# Week 4:  Indirect mood assessment and learnings from your homeworks…

# Positive & negative bias perception

(e.g., Halberstadt, Niedenthal, and Kushner, 1995; Bouhuys, Bloem, and Groothuis, 1995; Mayer and Salovey, 1993; Niedenthal and Kitayama, 1994)

| Positive | Negative |
|----------|----------|
| Band | Banned |
| Presents | Presence |
| Morning | Mourning |
| Pour | Poor |
| Sweet | Suite |
| Won | One |
| Pane | Pain |
| Heal | Heel |
| Dear | Deer |
| Peace | Piece |

# Forgas & Moylan (1987)

After the movies:  P asked to fill out a brief public-opinion-survey (13 questions)

- Political judgments
- Likelihood of future events
- Judging responsibility and guilt
- Satisfaction with personal and work life

# Forgas & Moylan (1987)

Experimental design:  Why are these important?

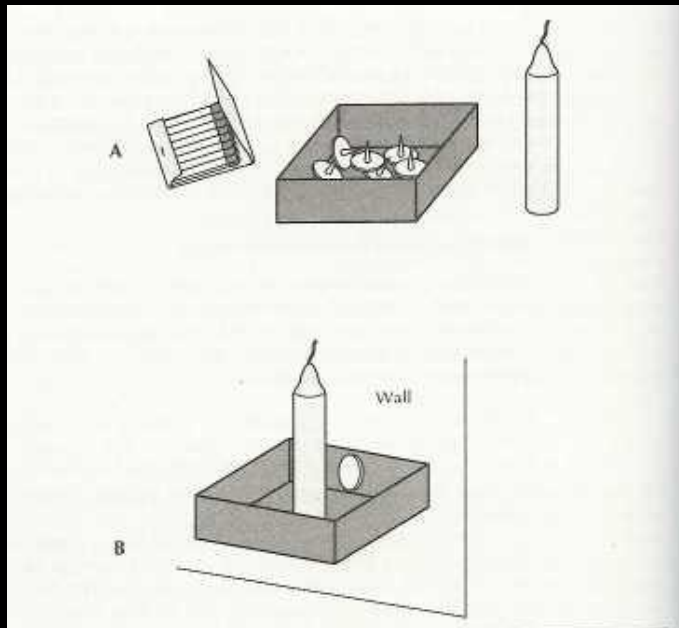Experimenter blind to hypothesis

Check mood as LAST question (not sooner)

Check moods going in (separate study)

Age, gender, SES influences

# Isen et al. Positive affect enhances creativity

Improves solving of Duncker's Candle Task, leads to greater Remote Word associations;  Isen, Daubman, and Nowicki, 1987;  Isen, Johnson, Mertz, and Robinson, 1985



**Duncker's Candle Task:**  Affix the candle to the wall and light it, in such a way that it doesn't drip on the ground.   (20% -> 75%)

# Isen et al. 1987 Methodology

- Why have them rate the pleasantness of unfamiliar words up front (but after the pos/neutral film shown?)
- Why include a "facilitative control?"
- Why did candy bar manipulation likely fail?
- Why include easy + moderate + hard items on Remote Associates Test?

# Case study: can we tell if a new typography provides a better experience for the reader?

- Measure: speed of reading, ease of reading, reading comprehension, "do you like the appearance?"
  - These show no difference

- The experts *think* the "aesthetic experience" is better
  - Solution: Measure
    1. direct affective experience while reading
    2. results of having had a positive-affect experience

# Case study:  can we tell if a new typography provides a better experience for the reader?

**Indirect measures hypothesized:
If you have had a positive experience,**

Then you are more likely to underestimate the time spent on the task

Then you will be better at solving creative problems

# We found (N=20) in comparing "good" typography to "bad":

No difference in self-reported liking of the experience (questionnaires with Likert scales)

Significant underestimating of the time spent on the reading task for the "good" type

Better performance solving two kinds of creative problems for the "good" type

# When is a good time for a mobile system to interrupt you?


Image courtesy of Reflex Blue on flickr. License CC BY-NC.


Image courtesy of Peter Parkes on Wikimedia Commons. License CC-BY.


