we care for?**

**The wanting self**  
Decision utility

**The enjoying self**  
Experienced utility

- **Do people want what they will most enjoy?**
- **Why the distinction was lost in economics**

### **Too many selves: Whose well-being do we care for?**

**The wanting self**  
Decision utility

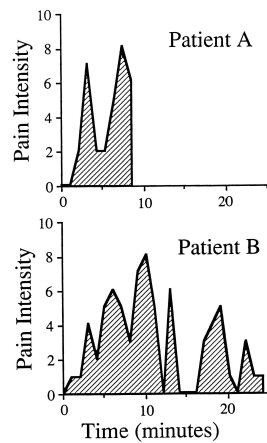
**The enjoying self**  
Experienced utility

**The experiencing self**  
Moment utility

**The remembering self**  
Remembered utility

## Who suffered more?

Patients undergoing colonoscopy reported their pain every 60 sec.



***“How much did these patients suffer?”***

The question is asked from the perspective of an objective observer

It requires an assessment of the ***total utility*** of episodes, from profiles of moment utility

## Can we make patients better off by prolonging their pain?

- The experiencing subject is worse off
- The remembering self likes it (*the memory of it*) better
- The cold-pressor experiment

## **The experiencing self:**

Life as a sequence of many moments

- **The psychological present: 0.5 – 3 seconds**
- **There are about 20,000 moments of 3 sec in a 16-hour day**
- **Each of them can be given a rich description**
  - ▶ goals
  - ▶ mental content
  - ▶ physical state
  - ▶ mood
- **What happens to these moments?**
  - ▶ mostly, they are lost without a trace
- *The experiencing self hardly has time to exist*

## **The remembering self:**

Life as a tale of significant moments

- **Representative moments**
  - ▶ beginnings
  - ▶ peaks
  - ▶ endings
- **Durations do not matter in a story, events do**
- *The remembering self keeps score and is in charge*
  - ▶ Which subject chooses vacations?

## **The dominance of the remembering self**

- **The only perspective we can easily adopt in thinking about life**
- **Is the interrupted symphony ruined?**

## **Implications for the measurement of well-being**

- **Two ways to measure well-being:**
  - ▶ global judgment by the subject
  - ▶ disaggregated reports, to be aggregated objectively

## Global evaluations of life

Taking all things together, how satisfied are you with your life as a whole these days? Are you

very satisfied,  satisfied,  not very satisfied,  not at all satisfied?

## Global evaluations of life

Taking all things together, how satisfied are you with your life as a whole these days? Are you

very satisfied,  satisfied,  not very satisfied,  not at all satisfied?

➤ How happy are you these days? Would you say you are

very happy  pretty happy  not at all happy

## Global evaluations of life

Taking all things together, how satisfied are you with your life as a whole these days? Are you

very satisfied,  satisfied,  not very satisfied,  not at all satisfied?

➤ How happy are you these days? Would you say you are

very happy  pretty happy  not at all happy

➤ Almost everything we know about well-being is based on these measures (>10,000 articles!)

## Edgeworth's fancy (1881)

- a "hedonimeter" that could record moment utility on a moving roll of paper
- "happiness is the area under the curve"

## Experience sampling

### How do you feel right now?

*Please rate each feeling on the scale given. A rating of 0 means that you are not experiencing that feeling at all. A rating of 6 means that this feeling is a very important part of the experience.*

	Not at all						Very Much
Happy . . . . .	0	1	2	3	4	5	6
Frustrated/annoyed . . . .	0	1	2	3	4	5	6

## Experience sampling

### How do you feel right now?

*Please rate each feeling on the scale given. A rating of 0 means that you are not experiencing that feeling at all. A rating of 6 means that this feeling is a very important part of the experience.*

	Not at all						Very Much
Happy . . . . .	0	1	2	3	4	5	6
Frustrated/annoyed . . . .	0	1	2	3	4	5	6

- **A profile of affect can be generated, and assessed objectively, to yield a measure of ‘objective happiness’**

## **“Objective happiness”**

- **If we believe that Californians are happier, what do we have in mind?**
  - ▶ “Californians are more satisfied with their lives”
  - ▶ “Californians, on average, are in a better mood”
  
- **Aggregating moment utilities gives the experiencing subject a voice**
  
- **Possible implications of the emphasis on time:**
  - ▶ comparing “ways of life”: leisure and work

