

Variants of Utility

Two concepts of utility

- ❖ Modern usage: ***Decision utility***
 - inferred from choices, explains choices
- ❖ Bentham/Edgeworth: ***Experienced utility***
 - the quality and intensity of hedonic experience
- ❖ Arguments against study of Experienced Utility
 - superfluous -- agents are rational
 - impossible -- experience is private

The view from psychology

- ❖ ***The measurement of experienced utility is both useful and feasible***
- ❖ Interpersonal comparisons are not impossible
 - Similar brains → similar sensations
- ❖ Fair interpersonal agreement on psychophysical functions:
 - sound pressure → loudness
 - pressure of labor contractions → pain
- ❖ The adoption of experienced utility as a topic opens an agenda for psychological research, and perhaps eventually for a conversation with economics

Elements of a research agenda

- 1. The logic of experienced utility**
from moments to episodes
- 2. The psychology of remembered utility**
evaluation of episodes by moments
- 3. Decisions that do not maximize utility**
adding a better end
- 4. Adaptation neglect in forecasts of utility**
transitions as proxies for states
- 5. Well-being and experienced utility**
exploring the hedonic treadmill

1. The logic of Experienced Utility:

From moments to episodes

The hedonic dimension

- ❖ Each moment of experience is characterized by an affective/hedonic state
- ❖ The underlying scale consists of two distinct limbs joined by a distinctive zero: neither good nor bad.
- ❖ ***Moment utility*** comprises an affective reaction and an action tendency:
 - **continue** or **stop**
 - **approach** or **avoid**

The utility of outcomes that extend over time

- ❖ **Moment utility.**

- “Are you in pain now?”

- ❖ Global ***remembered utility*** of episodes

- “How much did you suffer altogether?”

How to assess the *total utility* of episodes:

- ❖ Accept subjective reports of moment utility

- ❖ Avoid global subjective reports

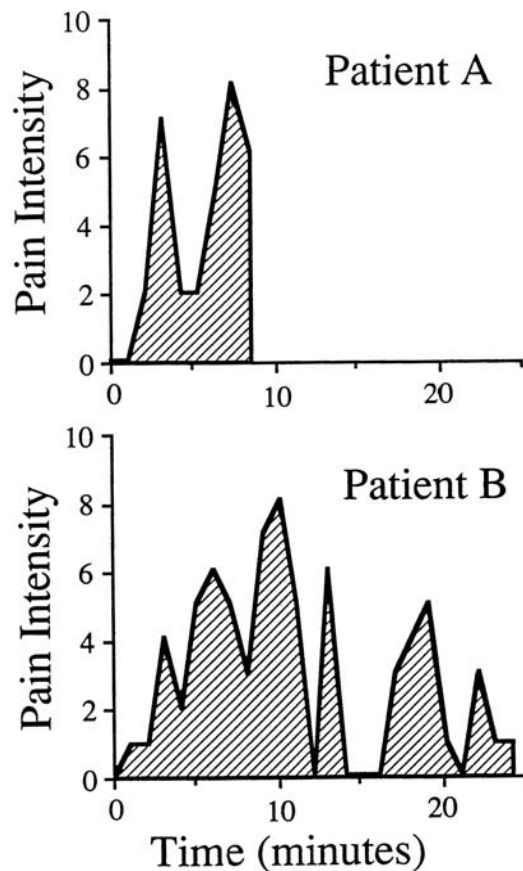
- fallible memory

- problematic aggregation

- ❖ ***The total utility of an episode is constructed, from a profile of moment 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

The logic of total utility

(Kahneman, Wakker, Sarin, 1997)

Conditions on the measure of moment utility:

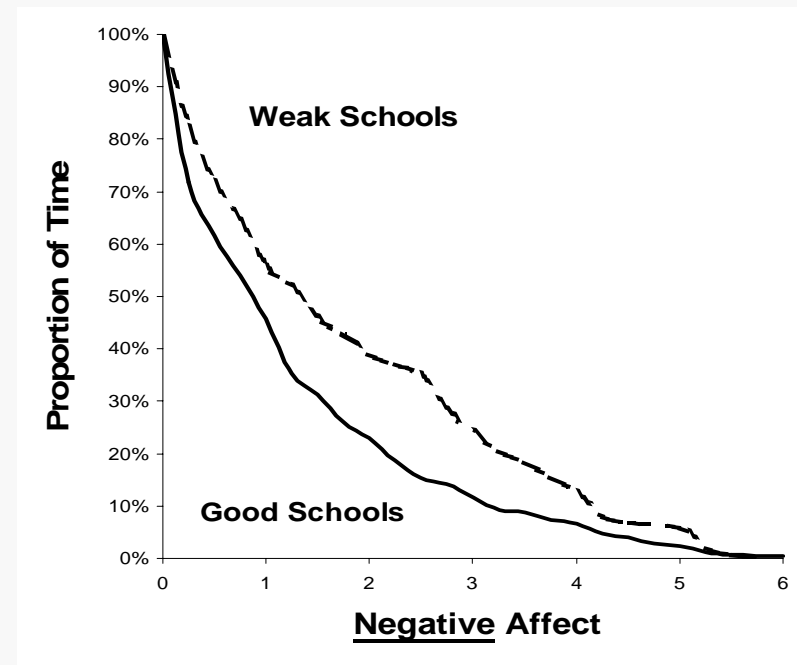
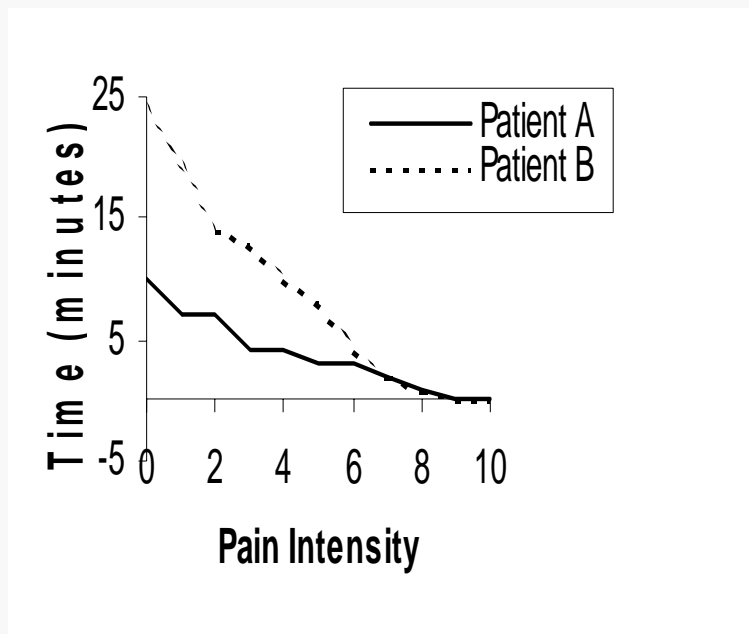
- ❖ inclusiveness: must contain all the information relevant to total utility, including hedonic effects of anticipation and memory
- ❖ intrapersonal comparability across experiences
- ❖ ordinal measurement on both sides of zero
- ❖ interpersonal comparability

Principles for the evaluation of total utility:

- ❖ time-neutrality: all moments are weighted equally (no discounting, etc.)
- ❖ separability: the order of moment utilities does not affect their contribution to total utility

The decumulative representation

- ❖ A temporal decumulative representation provides a *partial* order of total utility
 - patient B suffered strictly more than patient A
- ❖ Individual profiles summed to create group profile



2. The psychology of remembered utility:

Evaluation by representative moments

The valuation of extended outcomes

- ❖ *The utility of moments commonly serves as a proxy for the utility of states or episodes*
- ❖ Transitions (e.g., moving to California) are proxies for temporally open-ended states
- ❖ Representative moments are proxies for complete episodes, e.g., colonoscopy or vacation

Remembered utility of a colonoscopy (Redelmeier and Kahneman, 1996)

Predictors of Retrospective Global Ratings

Peak+End	.67
Duration of procedure	.03

- ❖ The representative moment is a composite, which weights two singular moments: Peak pain and End
- ❖ Little effect of duration in this study

Peak+End rule and Duration Neglect

- ❖ Good approximation, supported with both abstract and real stimuli
 - Fictitious profiles of pain
 - Life trajectories (Diener et al)
 - Films, sounds, pressure pain (Ariely)
- ❖ Duration neglect in lower animals: the fear of an electric shock is independent of its duration
- ❖ The weight of duration is increased by directing attention to it (Ariely & Loewenstein, 2000)
- ❖ The Peak + End rule entails violations of dominance

3. Decisions that do not maximize utility:
Adding a better end

Violations of dominance

Kahneman, Fredrickson et al, 1993: On two trials, separated by seven minutes, participants immerse a hand in cold water until instructed to remove it. Seven minutes after the second trial, they are called for a third trial and are asked which of the two trials they want to repeat.

