# The Influence of Contour on Similarity Perception of Star Glyphs

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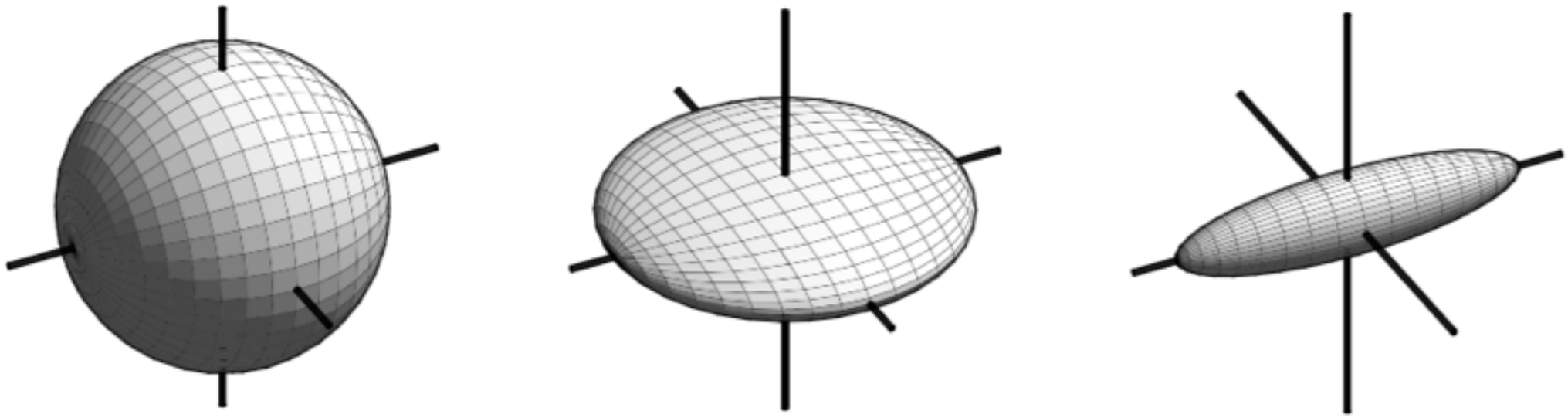
present by Kailun Zhang

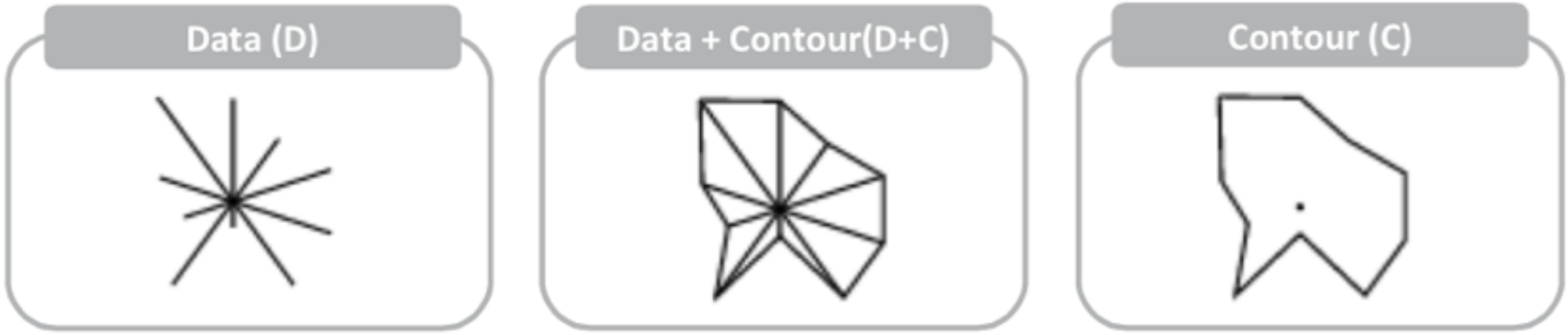
# What is a glyph?



(a) (b) (c)