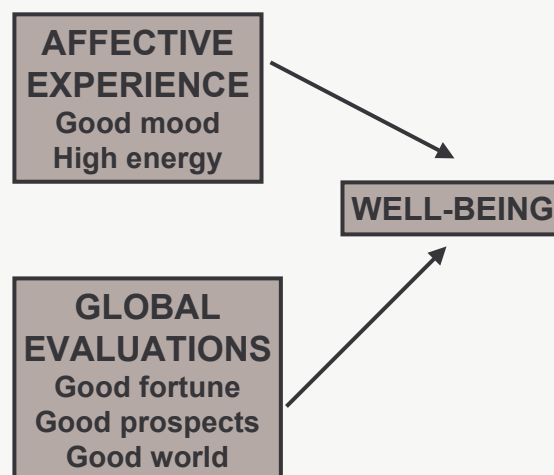
## **A neural “hedonimeter”?**

- **Give it a decade or two**
- **Richard Davidson’s prefrontal cortical asymmetry is currently the leading candidate**

## Correlates of Baseline Prefrontal Asymmetry

- **Dispositional PA and NA**
- Behavioral Inhibition/Activation
- **Self-report measures of well-being**
- Basal cortisol in humans and monkeys
- Basal and reactive natural killer cell activity
- **Antibody response to influenza vaccine**
- Voluntary and automatic emotion regulation
- **Reactivity to emotional film clips**
- Reactivity to maternal separation
- Temperament in toddlers

## Review: Constituents of Well-Being



## Affect and Evaluation may have different sources

Anemic

**AFFECTIVE  
EXPERIENCE**  
Good mood  
High energy

**GLOBAL  
EVALUATIONS**  
Good fortune  
Good prospects  
Good world

French

## Affect and Evaluation may have different sources

Neurotic

**AFFECTIVE  
EXPERIENCE**  
Good mood  
High energy

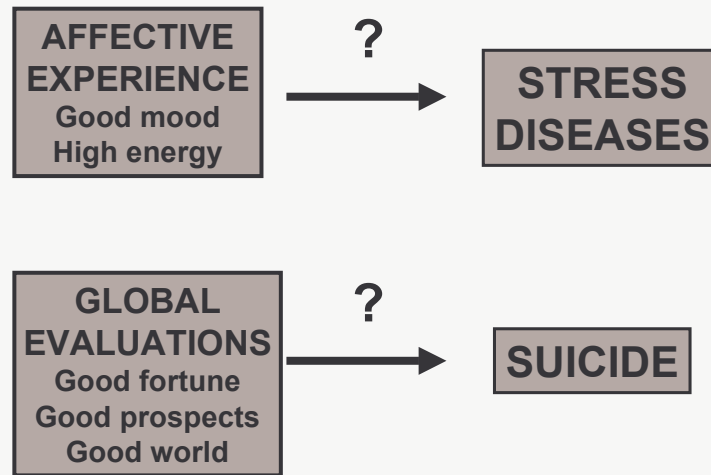
Unemployed

Divorced

Non-believer

**GLOBAL  
EVALUATIONS**  
Good fortune  
Good prospects  
Good world

## Possible Consequences of Affect and Evaluation



## Some questions that arise

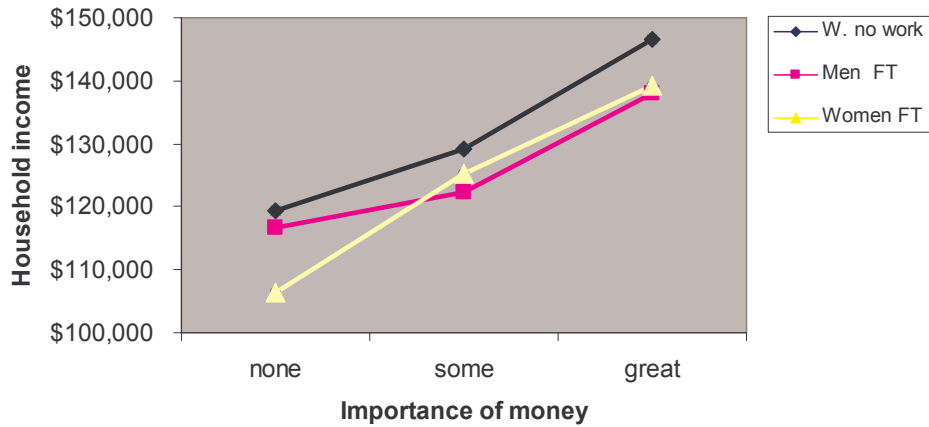
- We need a normative analysis of well-being that incorporates the distinctions
  - ▶ experience vs memory
  - ▶ affect vs narrative evaluation
- Empirical questions that were considered settled may need to be asked again

