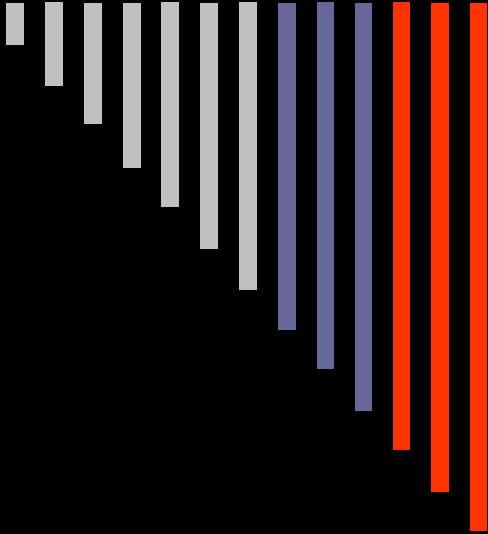


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# The Effect of Conceptual Metaphor on Text Comprehension

Graduate School of Education  
Kyoto University, Japan

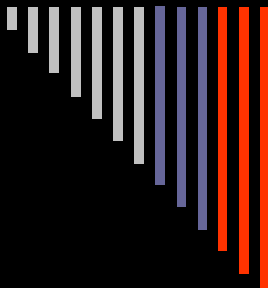
Tomohiro Taira ([sakusha@syd.odn.ne.jp](mailto:sakusha@syd.odn.ne.jp))

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# Presentation Points

- About Conceptual Metaphor
  - The conceptual structure extended from experience (Lakoff & Johnson, 1980)
  - “Target” concept depends mostly on “Base” concept (Lakoff, 1990)
- Conceptual Metaphor in Cognitive Psychology
  - Redefinition of Conceptual Metaphor in this presentation
- The Role of Conceptual Metaphor in Reading Processing
  - Revealed by Psychological Experiment



# Conceptual Metaphor and Comprehension

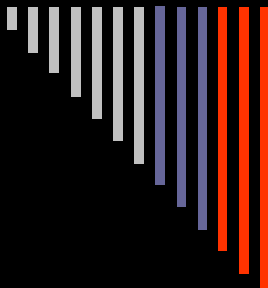
## □ Metaphor-Based Schema

- Conceptual metaphor creates the schema of “Target” concept in the basis of “Base” concept (Allbriton, 1995).
- The elements related to the same metaphor-based schema are more closely linked to each other (Allbriton et al, 1995).
- Metaphor-based schema can play a selective role in acquiring information when we think and understand.



# Conceptual Metaphor In Japanese

- “Argument is Building”
  - Ideas are the materials of discussion.
  - “Your opinion is so weak that you can’t persuade me.”
- “Scholastic Ability is Money”
  - It is very important matters.
  - “The harder you study, the easier you become in the future.”



# Conceptual Metaphor in Cognitive Psychology

- Conceptual metaphor itself cannot be researched because of its definition (Murphy, 1996).
- Previous studies in Cognitive Psychology argue that conceptual metaphor should be defined as the coherence of text-representation.



# Research Questions

## 1. What are we comprehending?

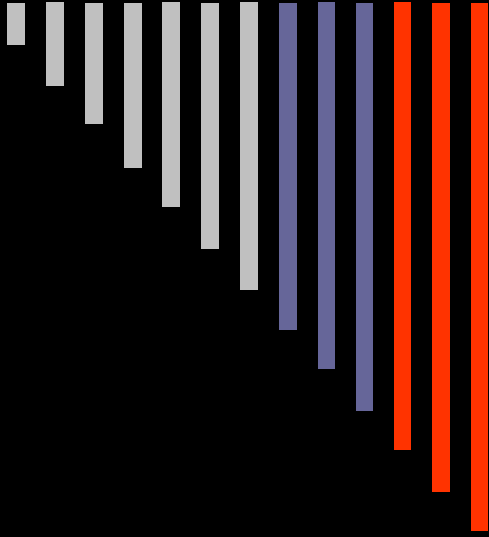
- Most researches focus on the result of acquiring information, **not on the online process.**

## 2. How do we access information?

- Previous studies show the promoting effect of metaphors on accessibility in offline process.
- Use of metaphors helps us comprehending.

