A Perceptual Map of the Decision Making

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Reference

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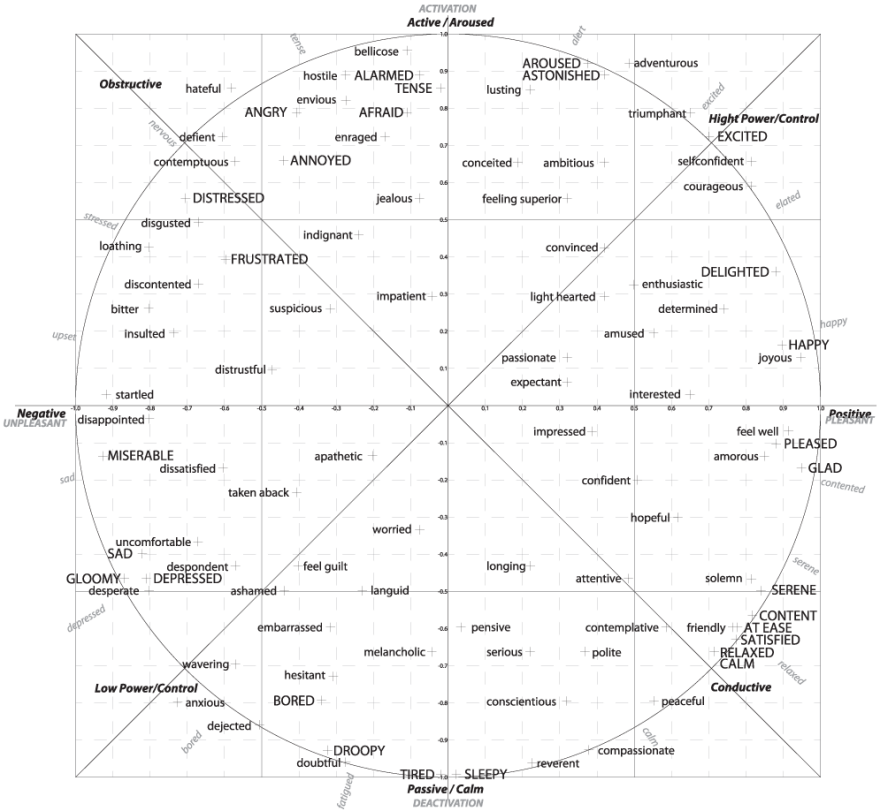
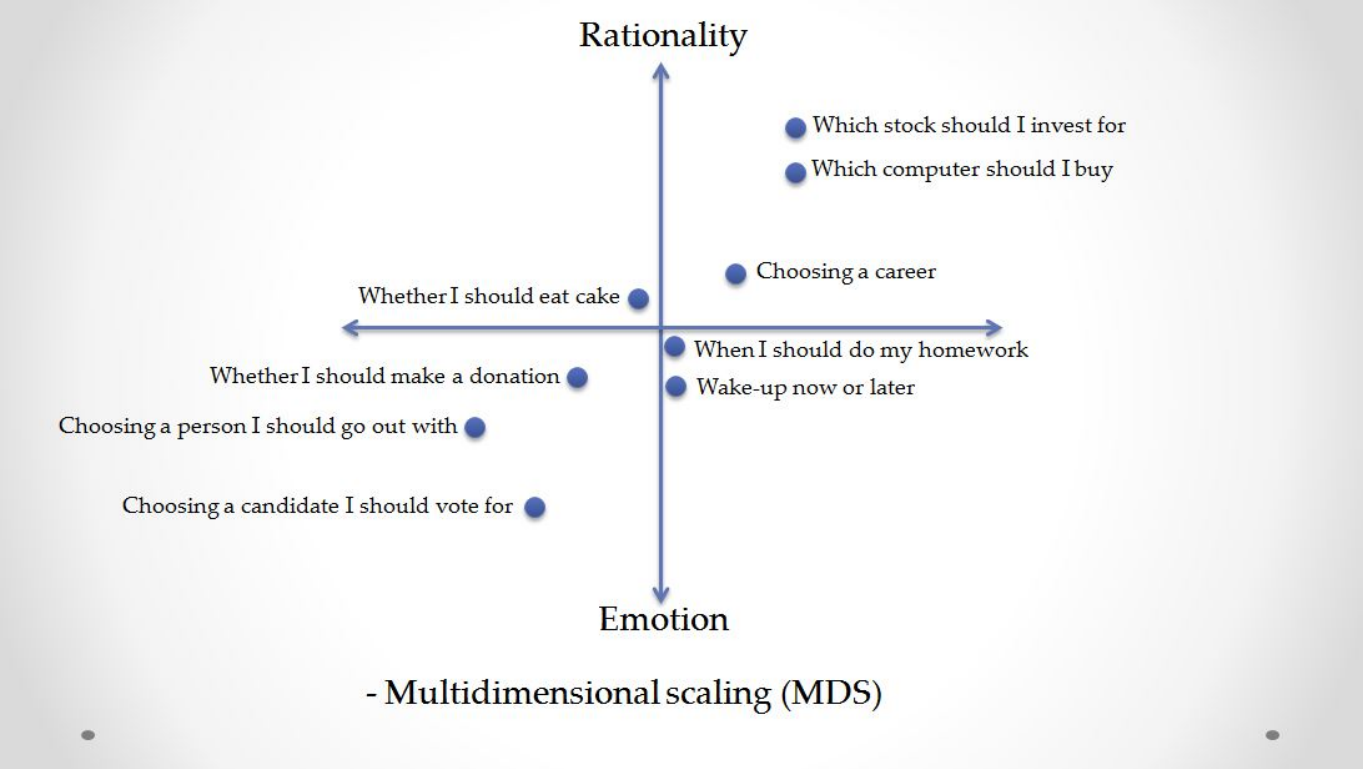
Previous research suggests that a concept whose defining attribute defies description can be studied using multidimensional scaling.