# Star Glyph

# Primary Motivation

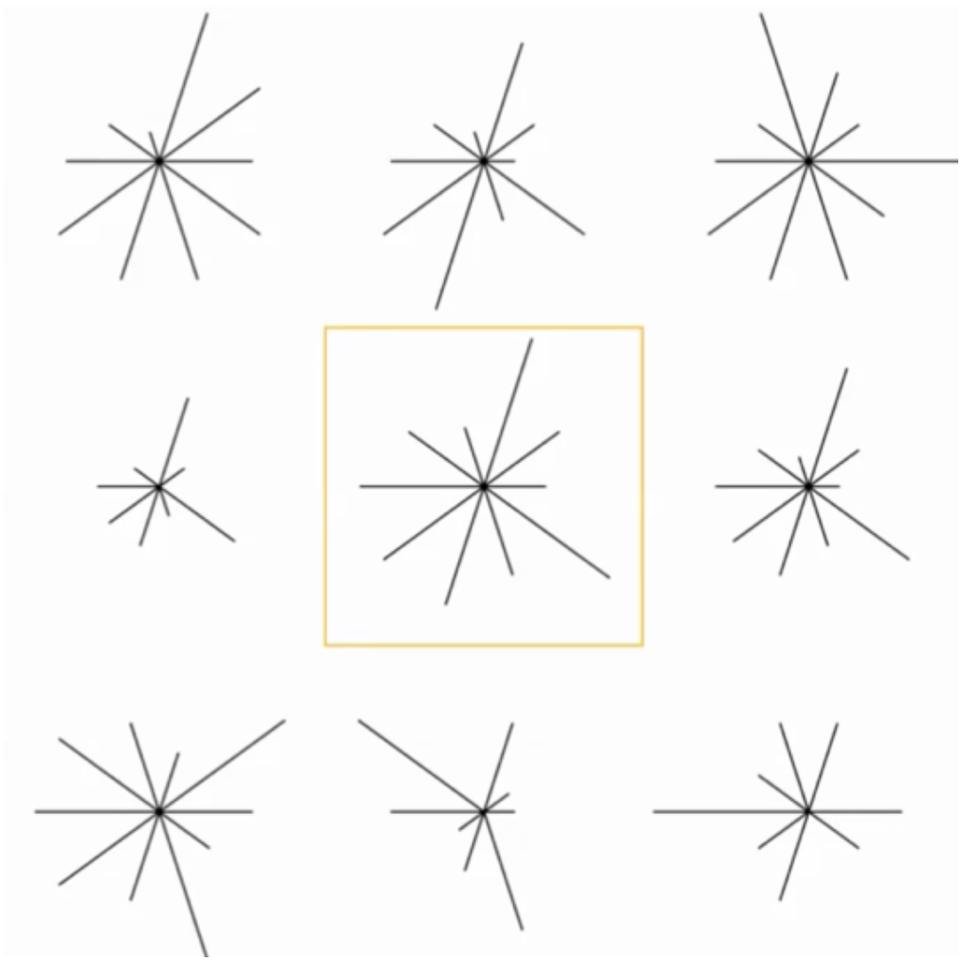


# Experiment 1 - Research Question

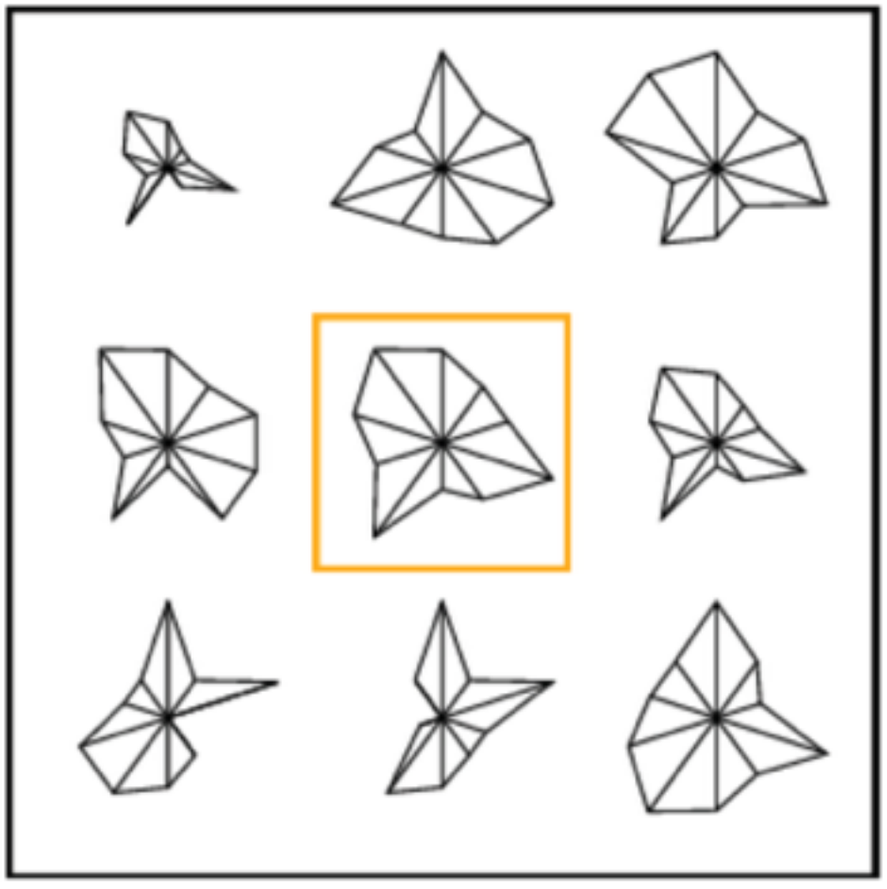
- Does contour affect people's perception of data similarity with star glyphs?

# Experiment 1 - Definition

- data similarity
    - d1 = {5,8,4} & d2 = {4,9,4}
    - d1 = {5,8,4} & d3 = {5,3,1}



# Experiment 1 - Task Setup



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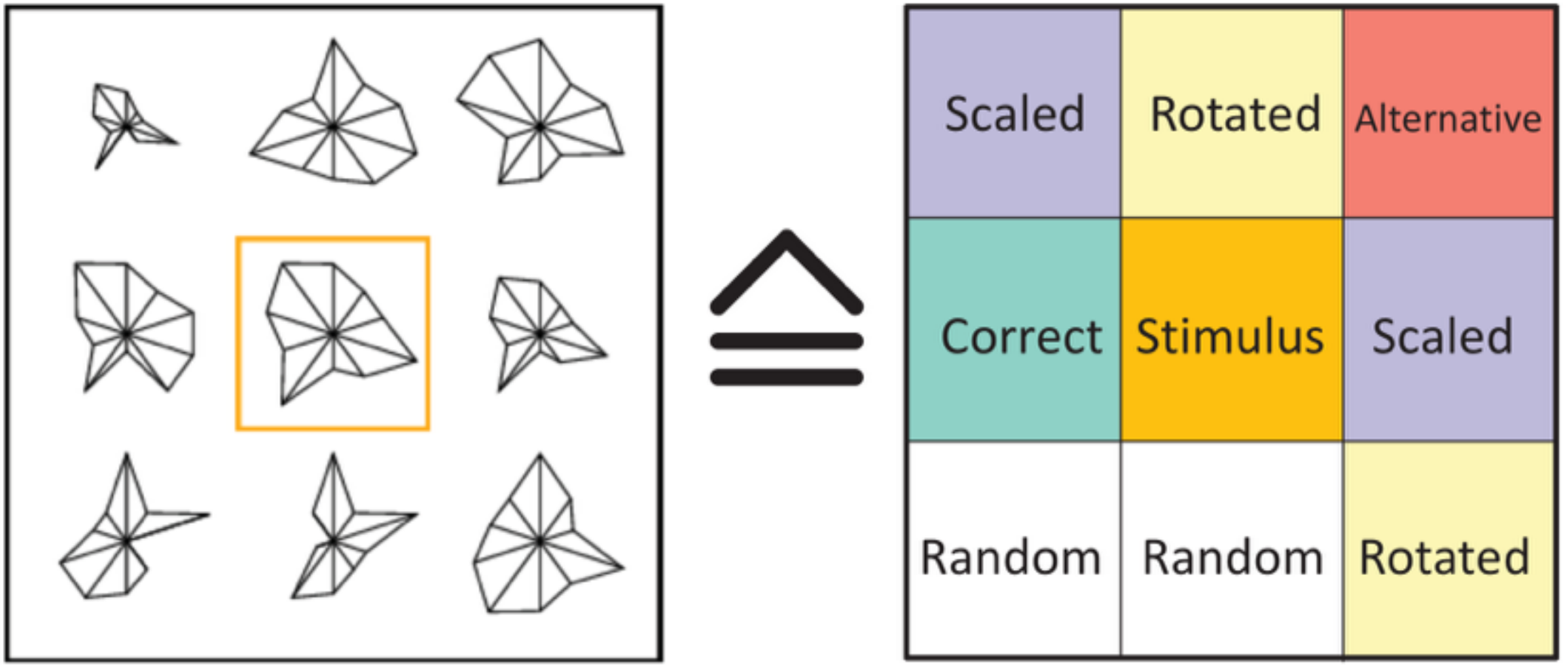
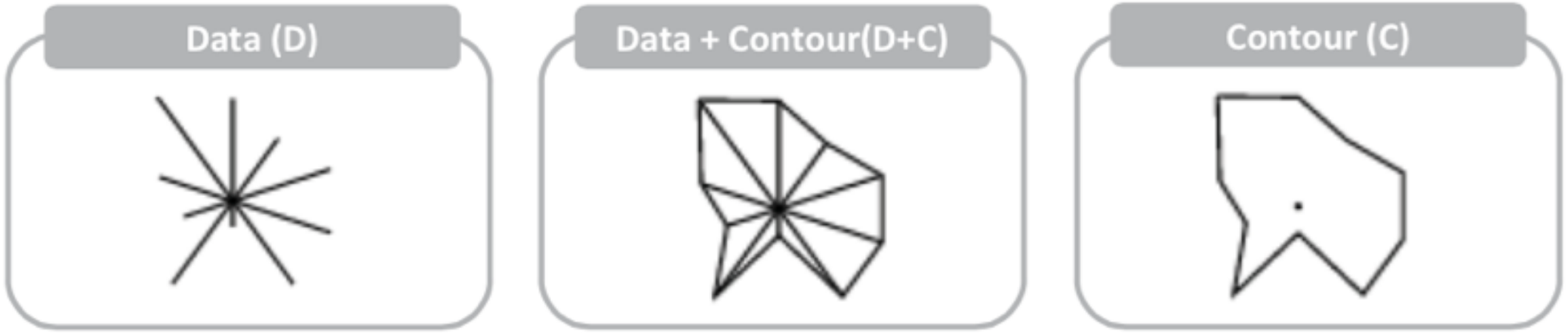