## 3. How do we construct information?

- Metaphor-based schema helps.
- Conceptual structure is changed in the basis of conceptual metaphors.



# Experiment

# The Experiment Procedure

Metaphor Presentation  
or No Presentation



“Argument is like Building.”  
or (No priming sentence)

Reading Task  
(Index: Reading Time)

First, the Argument itself has processing and contents. We consider what we will and should talk about. We start from the clear fact to the result which is required to be proved. Discussion is processing like this. ....

Comprehension Test  
(Index: Reaction Time)

YES or NO ?

Argument has processing.	(YES)
Argument is battle of word.	(NO)

Writing Essay  
(Index: Word Frequency)

Write what you think about “Argument” in 10 minutes freely.

## Participants

Exp1 : 18 Kyoto University undergraduates  
Exp2 : 16 Kyoto University undergraduates

## Materials

Japanese Text about “Argument”  
High-Conventional Metaphor (Rating: 3.63)  
Japanese Text about “Scholarship”  
Low-Conventional Metaphor (Rating: 2.44)

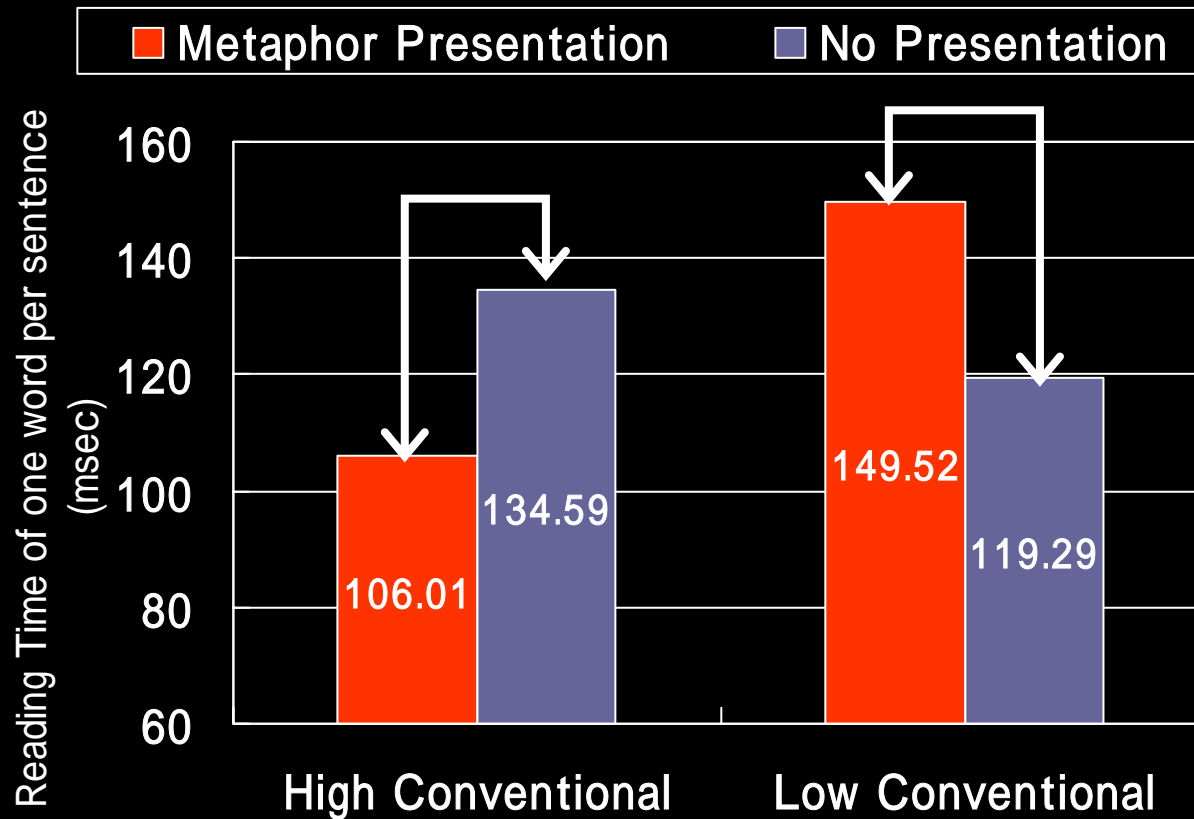




# Results

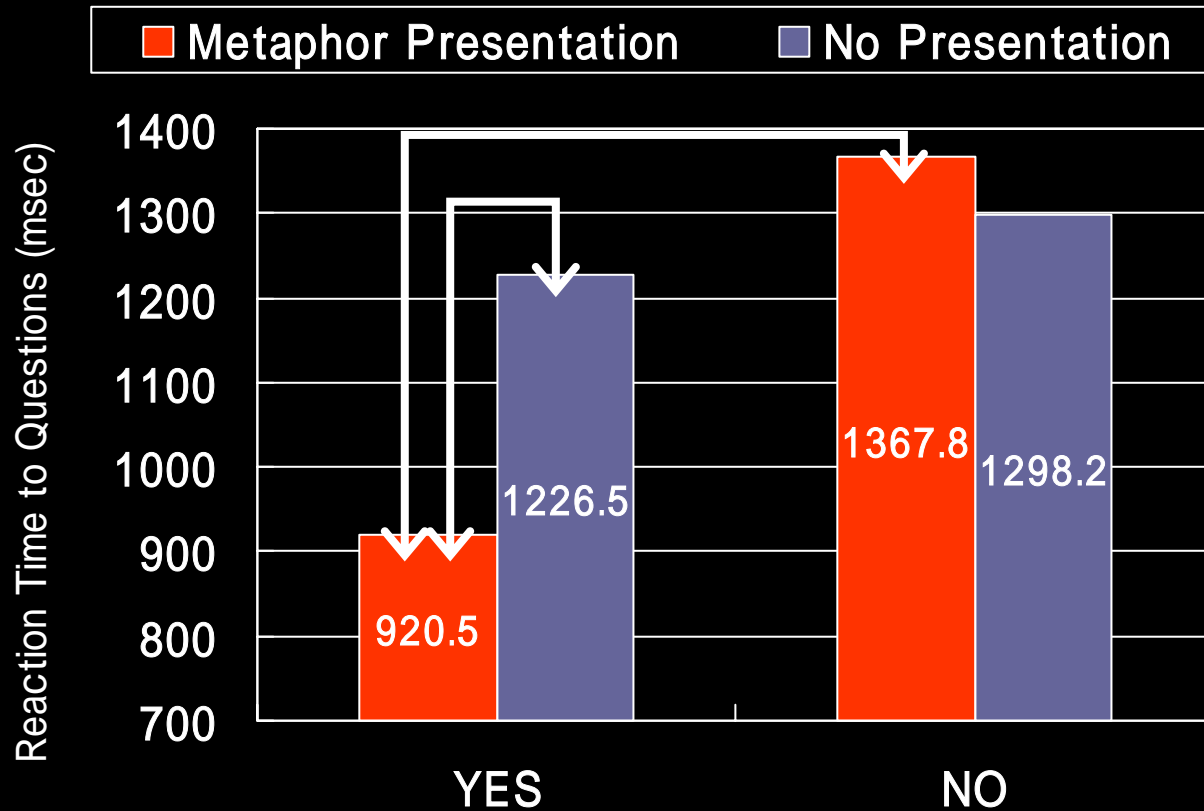
- Whether metaphor use or no use shows...
  1. Difference in Online Processing
    - Results of Reading Time from EXP2
  2. Difference in Accessibility to information
    - Results of Reaction Time from EXP2
  3. Difference in Conceptual Structure
    - Results of word frequency analysis from EXP1