Short: 60 sec at 14°C

Long: 60 sec at 14°C + 30 sec → 15°C

65-80% prefer Long

This is not an isolated finding

Remembered utility → Decision utility

- ❖ “**Choosing by liking**” -- a non-analytic strategy of choice, selects the option most liked or least disliked
- ❖ Closely related to Paul Slovic’s **affect heuristic**
- ❖ *Choosing by liking maximizes the anticipation of remembered utility*
- ❖ *but not necessarily the utility actually experienced*
- ❖ These (and other) failures to maximize experienced utility are **systematic and predictable** consequences of familiar psychological principles

4. Adaptation neglect in affective forecasts:

The transition heuristic

Changes as proxies for states

- ❖ A generalization of prospect theory: An anticipated emotional reaction to a **transition** often serves as a proxy for the utility of the end state
- ❖ ***This 'transition heuristic' ignores the likelihood of adaptation to the new state***
- ❖ Blindness to adaptation has been explored by several researchers (Gilbert et al; Loewenstein)
- ❖ Gilbert et al (1998)
 - the response to election results
 - the response to tenure decision

Misprediction of adaptation

(Beruria Cohn, 1999)

Survey participants were asked to estimate the % of time that various classes of persons spend in good, neutral or bad mood, e.g., paraplegics and lottery winners, one month or one year after the event. Respondents were also asked if they knew a case personally

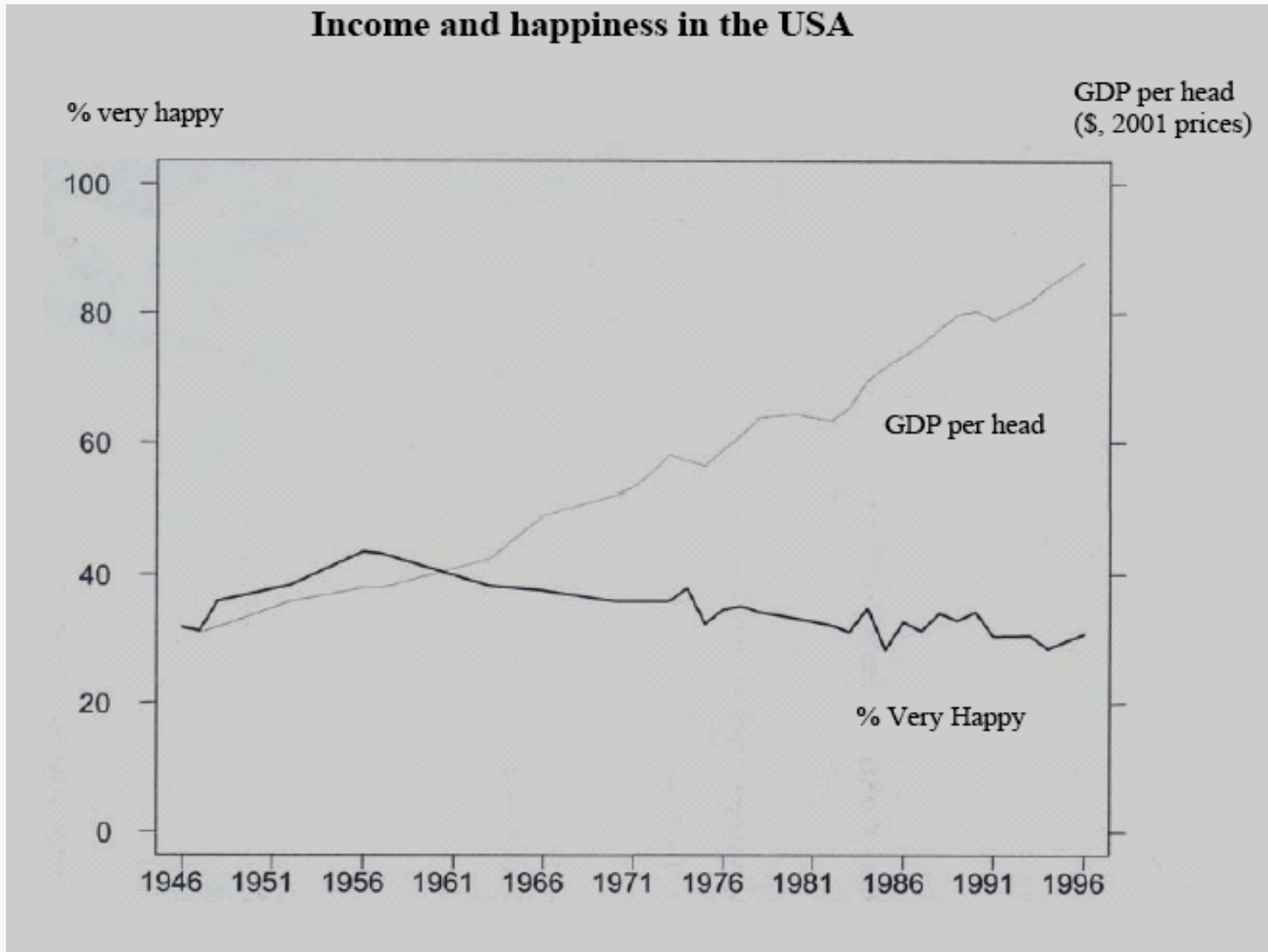
The measure: $\%(\text{good mood}) - \%(\text{bad mood})$

	One month	One year
Paraplegics		
Know one	-50%	-20%
Don't know one	-41%	-37%
Lottery winners		
Know one	64%	25%
Don't know one	58%	50%

The reality of 'adaptation'

The hedonic treadmill

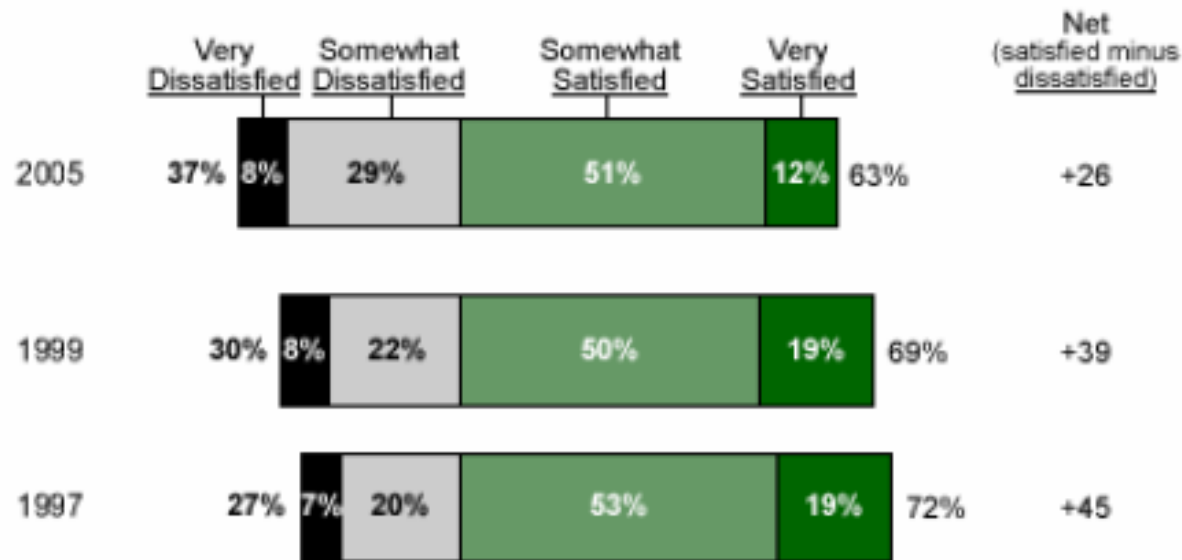
The Easterlin paradox



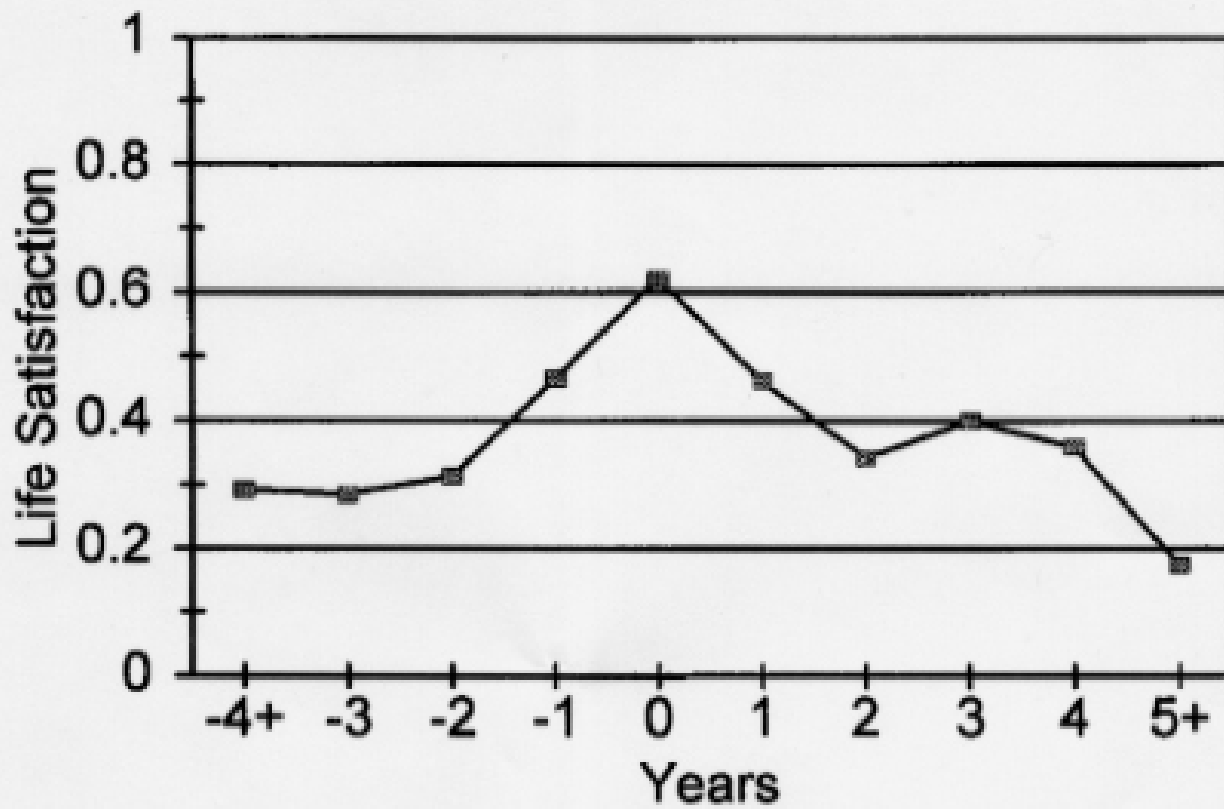
Despite a 250% increase in average real income in China from 1994 to 2005, no increase in reported life satisfaction

Overall Satisfaction With How Things Are Going in Life (Total Sample)

Overall, how satisfied or dissatisfied are you with the way things are going in your life today? Would you say you are very satisfied, somewhat satisfied, somewhat dissatisfied, or very dissatisfied?