# Experiment 1 - Experiment Design

- factor 1 - contour variations (D,D+C,C)



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- factor 2 - dimensionalities (high, low)

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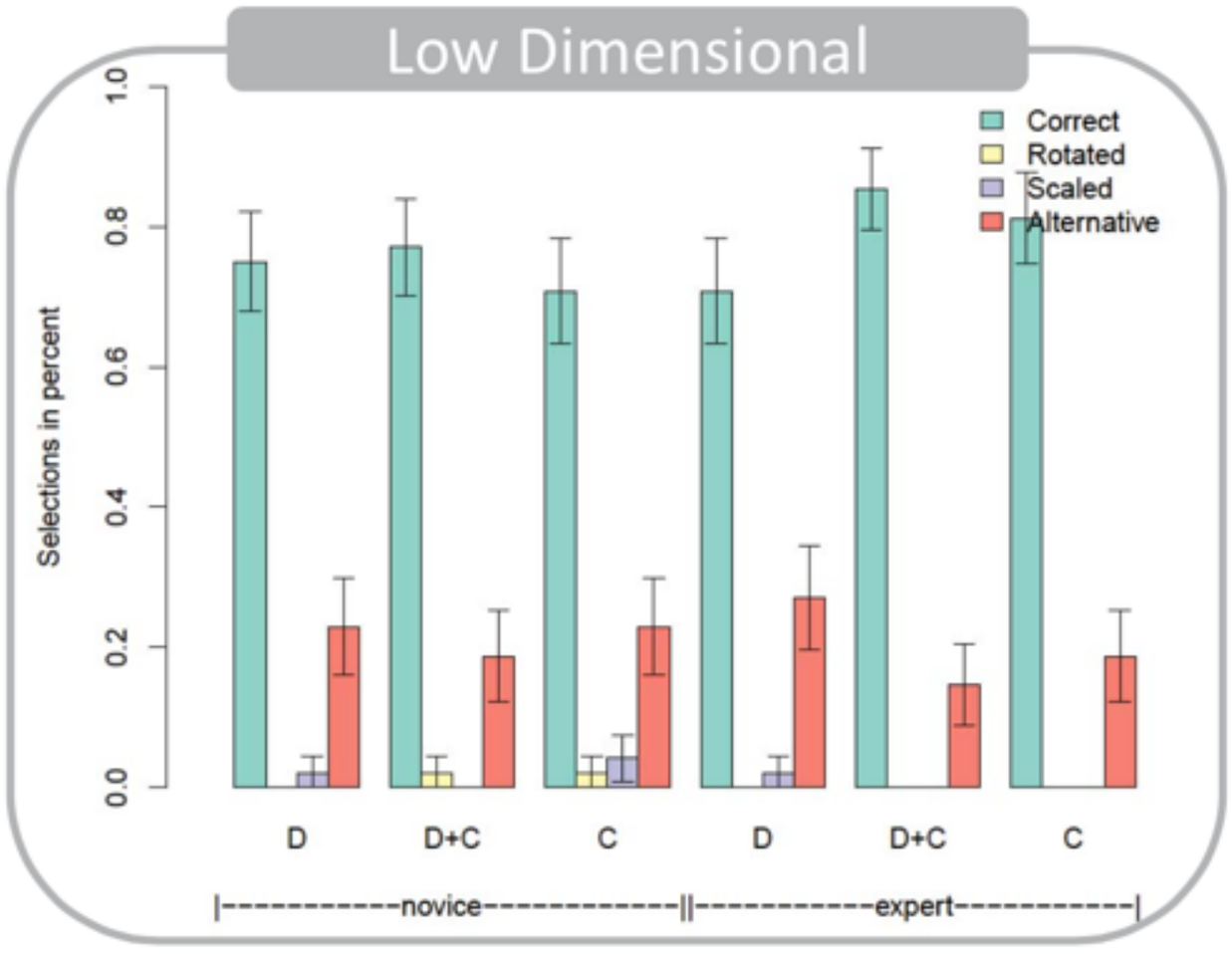
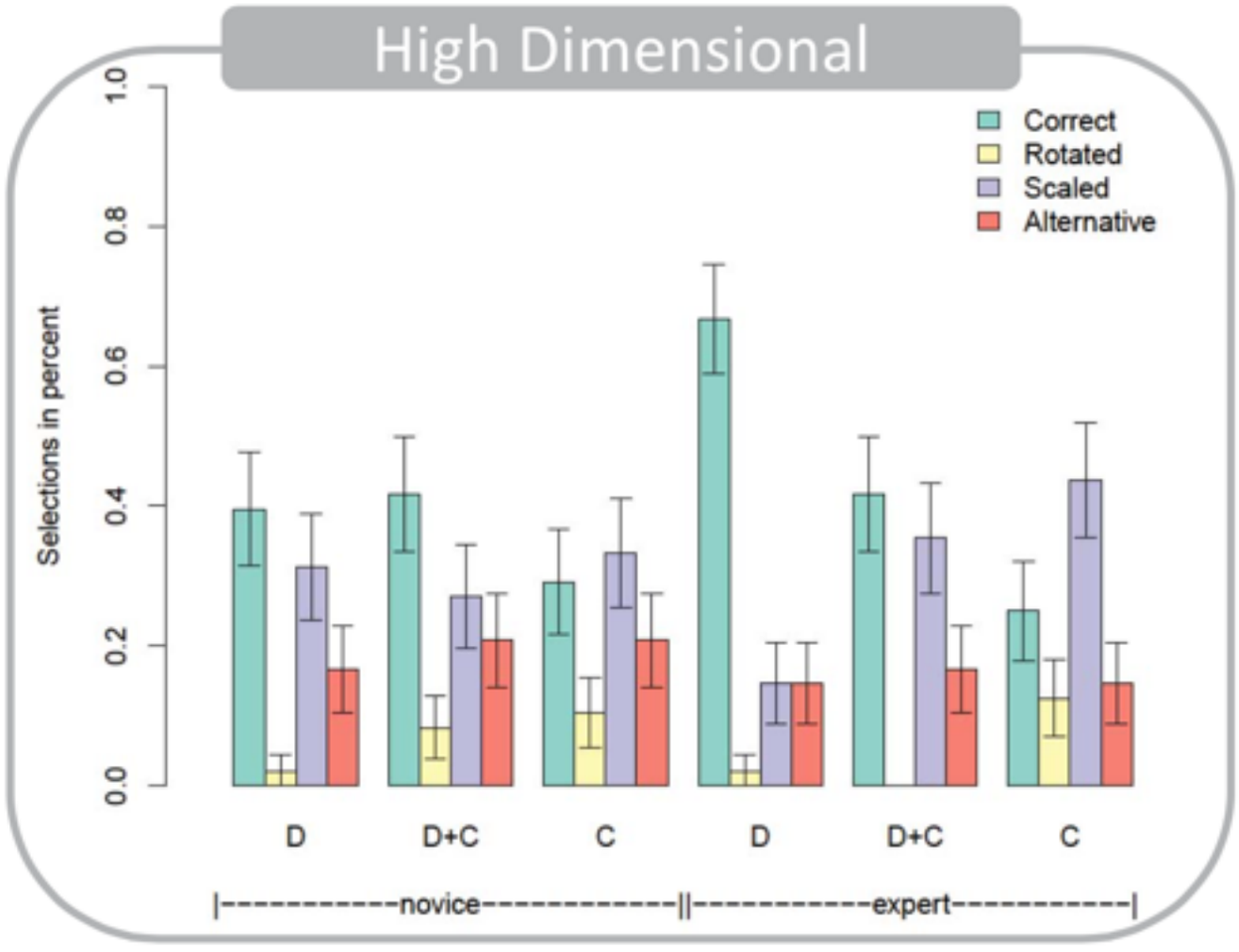
- factor 1 - contour variations (D,D+C,C)
- factor 2 - dimensionalities (high, low)
- factor 3 - expertise (novice user, expert user)