Conclusion



The underlying dimensions extracted from the spatial configuration of the data are thought to reflect the hidden structures, or important relationships, within it.
(Young & Hamer, 1987)

Method

Regression Model & Multidimensional Scaling

- Multidimensional Scaling is a mean of visualizing the level of similarity of individual cases of a dataset.
- Pairwise similarities reconstruct a map that preserves distances.

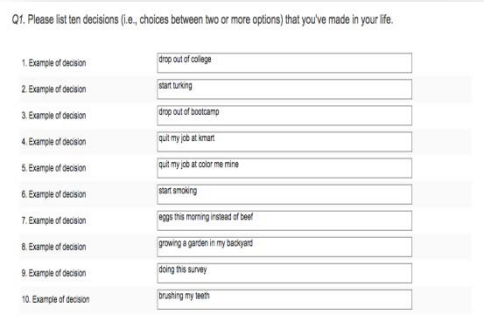
$$\Delta := \begin{pmatrix} \delta_{1,1} & \delta_{1,2} & \cdots & \delta_{1,I} \\ \delta_{2,1} & \delta_{2,2} & \cdots & \delta_{2,I} \\ \vdots & \vdots & & \vdots \\ \delta_{I,1} & \delta_{I,2} & \cdots & \delta_{I,I} \end{pmatrix}.$$

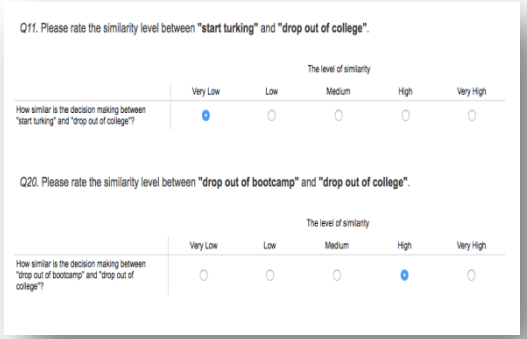
Data & Participants

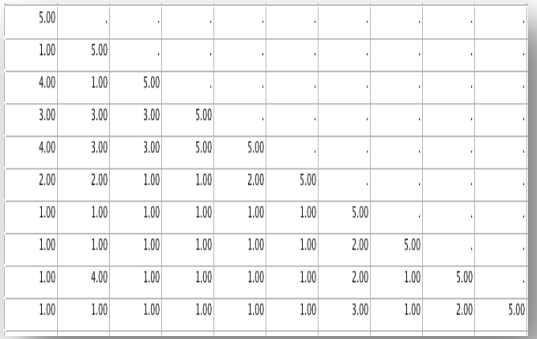
- 120 people are to be recruited through Amazon Mturk to participate in a survey.
- Demographic questionnaire is to be included in a survey.

Method

Procedure







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4.00	1.00	5.00	.	.	.	.	.	.	.
3.00	3.00	3.00	5.00	.	.	.	.	.	.
4.00	3.00	3.00	5.00	5.00	.	.	.	.	.
2.00	2.00	1.00	1.00	2.00	5.00	.	.	.	.
1.00	1.00	1.00	1.00	1.00	1.00	5.00	.	.	.
1.00	1.00	1.00	1.00	1.00	1.00	2.00	5.00	.	.
1.00	4.00	1.00	1.00	1.00	1.00	2.00	1.00	5.00	.
1.00	1.00	1.00	1.00	1.00	1.00	3.00	1.00	2.00	5.00

Step1. List of decisions

In this stage, participants list ten decisions that they've made in their life.

Step2. Similarity between decisions

Participants are asked how one decision is similar to another.

Step3. Computational Analysis

MDS analysis is conducted using function cmdscale() in R.

Abstract

A Perceptual Map of the Decision Making

What is the underlying dimensions in diverse types of decisions in the level of people's perception? In this study, MDS is used to create a map of decision-making and to extract the structure and relationships within it.

Keyword: Decision Making, Multidimensional Scaling (MDS)