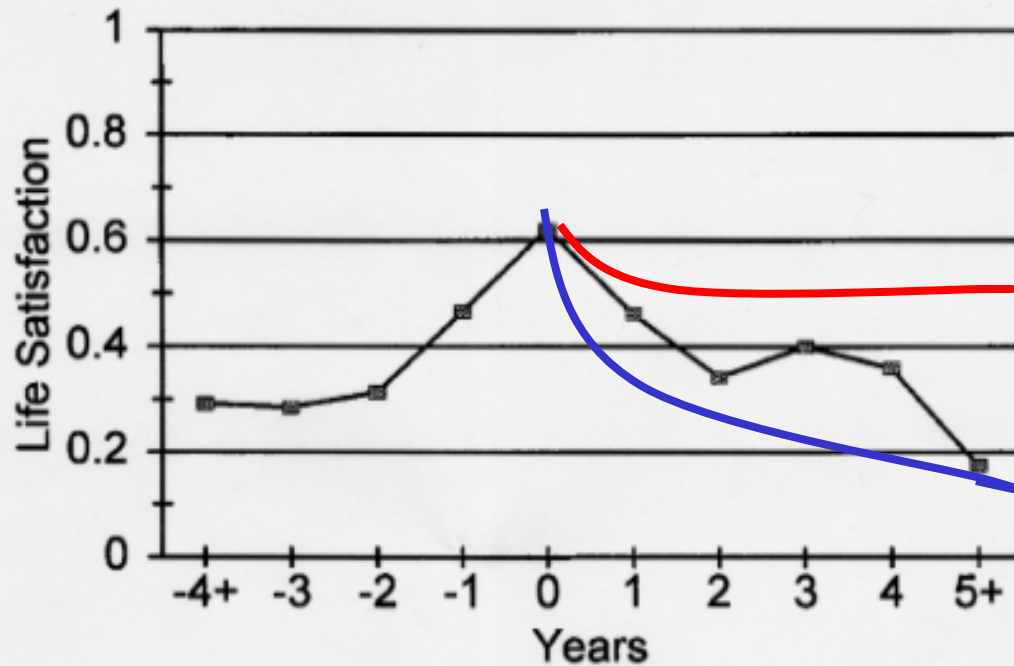


Marriage



Competing interpretations of the treadmill

Marriage



Affect adapts less than life satisfaction: Our initial hypothesis

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

Steps toward a Science of Well-Being

July 5, 2006

- **A ten-year project on well-being**
- **Focus on conceptual analysis and measurement**
- **Goal: a measure that**
 - ▶ can be used to compare populations, e.g., health states
 - ▶ can be used to guide and evaluate policy
- **Requirement: a measure that economists can respect**

Collaborators

➤ Long-term team

- ▶ Alan Krueger
- ▶ David Schkade
- ▶ Norbert Schwarz
- ▶ Arthur Stone

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➤ Comparison of well-being in USA and France

- ▶ Claude Fischler
- ▶ Alan Krueger
- ▶ David Schkade
- ▶ Amy Krilla

Outline

- 1. A hybrid model of well-being**
- 2. The Day-Reconstruction Method (DRM)**
- 3. Determinants of Experienced Happiness**
- 4. Happiness of women in two cities**
- 5. Whose lives are better?**
 - Comparing working women in the two countries
- 6. Determinants of life satisfaction**
- 7. The tradeoffs of a satisfying life**
- 8. The second dimension**
- 9. Conclusions and prospects**

1. A hybrid model of well-being: Living, and thinking about it

Life satisfaction as an aspect of well-being

- **Most of what we know about well-being based on reports of satisfaction with life**

“Considering everything, how satisfied are you with your life these days?”

- **The starting point of our work: doubts about the implied definition of well-being**

Two selves

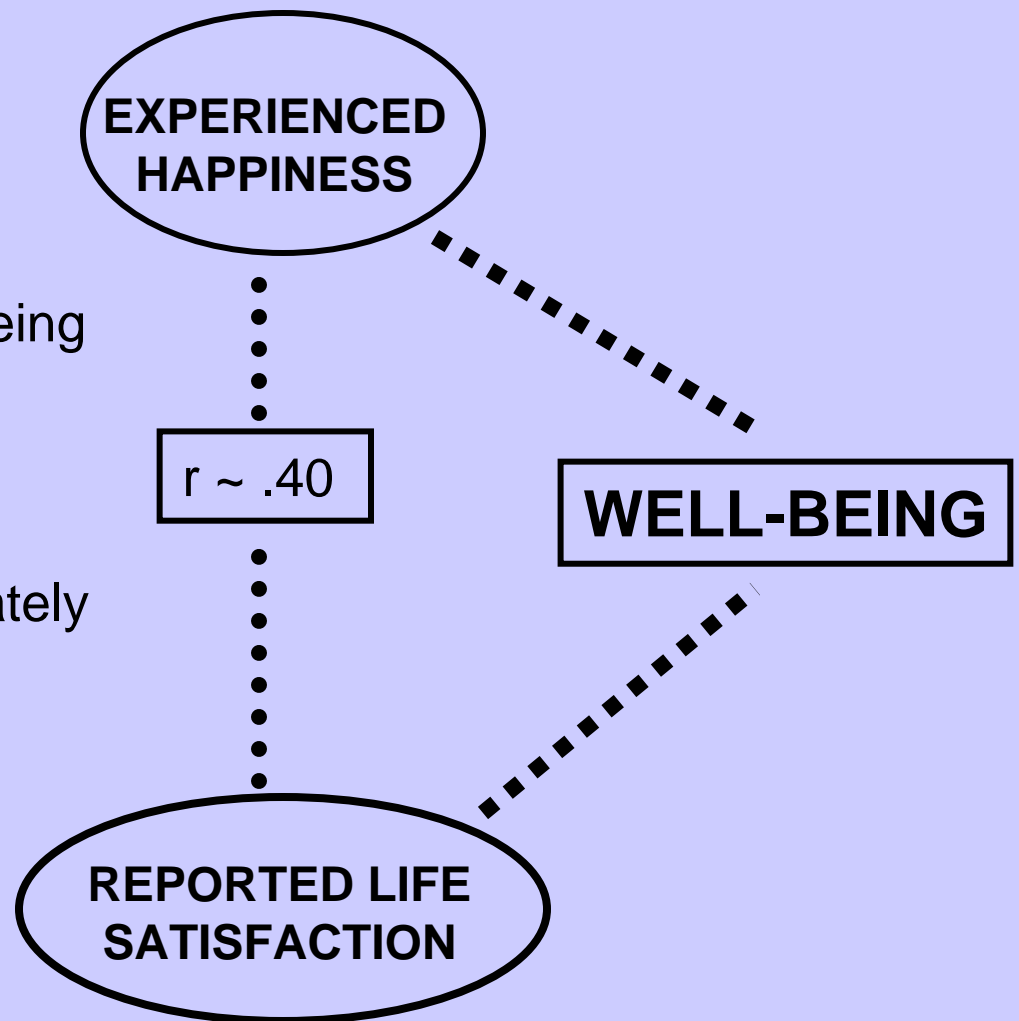
- **The experiencing self**
- **The remembering-evaluating self**

- **We should not take their agreement for granted**
- **The duration of pleasure and pain**
 - ▶ should count in assessing experiences
 - ▶ but duration is often ignored in retrospective evaluations

A hybrid model of subjective well-being

Neither of the aspects of well-being is expendable

They must be measured separately



A focus on time

- **Our definition of Experienced Happiness:**
 - ▶ Duration-weighting of good and bad experiences
- **Interest in time-use: what do people do with their time?**
- **Time-use is perhaps easier to control than other determinants of well-being**

- **The separate measurement of experienced happiness and life satisfaction**
 - ▶ raises new questions
 - ▶ may help resolve some ambiguities

