

Psychophysiological Measures of Emotion

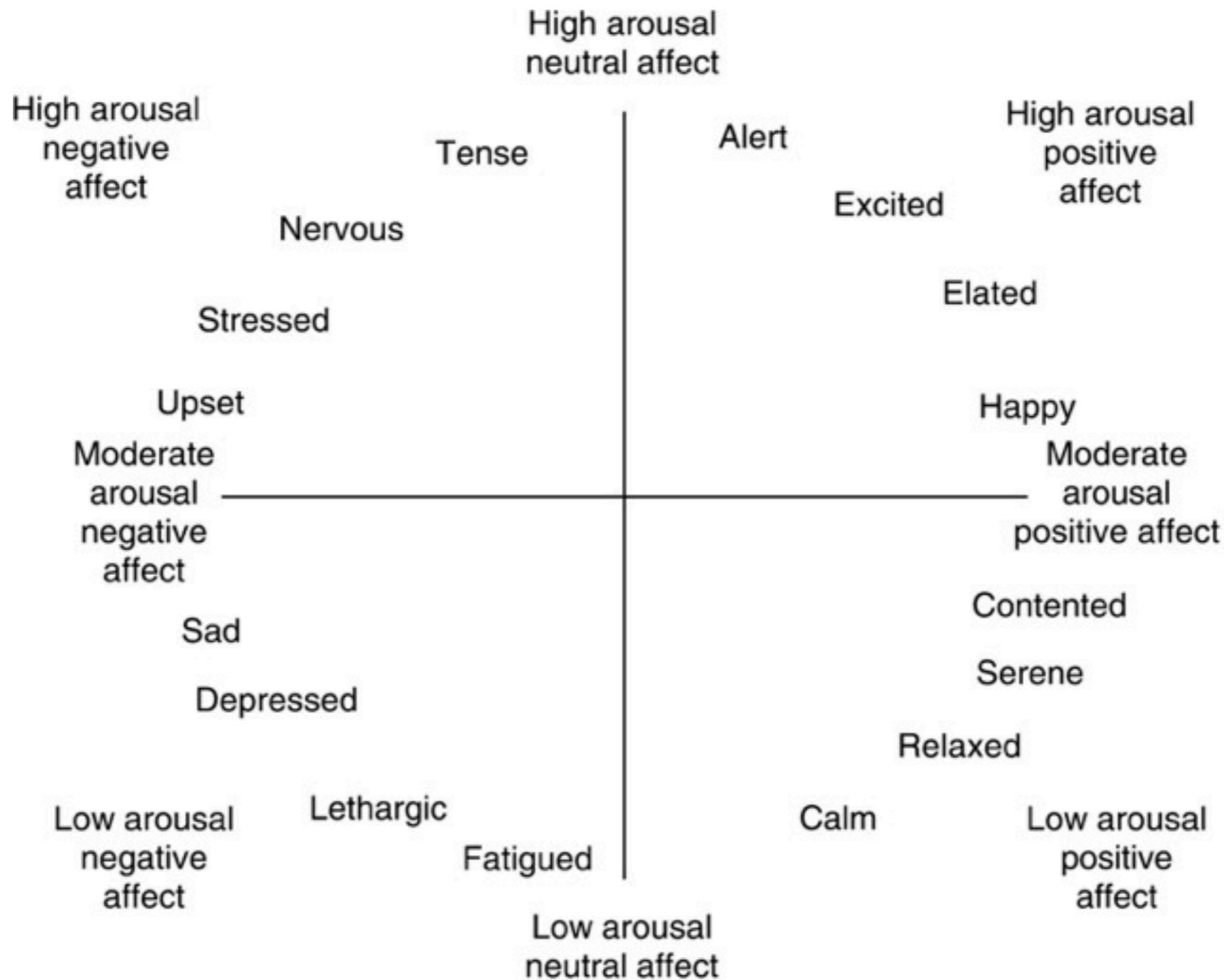
Application in experimental economics

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Laboratory of Experimental Economics
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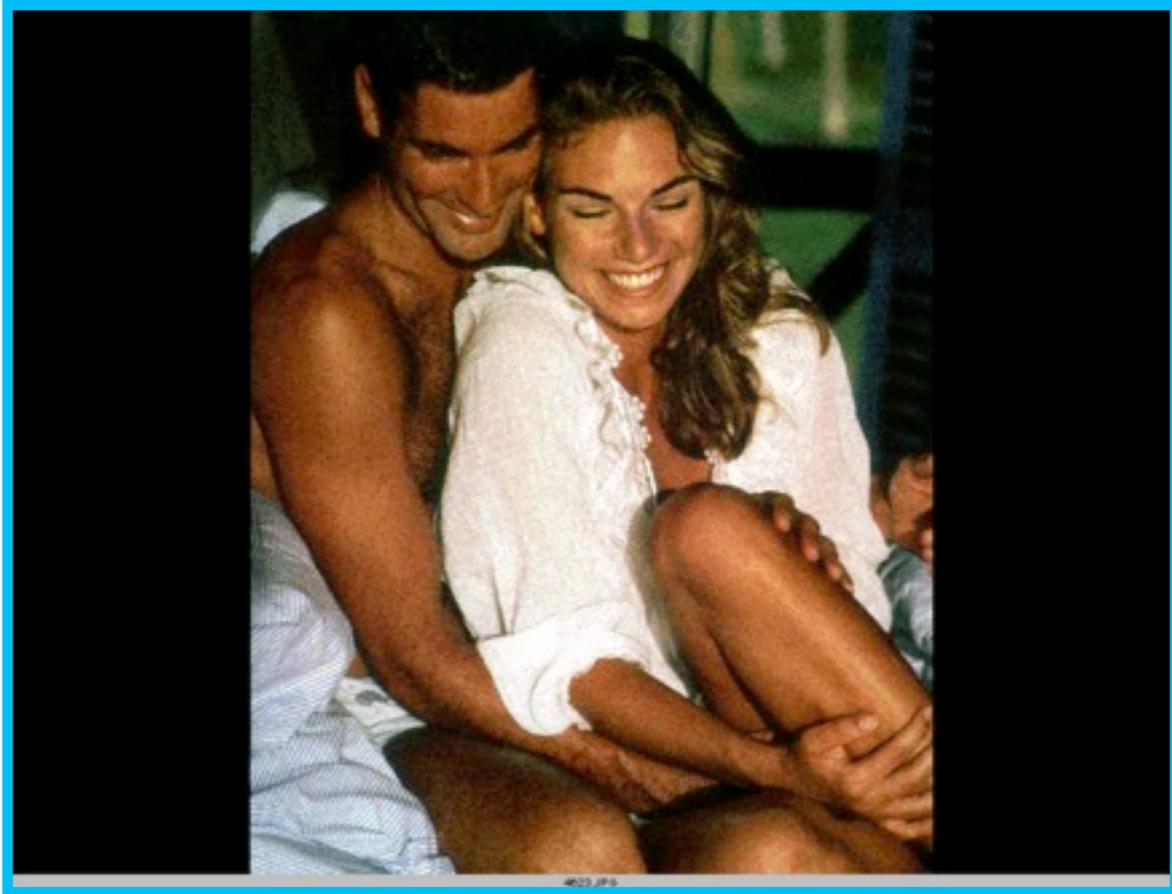
March 20, 2013