# Experiment 1 - Result



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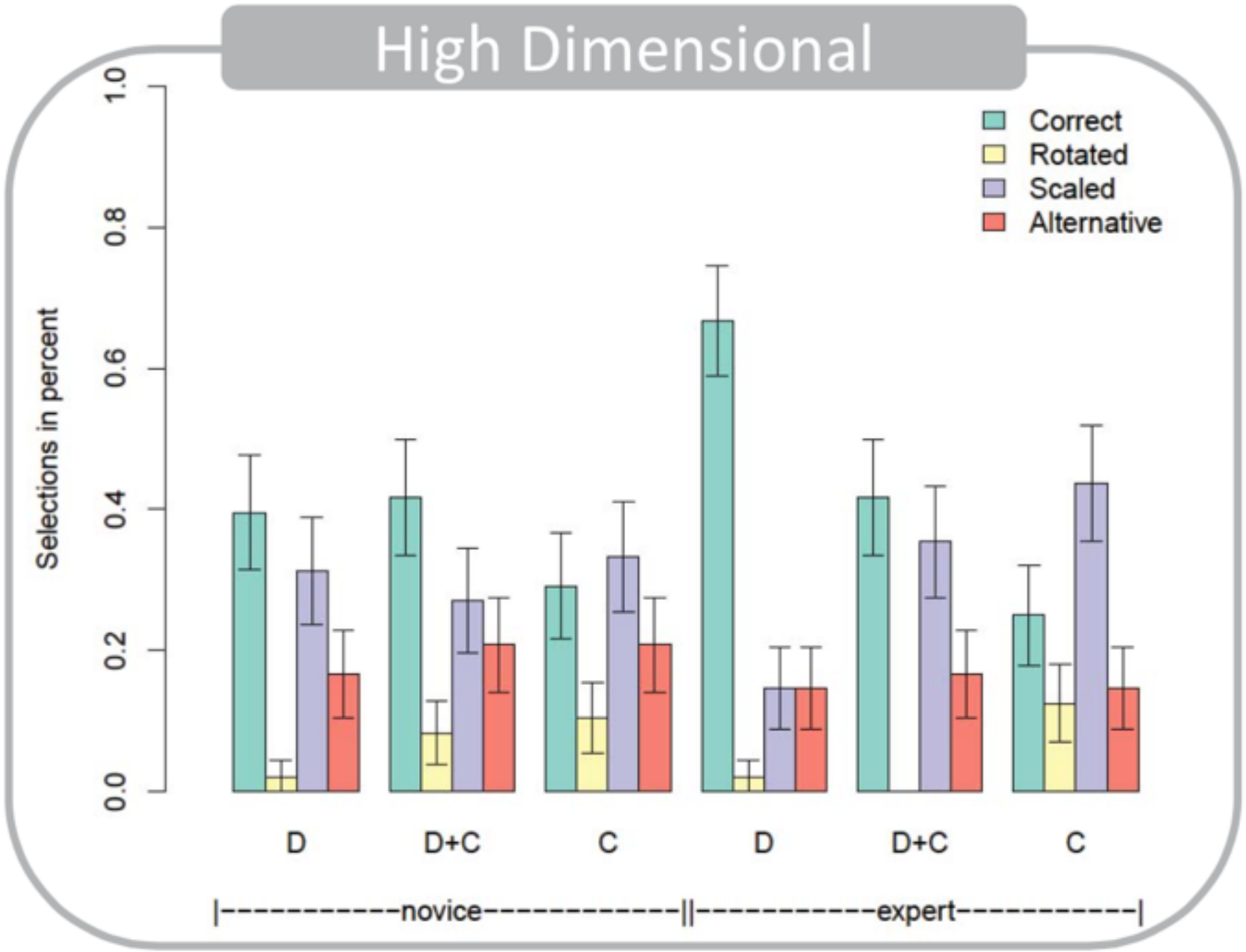
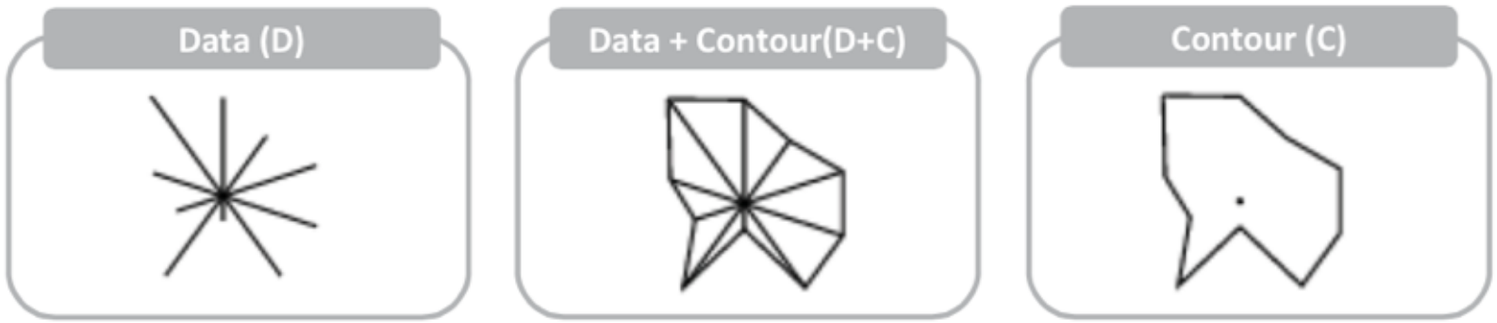
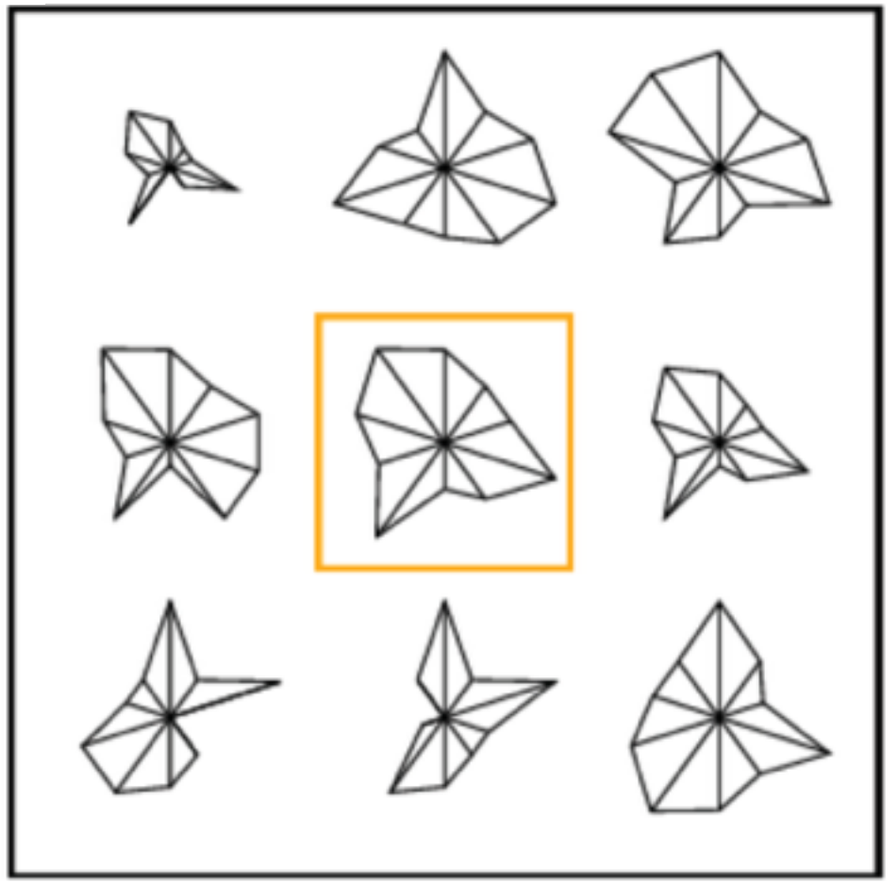