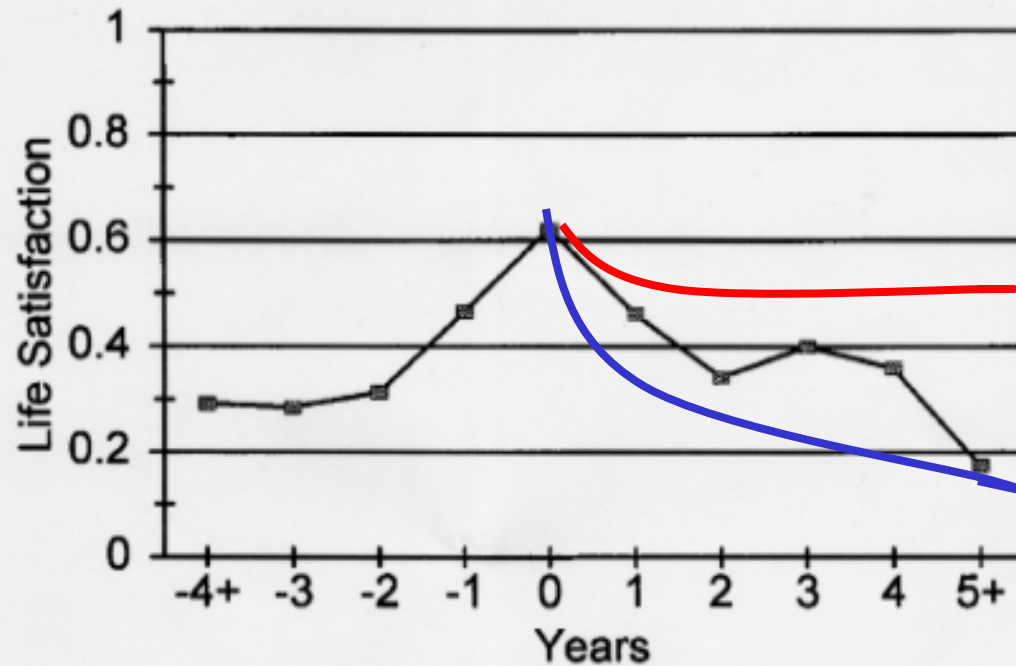
The emblematic result of WB research



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

Competing interpretations

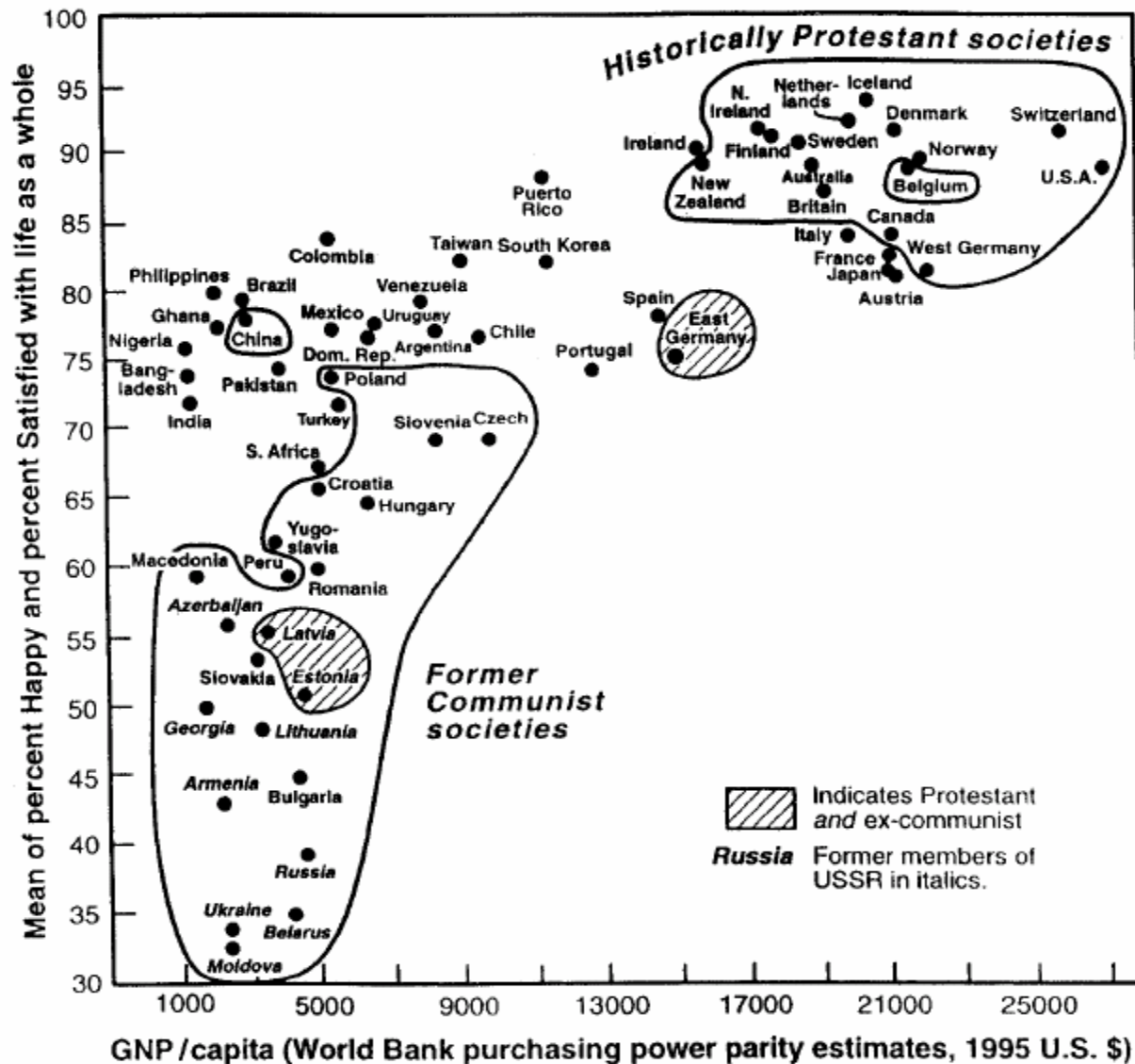
Marriage



— Experienced happiness adapts less than life satisfaction

— Experienced happiness adapts more than life satisfaction

Interpretations of country differences



2. The Day-Reconstruction Method (DRM)

The origin and goal standard of the DRM: 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
Tense	0	1	2	3	4	5	6

Our Procedure

- **Detailed reconstruction of a day**
 - ▶ **Parsed into episodes (typically ~ 15 per day)**
 - ▶ **Series of questions about each episode**

Were you alone?

no yes

Were you talking with anyone? (check one)

no one person more than one

If you were talking with or interacting with anyone, was it (check all that apply):

spouse, significant other

children

parents

other relatives

friends

co-workers

customers, students

boss

other people not listed

(specify) _____

What were you doing? (Please read the entire list carefully and check all that apply)

commuting, traveling

working

shopping, errands

doing housework

preparing food

child care

talking, conversation

playing

watching television

listening to music

listening to radio

home computer

reading

relaxing

grooming, self care

eating

exercising

walking, taking a walk

making love

rest/sleep

praying

other not listed

(specify) _____

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eating

exercising

walking, taking a walk

making love

rest/sleep

praying

other not listed

(specify) _____

If you checked several things you were doing at the same time, please circle the one that seemed the most important to you at the time.

What were you doing? (Please read the entire list carefully and check all that apply)

- | | | |
|-----------------------------------------------|------------------------------------------------|--------------------------------------------------------------|
| <input type="checkbox"/> commuting, traveling | <input type="checkbox"/> talking, conversation | <input type="checkbox"/> grooming, self care |
| <input type="checkbox"/> working | <input type="checkbox"/> playing | <input type="checkbox"/> eating |
| <input type="checkbox"/> shopping, errands | <input type="checkbox"/> watching television | <input type="checkbox"/> exercising |
| <input type="checkbox"/> doing housework | <input type="checkbox"/> listening to music | <input type="checkbox"/> walking, taking a walk |
| <input type="checkbox"/> preparing food | <input type="checkbox"/> listening to radio | <input type="checkbox"/> making love |
| <input type="checkbox"/> child care | <input type="checkbox"/> home computer | <input type="checkbox"/> rest/sleep |
| | <input type="checkbox"/> reading | <input type="checkbox"/> praying |
| | <input type="checkbox"/> relaxing | <input type="checkbox"/> other not listed
(specify) _____ |

If you checked several things you were doing at the same time, please circle the one that seemed the most important to you at the time.

The data I report are for **focal** activities

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			
Impatient for it to end . . .	0	1	2	3	4	5	6	
Competent / Confident . .	0	1	2	3	4	5	6	
Tense / Stressed	0	1	2	3	4	5	6	
Happy	0	1	2	3	4	5	6	
Depressed/blue	0	1	2	3	4	5	6	
Interested / focused	0	1	2	3	4	5	6	
Affectionate / friendly	0	1	2	3	4	5	6	
Calm / relaxed	0	1	2	3	4	5	6	
Irritated / angry	0	1	2	3	4	5	6	
Tired	0	1	2	3	4	5	6	

Duration-weighting

- **All individual measures of affect are duration-weighted:**
 - ▶ a score is assigned to each episode, and a duration-weighted average is computed for the whole day to characterize an individual

Our measures of Experienced Happiness

Difmax = 'Happy' - Max ('Tense', 'Depressed', 'Angry')

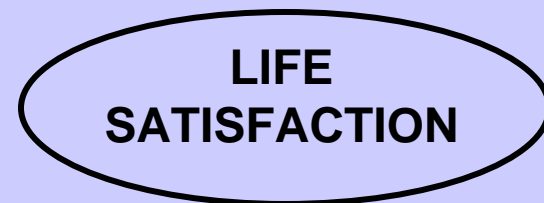
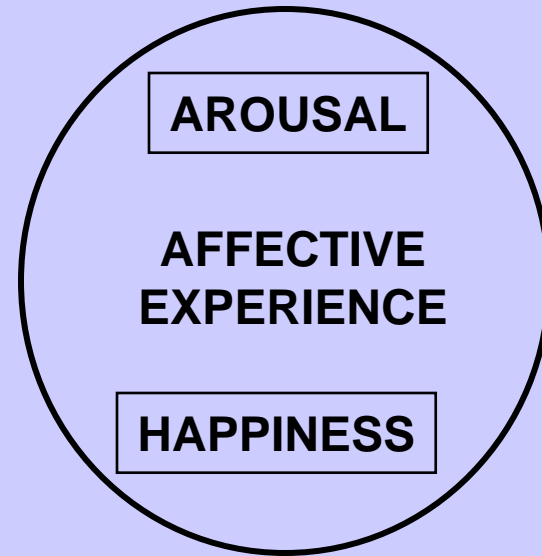
U-index = The proportion of time during which negative affect predominates (Difmax < 0)

Miscellaneous facts about the U-index

- **Average about 18% among American women**
 - ▶ 21% on weekdays
 - ▶ 14% on weekends
- **Very uneven distributions**
 - ▶ Top 10% of people account for almost 40% of total unpleasant-time
 - ▶ This is an underestimate of the true inequality
- **Implications for policy**
 - ▶ Focus on mental illness
 - ▶ Focus on improving use of time