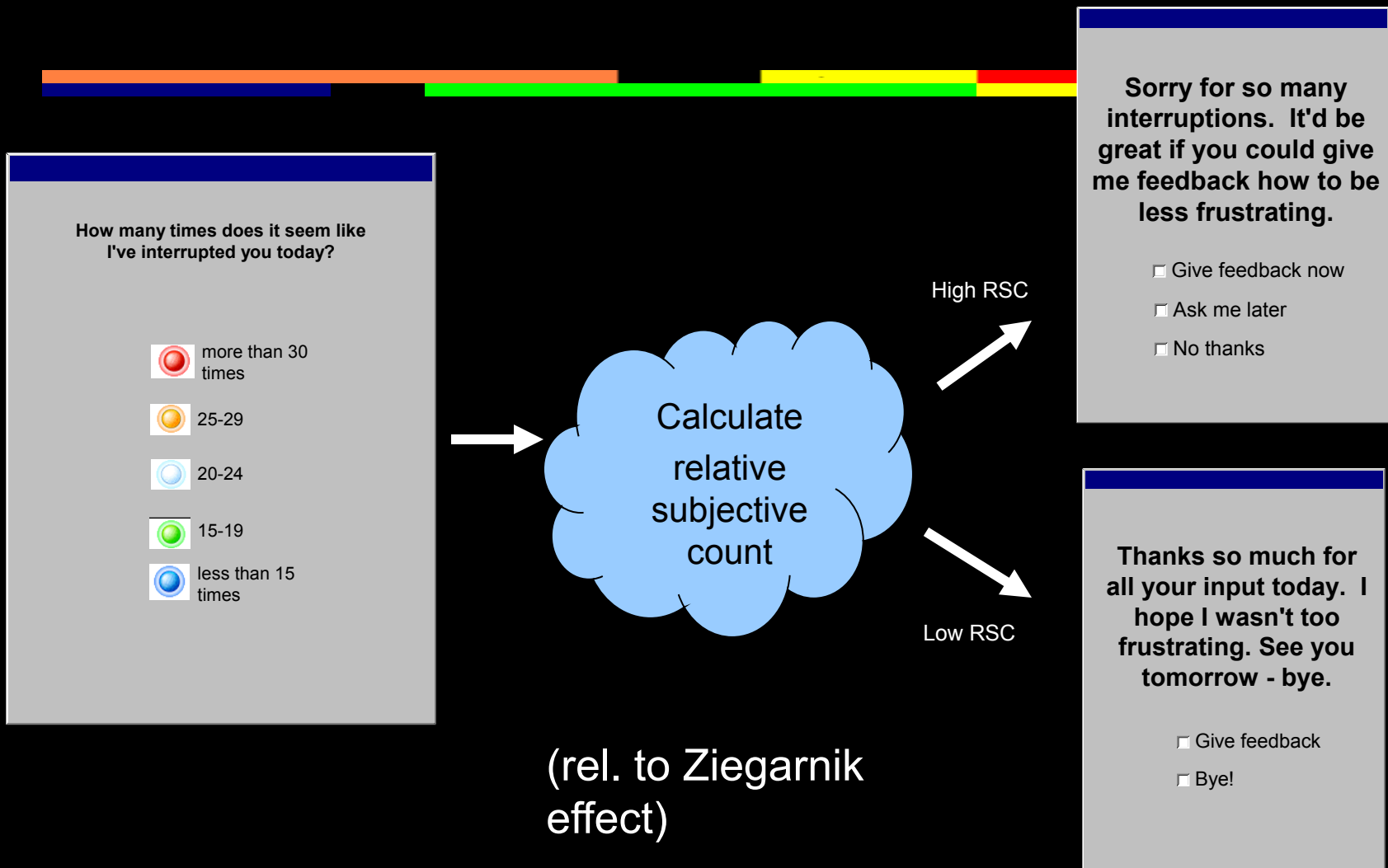Image courtesy of Bryan Collick on flickr. License CC BY-NC-SA.



Will empathetic response help if it interrupts at a bad time, or if you are stressed?