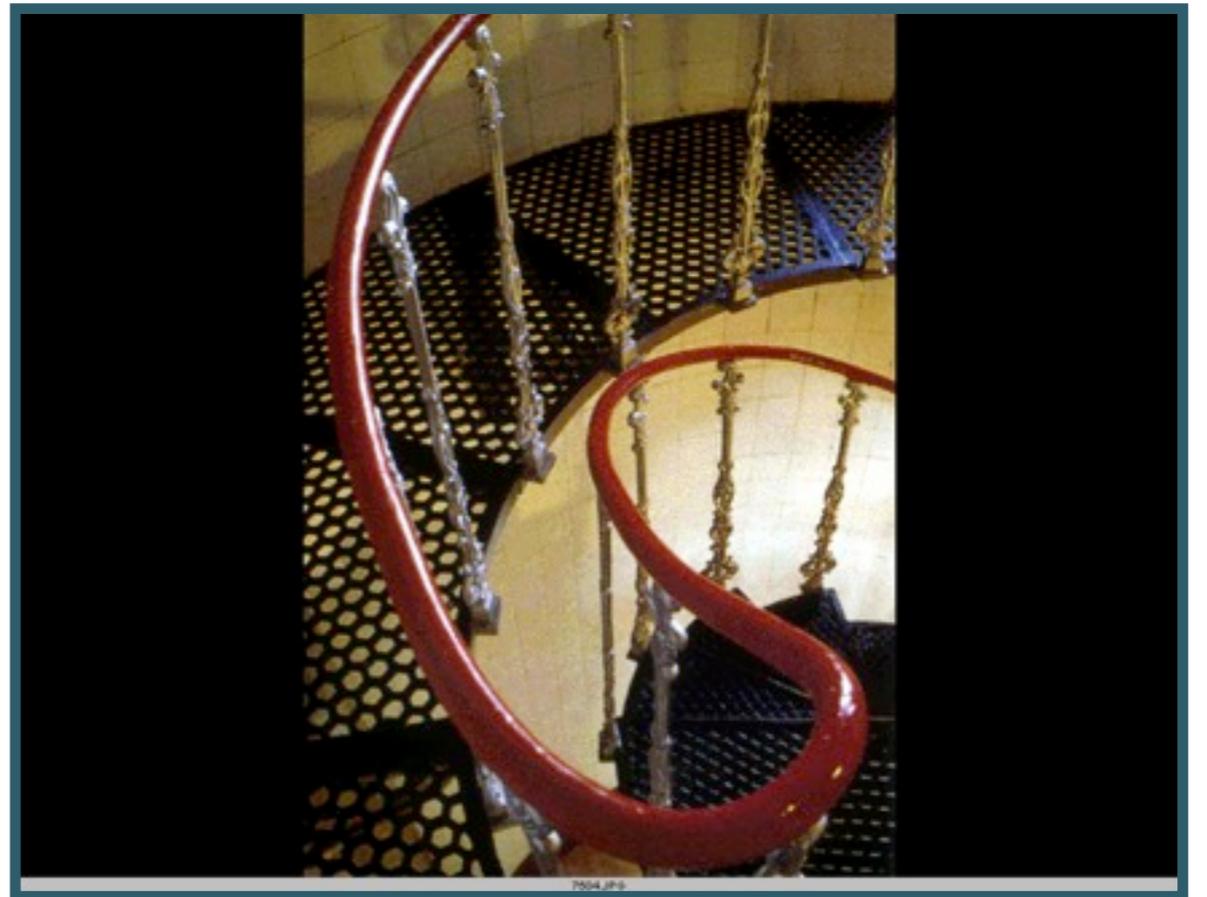
The Affective Space

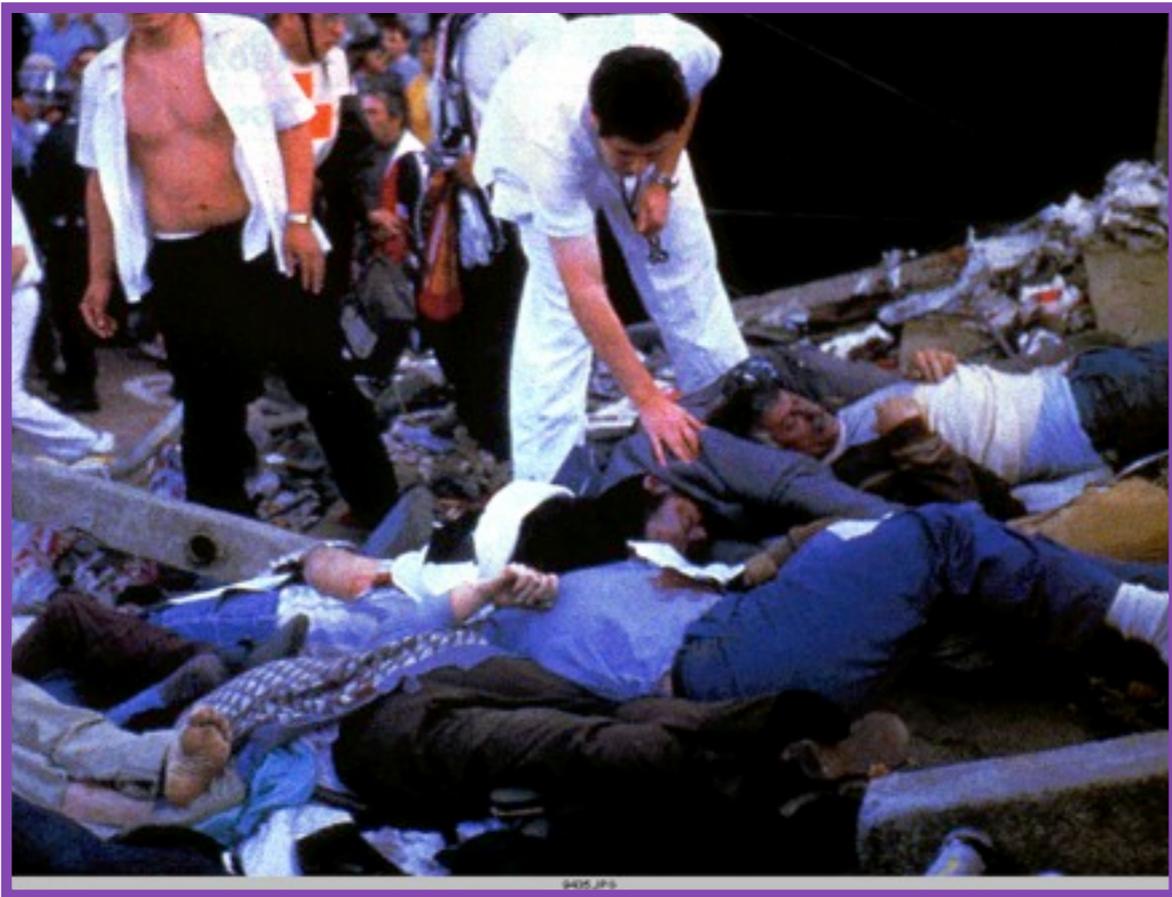


Russell, 1980; Watson y Tellegen, 1985; Bradley y Lang, 1994;
Feldman, 1995

The Picture Viewing Paradigm

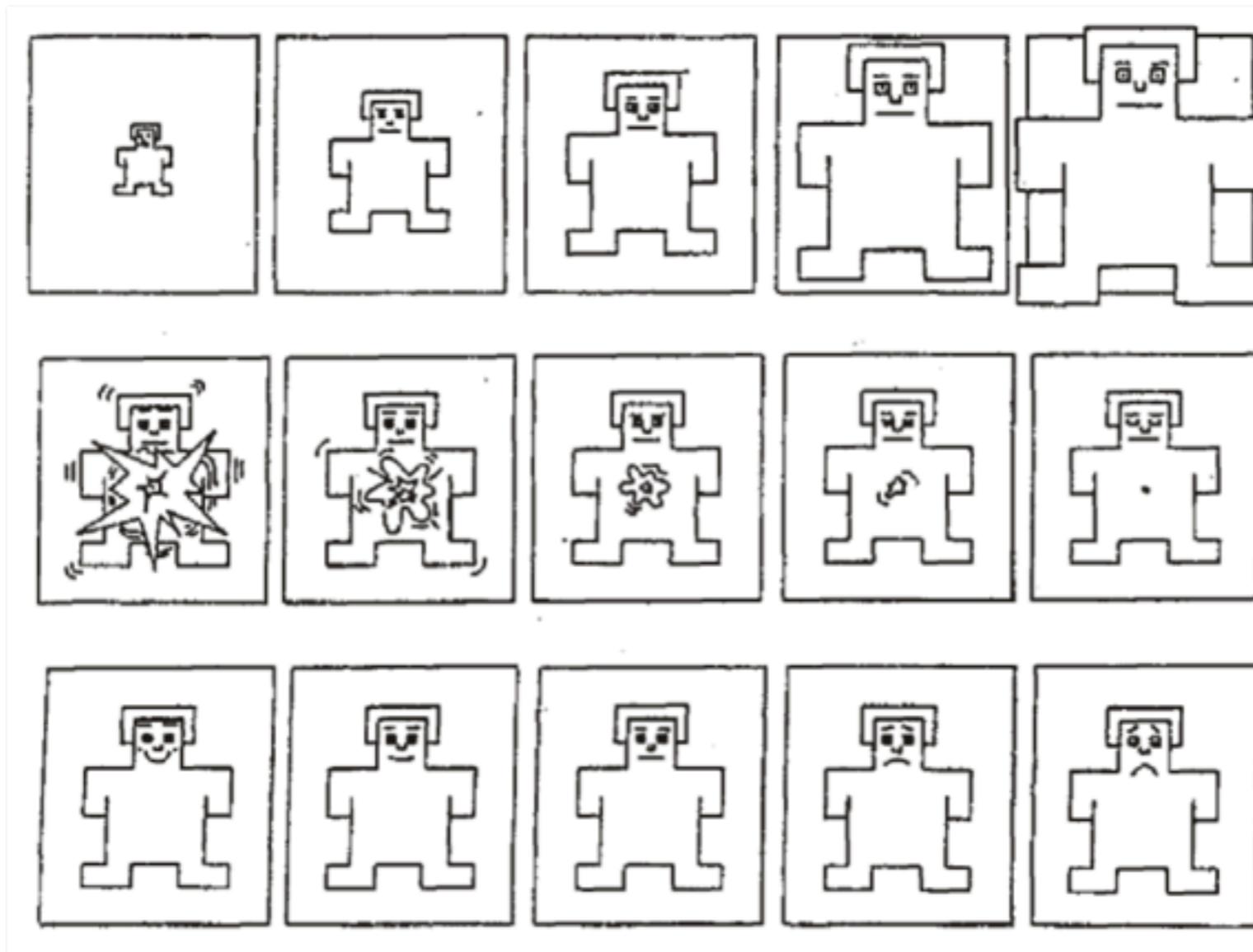






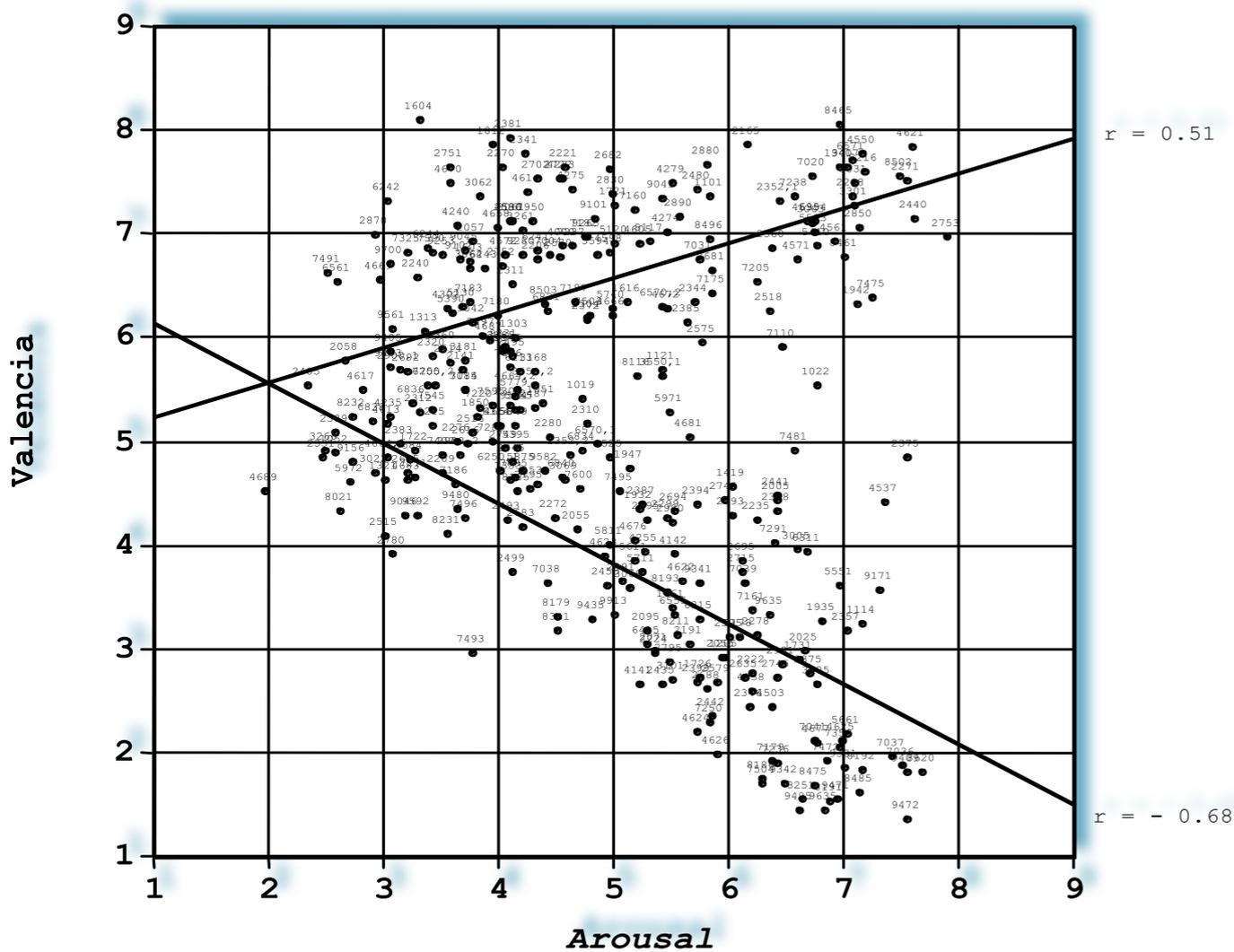
Subjective Evaluation

The self-assessment manikin

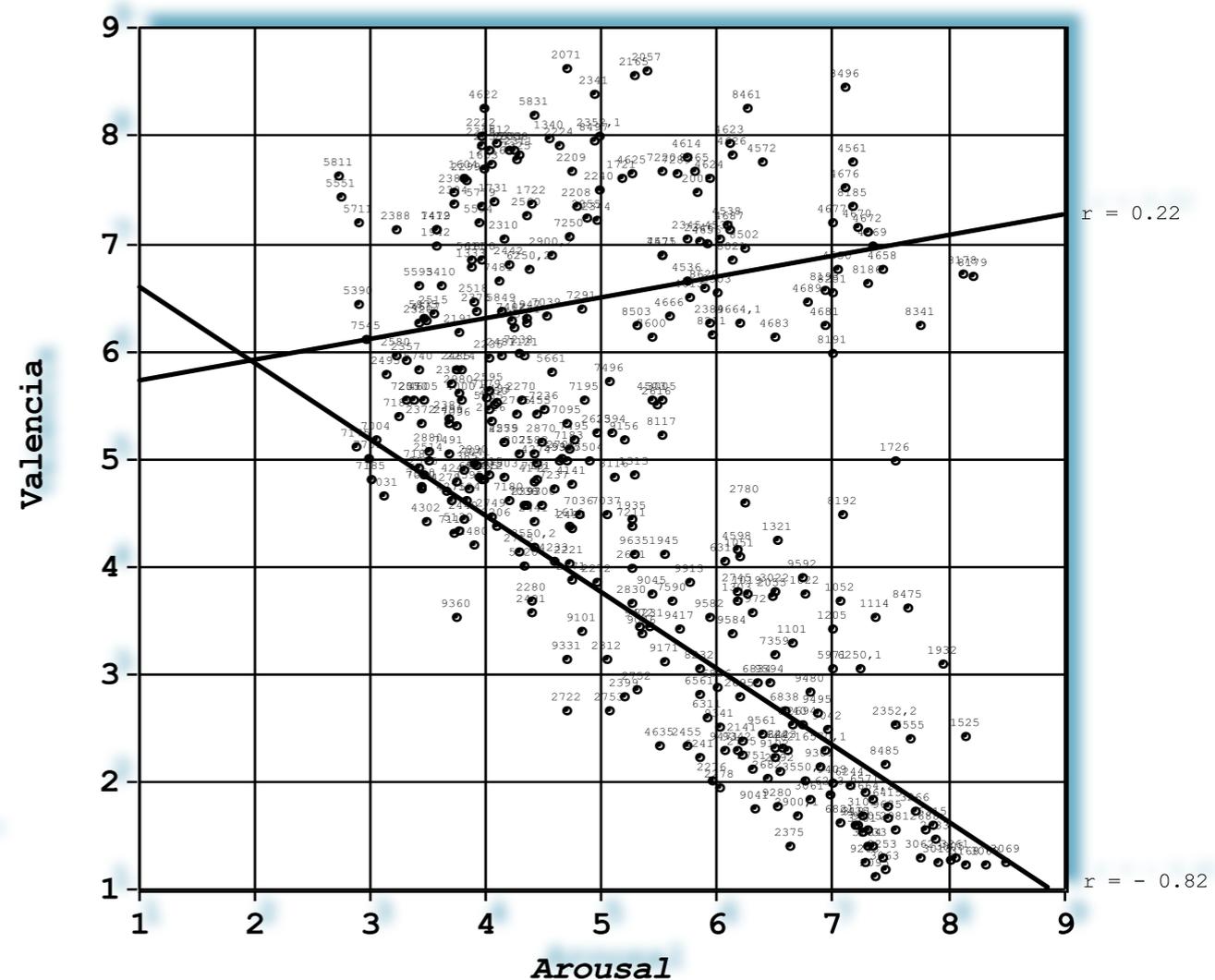