3. Determinants of Satisfaction and of Affective Experience

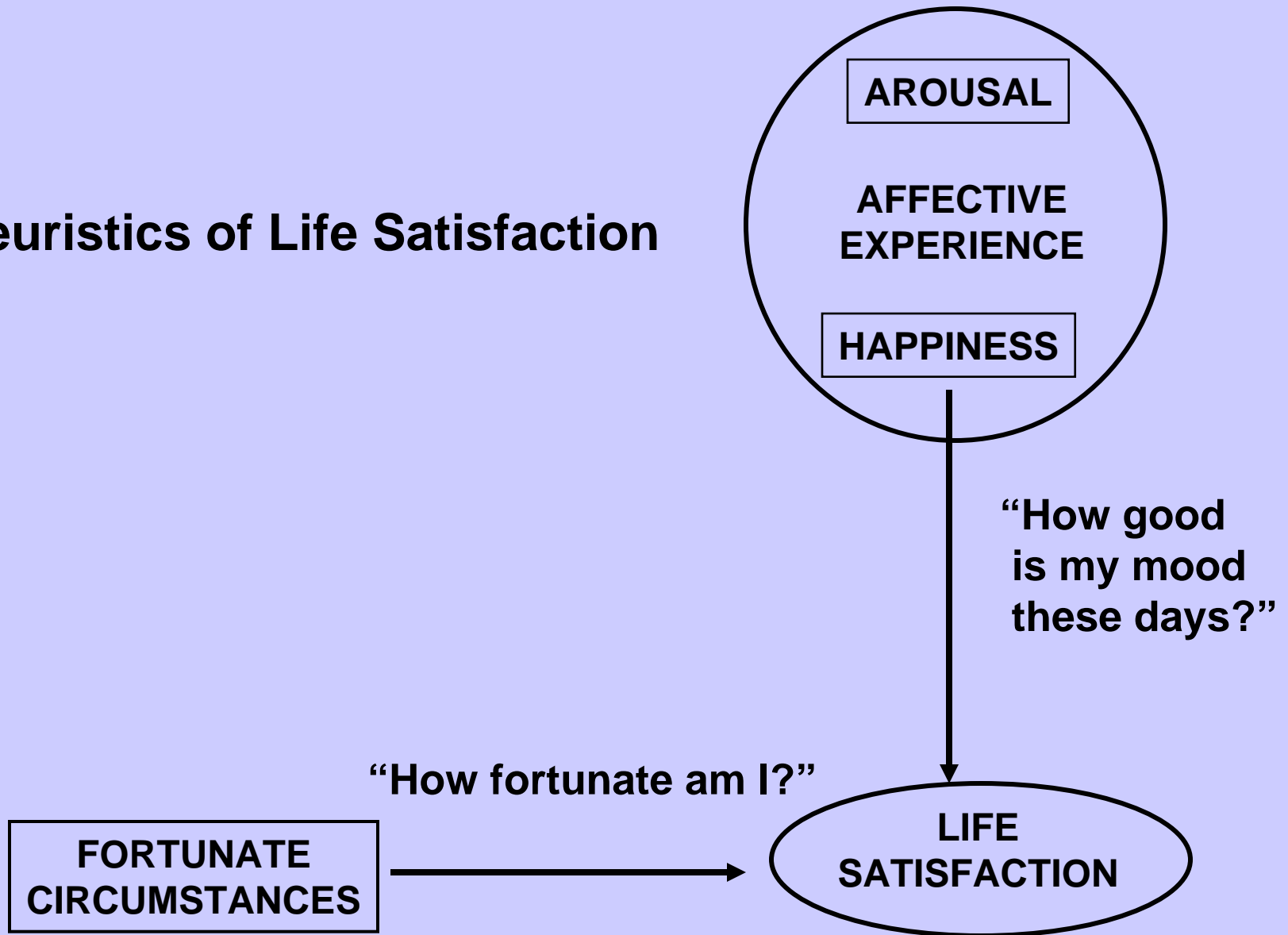
Constituents of well-being



Determinants of Life Satisfaction

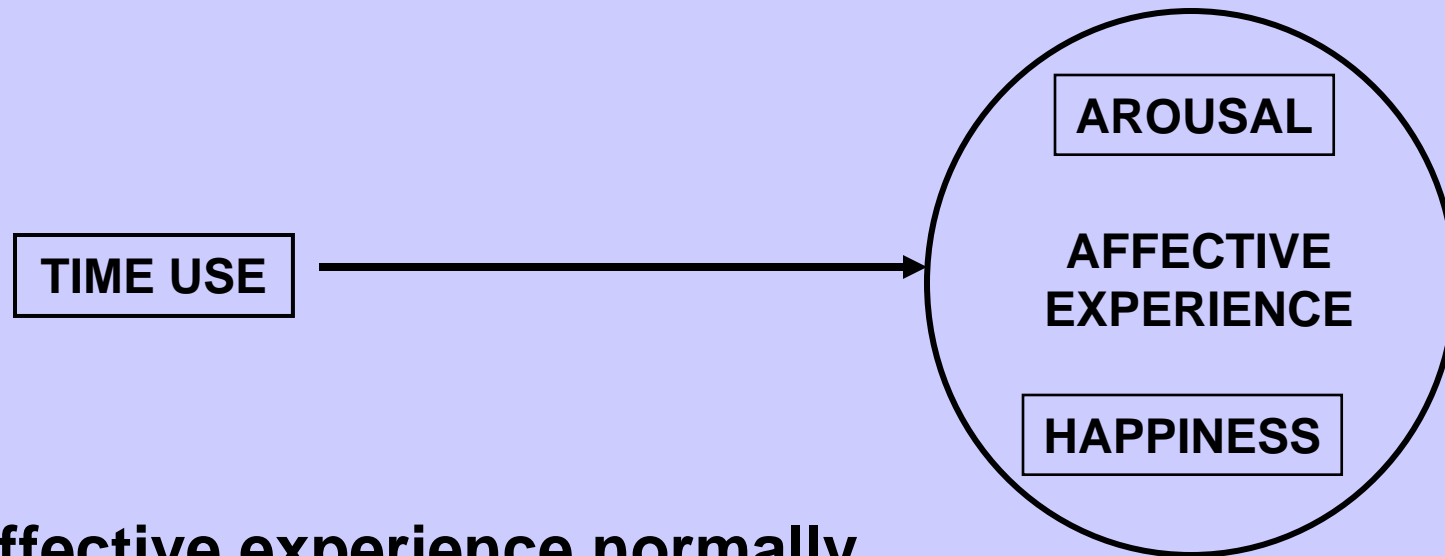
- **Life satisfaction is a judgment, not an experience**
- **It is evaluated when asked**
 - ▶ susceptible to context effects (e.g., dime on the counter)
- **Transformed into easier questions (heuristics):**
 - ▶ “How fortunate am I?”
 - ▶ “How good is my mood these days?”

Heuristics of Life Satisfaction



Determinants of Affective Experience

- **Personality**
- **The context of the moment**
 - ▶ mood varies considerably in the course of a day
- **Occasional preoccupations**
 - ▶ recent events, passionate love, bereavement

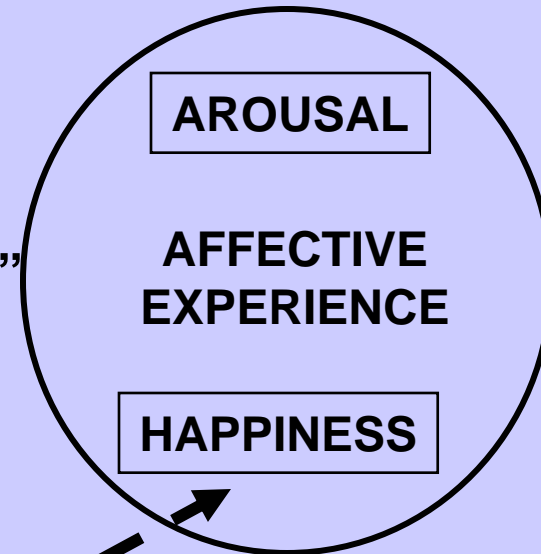


Affective experience normally depends (in addition to personality) on the circumstances of the moment

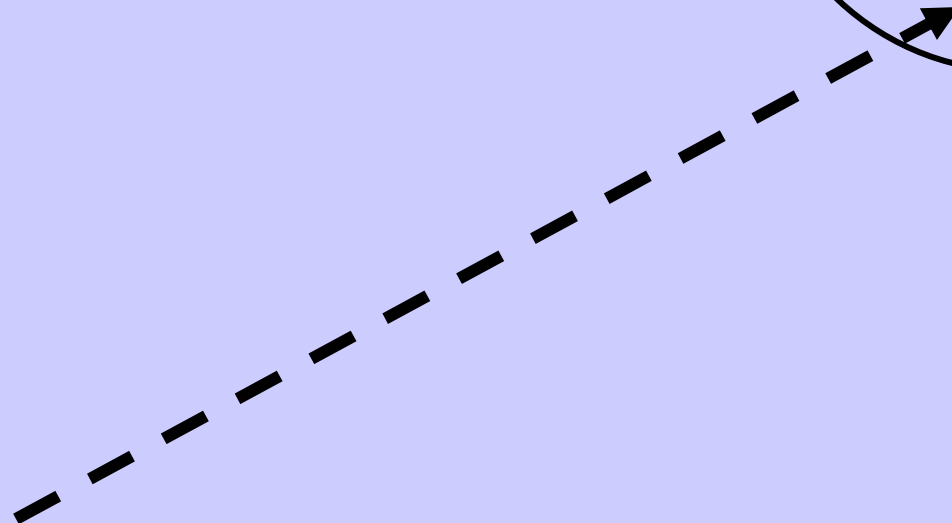
The frequently asked questions:

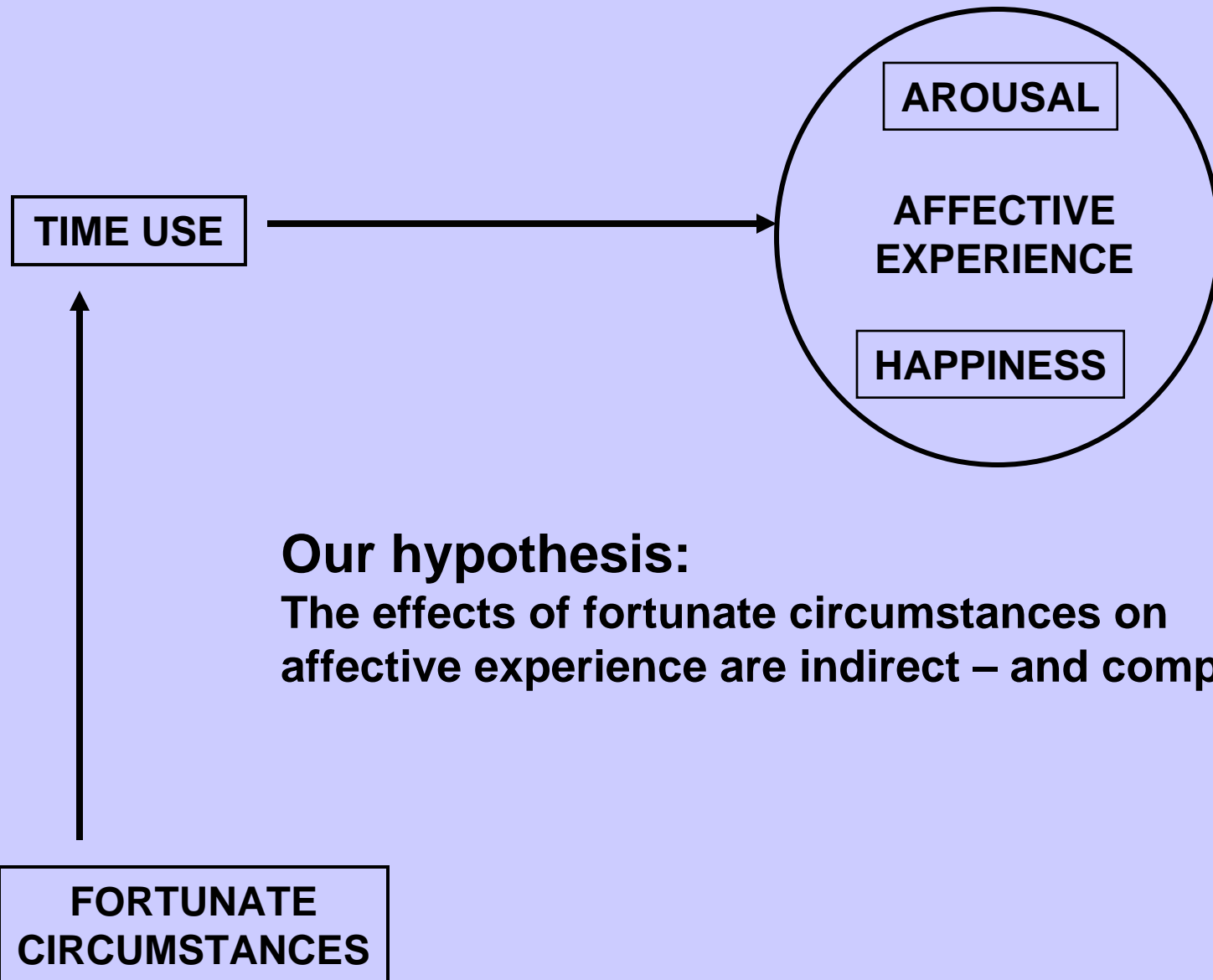
“are the rich happier than the poor?”