**Project 1**  
**Correlates and consequences**  
**of wanting money**

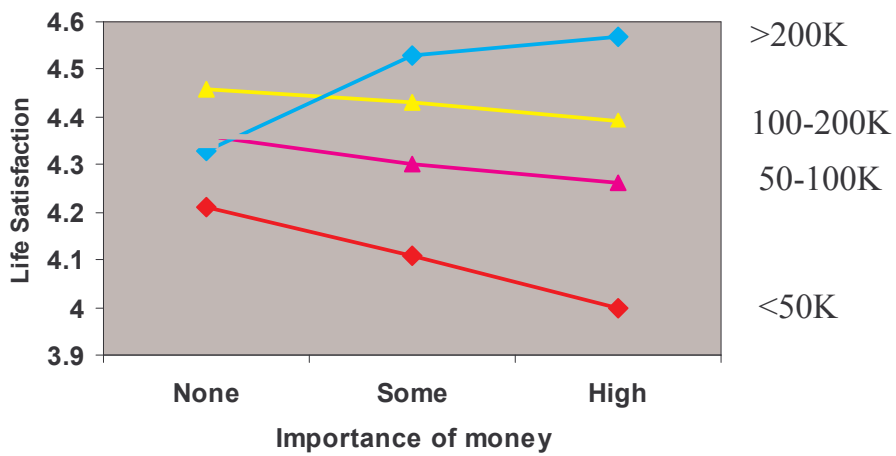
**Carol Nickerson**  
**Ed Diener**  
**Norbert Schwarz**

- **Analysis of 8,000 college graduates (class of '76) interviewed by Mellon Foundation in 1995-1997**

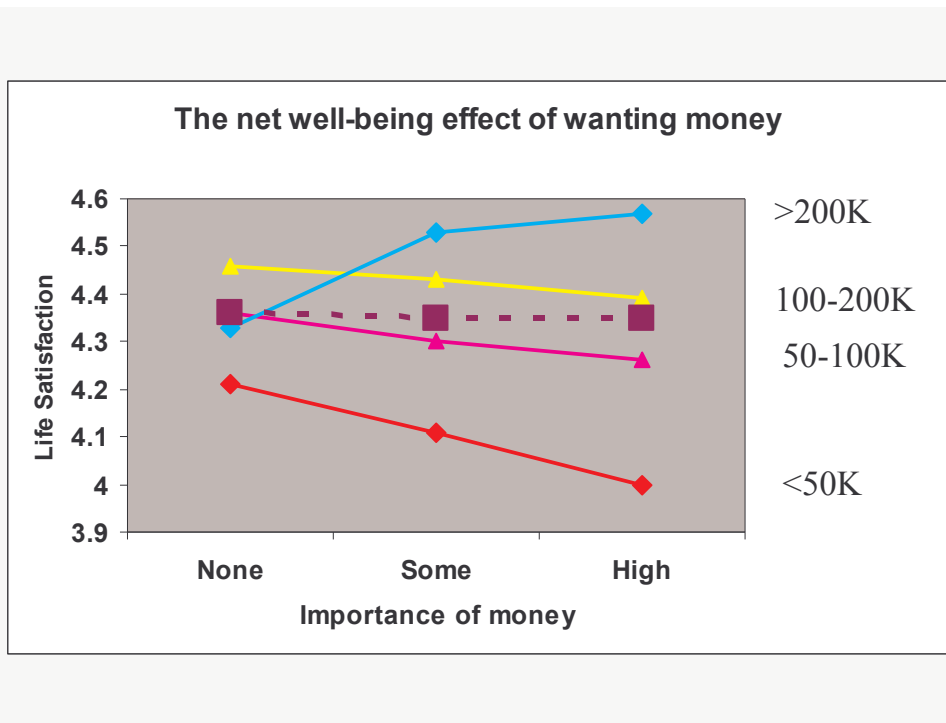
### Those who wanted money in 1976 tended to have it in 1995