Bradley & Lang, 1994, *J. Behav. Ther. & Exp. Psychiat.*

The bidimensional affective space



Male

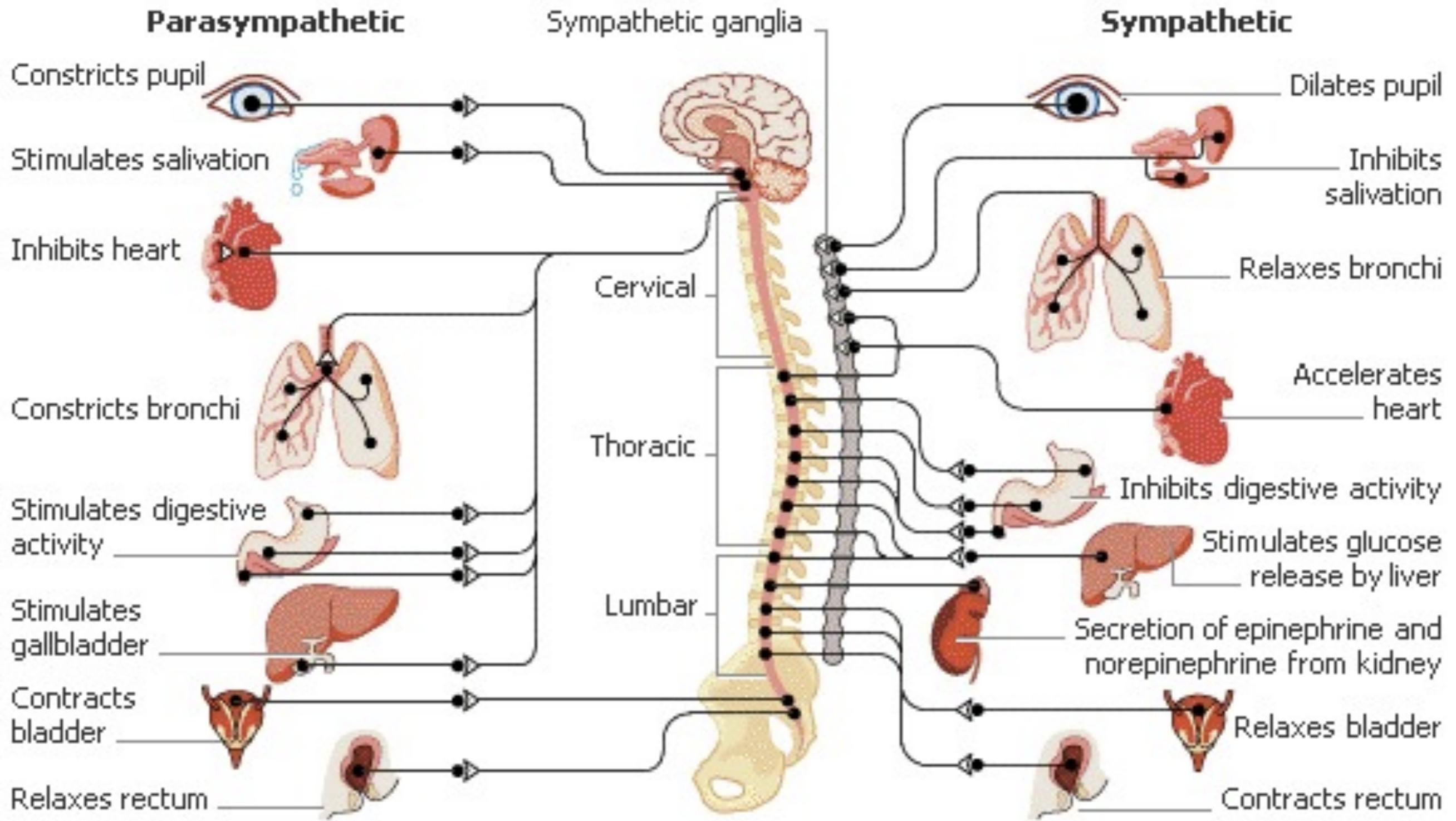


Female

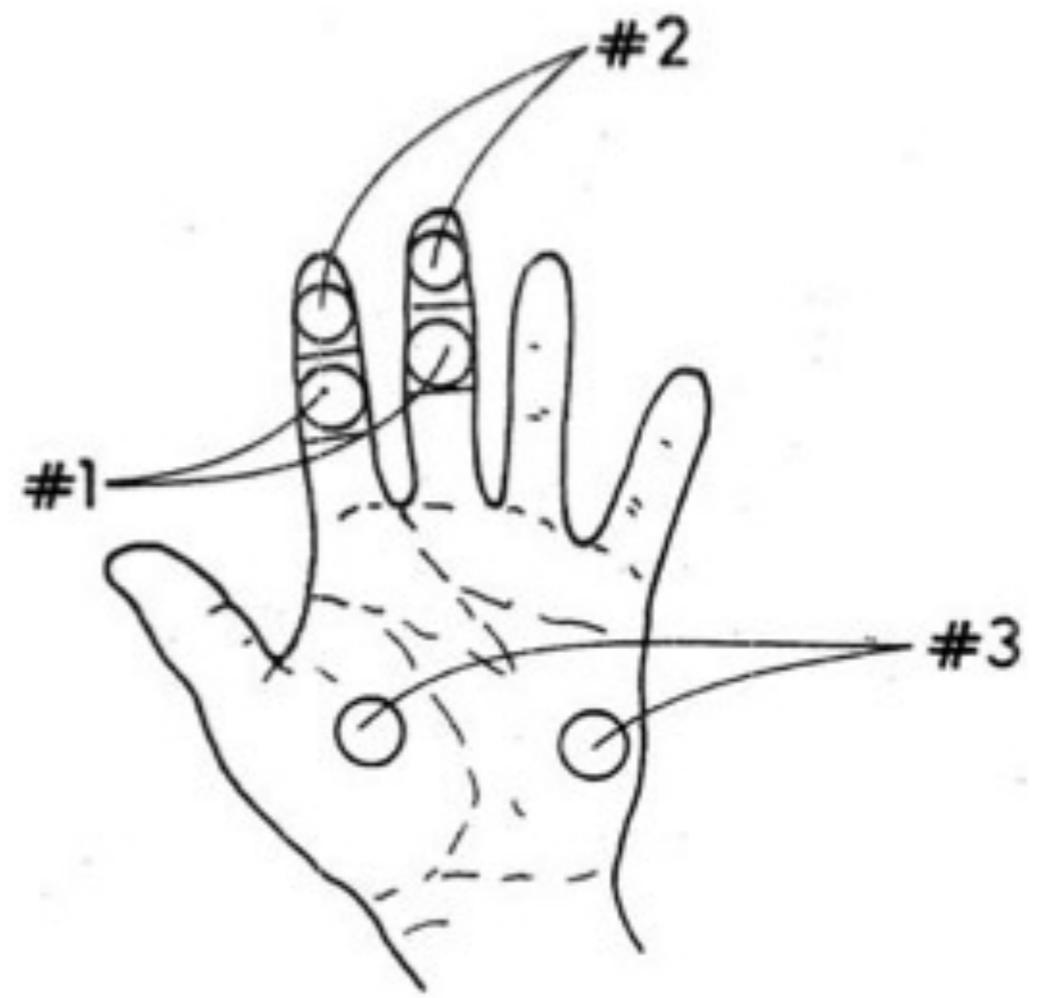
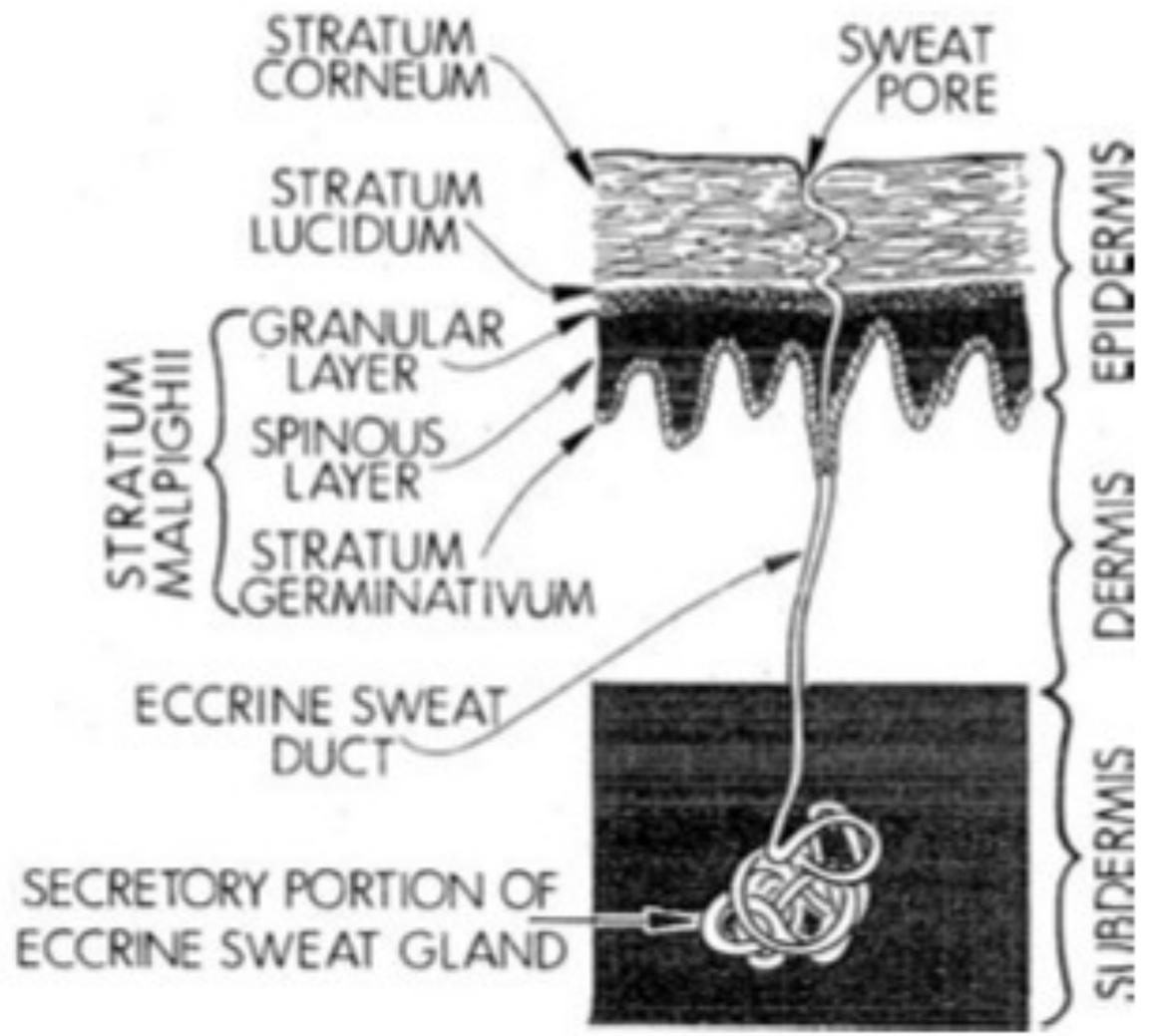
Objective Evaluation

Physiological Basis and Measurement

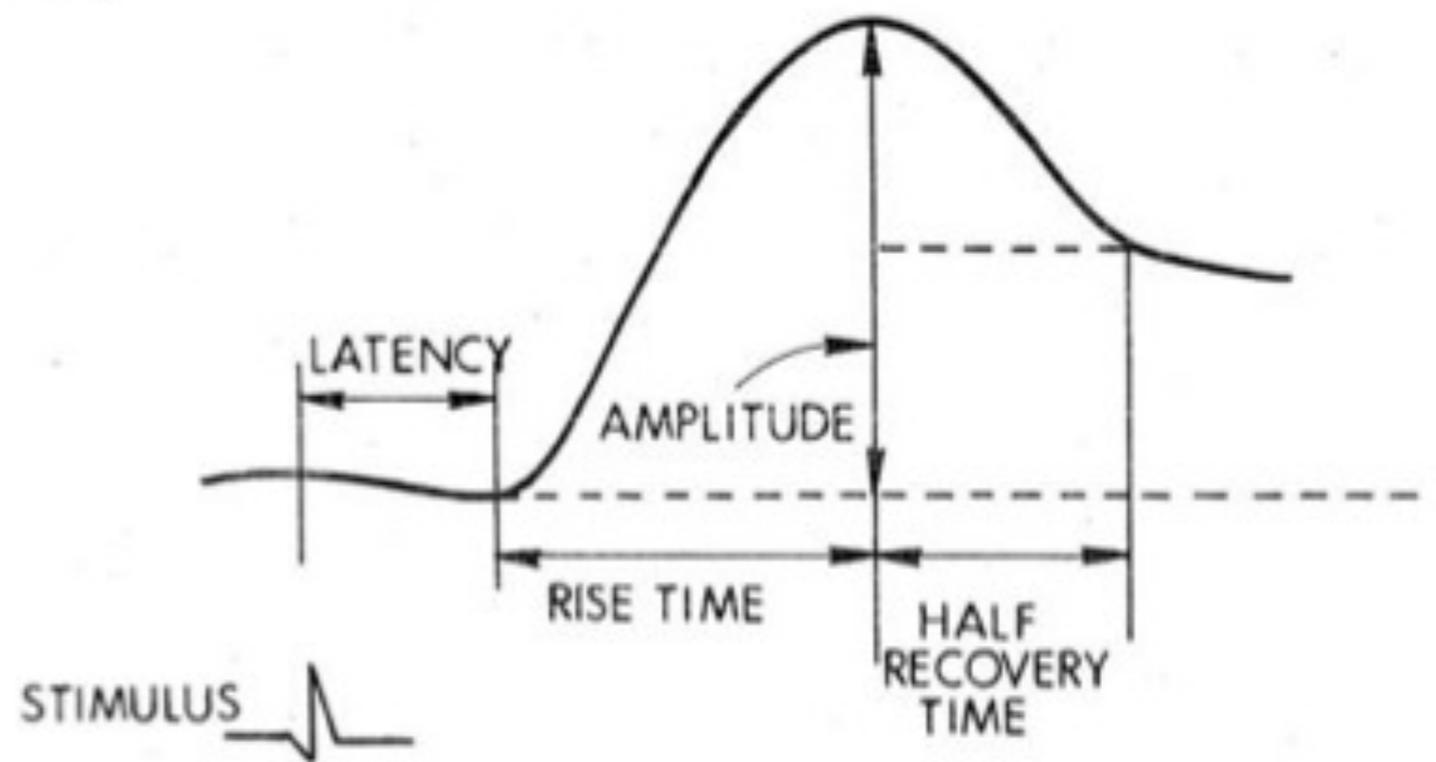
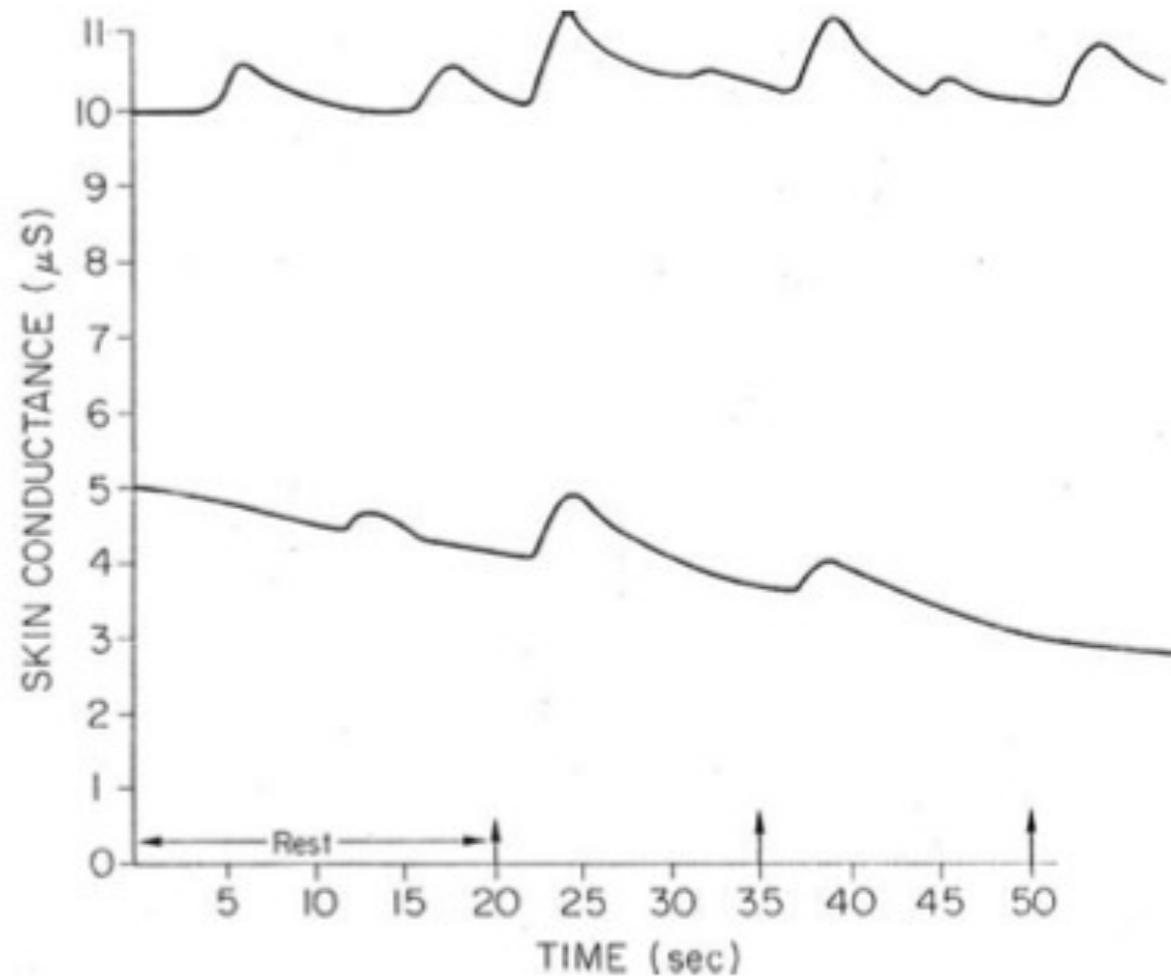
Autonomic Nervous System



