A Perceptual Map of Decision Making

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Introduction

To understand decision-making, the current study categorized numerous examples of decisions. We expected to find distinct types of decisions and harness this knowledge to achieve an appropriate approach for the unique types of decisions. For example, in comparative perspective, deciding a product to purchase may be made more rationally whereas deciding a person to marry may be made more emotionally. Is a voting more like a shopping or a dating? Depending on the type of decisions voting is included with, the strategy for influencing the voter's decision could be different. If voting is a relatively rational decision, the strategy should be to stress the content of a candidate's policies. On the other hand, if voting is an emotional decision, the strategy should be to manage the tone of voice. The major goal of the current study is to identify the categorization of decisions. This can then have implications for the proper strategy for impacting decisions.

Methods

- One hundred seventeen people were recruited through Amazon MTurk to participate in a survey constructed using Qualtrics. Participants who failed to complete the entire survey (n=19) were excluded from analysis. The final sample included 98 participants with 64 men and 34 women. The age of participants ranged from 21 to 68 years (M = 36.82, SD = 10.75).

- The survey was composed of three major sections. In the first part of the survey, participants were asked to freely list ten decisions they have made in their life. Then, in the second part, participants rated how one decision is similar to another on a 5-point scale ranging from 1 (very low) to 5 (very high) for each pair of decisions. After scoring perceived similarity between two decisions, for the third part, participants answered to what extent they agreed with statements that described characteristics of decisions they have made on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Twenty-two questions about characteristics of decision-makings are selected.(see Table 1 for a full list).

Results

- To assess the unique effects of difference in each decision characteristics on perceived distance between decisions, a multiple linear regression analysis was conducted to simultaneously regress the distance between decisions on the difference in twenty-two decision characteristics (i.e., 'This decision is usually made emotionally", "This decision is a choice between positive options").

- Difference in decision characteristics was determined by calculating the absolute difference between reported characteristics ratings. Distance between decisions was scored by reversing reported similarity scores between decisions which was rated on a 5-point scale (1 becomes 5, 2=4, 3=3, 4=2 and 5=1).

- A multiple linear regression was based on cluster-robust standard errors by participants, since among the total of 4410 decisions, each participant made 45 similarity evaluations. The full model, which included all twenty two characteristics of decision, significantly predicted the perceived distance between decisions, $R2 = .13$, $F(22, 4387) = 31.28$, $p < .001$. This indicates 13% of the variance of the perceived distance between decisions was explained by the twenty two characteristics of decision.

- It was also discovered that five of the twenty-two characteristics had a statistically significant effect on the perceived distance, in the multiple regression controlling for the other characteristics. Specifically, the perceived distance between decisions was predicted by the level of difference between decisions in emotional characteristic, $B = .085$, $t(4387) = 4.014$, $p < .001$, long-term characteristic, $B = .076$, $t(4387) = 3.537$, $p < .001$, high-risk characteristic, $B = .081$, $t(4387) = 3.702$, $p < .001$, high-impact characteristic, $B = .110$, $t(4387) = 4.037$, $p < .001$, and financial characteristic, $B = .106$, $t(4387) = 5.502$, $p < .001$ (see Table 2 for a summary of the regression analysis).

Table 1

Characteristics of decision	Questions used for decision's characteristics ratings
Four Ws and one H (what, when, where, who, how)	This decision is about deciding "what" or "which one" This decision is about deciding "when" or "which time" This decision is about deciding "where" or "which place" This decision is about deciding "who" or "which person" This decision is about deciding "how" or "which way"
Motives (rational or emotional)	This decision is usually made rationally This decision is usually made emotionally
Valence (positive or negative)	This decision is a choice between positive options This decision is a choice between negative options
Frequency (frequent or infrequent)	This decision occurs very frequently
Period (weekly, monthly, or yearly)	This is a decision you make every week or so This is a decision you make every month or so This is a decision you make every year or so
Duration (short-term or long-term)	This is a short-term decision for the present This is a long-term decision for the future
Respond time (quick or delayed)	This decision requires a great amount of time to make
Procrastination (weak or strong)	This is a decision you put off making until the last possible moment
Risk (low-risk or high-risk)	This decision involves high risk
Impact (low-impact or high-impact)	This decision has a high impact on your life
Influence (individual or social)	This is a decision that affects not only the person deciding, but also other people
Variety (limited options or multiple options)	This decision involves choosing between a variety of options
Finance (financial or non-financial)	This is a financial decision

Figure 1

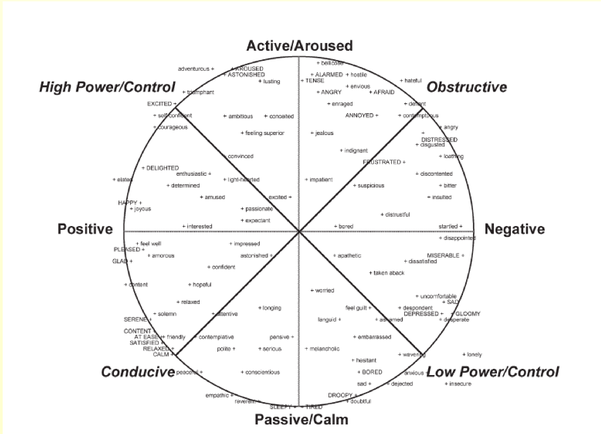

Figure 1. Past research by Scherer (2005) has shown that emotions can be categorized using factor analysis. The researcher measured level of similarity between emotions by collecting surveys. With the similarity matrix of emotions, the researcher visualized it as a map that preserves the distances using a statistical method called multidimensional scaling.

Table 2

Summary of Linear Regression Analysis Assessing the Unique Effects of Each Decision Characteristic Predicting Distance between Decisions

	Distance between Decisions		
Characteristics	*B*	*SE B*	*p*
(Intercept)	3.068	0.095	< .001
"What"	0.045	0.020	0.023
"When"	0.025	0.021	0.217
"Where"	0.037	0.013	0.003
"Who"	0.041	0.018	0.025
"How"	-0.017	0.023	0.454
Rational	-0.004	0.030	0.886
Emotional	0.085	0.021	< .001
Positive	0.050	0.026	0.053
Negative	-0.023	0.029	0.431
Frequent	0.051	0.029	0.078
Per week	0.017	0.029	0.559
Per month	-0.052	0.033	0.118
Per year	0.042	0.019	0.024
Short-term	-0.029	0.020	0.155
Long-term	0.076	0.021	< .001
Time-consuming	0.014	0.024	0.573
Procrastination	0.013	0.028	0.650
High-risk	0.081	0.022	< .001
High-impact	0.110	0.027	< .001
Social	0.040	0.024	0.090
Variety	0.053	0.023	0.022
Financial	0.106	0.019	< .001

Conclusion

- Our results revealed that participants perceived two decisions differently based on five characteristics of decision-making. Particularly, decisions are perceived different depending on whether the decisions are emotional, long-term, high-risk, high-impact, or financial. It was found that other characteristics of decisions such as frequency of decision-making or the number of options did not have significant additional effects on differentiating decisions.

- One limitation of this study is our classification of decisions relies on people's perception. It may be possible that the neurological system that draws distinction is different from our findings at perceptual level. A future study relating neurological findings to the categories of decision-making could further develop the classification of decisions.