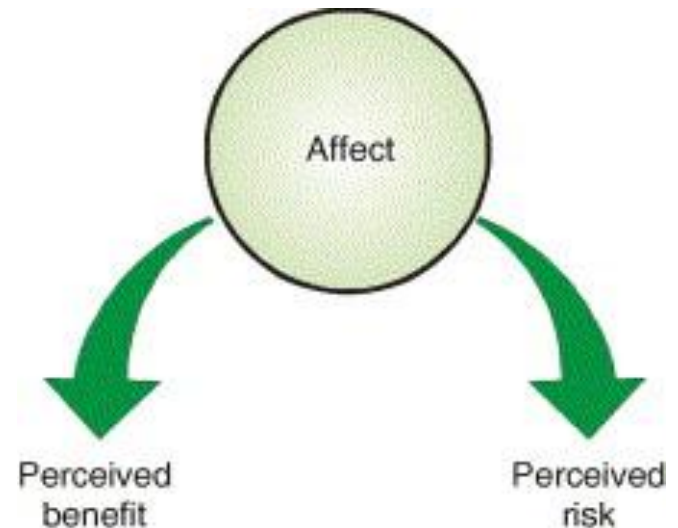


Interpretation of Risk Communication using Affect and Availability Heuristics

SE367 Term Project
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Affect Heuristic

- Decisions guided by your gut feelings
 - Emotional response
 - Perceived risk is inversely proportional to perceived benefits
-
- In 1994, Alhakami and Slovic proposed that if your feelings towards an activity (affect) is positive then perceived risk is low and perceived benefits are high.
 - On the other case if affect is negative then perceived risk is high and perceived benefits are low



A model from Ali Alkahami and Paul Slovic (1994)

Availability Heuristic

- Decision guided by availability of information and examples in your mind
- This heuristic is first given by Amos Tversky and Daniel Kahneman in 1973 **[3]**, In this paper they quote “a person evaluates the frequency of classes or the probability of events by availability, i.e., by the ease with which relevant instances come to mind”
- For example : Which is more likely a word (if picked randomly from dictionary) starts with letter “R” or “R” be the third letter of the word?
- Actually there are 3 times more words with “R” at third position than words that begin with “R”, **[5]**

Risk Communication

Important factors while perceiving risks:

- Feelings/Intuition
- Availability of Instances
- Past Experiences
- Way of communicating risk

- In 1978 Slovic [2] showed that presenting the risk faced during a lifetime of driving induced more people to wear seat belts compared with the presentation of the risk involved in the single trip

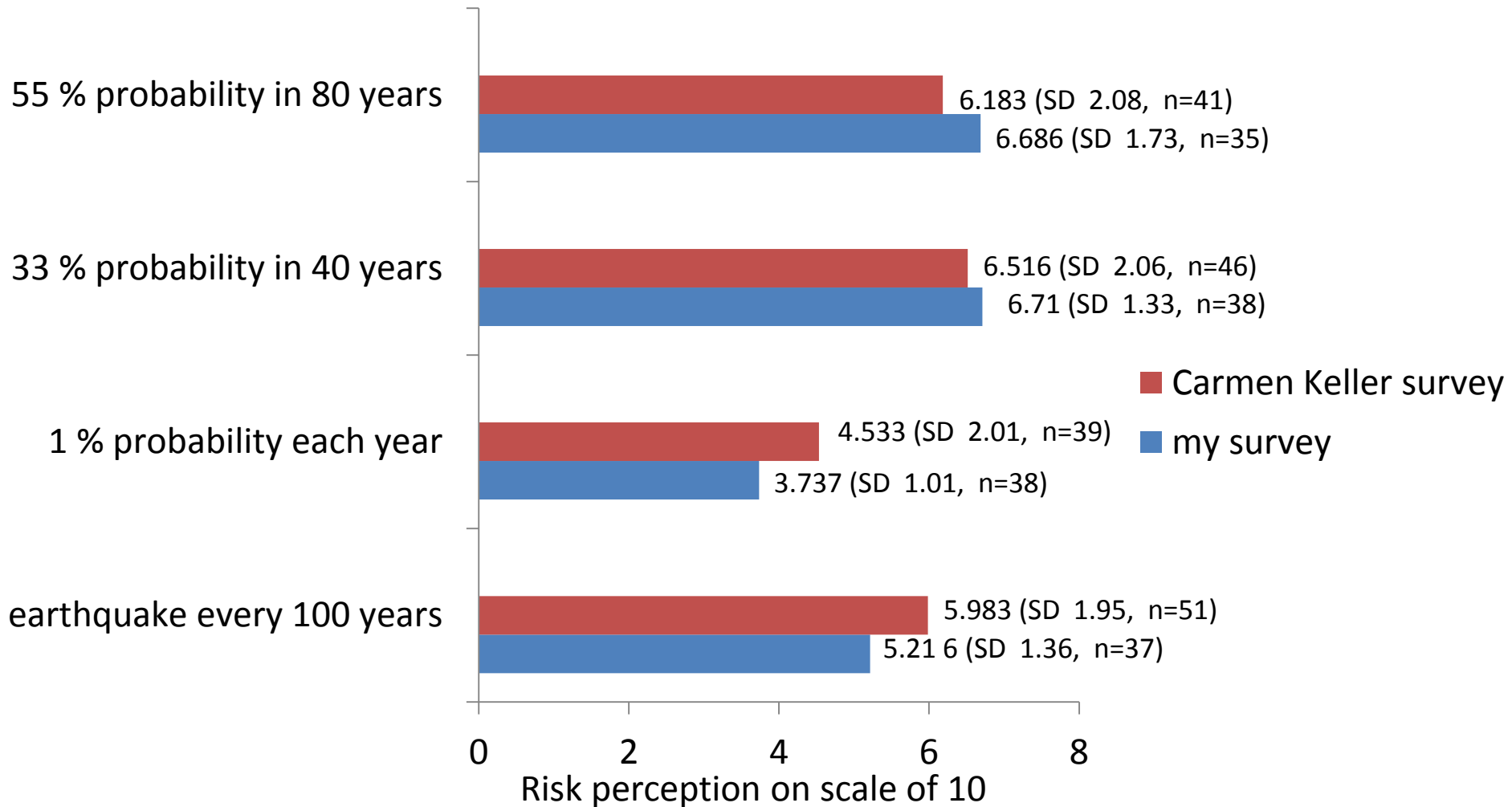
- This implies that if representation of the risk involved is for longer period of time then perception of risk is high