# Result Exp 2: Reading Time



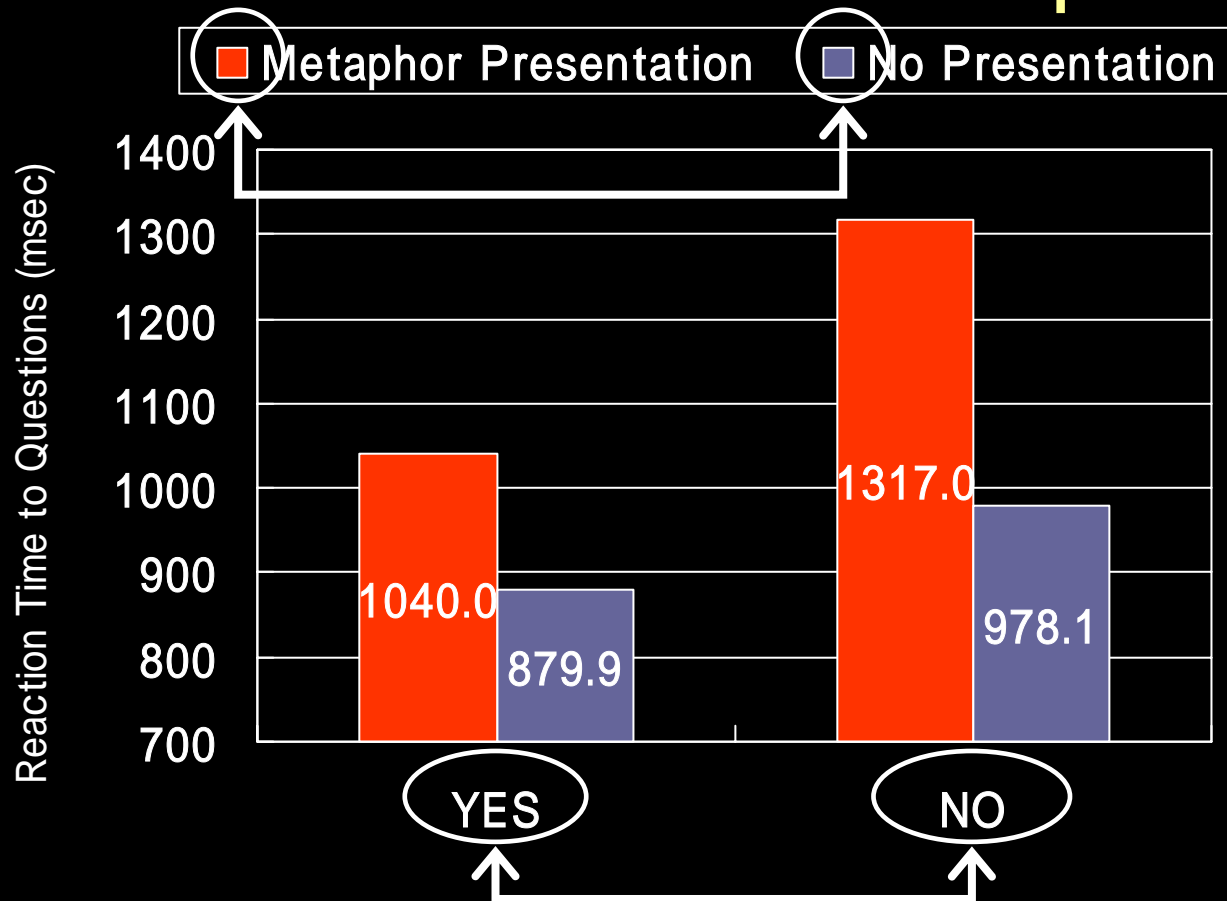
Participants in the High-Conventional metaphor condition read faster when the metaphor is presented. On the other hand, participants in the Low-Conventional metaphor condition read faster when no metaphor is presented.

# Reaction Time Exp2: High-Conventional Metaphor



Participants in the High-Conventional metaphor condition react faster when the metaphor is presented. The metaphor presentation activates acquired knowledge, which increases accessibility and makes reaction time faster.