# Experiment 1 - Discussion

- the negative effect of contour




- Judging shape rather than data similarity

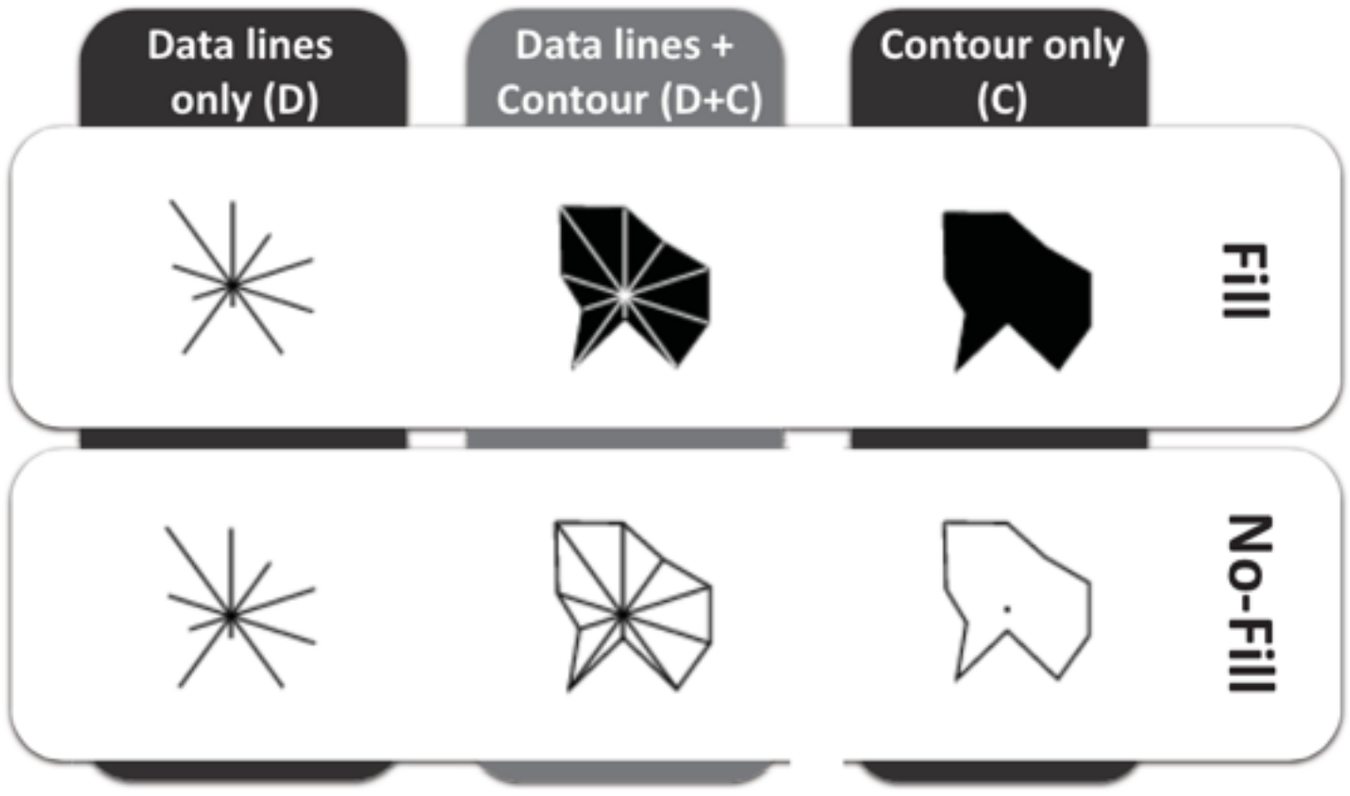


# Experiment 2 - Question

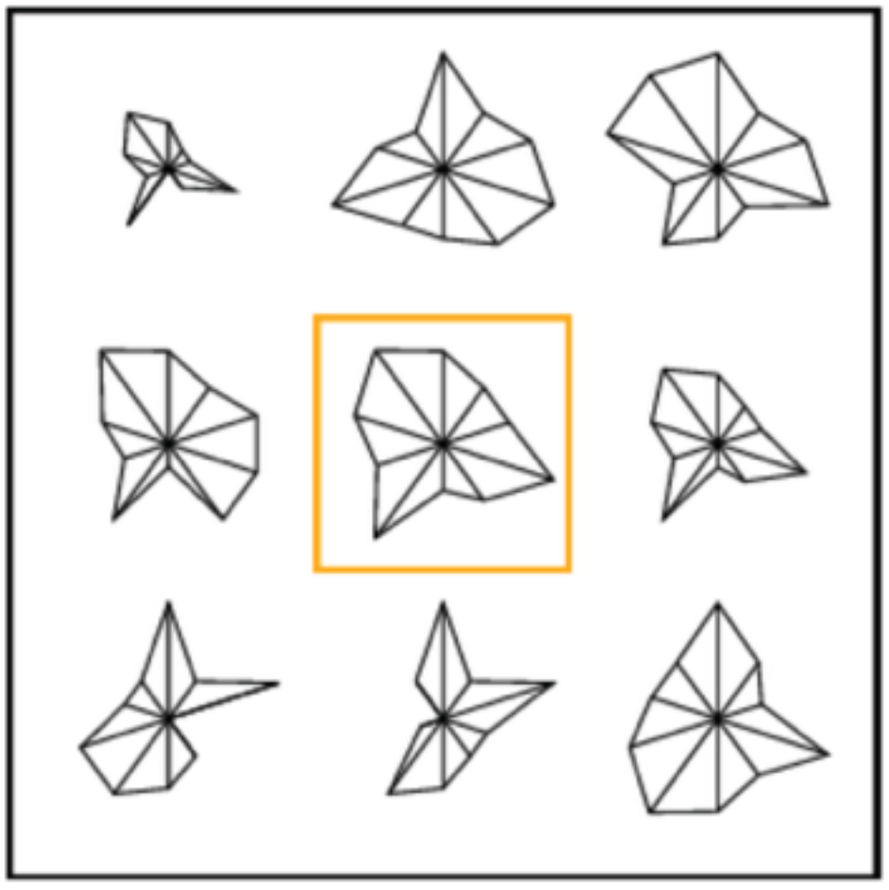
- If viewers do not know which similarity they are looking for, will they go with shape similarity or data similarity?