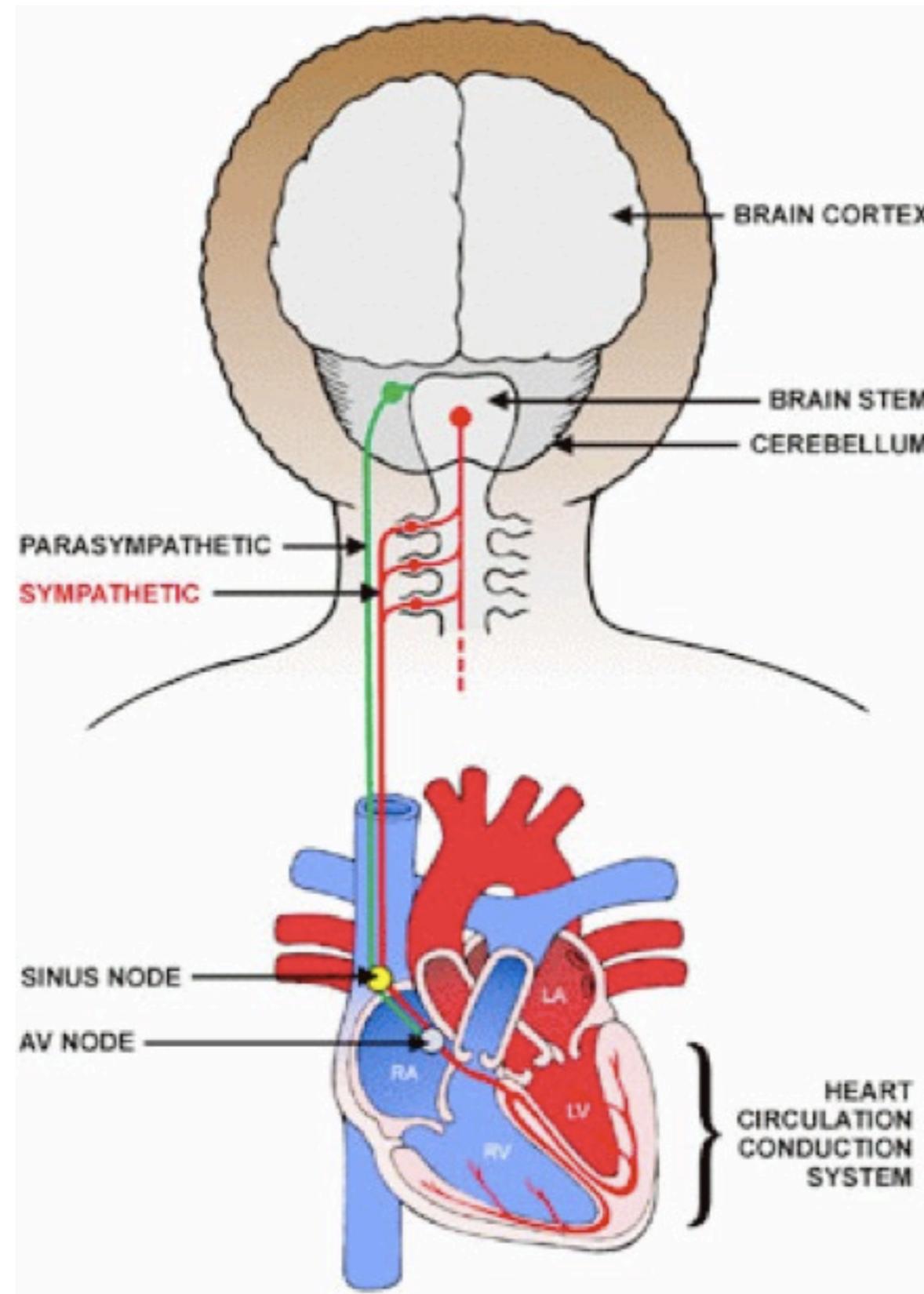
Skin Conductance



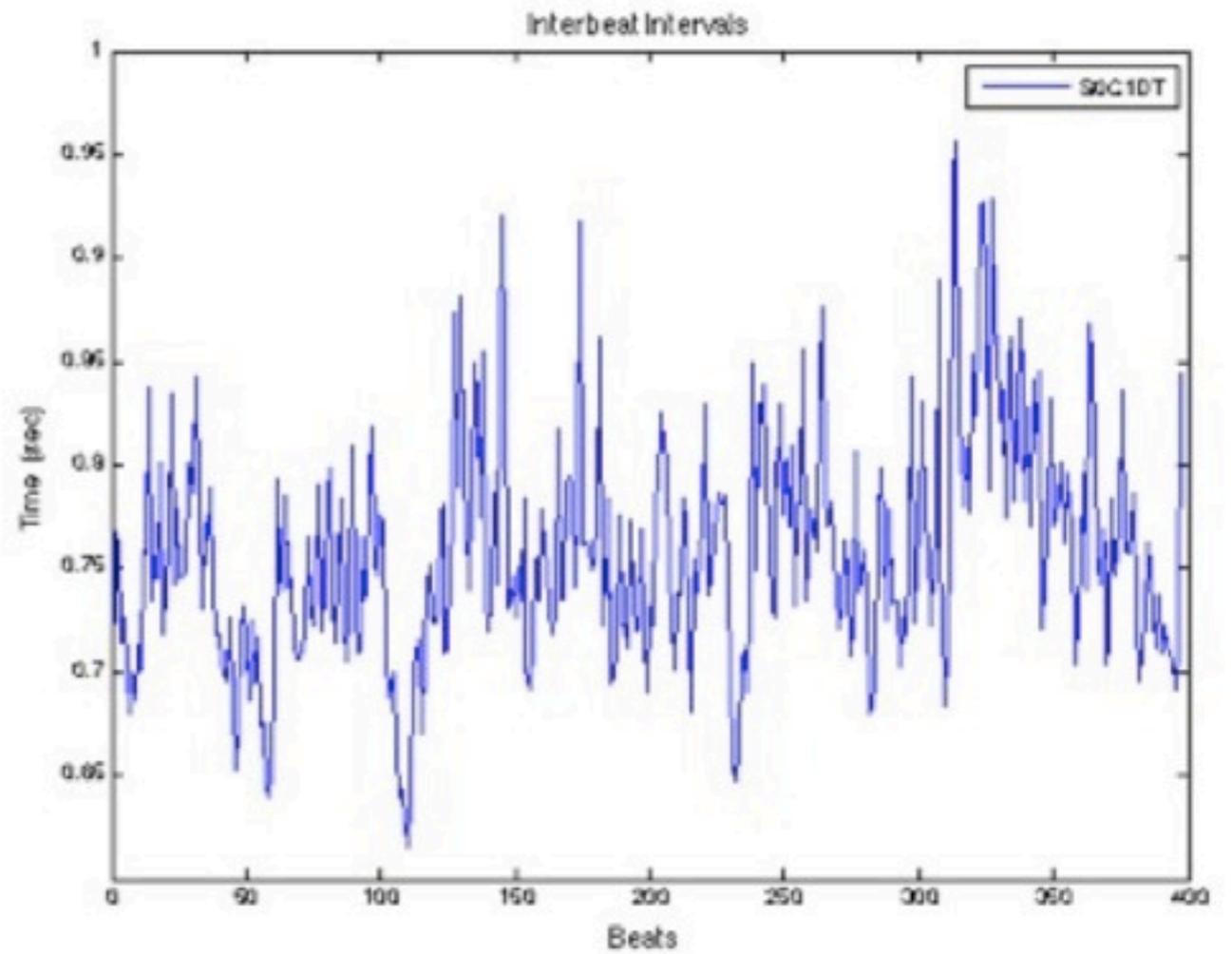
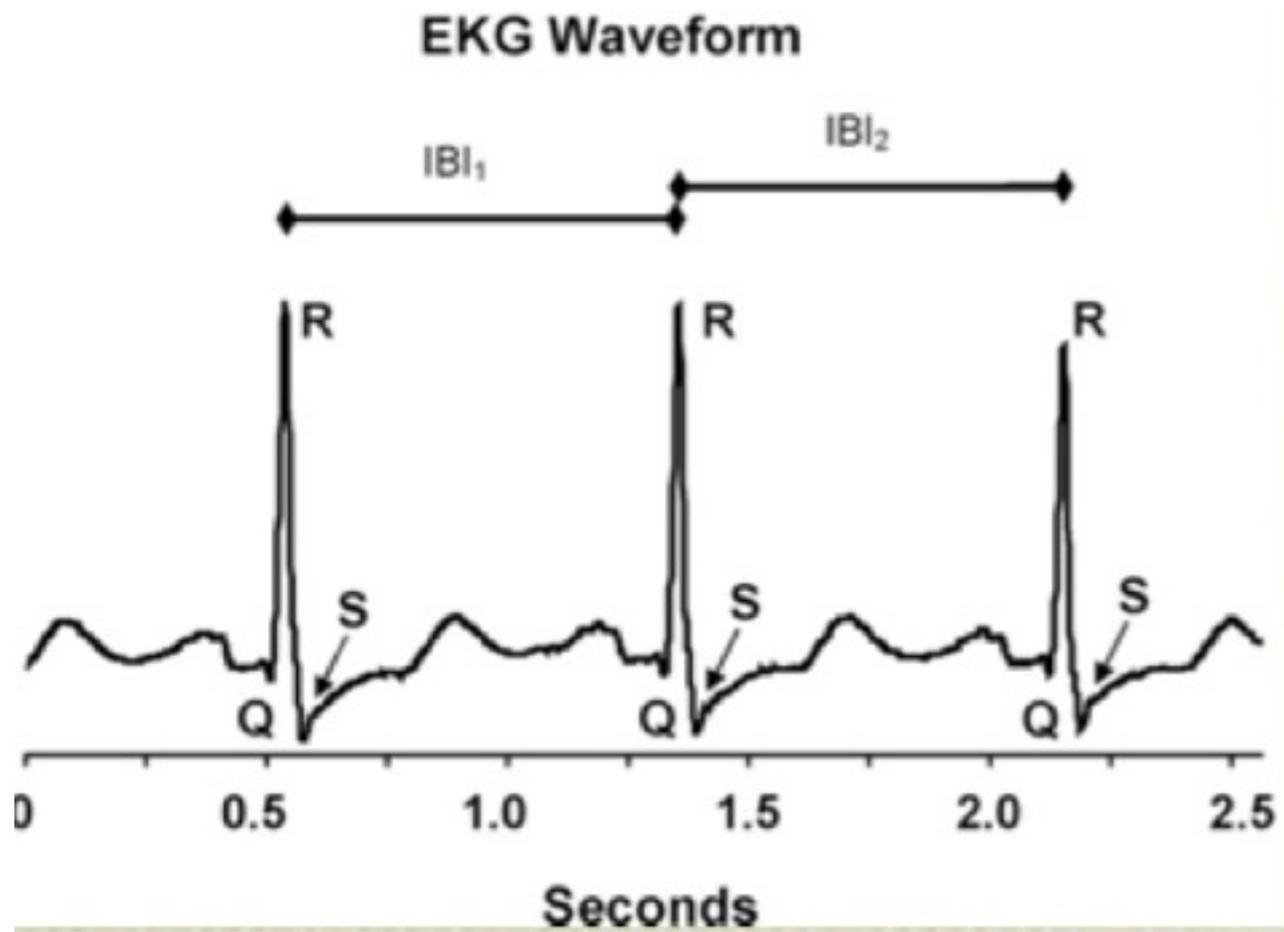
Skin Conductance



