



北京语言大学
BEIJING LANGUAGE AND CULTURE UNIVERSITY

The modality engendered by negation and where to find it

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Negation: Semantic opposition



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Negation: Semantic opposition

- Negation defines a semantic opposition between two expressions A and B;
- $\llbracket A \rrbracket \cup \llbracket B \rrbracket = \llbracket S \rrbracket$, their union is the universal set;
- $\llbracket A \rrbracket \cap \llbracket B \rrbracket = \emptyset$, their intersection is the empty set.
- Given a negative relation, $\llbracket A \rrbracket$ can be defined from the difference between $\llbracket S \rrbracket$ and $\llbracket B \rrbracket$, i.e., $\llbracket A \rrbracket = \llbracket S \rrbracket - \llbracket B \rrbracket$.



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- Suppose $\llbracket S \rrbracket = \{Basketball, Volleyball, Football\}$.
- Proposition “B” is *John likes the basketball*.
- Proposition “A” is *John does not like the basketball*.
- $\llbracket B \rrbracket = \{Basketball\}$. The basketball is at the highest position of the likeness rank.
- $\llbracket A \rrbracket = \llbracket S \rrbracket - \llbracket B \rrbracket = \{Volleyball, Football\}$. The basketball is at the lowest position of the likeness rank.



Negation: The difficulty



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- **First situation:** Suppose in a situation where an agent is given two known objects, such as a basketball and a football, choosing the football does not necessarily mean that the agent doesn't like the basketball,



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Negation: The difficulty

- **First situation:** Suppose in a situation where an agent is given two known objects, such as a basketball and a football, choosing the football does not necessarily mean that the agent doesn't like the basketball,
- it could only mean that the likeness rank of the football is higher than that of the basketball, or it could also mean that the basketball is merely ignored.
- Under this context, it is impossible to determine whether the modality or the uncertainty implied by the negation is processed or not.



Negation: Our experiments



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- **Second situation:** To tackle the previous problem, current study devised a different situation, where the agent was given a basketball and an unknown object.



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- With this simple experimental manipulation, one is to be certain that choosing the unknown object means that the agent doesn't like the basketball, i.e., the basketball is at the lowest position on the likeness rank.



Negation: Our experiments



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- Given the second situation, when participants are asked to judge the agent's likeness to the unchosen basketball, only when they have the ability to process the modality engendered by the negation,




Negation: Our experiments

- Given the second situation, when participants are asked to judge the agent's likeness to the unchosen basketball, only when they have the ability to process the modality engendered by the negation,
- the judged rank in the second situation should be lower than that in the first situation: If an object is disliked, the likeness of the object would be lower than any other objects, and its rank of likeness would be at the lowest position.