“are the married happier than the single?”



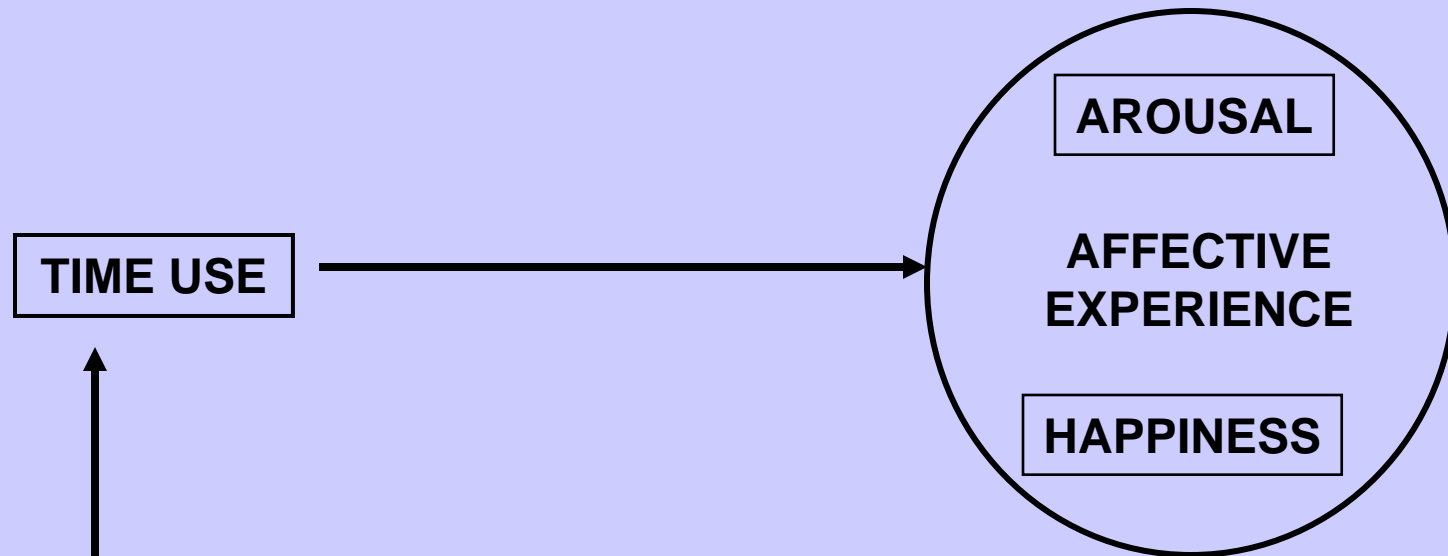
**FORTUNATE
CIRCUMSTANCES**



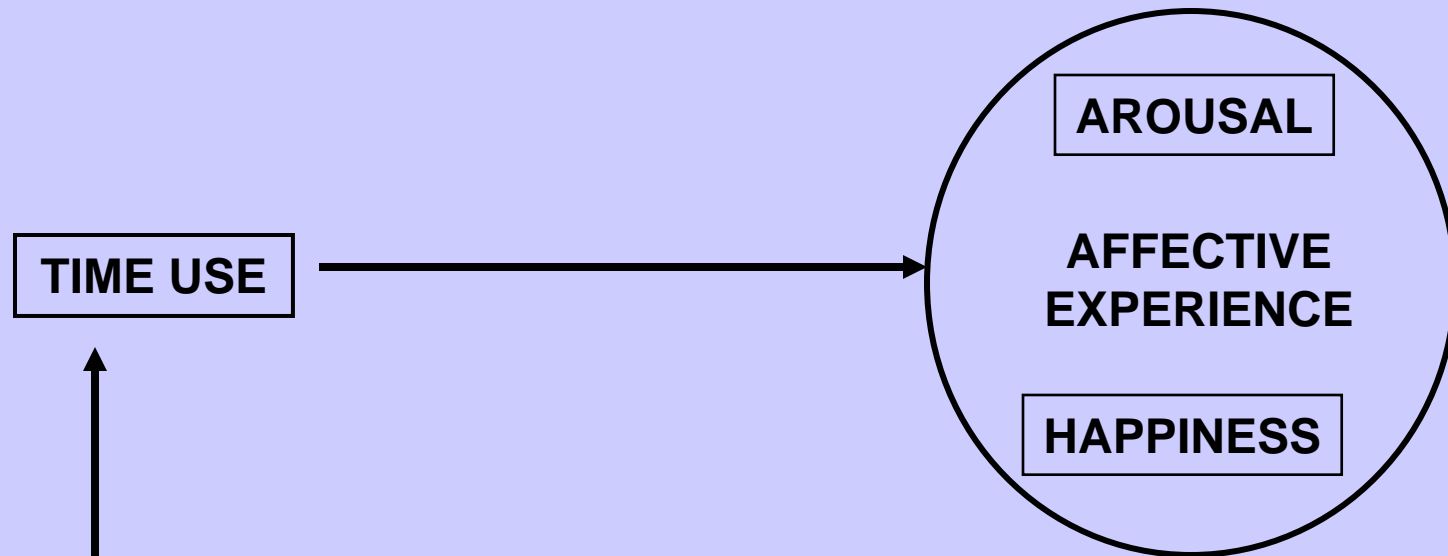


Our hypothesis:

The effects of fortunate circumstances on affective experience are indirect – and complex



Our findings:
very little effect of fortunate circumstances on happiness

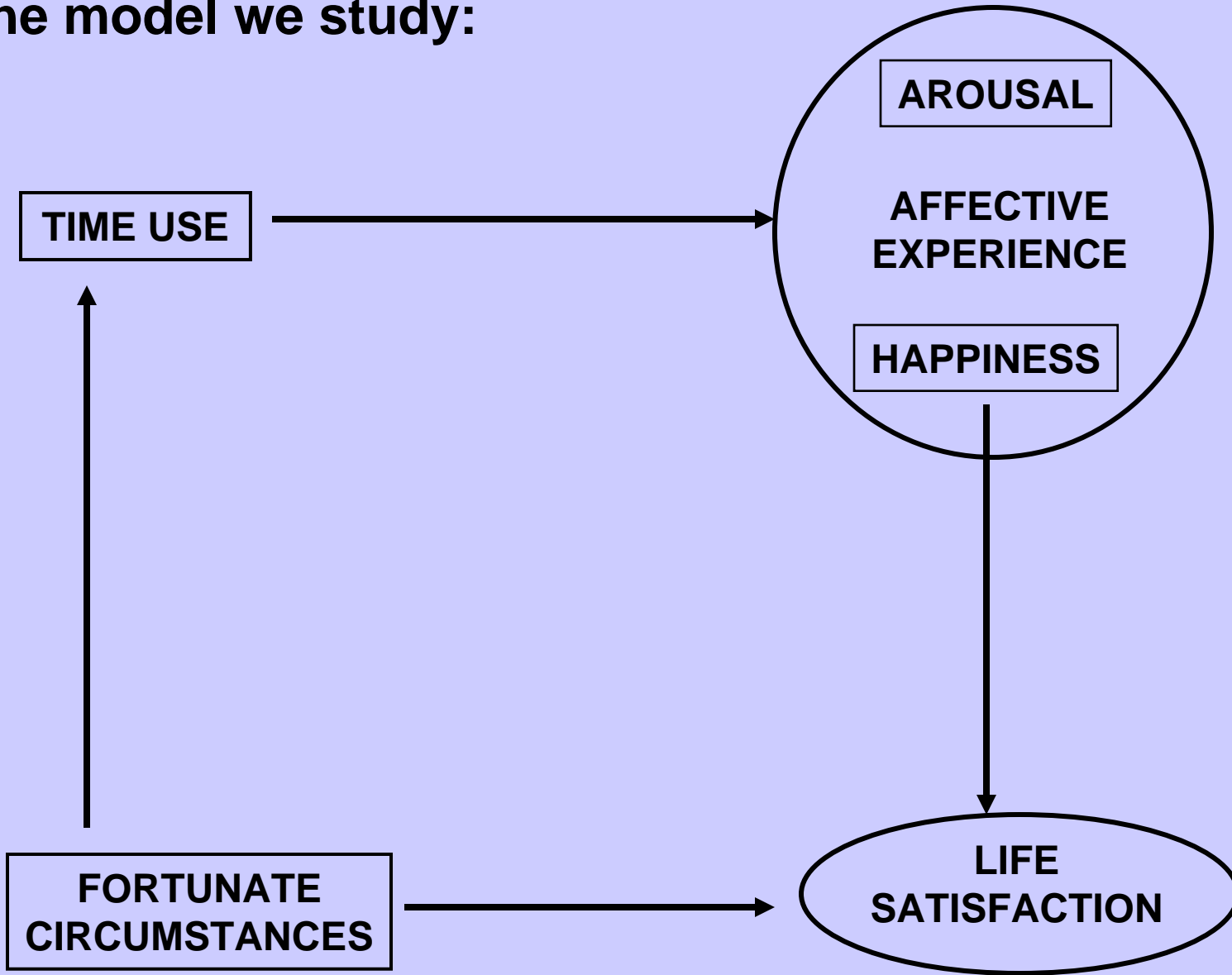


Our findings:

little effect of fortunate circumstances on happiness

**fortunate circumstances are associated with high arousal
on weekdays**

The model we study:



What are the proper weights?