**Fitsense EKG, Accelerometer and Location Sensors wirelessly talk to Cell Phone or HP IPAQ**

# Measuring frustration?

**How many times does it seem like I've interrupted you today?**

- 🔴 more than 30 times
- 🟠 25-29
- ⚪ 20-24
- 🟢 15-19
- 🔵 less than 15 times

Calculate relative subjective count

(rel. to Ziegarnik effect)

High RSC

**Sorry for so many interruptions. It'd be great if you could give me feedback how to be less frustrating.**

☐ Give feedback now

☐ Ask me later

☐ No thanks

Low RSC

**Thanks so much for all your input today. I hope I wasn't too frustrating. See you tomorrow - bye.**

☐ Give feedback

☐ Bye!

Goal:  Technology learns patterns of activity, stress, good/bad timing & adapts to these

Challenge:  Get LOTS of annotated data from people

Problem:  Users HATE to be interrupted all day to ask for data.

*"You can't pay them enough to be a subject" – Lisa Feldman-Barrett*

?Solution:  Empathy?

# Each interaction can be initiated by user or by system:

If user initiates interaction to annotate, the interaction looks like this:

# Each interaction can be initiated by user or by system:

When the system initiates interaction (interrupts user), the interaction looks like this:

- S: Morning, Jane!
- S: Do you have a minute?
- U: Yes.
- S: You know the drill -- feeling stressed?
- U: Its there - but not the worst.
- S: Thanks so much for all your input.  I hope I haven't been too frustrating.

# In "Empathetic" condition the dialogue also includes red text:

- S: Morning, Jane!
- S: Do you have a minute?
- U: Yes.
- S: You know the drill -- feeling stressed?
- U: Its there - but not the worst.
- S: Wish it was better.  Hope things start looking up.
- S: Thanks so much for all your input.  I hope I haven't been too frustrating.

**"How many times does it seem like the system interrupted you today?"** *(N=10 subjects)*

System 1:  (empathetic)

Actual interruptions = 496, User estimate = 336

**336/496 = 0.677**

System 2:  (non-empathetic)

Actual interruptions = 295,  User estimate = 292

**292/295 = 0.989**

t(45), p = .0024 between these two "relative subjective counts"

WHY LOOK AT MOOD?

The World Health Organization (WHO) reports that one suicide happens every 40 seconds, and that suicide is increasing at a rate that is predicted **to be 1 suicide every 20 seconds by the year 2020**

Major Depressive Disorder is the leading cause of **disability** in the U.S. for ages 15-44. (World Health Org. 2004)

Depression affects **30 million** adults in the U.S. (Kessler et al 2003)

41,149 suicides were reported in 2013 (CDC 2013)

"#1 Problem in Africa" (IBM Africa)

# References

Halberstadt, J. B., P. M. Niedenthal, et al. "Resolution of Lexical Ambiguity by Emotional State." *Psychological Science* 6, no. 5 (1995): 278-82.

Bouhuys, A. L., G. M. Bloem, et al. "Induction of Depressed and Elated Mood by Music Influences the Perception of Facial Emotional Expressions in Healthy Subjects." *Journal of Affective Disorders* 33, no. 4 (1995): 215.

Mayer, John D., and Peter Salovey. "The Intelligence of Emotional Intelligence." *Intelligence* 17 (1993): 433-42.

Niedenthal, Paula M., and Shinobu Kitayama. *The Heart's Eye: Emotional Influences in Perception and Attention*. Academic Press, 1994. ISBN: 978-0124105607.

Joseph, P. F., and Moylan Stephanie. "After the Movies : Transient Mood and Social Judgments." *Personality and Social Psychology Bulletin* 13, no. 4 (1987): 467-77.

# References cont.

Isen, A. M., K. A. Daubman, et al. "Positive Affect Facilitates Creative Problem Solving." *Journal of Personality and Social Psychology* 52 no. 6 (1987): 1122-31.

Isen, A. M., M. M. Johnson, et al. "The Influence of Positive Affect on the Unusualness of Word Associations." *Journal of Personality and Social Psychology* 48, no. 6 (1985): 1413-26.

Kessler, R. C., P. Berglund, et al. "The Epidemiology of Major Depressive Disorder: Results from the National Comorbidity Survey Replication (ncs-R)." *Jama* 289, no. 23 (2003): 3095-105.

MIT OpenCourseWare
http://ocw.mit.edu

MAS.630 Affective Computing
Fall 2015

For information about citing these materials or our Terms of Use, visit: http://ocw.mit.edu/terms.