# Reaction Time Exp2: Low-Conventional Metaphor



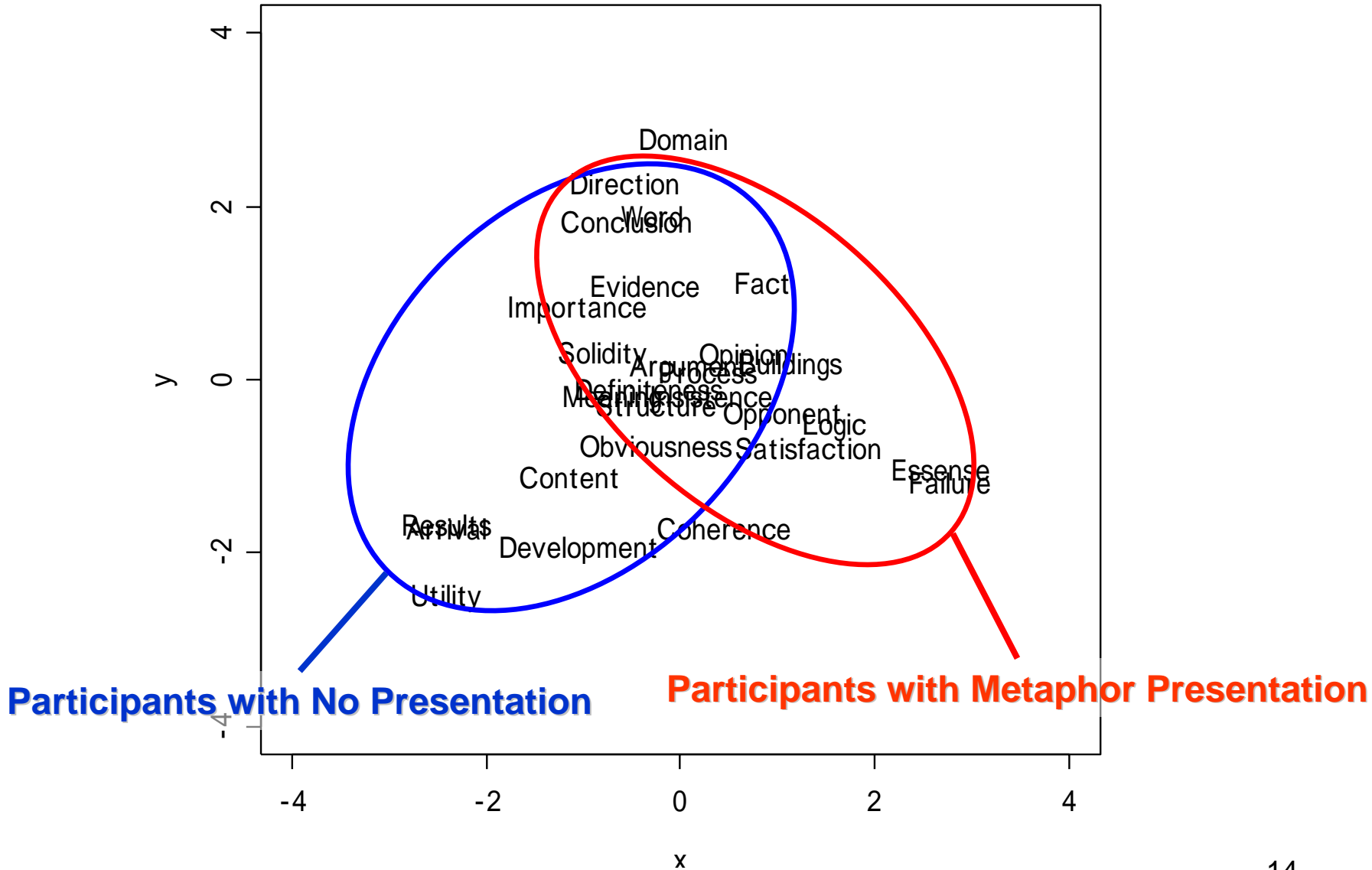
On the other hand, participants in the Low-Conventional metaphor conditions read faster when no metaphor is presented. Main effects of “Metaphor-Use” and “Reaction Type” are significant. This shows that in low-conventional metaphor conditions, the metaphor presentation does not activate acquired knowledge.

# Ex. Produced Words from Essay

	Metaphor	Discussion	Structure	Evidence	Insistence	Solidity	Essence	Importance	Opponent	.....
1	Present									.....
2	Present									.....
3	Present									.....
4	No									.....
5	No									.....
6	No									.....
...	...	...	...	...	...	...	...	...	...	.....