# Experiment 2 - Experiment Design

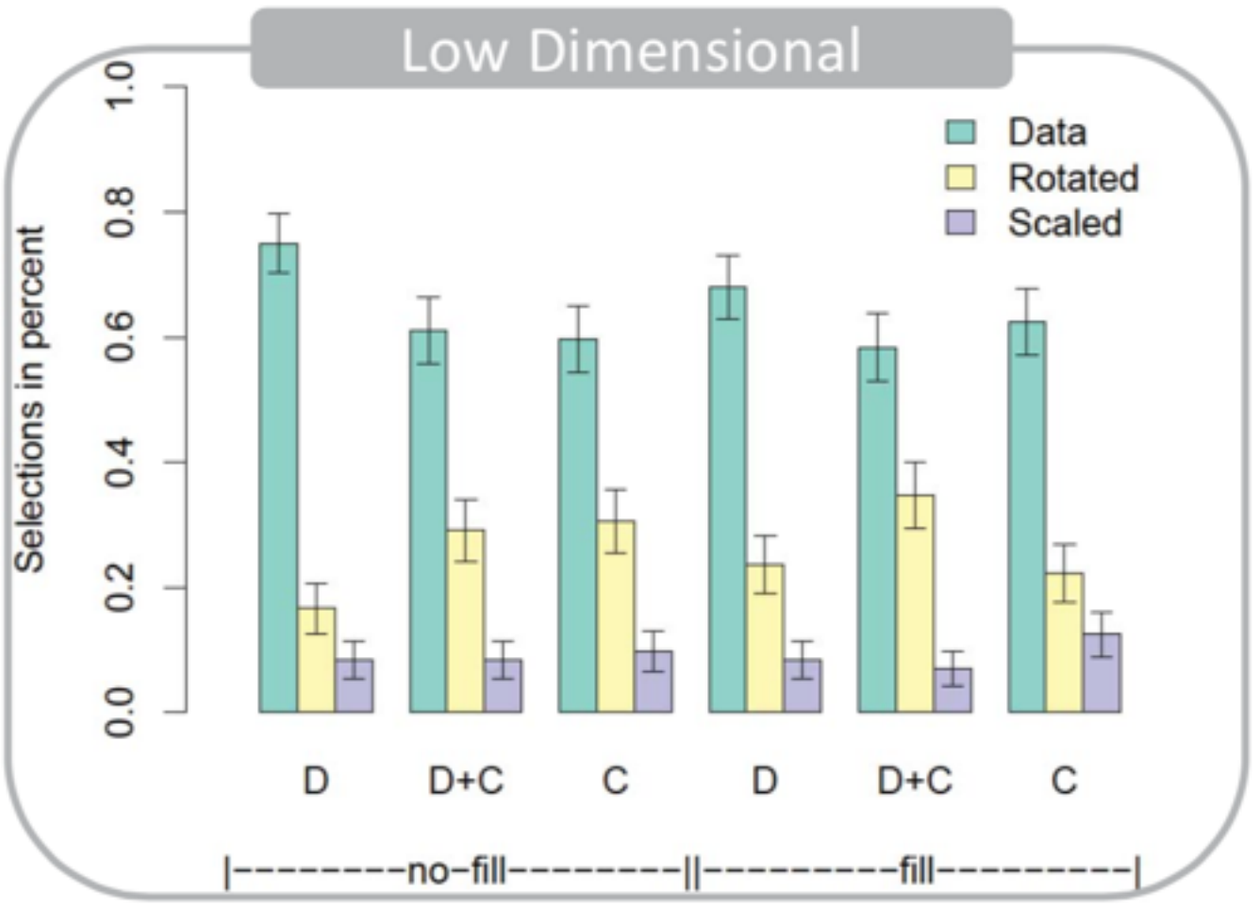
- factor 1 - contour variations (D,D+C,C)
- factor 2 - dimensionalities (high, low)
- factor 3 - filling types (Fill, No-Fill)