Study 1

- Situation given to participants: Purchasing house
- Information given (any one the following):
 1. On an average, there is a earthquake every hundred years.
 2. Each year, there is a 1% probability of earthquake.
 3. Within 40 years, there is a 33% probability of earthquake.
 4. Within 80 years, there is a 55% probability of earthquake.
- Participants were asked how risky would they consider living in a place like this?
They were asked to rate their risk on a scale of 1(not risky at all) to 10(Highly risky)
- It was expected from the participants that they should perceive higher risks for the probabilities represented for longer period of time

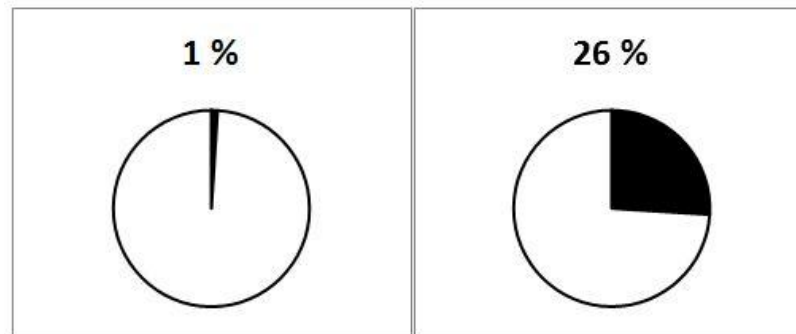
Source: Taken from experiments done by Carmen Keller, Michael Siegrist and Heinz Gutscher in 2006, [1]