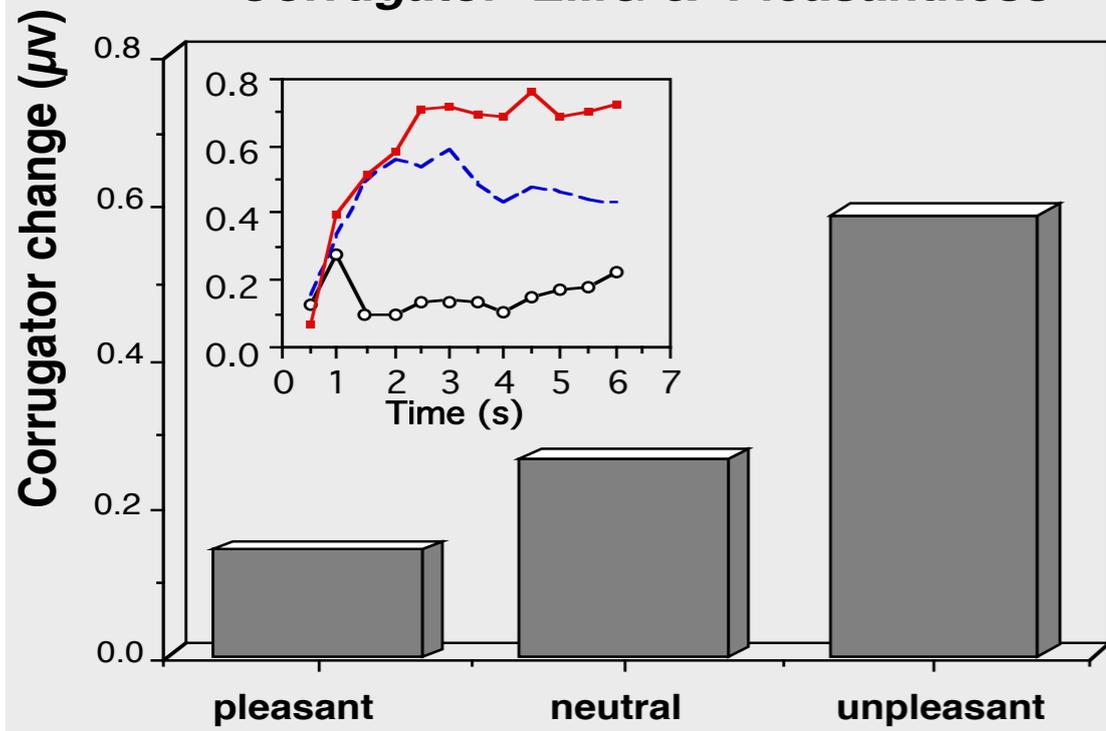
Heart Rate



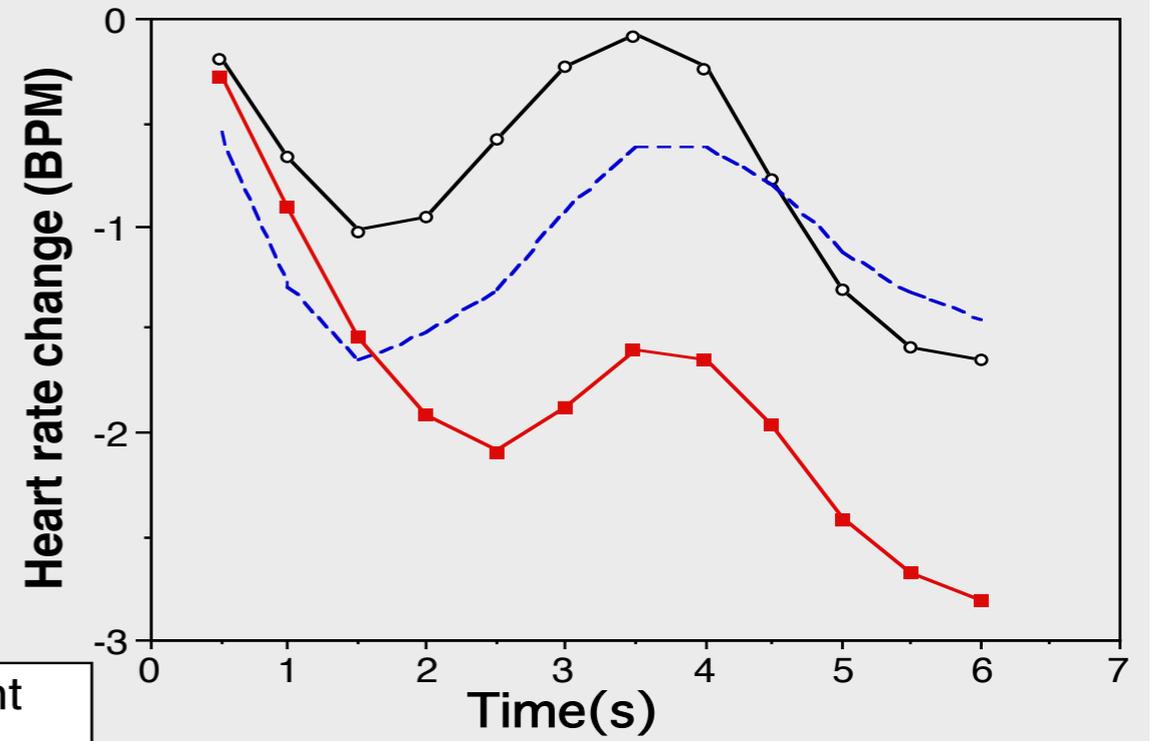
Heart Rate



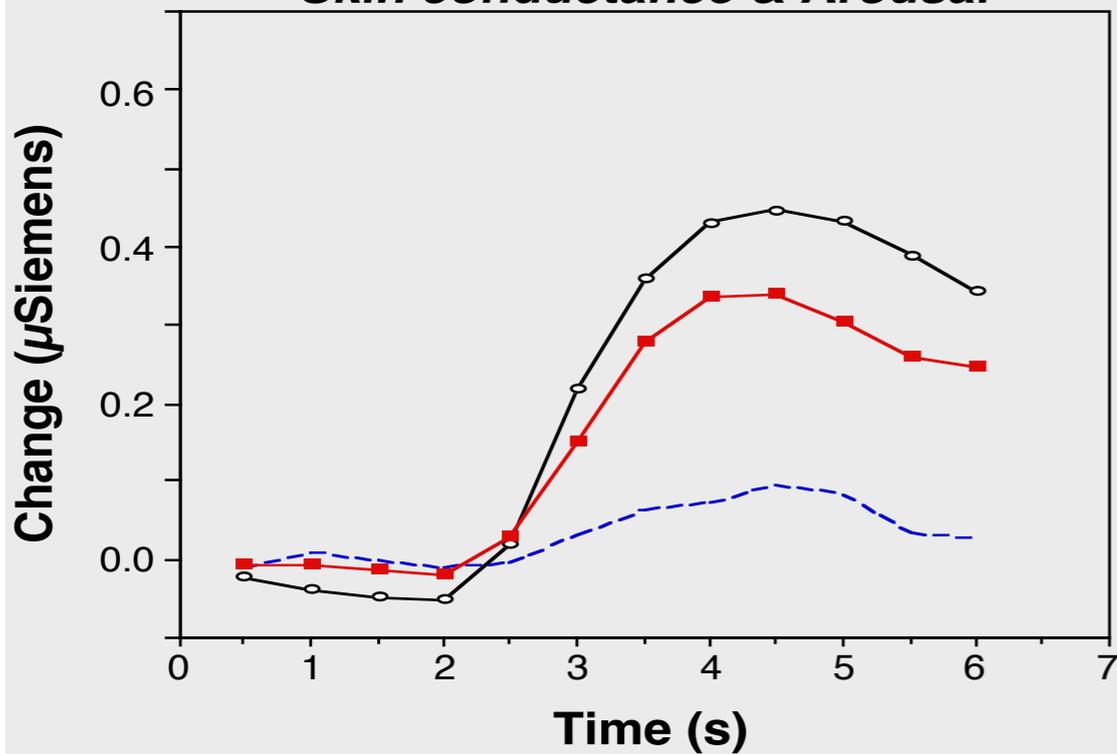
Corrugator EMG & Pleasantness



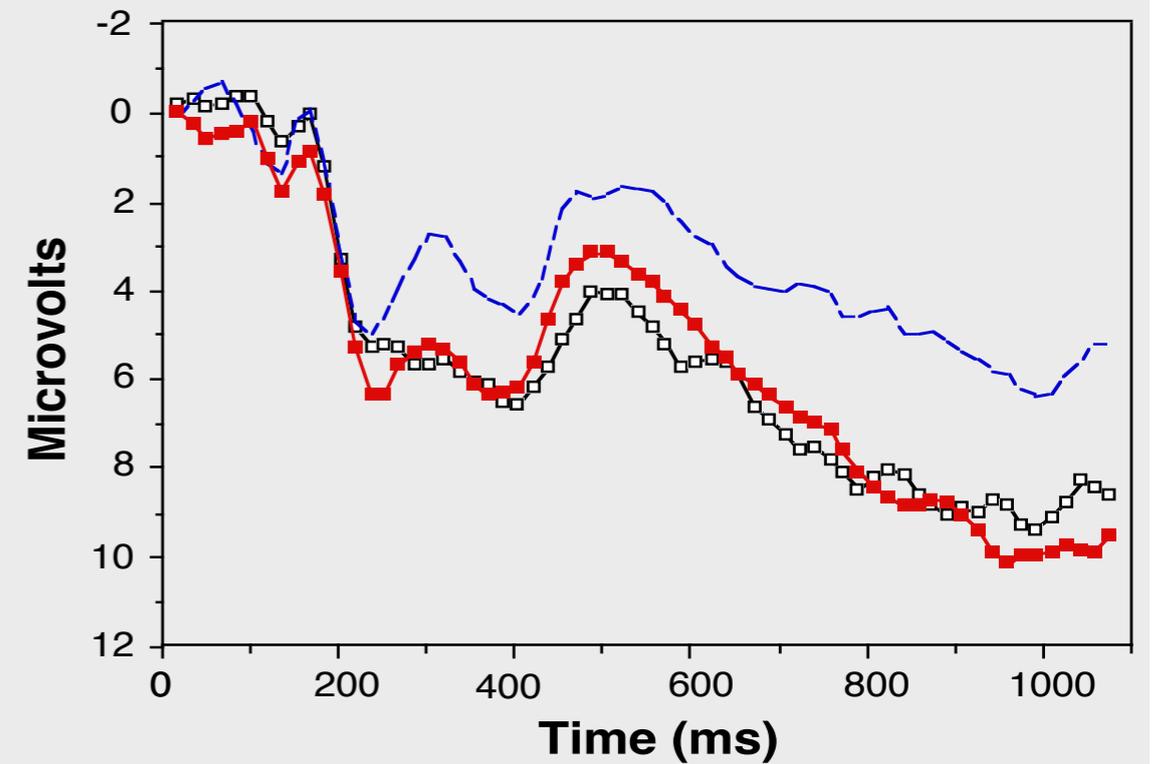
Heart rate & Pleasantness



Skin conductance & Arousal



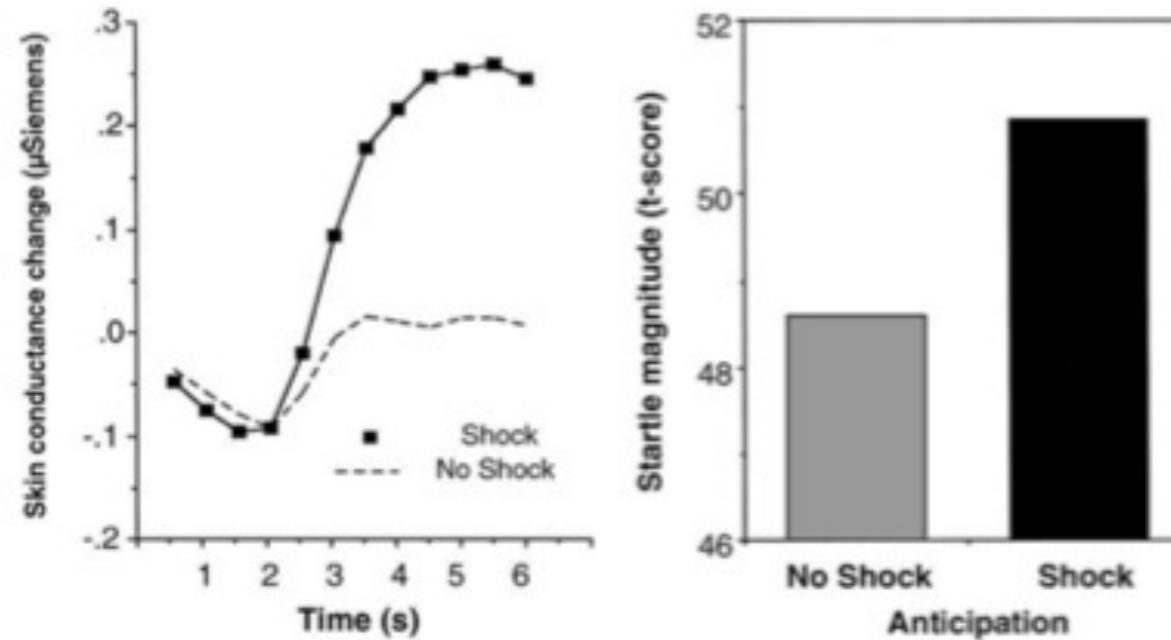
Cortical Evoked Potentials & Arousal



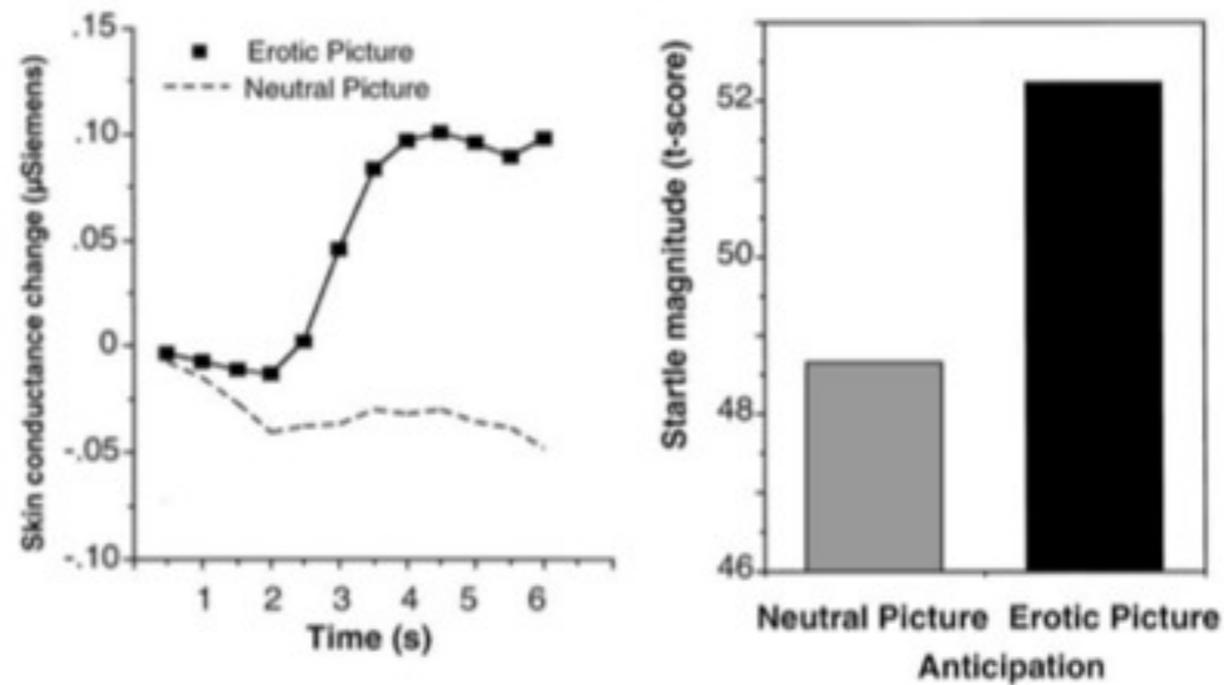
(Bradley y Lang, 2007)

Anticipating Emotions

Anticipating Shock



Anticipating Erotica



The Laboratory

Psychophysiology Lab

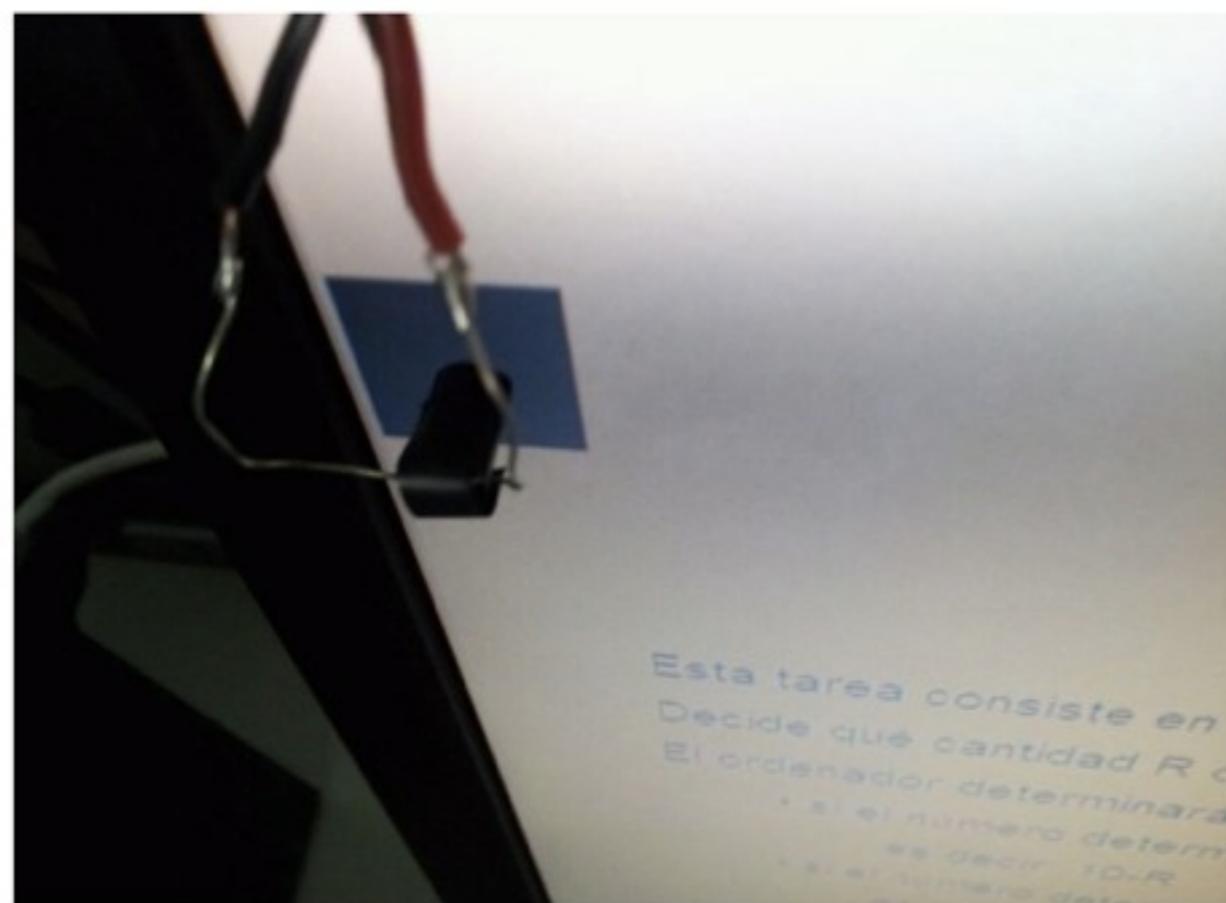
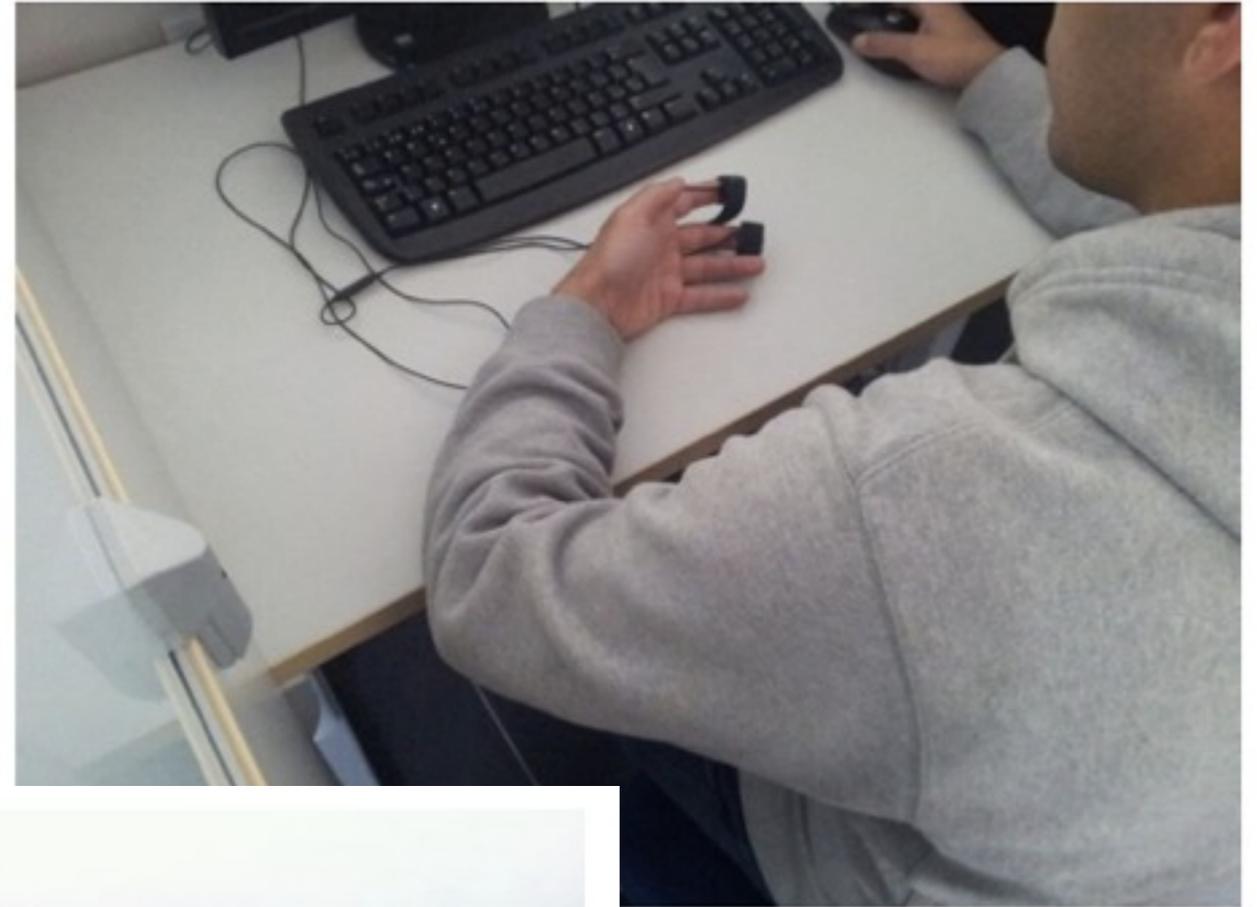
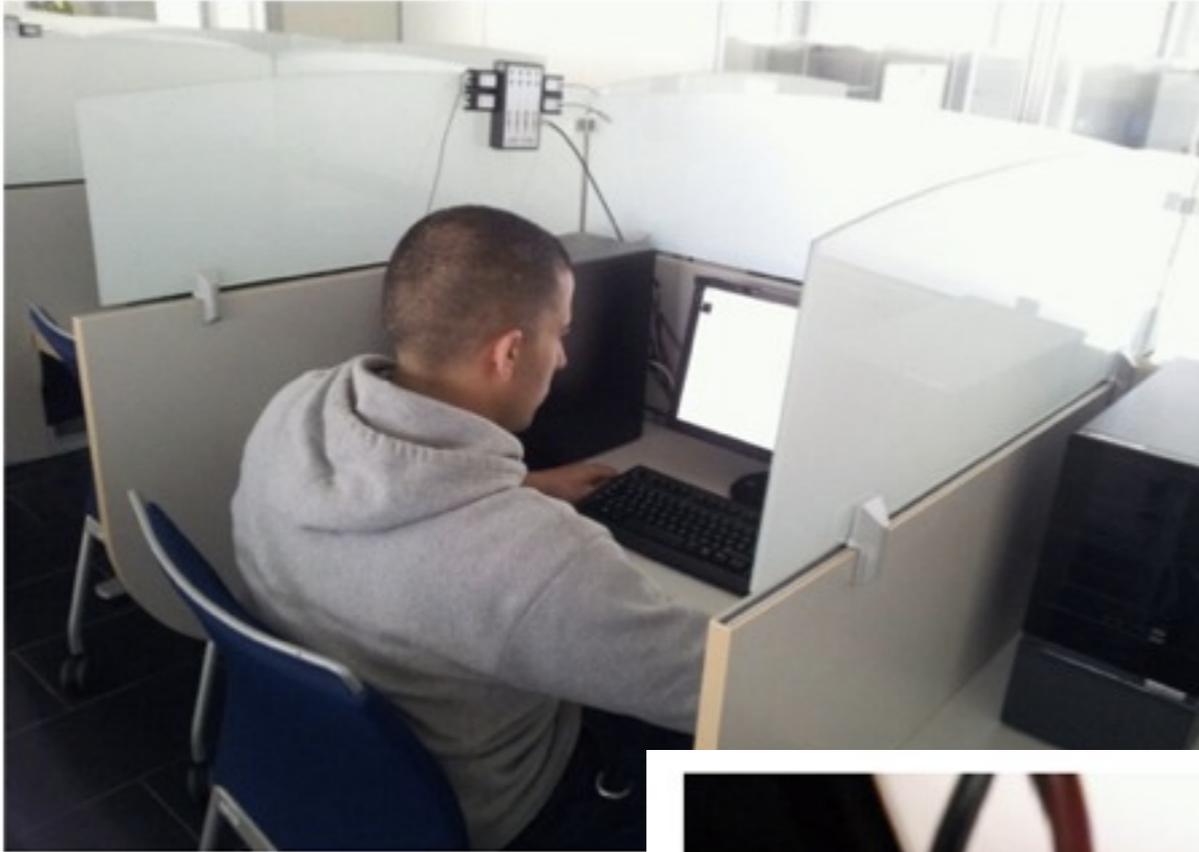