### The ambiguous well-being effects of wanting money



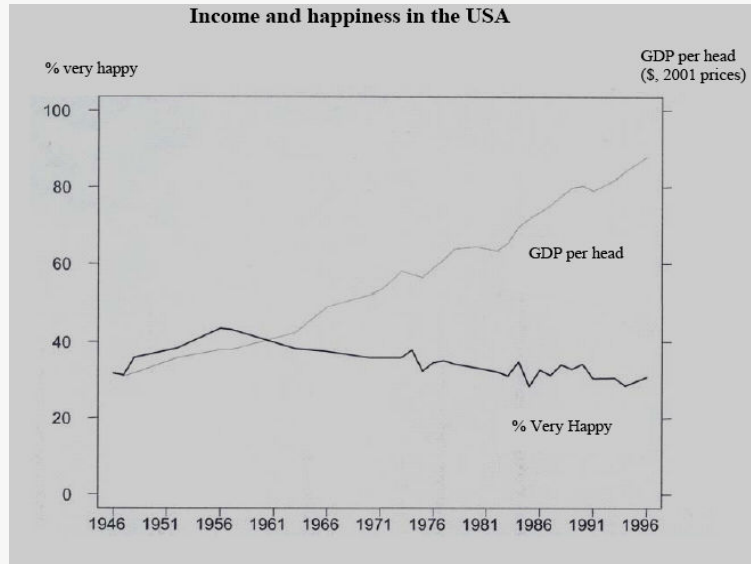
- More income is better than less, even if you did not particularly want it
- For the large majority of people – given their income, they are better off not wanting than wanting
- But those who want it tend to get it



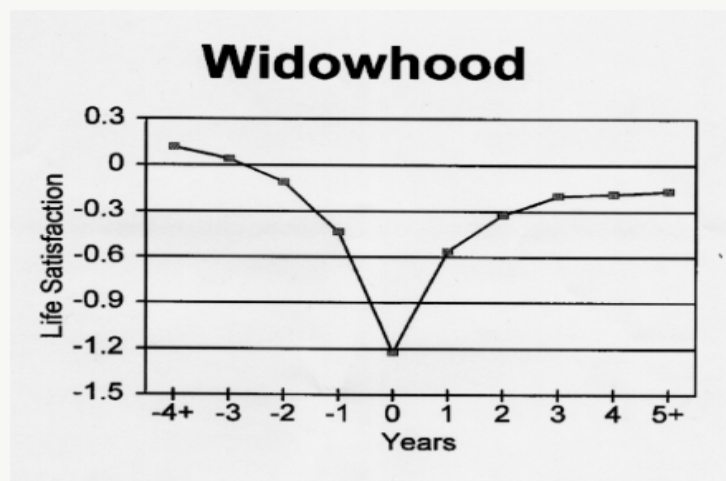
- **The effect of desire for money is nil in these data**
- **For people who want more money, or have less of it, the net effect may be negative**
- **In these data, a youthful desire for artistic accomplishments is correlated with lower life satisfaction twenty years later**
- **The humanists may be right: goals that drive actions that are intrinsically rewarding are less likely to be detrimental to well-being**

## **The puzzle of adaptation**

## The Easterlin paradox

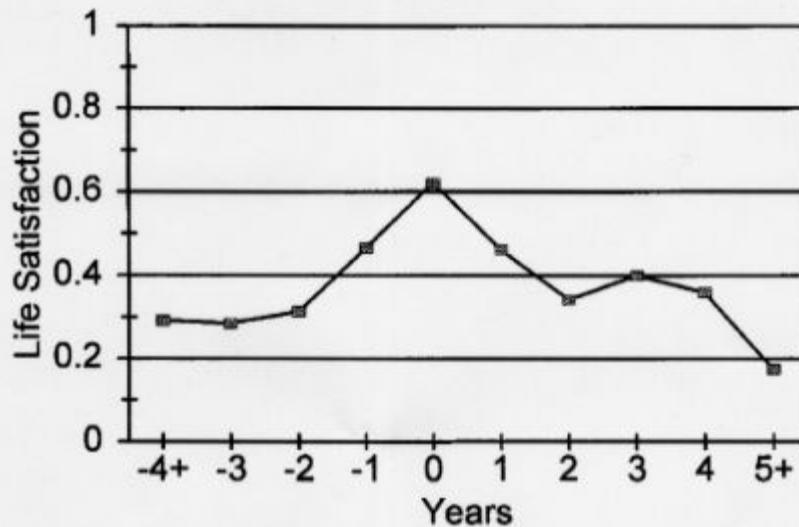


## The Basic Treadmill Effect



From Clark, Diener and McCulloch, 2001, based on 14 waves of the German Socio-Economic Panel Study (N ~26,000)

# Marriage



## Why are these results surprising?

- perhaps because we perform the wrong thought experiment:
  - ▶ We hate the idea of *losing* our air-conditioning, and infer we are better off for *having* it
- Our intuitions are about changes
- A fundamental error that motivates much human activity is the confusion of changes and states, coupled with a durability bias (Dan Gilbert)