- **When satisfaction and experienced happiness diverge or conflict --- which should count?**
 - ▶ This is a philosophical question
- **There is also an empirical question:**
 - ▶ *which of them influences health?*
 - ▶ Sheldon Cohen's results suggest that positive affect is critical

4. Happiness of women in two cities

The team:

Daniel Kahneman

Claude Fischler

David Schkade,

Alan Krueger

Amy Krilla

The data I will talk about

- **Fairly detailed knowledge of what happened in one day of the lives of many women, aged 18-60.**
- **Sample size** (after excluding students aged < 30)
 - ▶ 770 in Columbus, Ohio
 - ▶ 701 in Rennes, France
- **Participants recruited by random-digit dialing**
- **Their demographics resemble those of US and France**
- **But the sample is not a probability sample, generalize at your peril**

- **We used the Day-Reconstruction Method (DRM) to measure affective experience**
- **300 women in each country described a weekend day**

5. Determinants of Experienced Happiness

Personality

Corr with Difmax

-.41 **-.43**

Low Energy, vitality

During the past month, how much of a problem has it been for you to keep up enough enthusiasm to get things done?

.29 **.22**

Sleep quality

During the past month, how would you rate your overall sleep quality?

“How others see you”

Enthusiastic

Optimistic

Laughs easily

.28

Sees the bright side

Comfortable everywhere

Enjoys good food

Enjoys being with people

Pessimistic

Often worries for nothing

-.37 **-.29**

A bit depressed

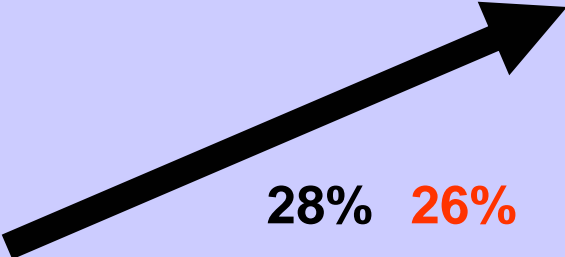
-.35

Often angry

-.38 **-.32**

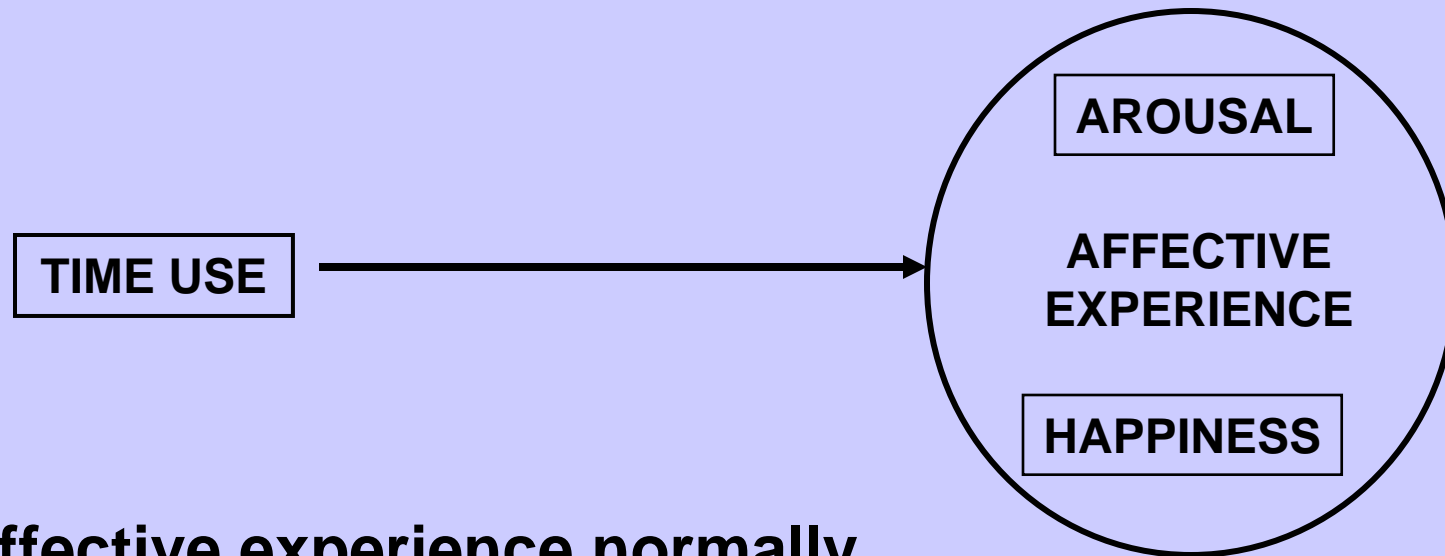
Tense and uncomfortable

**AFFECTIVE
DISPOSITION**



28% 26%

**EXPERIENCED
HAPPINESS**



Affective experience normally depends (in addition to personality) on the circumstances of the moment

Categories of activities

➤ Engaged leisure:

- ▶ making love, playing, reading, walking, praying

➤ Eating

➤ Talking

➤ Passive leisure:

- ▶ TV, relaxing, sleeping

➤ Home Compulsory

- ▶ housework, child care, shopping, preparing food

➤ Work and Commute

Time-Use (% of waking day)

COLUMBUS **RENNES**

Engaged Leisure	11.5	12.5
Eating	5.2	11.7
Talking	9.6	10.8
Passive Leisure	13.1	12.3
Home Compulsory	29.8	27.3
Work and Commute	22.2	19.3
SOCIAL	76.1	71.9
ALONE	23.9	28.1

- **We compute averages of Difmax or U-index for activities and interactions**
- **In this calculation all individuals who contribute data for an activity are weighted alike**

DIFMAX

COLUMBUS

RENNES

making love

making love

play

play

x

x

x

x

x

x

x

x

x

x

x

x

x

x

x

x

x

child care

x

x

x

x

x

housework

x

x

x

child care

shop

shop

housework

commute

work

work

commute

$r = .90$

Activity Categories – U-index

COLUMBUS

RENNES

Engaged Leisure

11.0

9.6

Eating

11.4

9.5

Talking

14.9

12.2

Passive Leisure

10.9

11.2

Home Compulsory

19.4

17.2

Work and Commute

27.8

24.0

SOCIAL

13.5

9.5

ALONE

17.9

18.1

SOCIAL ADVANTAGE

4.4

8.6

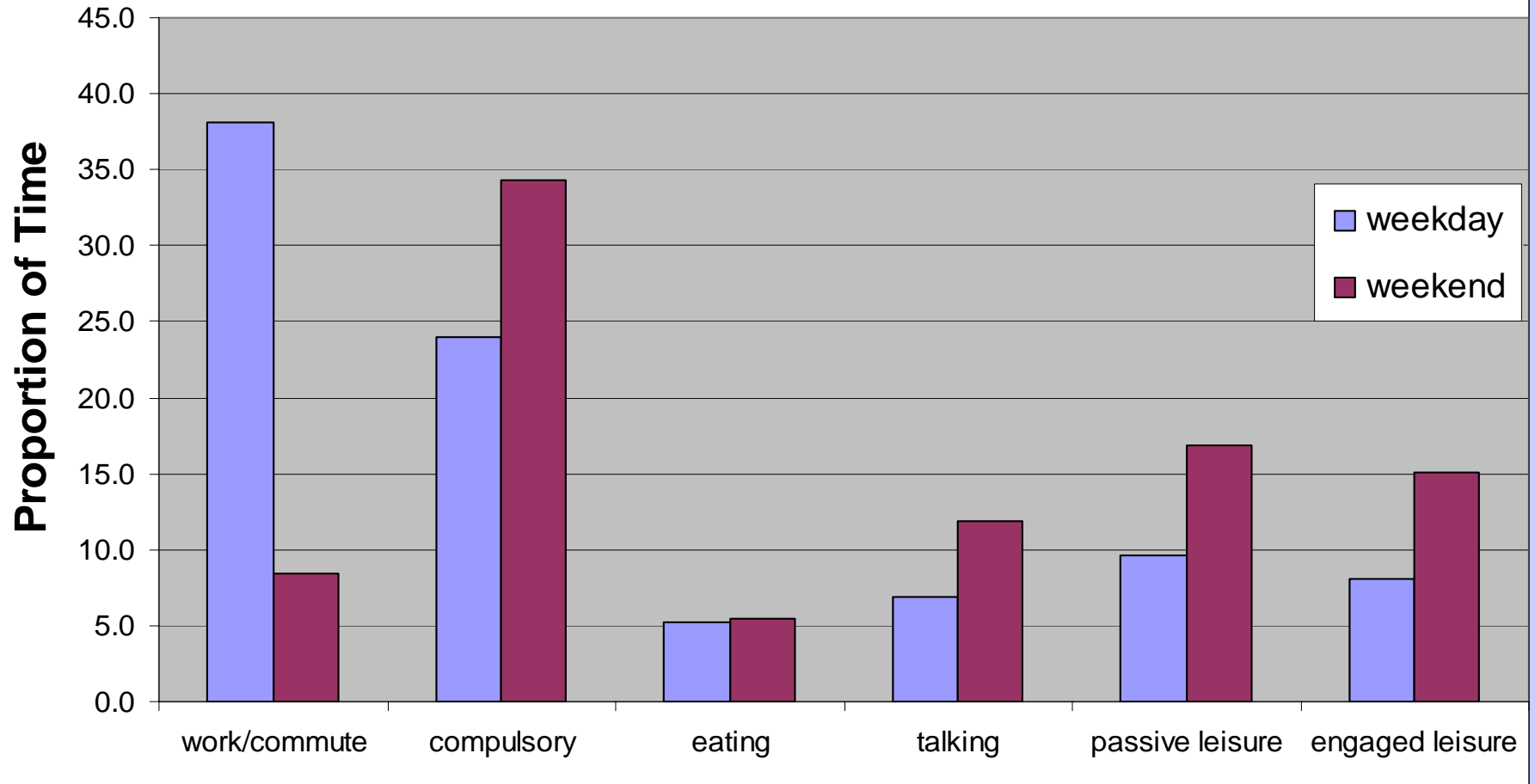
Activity Categories – U-index

COLUMBUS RENNES

Engaged Leisure	11.0	9.6
Eating	11.4	9.5
Talking	14.9	12.2
Passive Leisure	10.9	11.2
Home Compulsory	19.4	17.2
Work and Commute	27.8	24.0
SOCIAL	13.5	9.5
ALONE	17.9	18.1
SOCIAL ADVANTAGE	4.4	8.6

And a pet may be almost as good as a friend!