Control Room



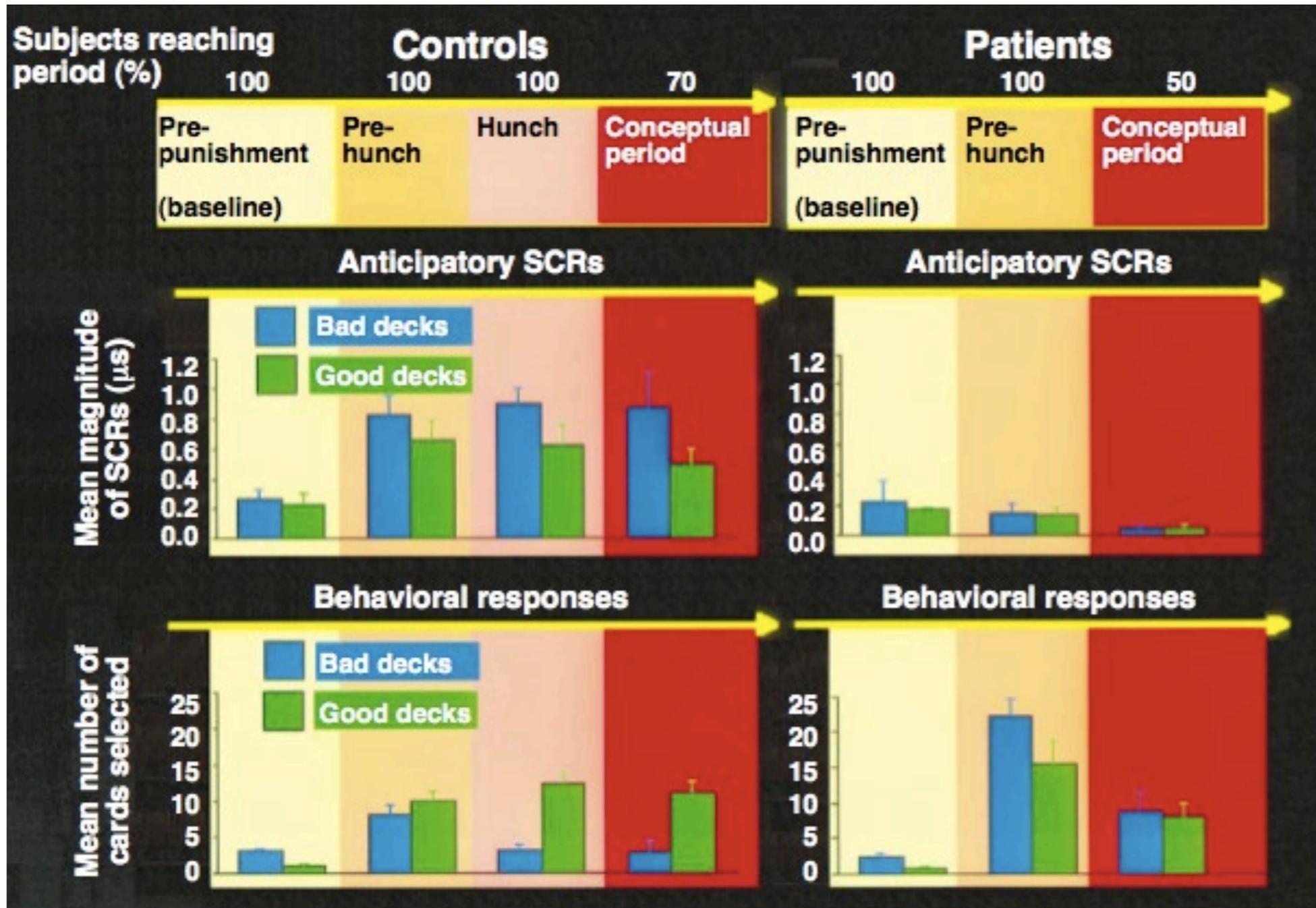
Subject Room

LEE



Application in Behavioral Economics

Anticipating Risk in a Gambling Task



Bechara, Damasio et al, 1997. *Deciding Advantageously Before Knowing the Advantageous Strategy*. **Science** — 1729 citations!

Emotional Arousal and Tax Evasion

Coricelli et al, 2010, **Experimental Economics**

We show that the intensity of anticipated and anticipatory emotions before reporting income positively correlates with both the decision to cheat and the proportion of evaded income. The experienced emotional arousal after an audit increases with the monetary sanctions and the arousal is even stronger when the evaders picture is publicly displayed.

A study on Corruption

Tarek Jaber Lopez
Aurora Garcia Gallego
Nikos Georgantzis
Pandelis Perakakis

The Game

Players

2 Firms and 1 Town Planner

Two Stages

- Stage 1: firms i and j compete for the license of a public project
 - simultaneous decisions: **quality**, Q_i, Q_j and **bribe**, B_i, B_j
- Stage 2: town planner observes both firms' offers (firms do not observe rival offers) to decide the **winning** firm

T0w:-Baseline (T0: Partners) + **New STAGE:**

Firms not obtaining the license can "blow the whistle" to inspect for corruption (any positive bribe, $B > 0$)

Our benchmark is the Nash equilibrium of the game:

Equilibrium quality and bribe

$$N = (Q_1, Q_2, B_1, B_2) = (5, 5, 5, 5)$$

Firms' decisions

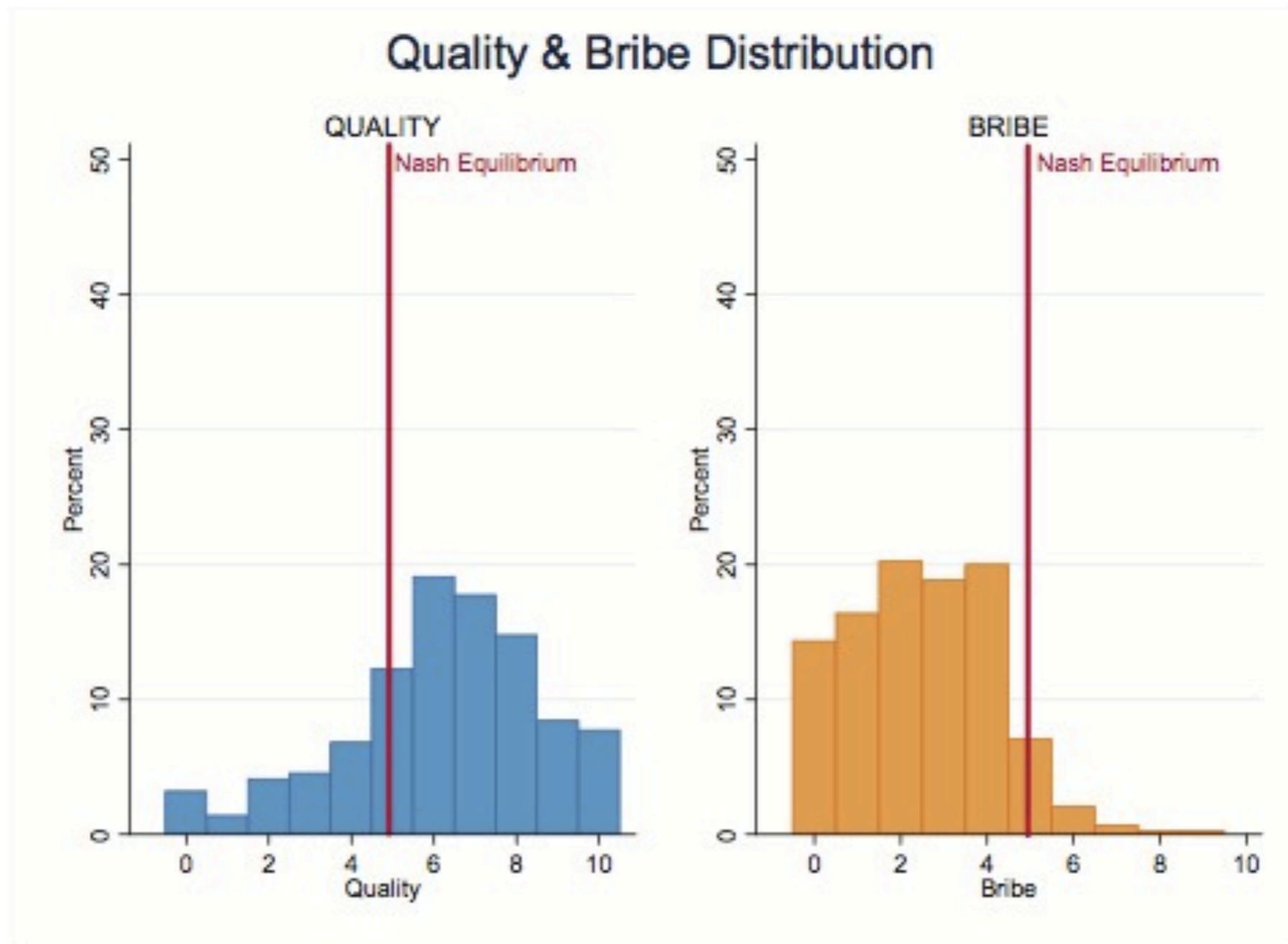


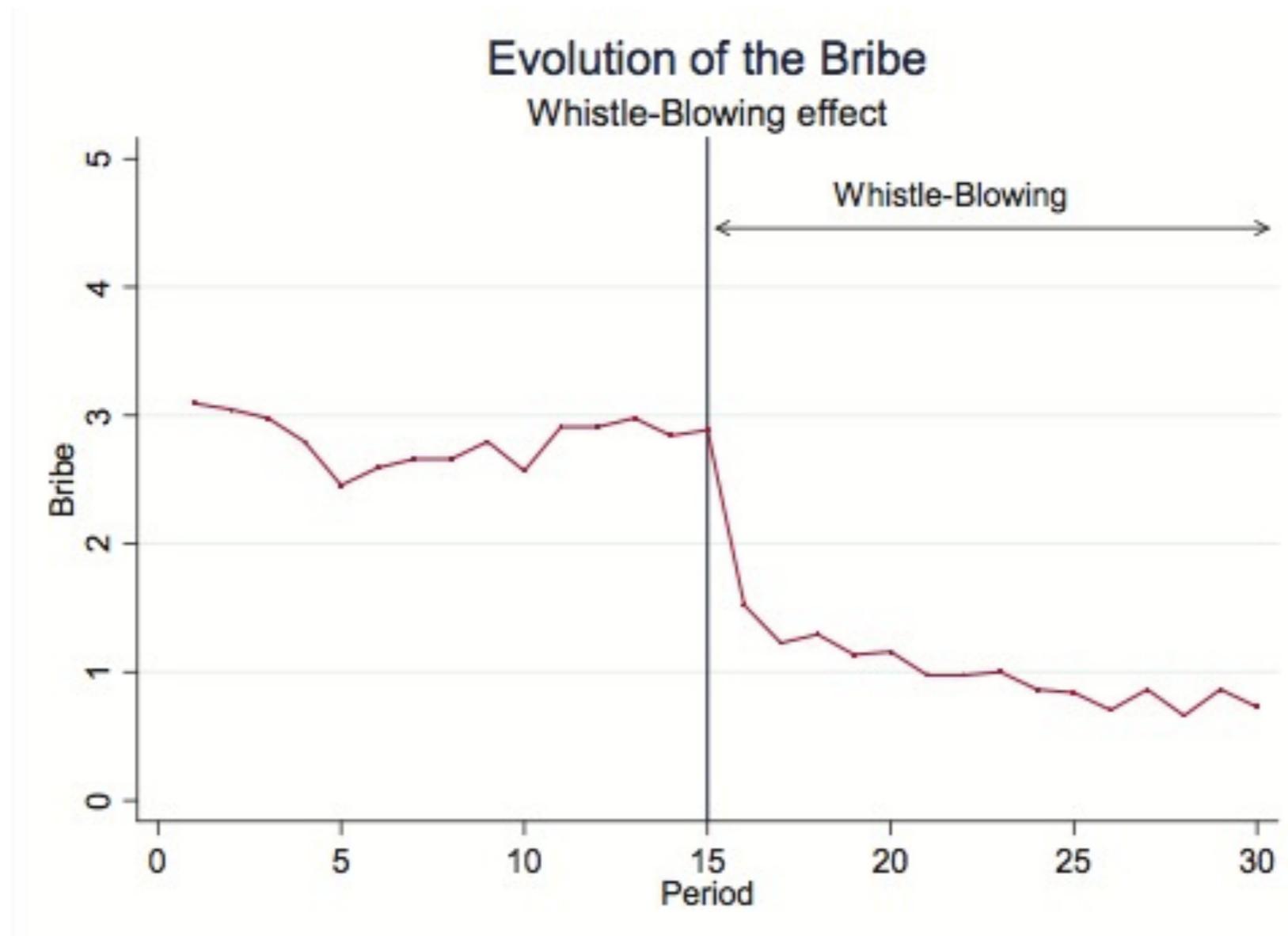
Figure: Bribe and Quality

Town Planners' decisions

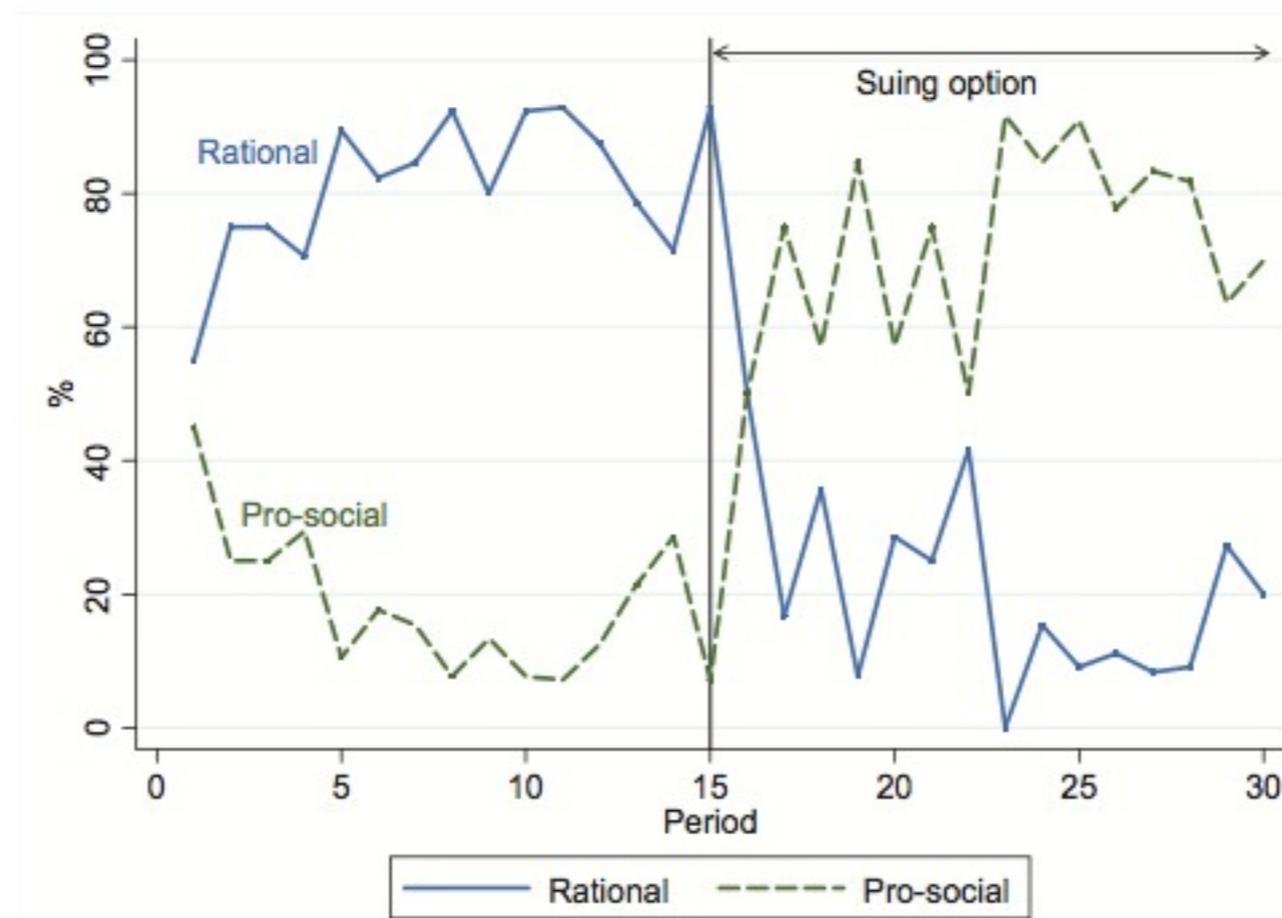
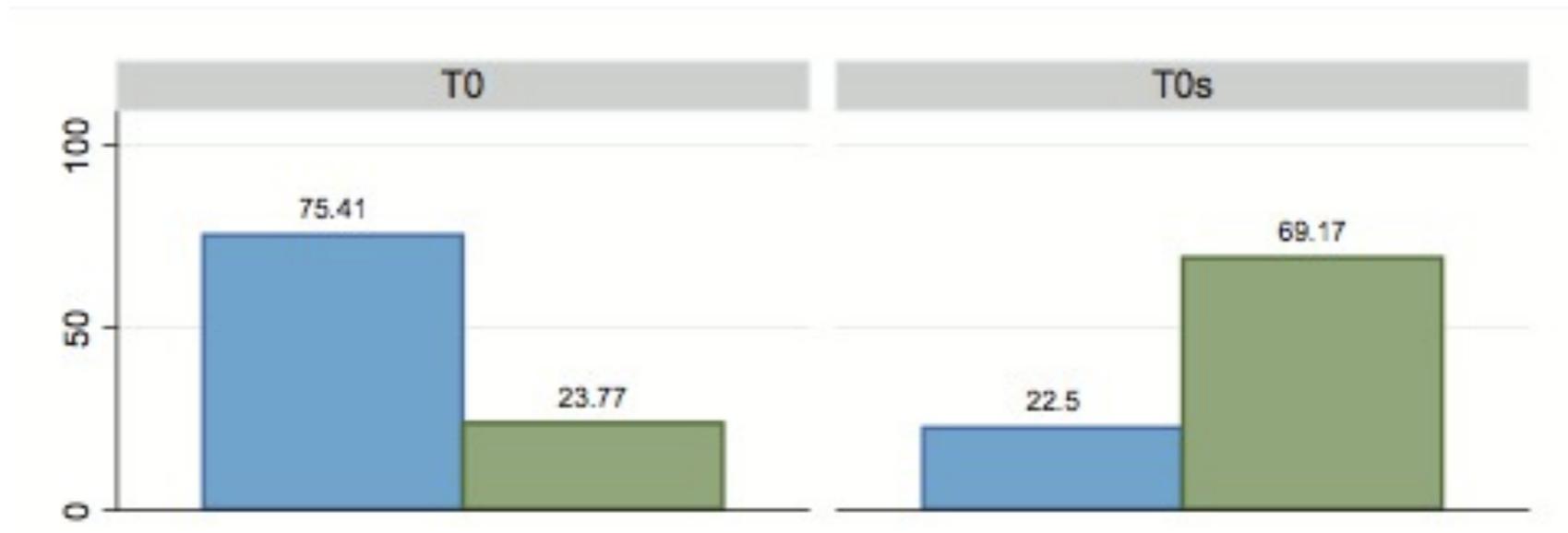


Figure: Town Planner preferences

Effect of whistle-blowing on Firms



Effect of whistle-blowing on planners



Physio-corruption

- 8 sessions implementing the “T0-then-T0w” treatment
- 89 subjects: 43 women and 46 men
- Average quality:
 - Treatment baseline:
men: 7.44
women: 7.22
 - Treatment whistle-blowing:
men: 9.17
women: 9.23

Firms' decision — baseline

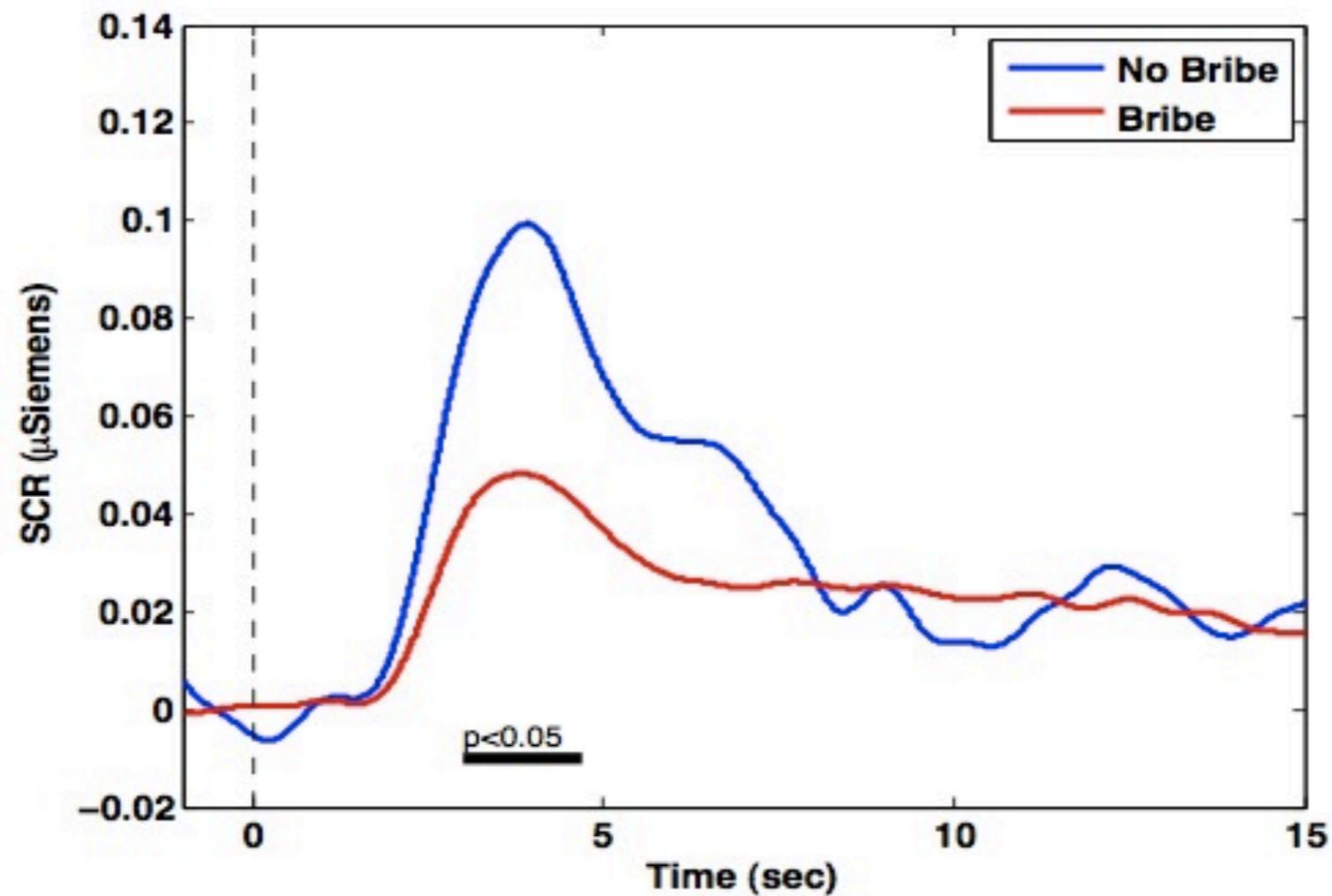


Figure: Skin conductance reaction during post-decision seconds (Baseline treatment)

Firms' decision — whistle-blowing

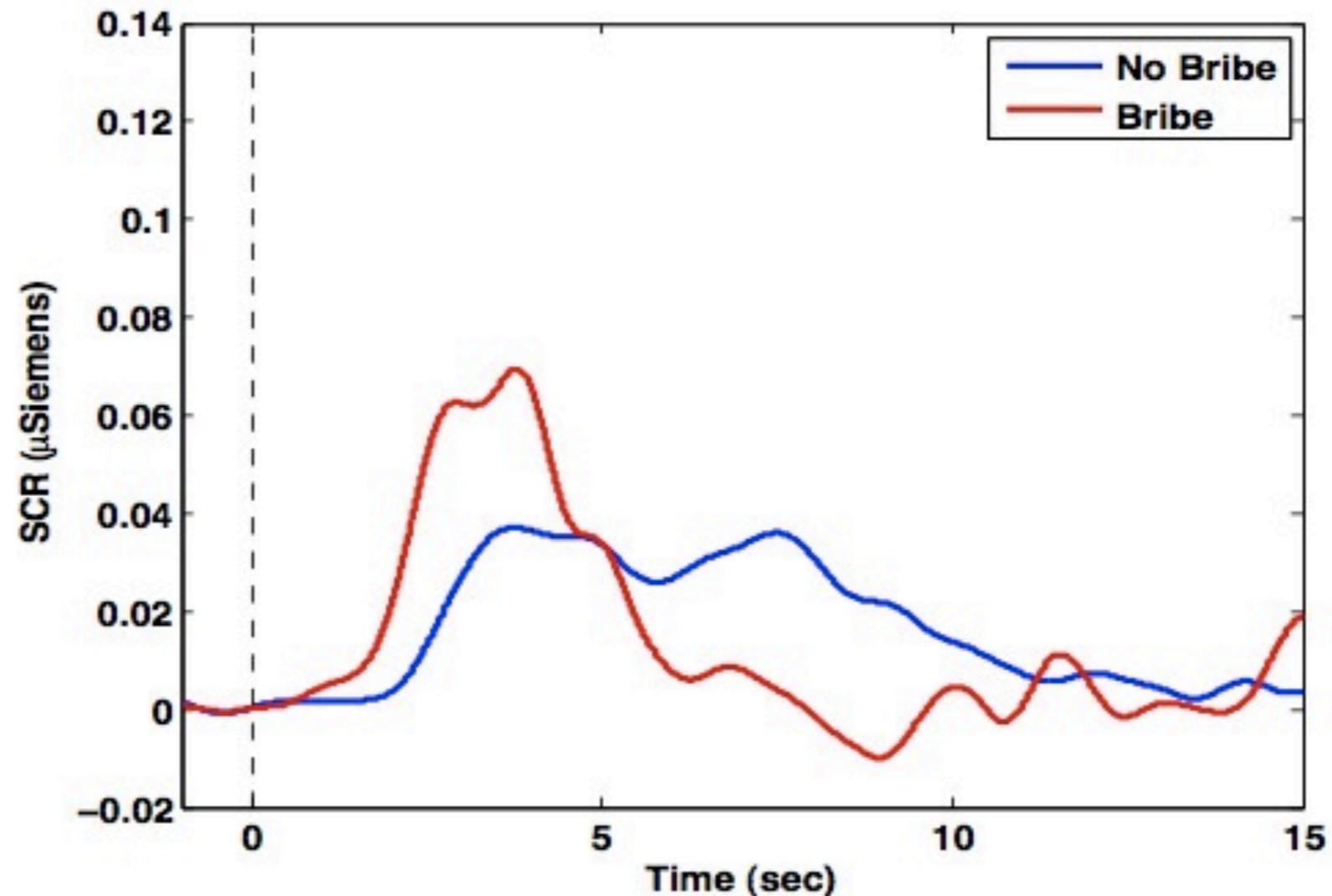


Figure: Skin conductance reaction during post-decision seconds (Whistle-blowing treatment)

Gender effect — baseline

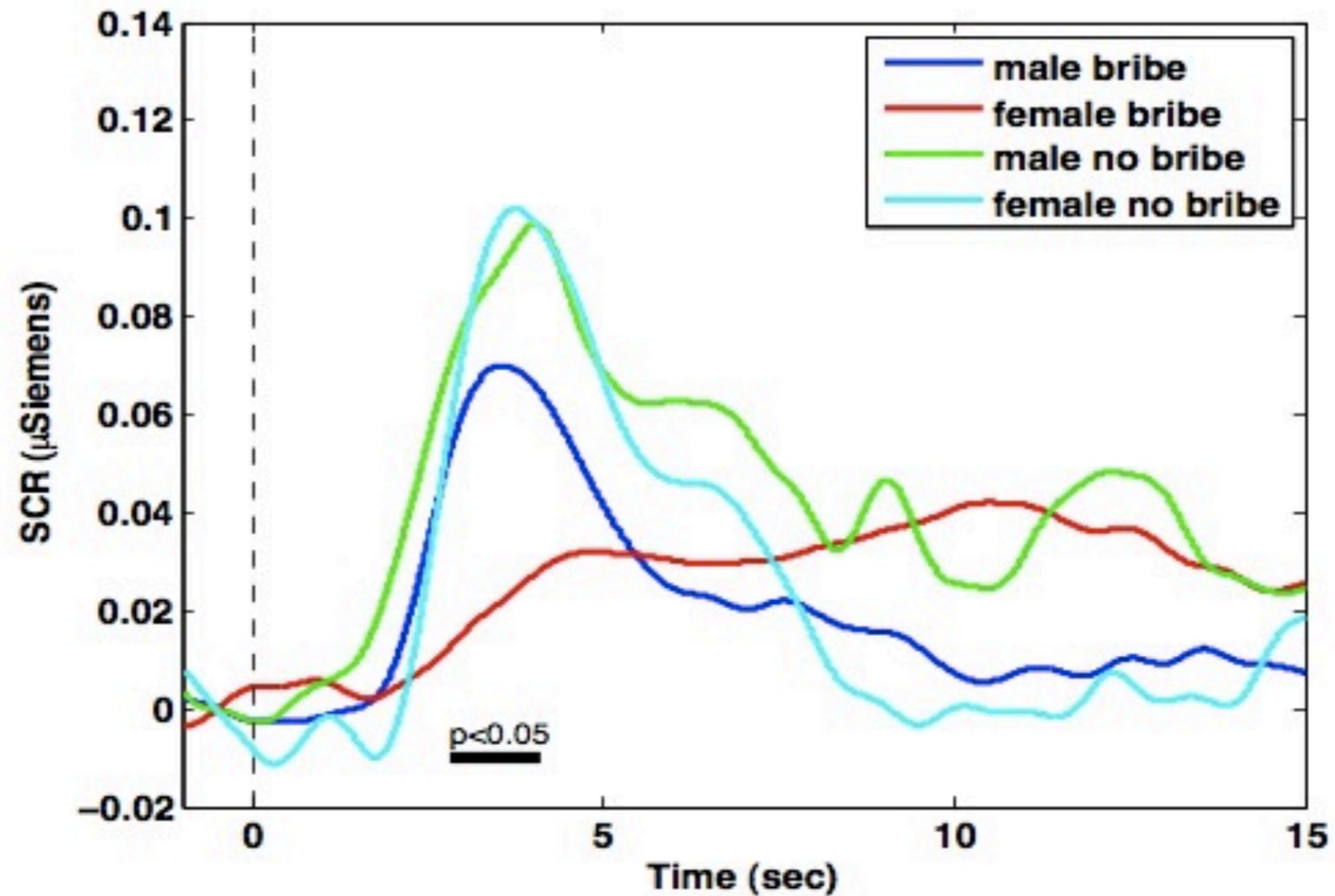


Figure: Skin conductance reaction by gender during post-decision seconds (Baseline treatment)