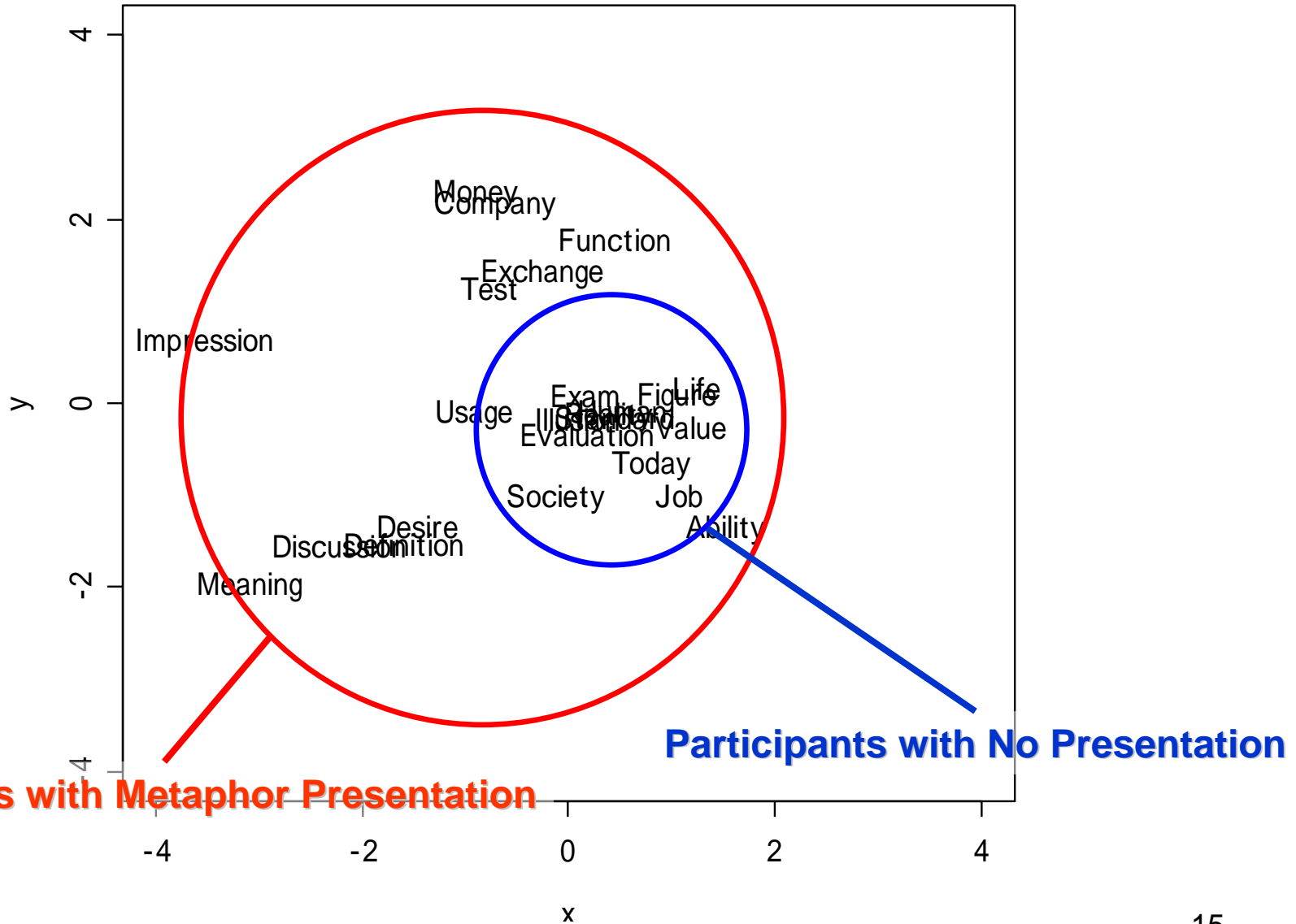
The participants in the no metaphor conditions did not produce the word “Essence” in their essays.

# Difference of Conceptual Structure



Correspondence Analysis: High-Conventional Metaphor

# Difference of Conceptual Structure



Correspondence Analysis: Low-Conventional Metaphor



# Discussion 1

- What happened to Reading Time?
  - Relationship between “Target” concept and “Base” concept is not pre-existent, there is a need for a comparison process to be done.
  - There is “Ongoing Mapping” between “Target” and “Base”.
  - Mapping consistency cannot be searched easily, **especially in Low-Conventional metaphor.**





# Discussion 2

- Process of comprehension
  - Career of metaphor hypothesis (Bowdle & Gentner, 2005; Gentner, Bowdle, Wolff, & Boronat, 2001) shows that the stability of meaning depends on metaphor conventionality.
  - Static conceptual structure and strong conceptual metaphor are achieved by conventional use of metaphorical expression.



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