## Project #2: Reconstructing Experience

Alan Krueger  
David Schkade  
Norbert Schwarz  
Arthur Stone

### Competing interpretations of the treadmill



**Affect adapts less than life satisfaction: Our initial hypothesis**

**Affect adapts more than life satisfaction: our data suggest this could be true**

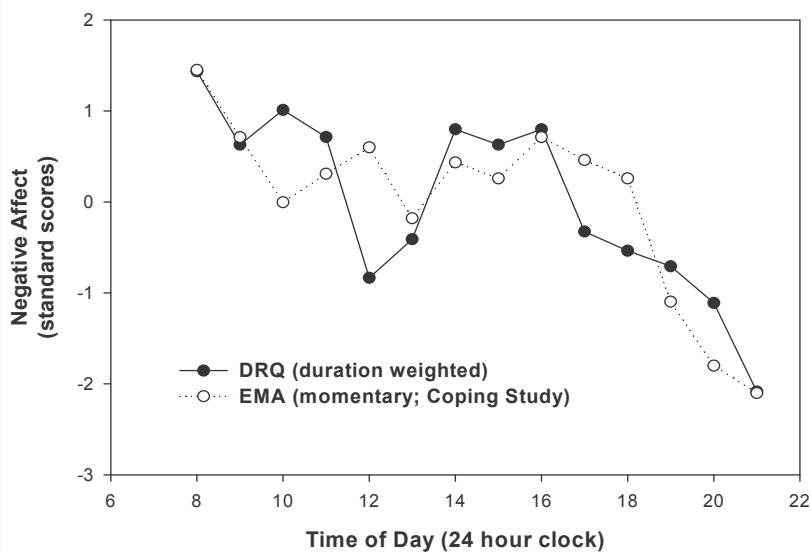
## Assessing Feelings: DRM Adjectives

How did you feel during this episode?

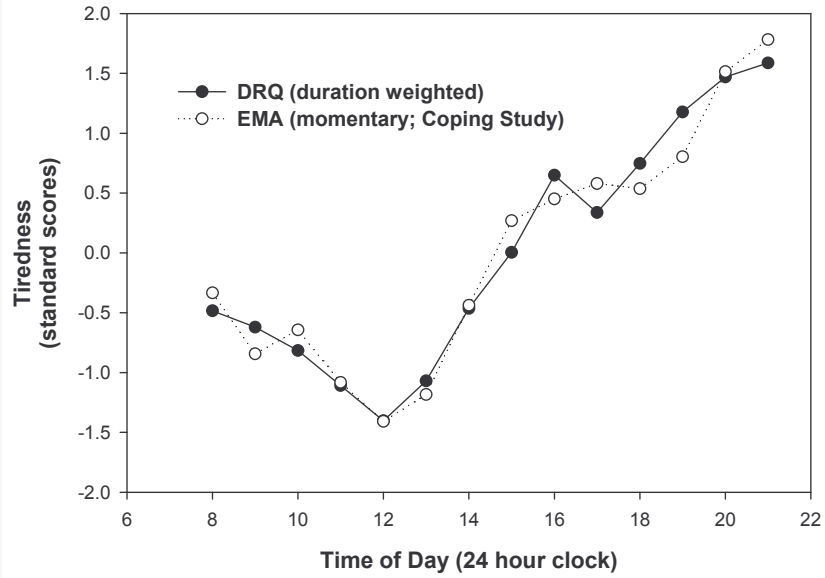
*Please rate each feeling on the scale given. A rating of 0 means that you did not experience that feeling at all. A rating of 6 means that this feeling was a very important part of the experience. Please circle the number between 0 and 6 that best describes how you felt.*

	Not at all						Very much							
	0	1	2	3	4	5	6	0	1	2	3	4	5	6
Impatient for it to end . . .	0	1	2	3	4	5	6	0	1	2	3	4	5	6
Happy . . . . .	0	1	2	3	4	5	6	0	1	2	3	4	5	6
Frustrated/annoyed . . . . .	0	1	2	3	4	5	6	0	1	2	3	4	5	6
Depressed/blue . . . . .	0	1	2	3	4	5	6	0	1	2	3	4	5	6
Competent/capable . . . . .	0	1	2	3	4	5	6	0	1	2	3	4	5	6
Hassled/pushed around . . .	0	1	2	3	4	5	6	0	1	2	3	4	5	6
Warm/friendly . . . . .	0	1	2	3	4	5	6	0	1	2	3	4	5	6
Angry/hostile . . . . .	0	1	2	3	4	5	6	0	1	2	3	4	5	6
Worried/anxious . . . . .	0	1	2	3	4	5	6	0	1	2	3	4	5	6
Enjoying myself . . . . .	0	1	2	3	4	5	6	0	1	2	3	4	5	6
Criticized/put down . . . . .	0	1	2	3	4	5	6	0	1	2	3	4	5	6
Tired . . . . .	0	1	2	3	4	5	6	0	1	2	3	4	5	6