Study 1 Results



Study 2

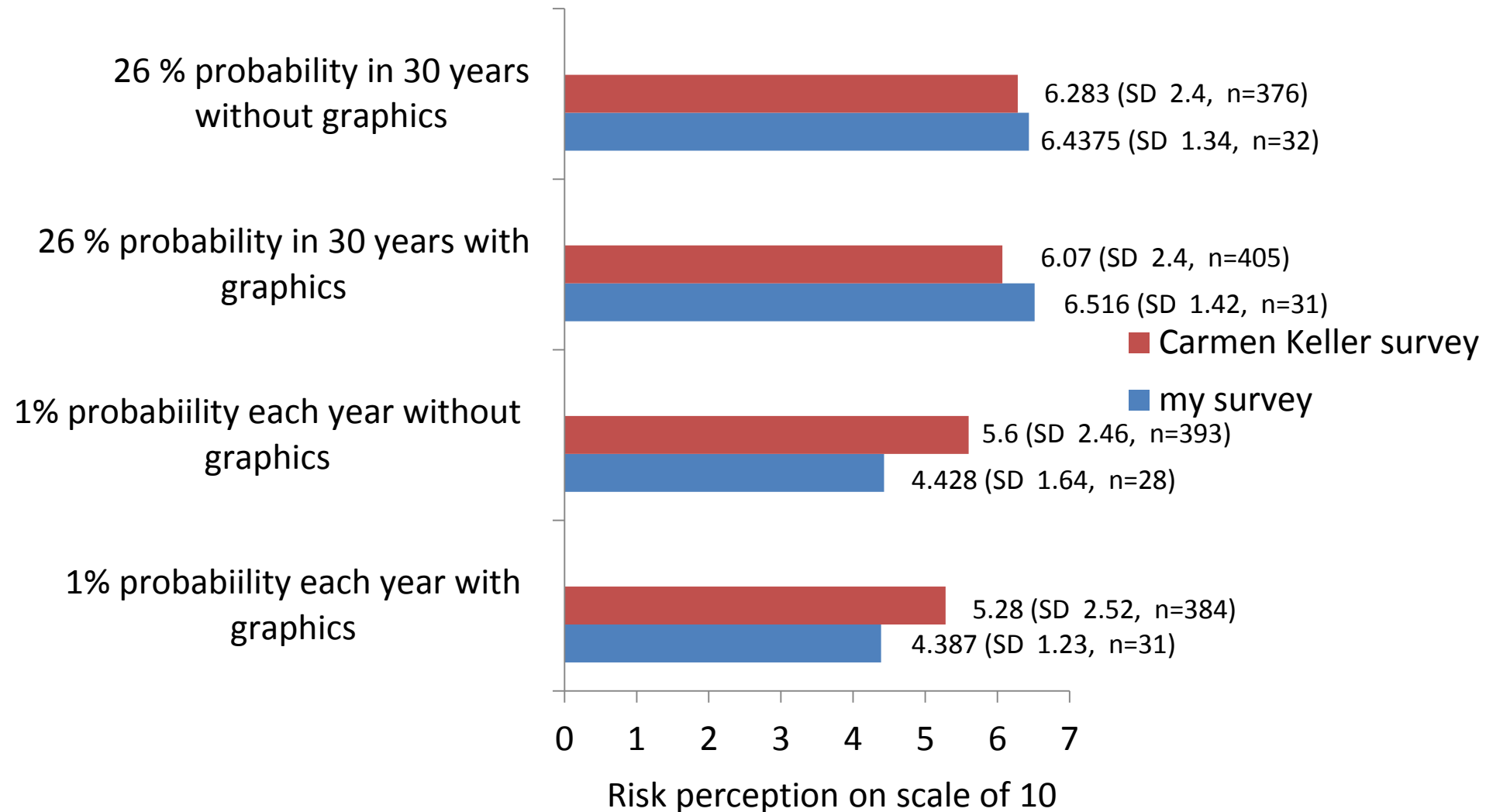
- Situation given to participants: Purchasing house
- Information given for probability of flood (any one the following):
 1. Probability of 1% within one year, without graphical display
 2. Probability of 1% within one year, with graphical display
 3. Probability of 26% within 30 years, without graphical display
 4. Probability of 26% within 30 years, with graphical display



- Participants were asked how risky would they consider living in a place like this?
They were asked to rate their risk on a scale of 1(not risky at all) to 10(Highly risky)

Source: Taken from experiments done by Carmen Keller, Michael Siegrist and Heinz Gutscher in 2006, [1]