Gender effect — whistle-blowing

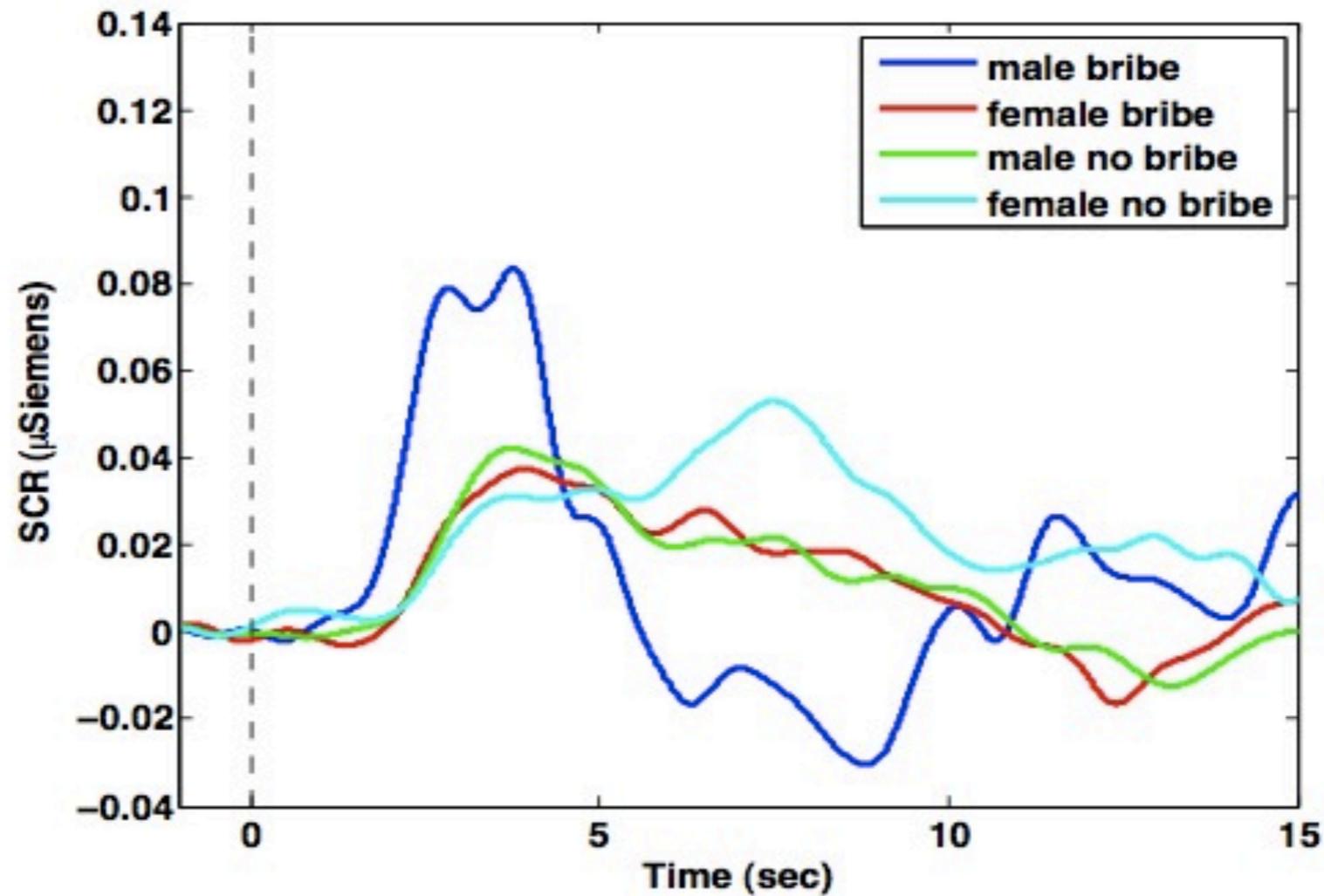


Figure: Skin conductance reaction by gender during post-decision seconds (Whistle-blowing treatment)

Firms waiting for whistle-blowing

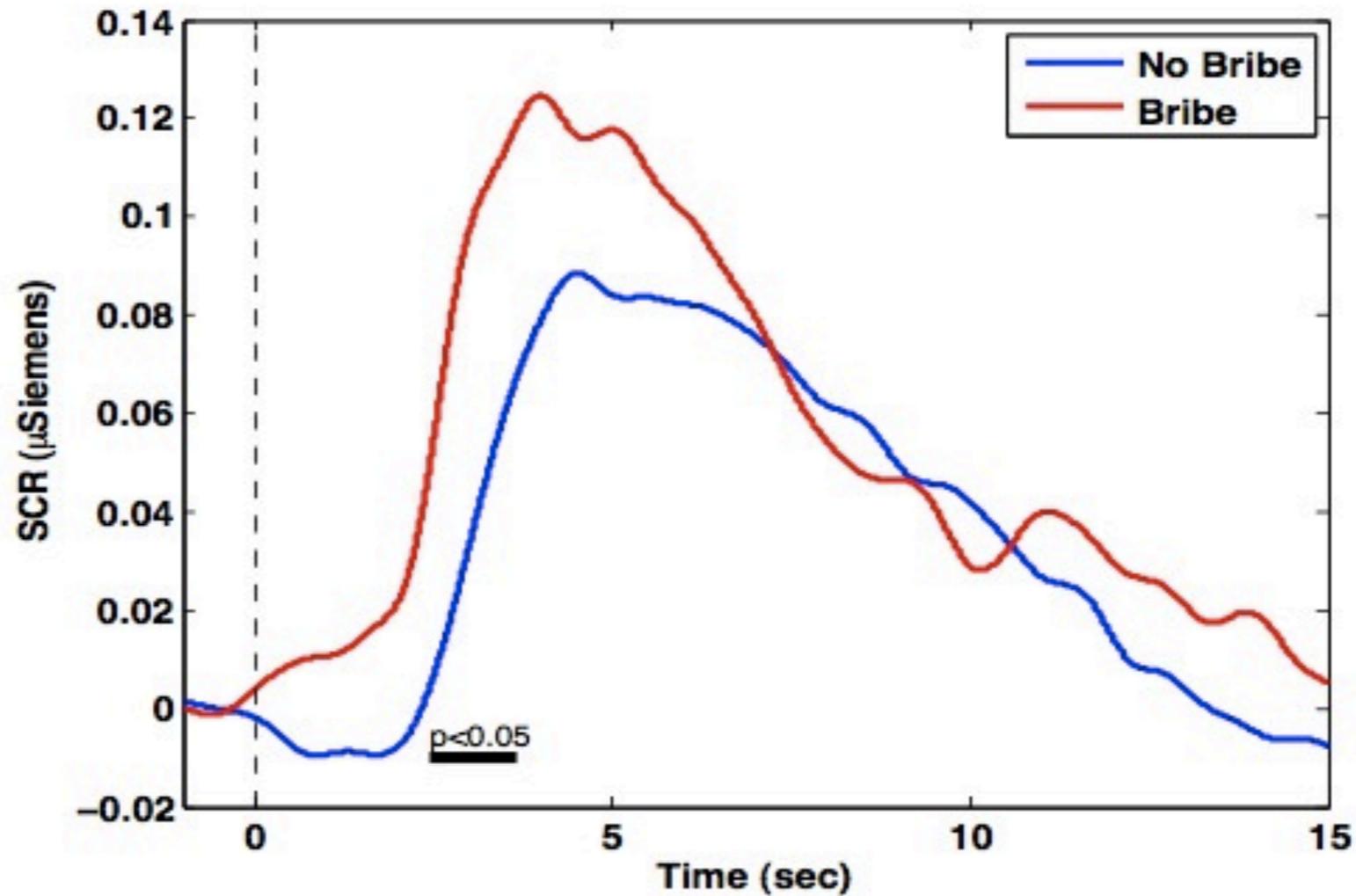


Figure: Winner's skin-conductance while waiting for loser to decide whether to blow the whistle

Town Planners do not show extra arousal

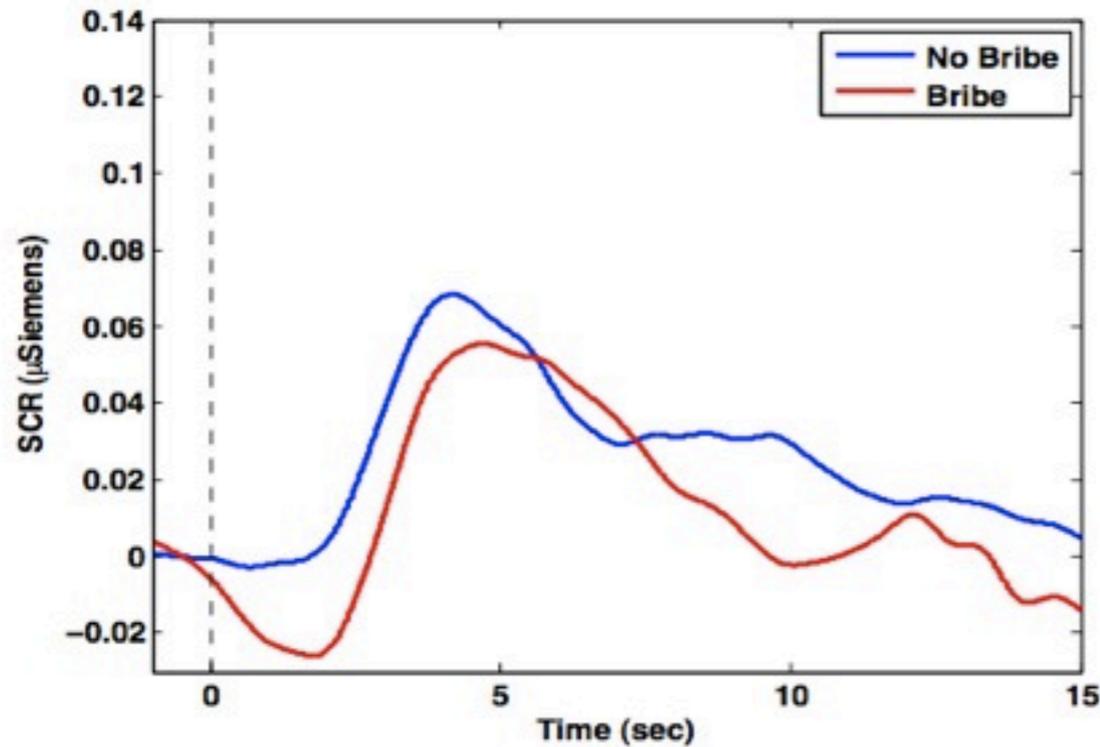


Figure: Skin conductance reaction during post-decision seconds (whistle-blowing treatment)

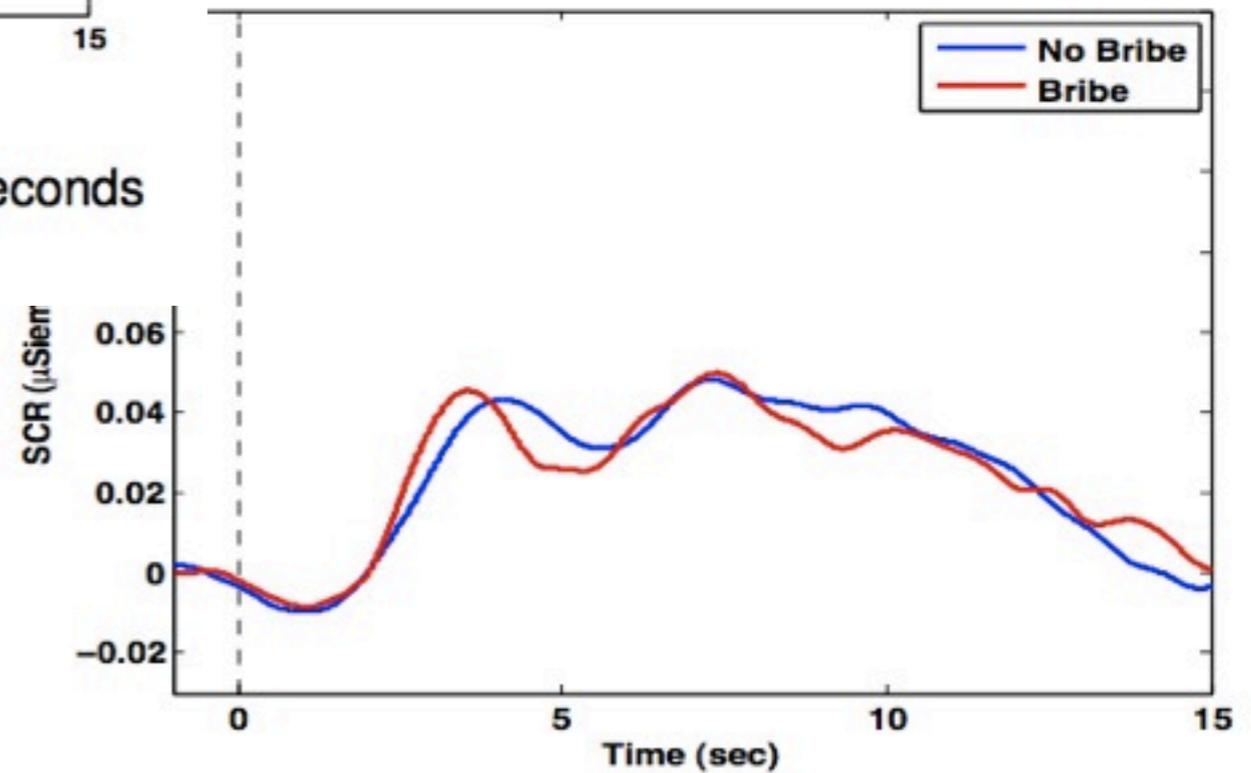


Figure: Skin conductance reaction waiting whistle-blowing

Why are planners so comfortable with bribes?

- The law makes a distinction between “active” and “passive” bribery
- It could be the case that our body also makes such a distinction
- Thus, agents receiving the bribe may feel less guilty or no guilty at all (especially here that the planner often has no alternative but choose between two bribes)

Work in progress...

Thank you for your attention!