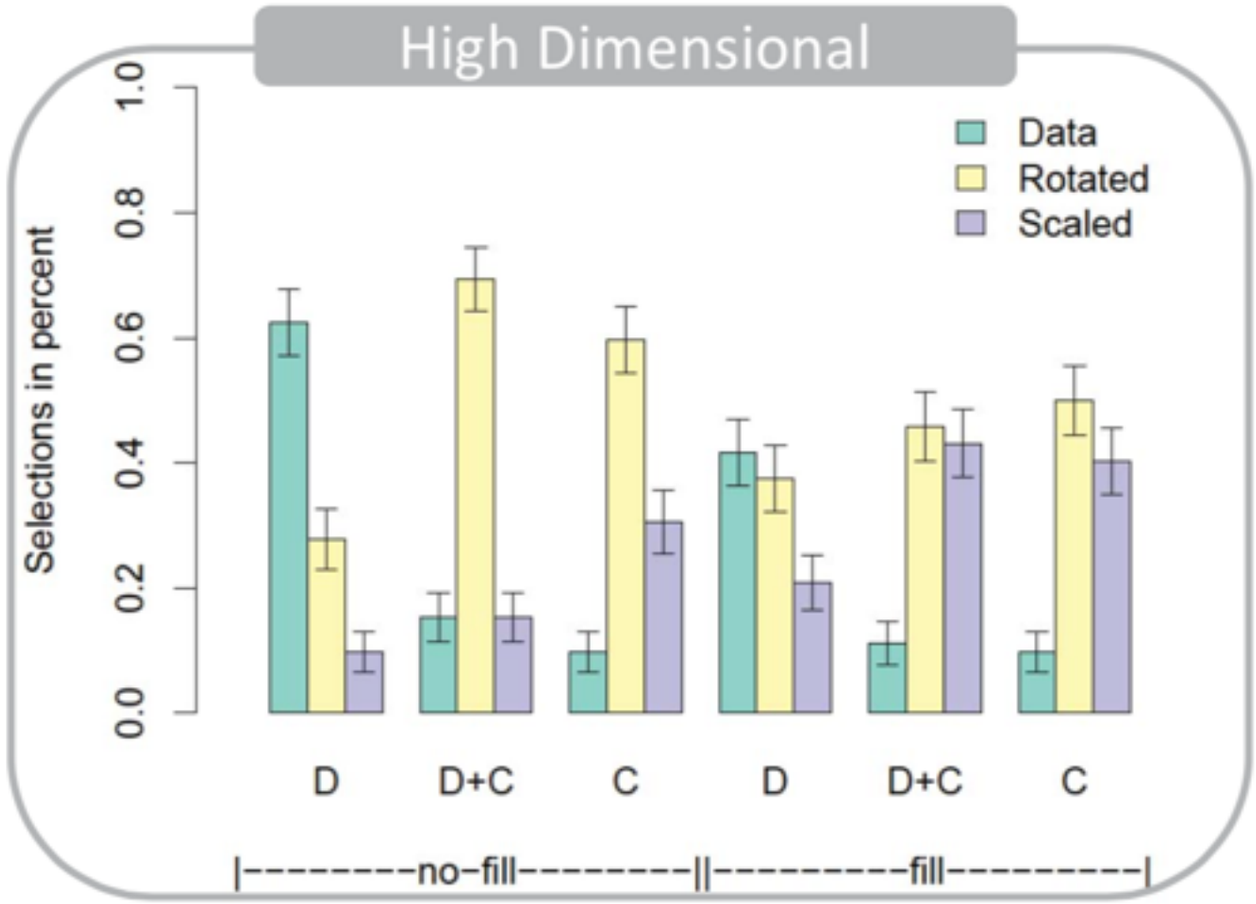


# Experiment 2 - Task Setup



# Experiment 2 - Result



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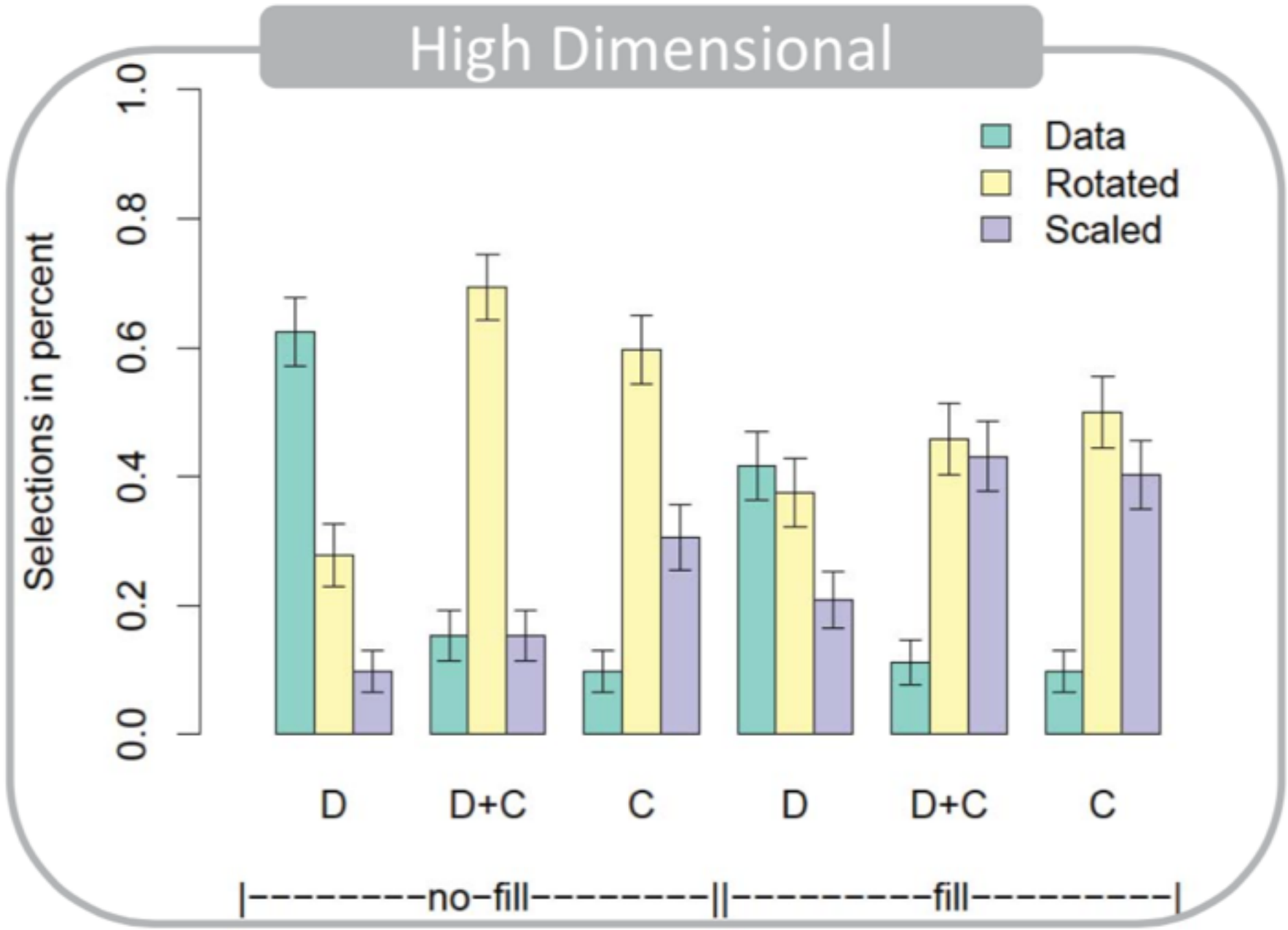


# Experiment 2 - Discussion

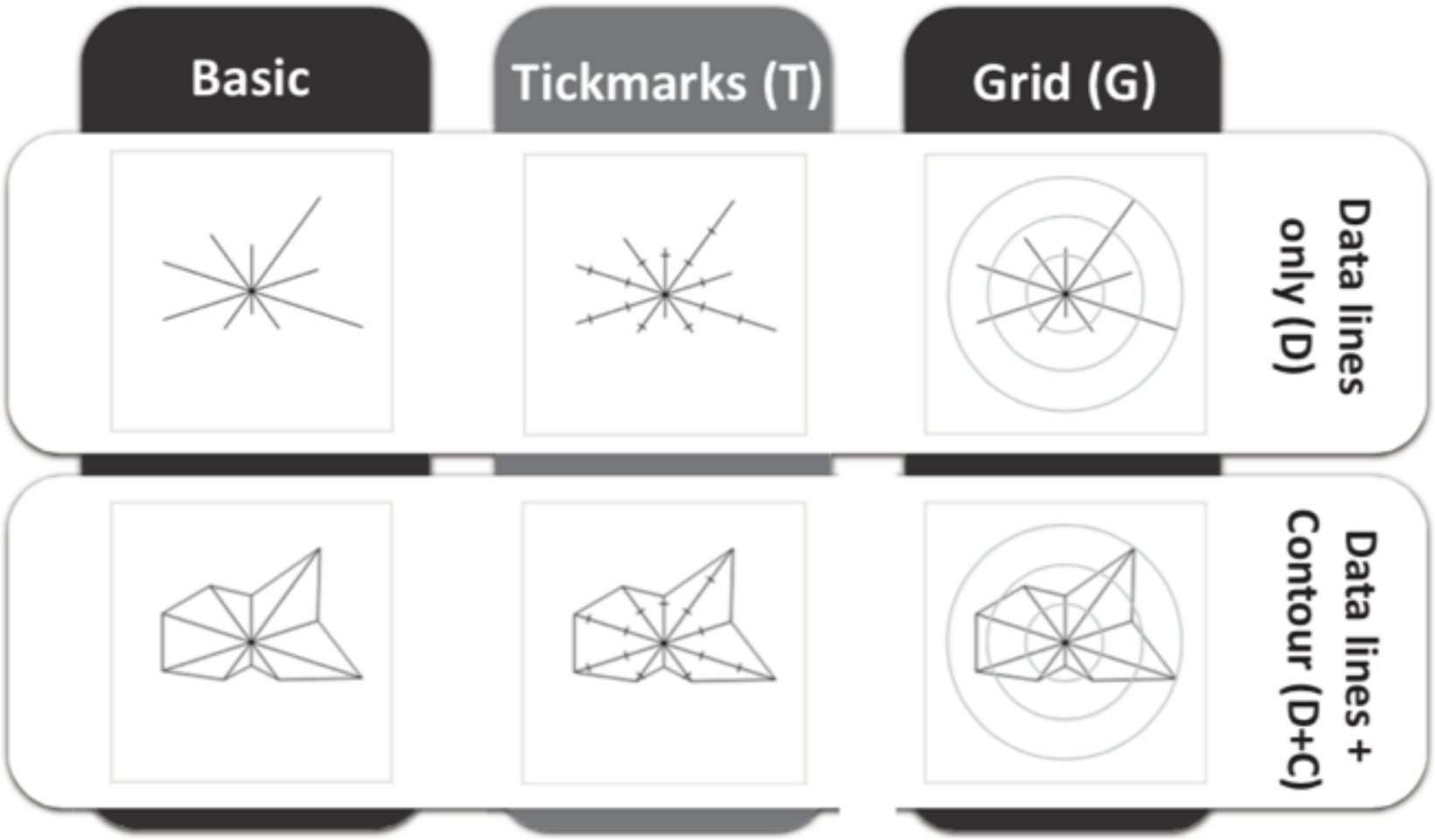
- Natural tendency of people to judge glyphs
    - low-dimension: “data-centric”
    - high-dimension + D: “data-centric”
    - high-dimension + C (+ D) : “shape-centric”