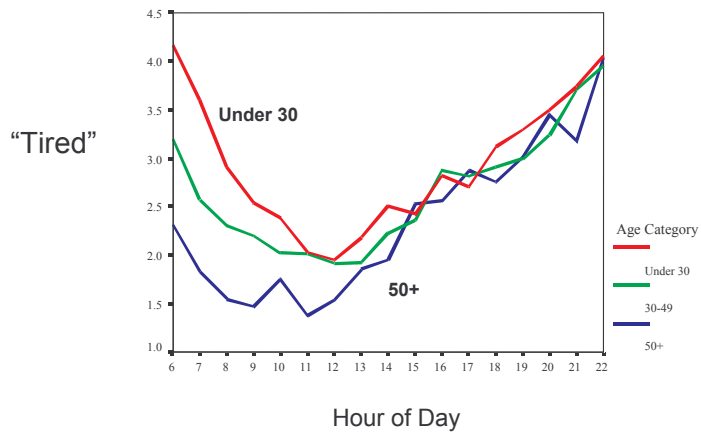
**Comparison of DRQ and EMA  
Affect over Time of Day**



### Comparison of DRQ and EMA Affect over Time of Day



### Diurnal Patterns of Tiredness by Age Group



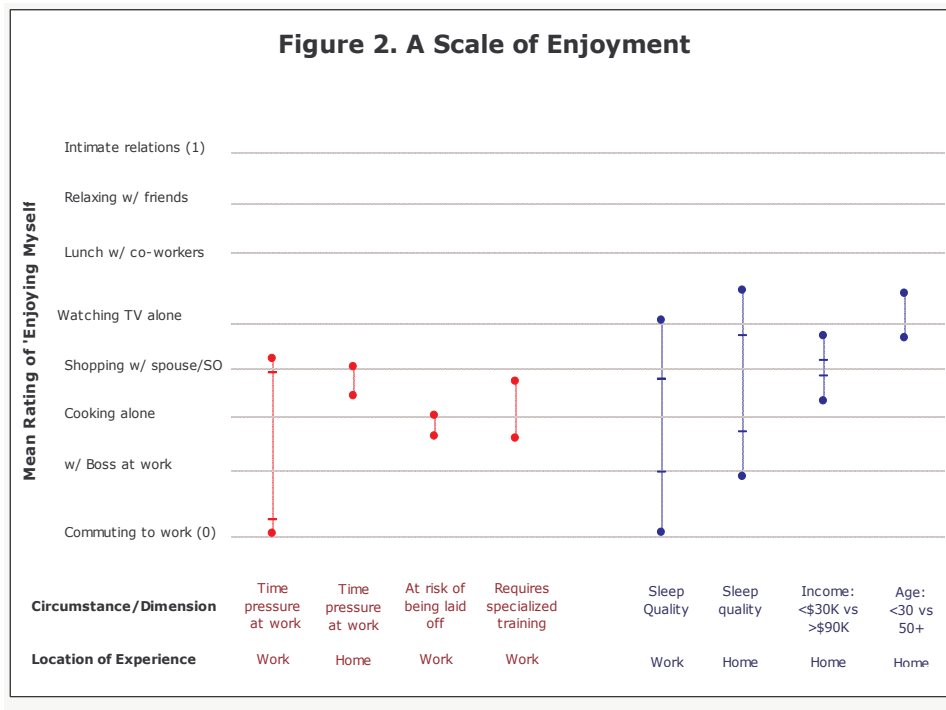
### Interaction Partners (DRM)

<b>friends</b>	<b>3.69</b>
<b>relatives</b>	<b>3.38</b>
<b>spouse/SO</b>	<b>3.32</b>
<b>children</b>	<b>3.29</b>
<b>co-workers</b>	<b>2.84</b>
<b>clients/customers</b>	<b>2.84</b>
<b>alone</b>	<b>2.71</b>
<b>boss</b>	<b>2.43</b>

The overwhelming importance of social contacts

### A scale of enjoyment

**sex**  
**relaxing with friends**  
**lunch with co-workers**  
**watching TV alone**  
**shopping with spouse**  
**cooking alone**  
**with boss at work**  
**commuting to work**



