

# **Test Dimension and Factor Analysis**

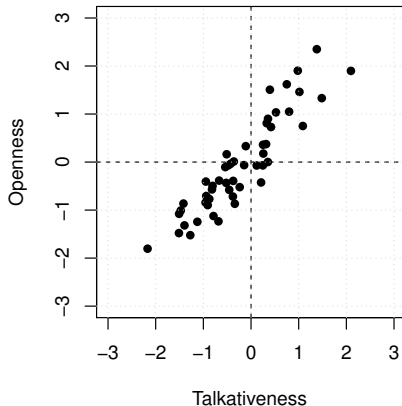
Corson N. Areshenkoff

University of Victoria

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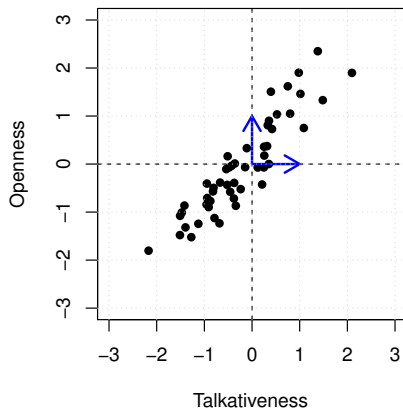
# Intuition

- ▶ Hypothetical test contains items related to openness and talkativeness.
- ▶ Notice the high correlation between variables.



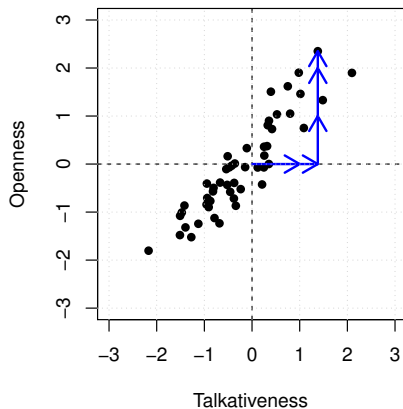
# Intuition

- Score is measured in units of openness and talkativeness (called basis vectors)



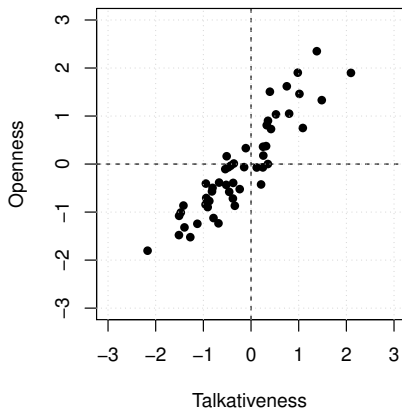
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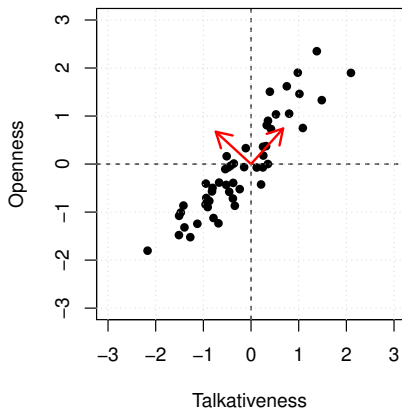
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- ▶ Since variables are highly correlated, could create new axes along the dimension of maximum variance.
- ▶ Creates new variables which are *composites* of the old ones.



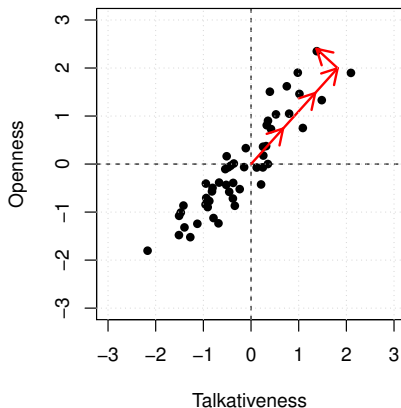
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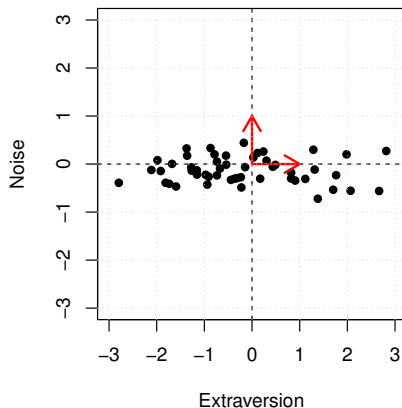
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# Intuition

- Replotting with the new axes reveals that most of the variability in the data lies along *one-dimension*.





# Gambling Experiment

**Goal:** Study the effect of stress on risky decision making

**Stress measures:**

**BP** Blood Pressure

**HR** Heart Rate

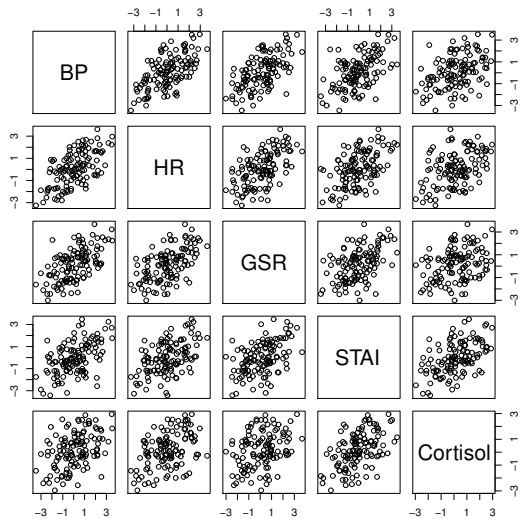
**GSR** Galvanic skin response

**STAI** State train anxiety inventory

**CRT** Cortisol

**Problem:**

1. How do we know our stress manipulation works?
2. How to we quantify stress?



# Intuition