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Familiarization video



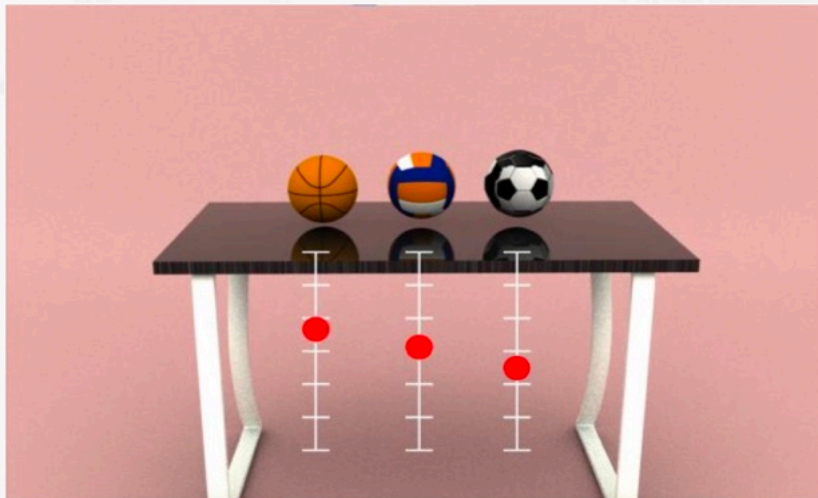
Test: Preview image



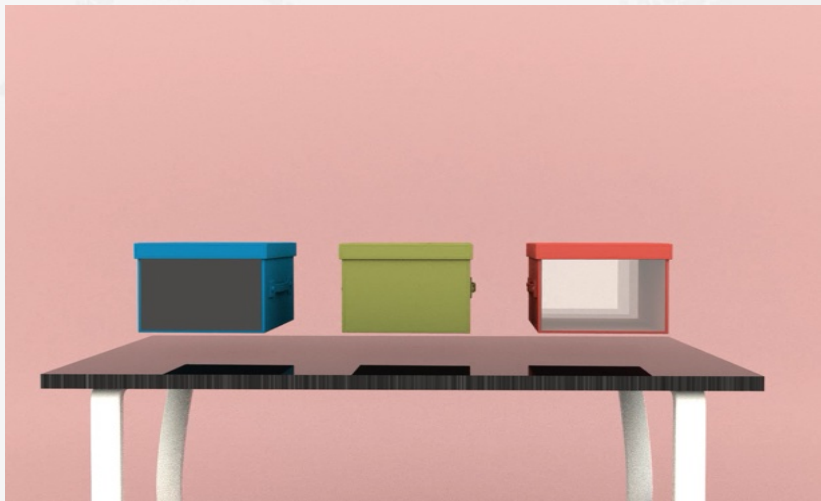
Test: Video




Test: Response image



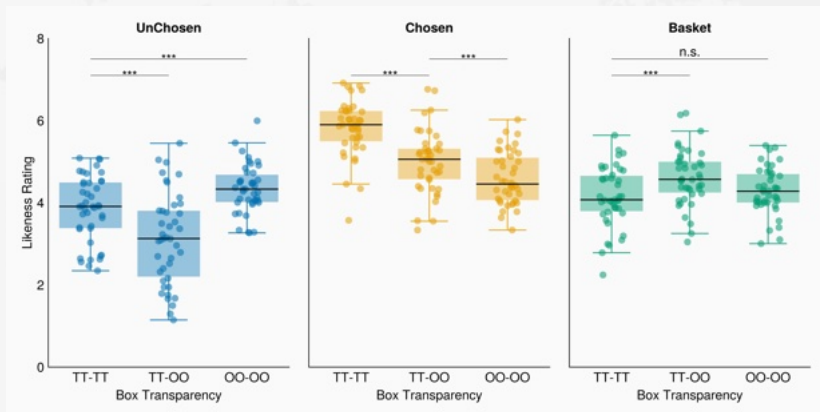
Experimental logic: Box colors



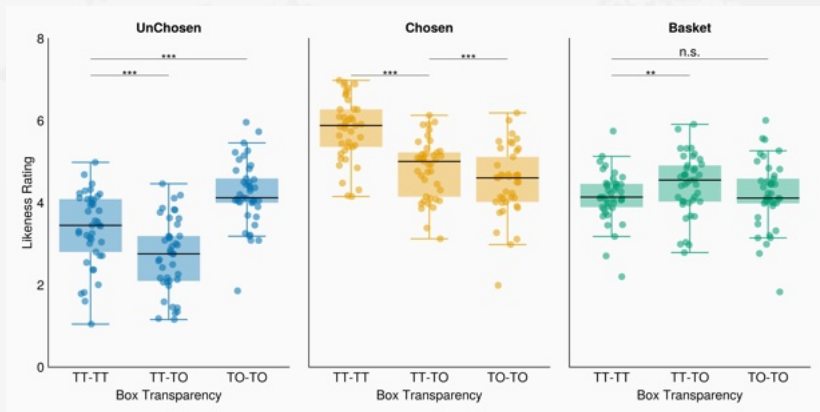
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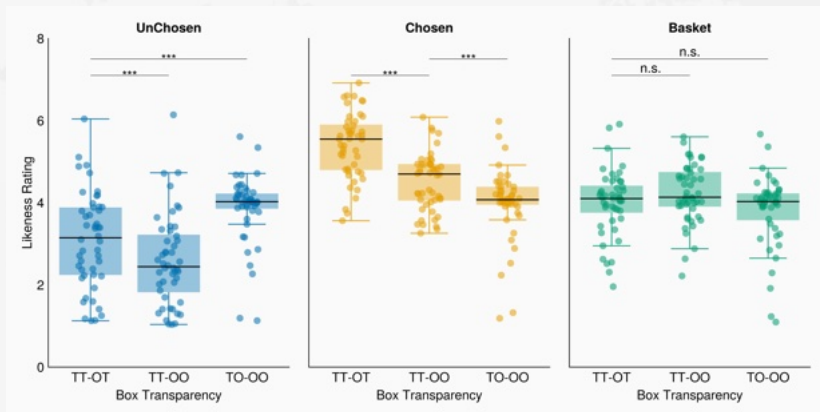
Experiment 1



Experiment 2



Experiment 3



A faint, light gray world map is centered in the background of the slide, showing the outlines of continents and major landmasses.

Thank You