Study 2 Results



Study 3

Situation given to participants: Purchasing house

Group 1

Shown 2 photographs of normal houses for 30 seconds

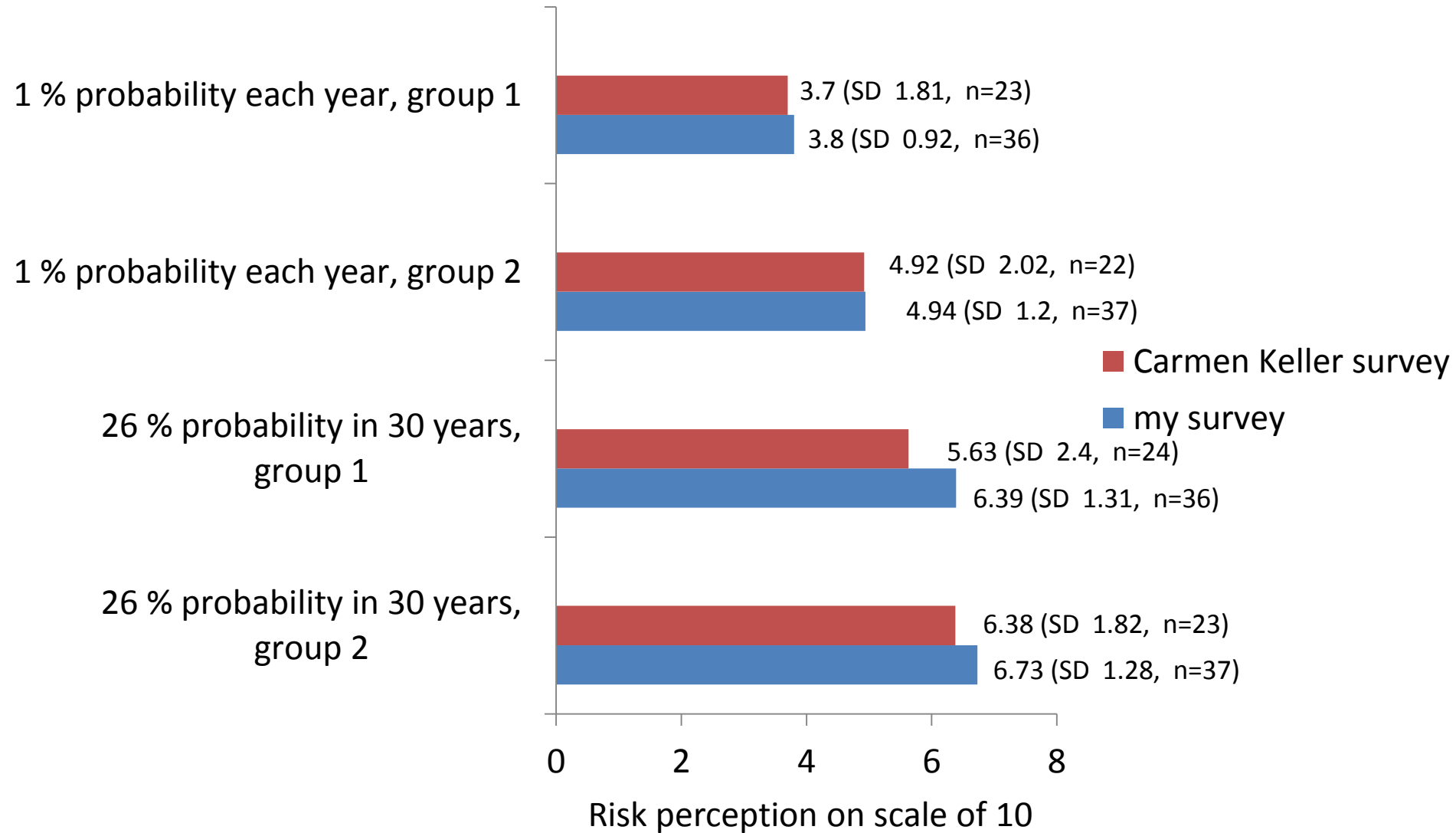
Group 2

Shown 2 photographs of houses affected by earthquakes for 30 seconds

- Information provided (any one of the following):
 1. 1% probability of earthquake within one year.
 2. 26% probability of earthquake within 30 years.
- It was expected from the participants that the availability of earthquake effected images will evoke some negative emotions and risk perception would increase

Source: Taken from experiments done by Carmen Keller, Michael Siegrist and Heinz Gutscher in 2006, [1]

Study 3 Results



References

- [1] Carmen Keller, Michael Siegrist and Heinz Gutscher, "The Role of the Affect and Availability Heuristics in Risk Communication", *Risk Analysis*, Vol. 26, No. 3, 2006
- [2] P. Slovic, B. Fischhoff, S. Lichtenstein, "Accident probabilities and seat belt usage: A psychological perspective", *Accident Analysis & Prevention*, Volume 10, Issue 4, December 1978, Pages 281–285
- [3] Paul Slovic, Melissa L. Finucane, Ellen Peters, Donald G. MacGregor, "The affect heuristic", *European Journal of Operational Research*, Volume 177, Issue 3, 16 March 2007, Pages 1333–1352
- [4] Melissa L. Finucane, Ali Alhakami, Paul Slovic and Stephen M. Johnson, "The Affect Heuristic in Judgments of Risks and Benefits", *Journal of Behavioral Decision Making*, 1-17 (2000)
- [5] Wikipedia, "Affect Heuristic", "Availability Heuristic"