## Selected results

- The normal state is mildly positive
  - ▶ enjoyment = 0 only 12% of the time
- negative emotions are rare
  - ▶ but 75% of the time “tired” > 0
  - ▶ 55% of the time “impatient for it to end” >0
- Some adjectives are more trait-like than others
- Ratio of person/situation SD's
  - ▶ Depressed 81.3
  - ▶ Impatient for it to end 1.8
  - ▶ Happy 6.5
  - ▶ Competent/capable 30.6

## More Results

- **Happiness as a trait** -- especially affect!
  - ▶ Set-point theory (Headey and Wearing)
- **Sleep** – surprisingly important
- **Income** – more effect on satisfaction
- **“Competent/capable”** – correlated with income, education
  - ▶ *should we reconsider our concept of well-being?*
- **Age** – things keep improving
- **Religion** – good for both affect and SWB
- **Divorce** – life satisfaction vs affect
- **Adaptation of affect and satisfaction**
  - ▶ *circumstances generally have **less** influence on affect than on satisfaction*

## Competing interpretations of the treadmill: The current leading hypothesis



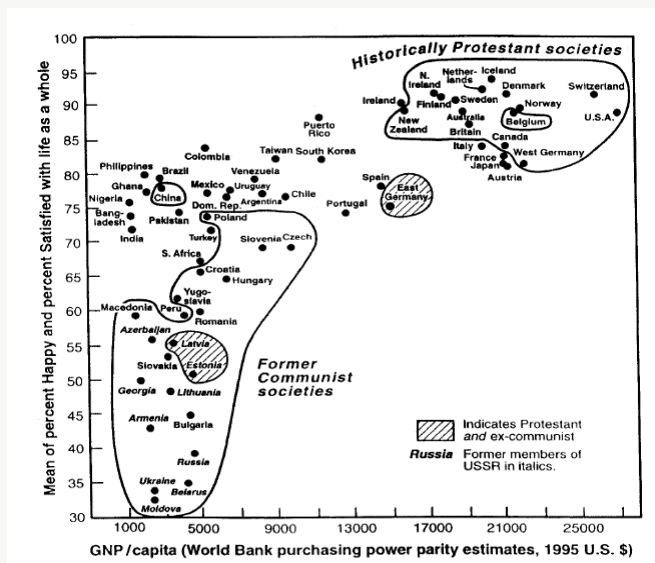
Affect adapts more than life satisfaction:  
— our data suggest this could be true

# Project #3

## Country differences in well-being

Jason Riis  
 Norbert Schwarz  
 Robert McCulloch

### Inglehart's Figure



## Interpretations of country effects

- It is commonly assumed that the differences within and between countries are on the same scale
- But the differences are implausibly large
  - ▶ 62% of Danes, but only 12% of French respondents describe themselves as very satisfied with their lives
- To be as miserable as the average Frenchman...
- Do we believe these differences are real?
  - ▶ What would that mean?

## A surprising observation

- The SRHS question:
  - ▶ “Would you say your health these days is ...”
- 40% of Danish respondents (aged 50 and over) say they are very healthy
- 11% of Frenchmen do
- The French live 3 years longer

**Correlates of country averages of SRHS  
(subjective health)  
in World Values Survey and Eurobarometer**

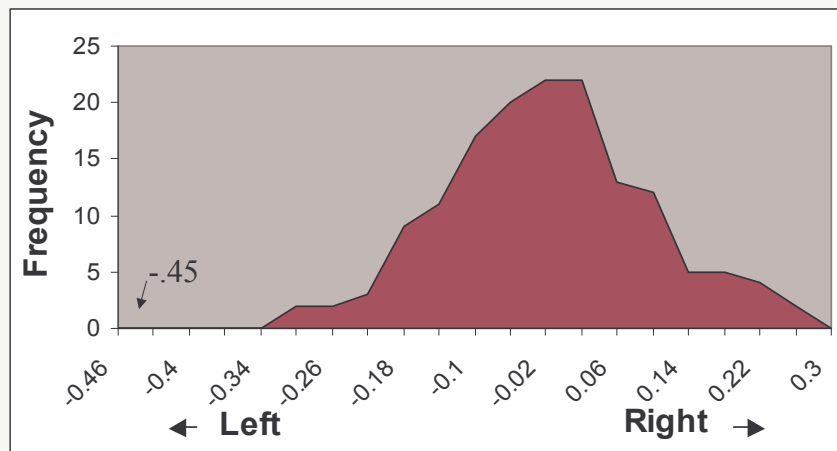
	20 rich OECD	all 63
WVS happy	0.79	0.81
WVS life satisfaction	0.85	0.84
life expectancy - WHO 1993	0.05	0.13
HALE at age 60 - 2001 avg	-0.06	0.36
<b>Eurobarometer (13 countries)</b>		
long-term illness	-0.25	
specific med probs	-0.19	
consulting a physician	<b>-0.70</b>	