# Experiment 3 - Research Question

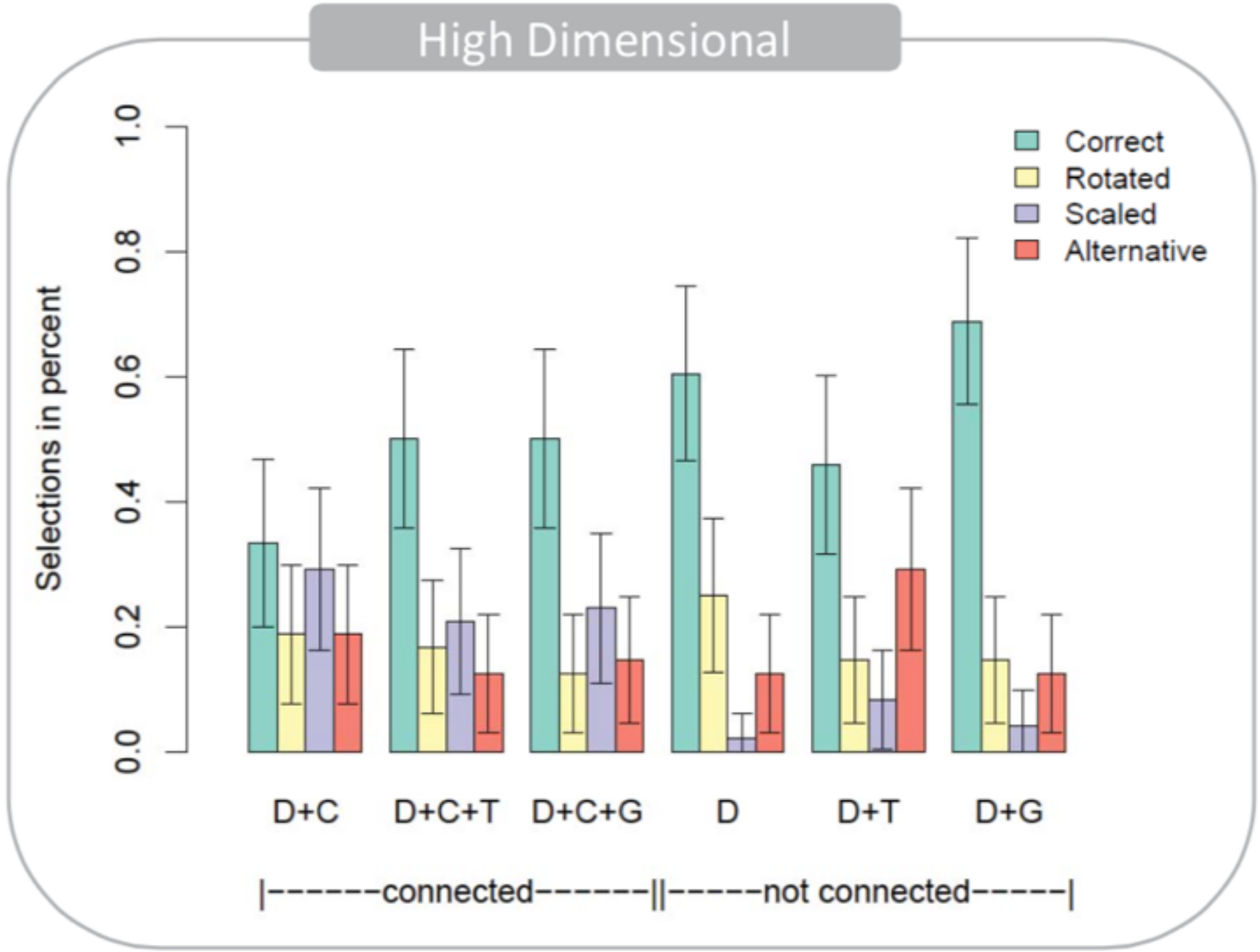
- Can we improve accuracy of data similarity by adding reference structures?

# Experiment 3 - Experiment Design

- factor 1 - contour variations (D,D+C)
- factor 2 - improvements (basic, T, G)



# Experiment 3 - Result & Discussion



# Experiment 3 - Result & Discussion

- Strongly preferred
  - D+C 
  - D+C+G 
- Hardest to use
  - D 

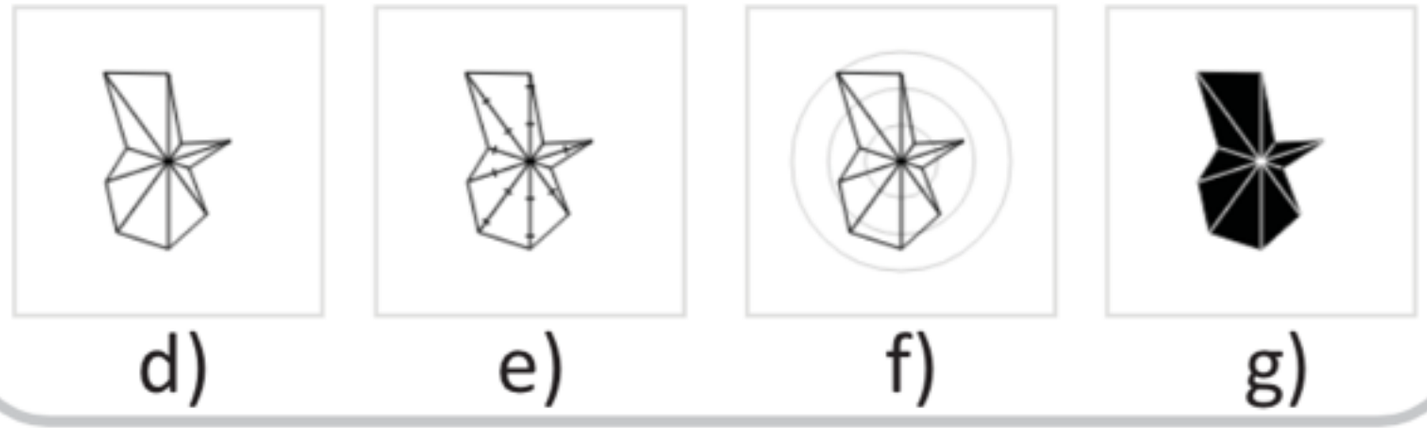
# Critics

- Methodology-wise
    - Participant group
    - Order effect of conditions
- Content-wise
    - Generalizability to other glyphs?
    - Cut-off point in dimensionality

## Data lines only (D)

a) b) c)

## Data lines + Contour (D+C)



d) e) f) g)

## Contour only (C)

h) i)