Why we are happier on weekends

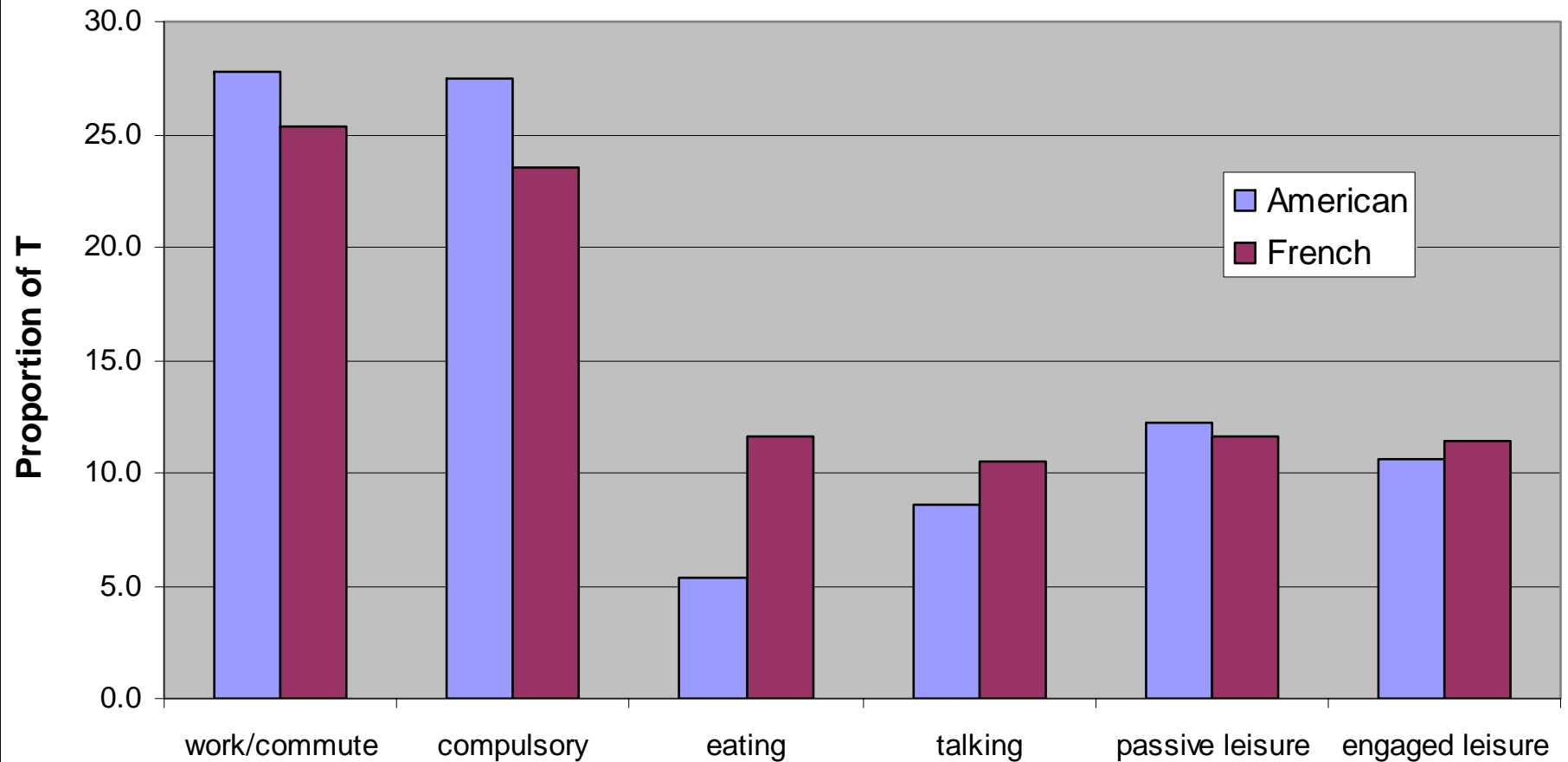


**U-index for Columbus working women is 21% on weekdays and 14% on weekends
Corresponding values in Rennes sample: 18% and 13.5%**

5. Whose lives are better?

Comparing working women in the two countries

Working women in Rennes have (slightly better) lives



U-index US-tastes

Columbus: 17.9% Rennes: 16.7% t = 5.29

U-index FR-tastes

Columbus: 16.2% Rennes: 15.1% t = 4.73

- **In a normal week, the French advantage exists only on weekdays**
- **The overall French advantage is increased significantly (but not dramatically) by incorporating vacation days**

6. Determinants of Life Satisfaction

Life Satisfaction: Diener-Emmons Scale

Agreement with five statements (7-point scale)

“In most ways, my life is close to ideal.”

“The conditions of my life are excellent.”...

Determinants of Satisfaction and Happiness Columbus

L.SAT E.HAP

Household Income	.36**
Has mate	.27**
Education	.23**
Lives with child <6	.11**
Age	.02
Non-white	-.22**
Unemployed	-.13**
Body-Mass Index	-.13**
Health problem	-.09*

Determinants of Satisfaction and Happiness Columbus

L.SAT E.HAP

Household Income	.36**	>	.10**
Has mate	.27**	>	.04
Education	.23**	>	.00
Lives with child <6	.11**	>	-.03
Age	.02	<	.08*
Non-white	-.22**	>	-.09*
Unemployed	-.13**	>	-.04
Body-Mass Index	-.13**	>	.03
Health problem	-.09*	>	-.04

Determinants of Satisfaction and Happiness

Rennes

SAT HAP

Has mate	.38**
Household Income	.35**
Lives with child <6	.23**
Education	.22**
Unemployed	-.18**
Health problem	-.10**
Body-Mass Index	-.10*
Age	-.08*
Body-Mass Index	-.10*

Determinants of Satisfaction and Happiness

Rennes

SAT HAP

Has mate	.38**	>	.12
Household Income	.35**	>	.08*
Lives with child <6	.23**	>	.09*
Education	.22**	>	-.06
Unemployed	-.18**	>	-.07
Health problem	-.10**	>	-.01
Body-Mass Index	-.10*	>	.01
Age	-.08*	>	-.05
Body-Mass Index	-.10*	>	.01

The Good-Fortune Index (GFI) in Two Cities:

Beta weights for life satisfaction

Columbus **Rennes**

	Columbus	Rennes
Household Income	.24**	.15**
Has mate	.08*	.25**
Education	.11**	.12**
White (US)	.09*	
Unemployed		.19
Lives with child <6	.12**	.12**
Health problem	.08*	
Age		-.08*

- **In both samples, satisfying circumstances account for more than 20% of the variance of life satisfaction**
- **The same variables account for 1%-2% of the variance of Experienced Happiness**

7. Costs and benefits of a satisfying life

Benefits and Costs – Having a mate (US)

% time

no mate

has mate

Benefits and Costs – Having a mate (US)

% time	no mate	has mate
alone	28%	15%

Benefits and Costs – Having a mate (US)

% time	no mate	has mate
alone	28%	15%
immediate, nuclear family	17%	38%

Benefits and Costs – Having a mate (US)

% time	no mate	has mate
alone	28%	15%
immediate, nuclear family	17%	38%
intimates (friends, family)	16%	3%

Benefits and Costs – Having a mate (US)

% time	no mate	has mate
alone	28%	15%
immediate, nuclear family	17%	38%
intimates (friends, family)	16%	3%
compulsory home tasks	23%	31%

Benefits and Costs – Having a mate (US)

% time	no mate	has mate
alone	28%	15%
immediate, nuclear family	17%	38%
intimates (friends, family)	16%	3%
compulsory home tasks	23%	31%
discretionary activities	41%	35%

Benefits and Costs – Having a mate (US)

% time	no mate	has mate
alone	28%	15%
immediate, nuclear family	17%	38%
intimates (friends, family)	16%	3%
compulsory home tasks	23%	31%
discretionary activities	41%	35%

Back to marriage: is this a mystery?



Back to marriage: is this a mystery?



Time use data focus our attention on the steady state of marriage

Back to marriage: is this a mystery?



Time use data focus our attention on the steady state of marriage

In the steady state, there may be no mystery

Time-use correlates of Good Fortune

Difference between top and bottom thirds (minutes)

	COLUMBUS	RENNES
Engaged Leisure	1	-4
Eating	13	8
Talking	-9	10
Passive Leisure	-57	-38
Home Compulsory	86	19
Work and Commute	8	35
SOCIAL	105	166

8. Conclusions and prospects

The joy of a new hammer: many nails

- **New tools may provide new perspectives**
- **The new tools proposed here:**
 - ▶ bottom-up measurement of experienced happiness
 - ▶ detailed study of time-use
- **Advancing the goal of National Well-Being Accounts:**
 - ▶ Alan Krueger and the modified ATUS
- **Advancing the goals of measuring the burden of illness and the burden of ageing**

Improving well-being

- **Can experienced happiness and life satisfaction be jointly improved?**
- **Time-use may be the determinant of well-being that is the most susceptible to improvement**
 - ▶ by the individual
 - ▶ in the context of policy

The end