**Conclusions from country effects**

- At the country level, the differences are likely to be due entirely to evaluation
- But evaluation may control behavior, perhaps including the ultimate form of complaining

## Ending on a positive note

Physiological effects of a spiritual skill  
Left prefrontal activation (gamma power)  
(R.J. Davidson)



**The End**

**three impossible thought experiments**

- **we cannot take the perspective of the experiencing self**
- **we cannot avoid the reference point in imagining life without air conditioning – linked to JE-SE**
- **we cannot predict adaptation**

## Which subject is adapting?

- ❖ **The experiencing subject?**
  - Is the treadmill a characteristic of real-time experience?
- ❖ **The remembering subject**
  - Or is it a characteristic of evaluative memory?
- ❖ **This is the essence of the California/Australia question**

## **A substitute for Experience Sampling The Day-Recall Measure (DRM)**

### **The research team:**

**Daniel Kahneman (Judgment, Decision making)**  
**Alan Krueger (Economics)**  
**David Schkade (Psychology, Surveys, Statistics)**  
**Norbert Schwarz (Affect, Survey methods)**  
**Arthur Stone (Health Psychology, ESM)**

## Day Recall Method

Now look at your Diary and select the next episode.

This is episode # \_\_\_  
which began at \_\_\_\_\_ and ended at \_\_\_\_\_.

What were you doing? (check all that apply)

- |   |   |
|---|---|
| <input type="checkbox"/> commuting                    | <input type="checkbox"/> working                      |
| <input type="checkbox"/> shopping                     | <input type="checkbox"/> preparing food               |
| <input type="checkbox"/> doing housework              | <input type="checkbox"/> taking care of your children |
| <input type="checkbox"/> eating                       | <input type="checkbox"/> pray/worship/meditate        |
| <input type="checkbox"/> socializing                  | <input type="checkbox"/> watching TV                  |
| <input type="checkbox"/> nap/resting                  | <input type="checkbox"/> computer/internet/email      |
| <input type="checkbox"/> relaxing                     | <input type="checkbox"/> on the phone                 |
| <input type="checkbox"/> intimate relations           | <input type="checkbox"/> exercising                   |
| <input type="checkbox"/> other (please specify _____) |   |

## DRM Episode Questions

Where were you?

- At home    At work    Somewhere else

Were you interacting with anyone?

- |   |  |
|---|--|
| <input type="checkbox"/> no one                   |  |
| <input type="checkbox"/> spouse/significant other | <input type="checkbox"/> my children       |
| <input type="checkbox"/> friends                  | <input type="checkbox"/> parents/relatives |
| <input type="checkbox"/> co-workers               | <input type="checkbox"/> boss              |
| <input type="checkbox"/> clients/ students        | <input type="checkbox"/> other people      |

## Future Directions

- ❖ **What does income buy, if anything?**

- Competence?

- ❖ **Connections with biology and health**

- ❖ **The skills of happiness**

- allocation of time
- understanding recurrent pleasures
- meditation

- ❖ **The unsolved philosophical problem**

- experiencing and remembering

- ❖ **A general psychological principle:**

- ❖ **Evaluation by moments**

- ❖ **In decision making**

- ❖ **prospect theory (Kahneman and Tversky, 1979)**

- ❖ **utility is attached to gains and losses, not to states**

- ❖ **In affective forecasting**

- ❖ **moments of transitions valued as a proxy for states**

- ❖ **In retrospective evaluation**

- ❖ **the peak/end rule**

**Misprediction of adaptation  
(Beruria Cohn, 1999)**

The measure: %(good mood) - %(bad mood)

<b>Paraplegics</b>	<b>One month</b>	<b>One year</b>
Know one	-50%	-20%
Don't know one	-41%	-37%

<b>Lottery winners</b>		
Know one	64%	25%
Don't know one	58%	50%

		% "none"
Happy		6
Warm		9
Enjoy		12
Frustrated		52
Worried		56
Depressed		74
Hassled		76
Angry		78
Criticized		89
Impatient		45
Tired		25

**Traits vs Situation Descriptors**  
**Ratio of person/situation SD**

<b>Enjoying myself</b>	<b>3.4</b>
<b>Happy</b>	<b>6.5</b>
<b>Competent / capable</b>	<b>30.6</b>
<b>Impatient for it to End</b>	<b>1.8</b>
<b>Tired</b>	<b>4.5</b>
<b>Frustrated</b>	<b>4.6</b>
<b>Depressed</b>	<b>81.3</b>