

Does Boundary Ownership affect Scene Construction?

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Background

Boundary Extension (BE):

- People remember seeing just beyond the boundaries of a view (BE)
- Scene construction is elicited by a close-up view (e.g., Intraub, 2010)

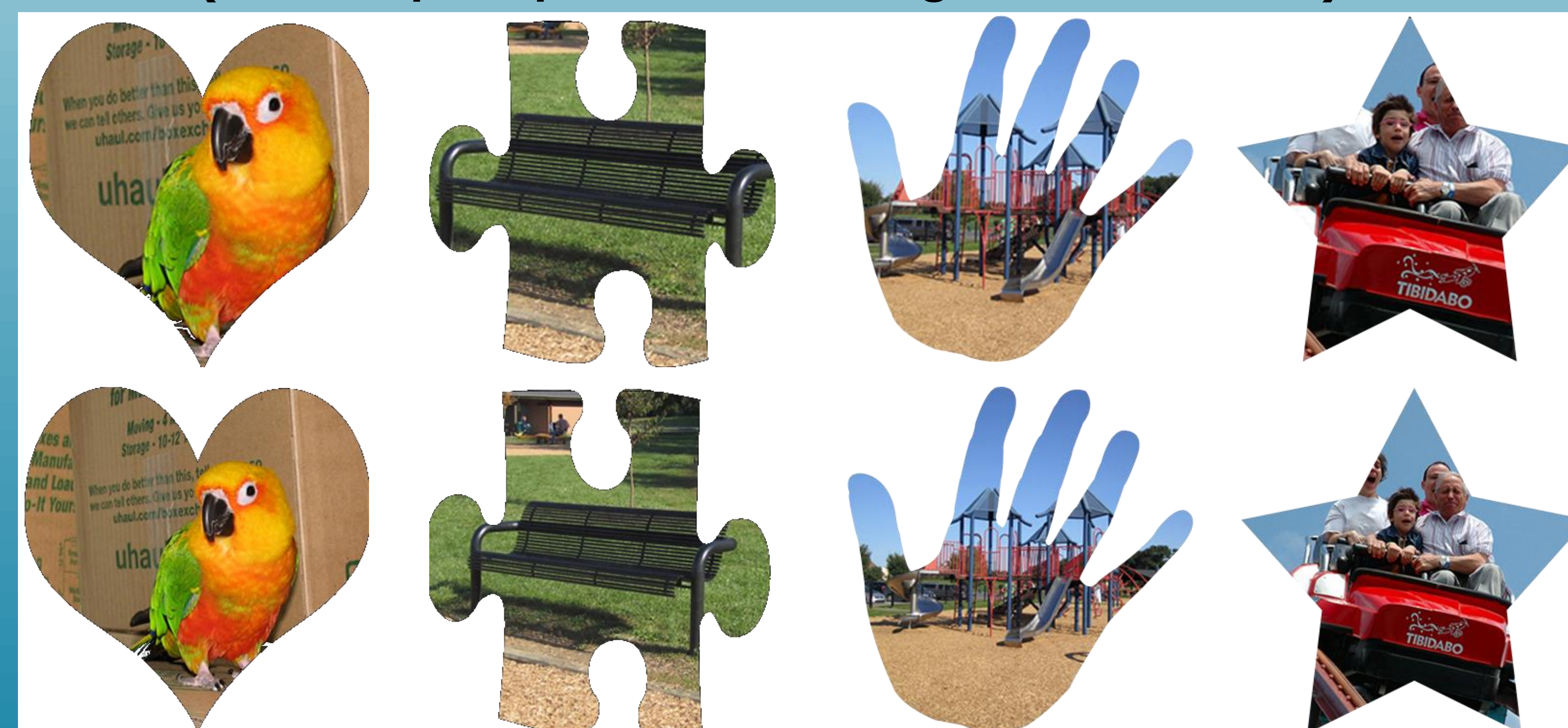


- Do all boundaries elicit scene construction?
- View boundaries (VB) do, but object boundaries (OB) do not (Gottesman & Intraub, 2003)
- Meaningful shapes are seen as having OB rather than VB (Nelson & Palmer, 2001)



What happens if scenes are cut into meaningful shapes?

Stimuli (Close-Ups Top Row, Wide Angles Bottom Row)

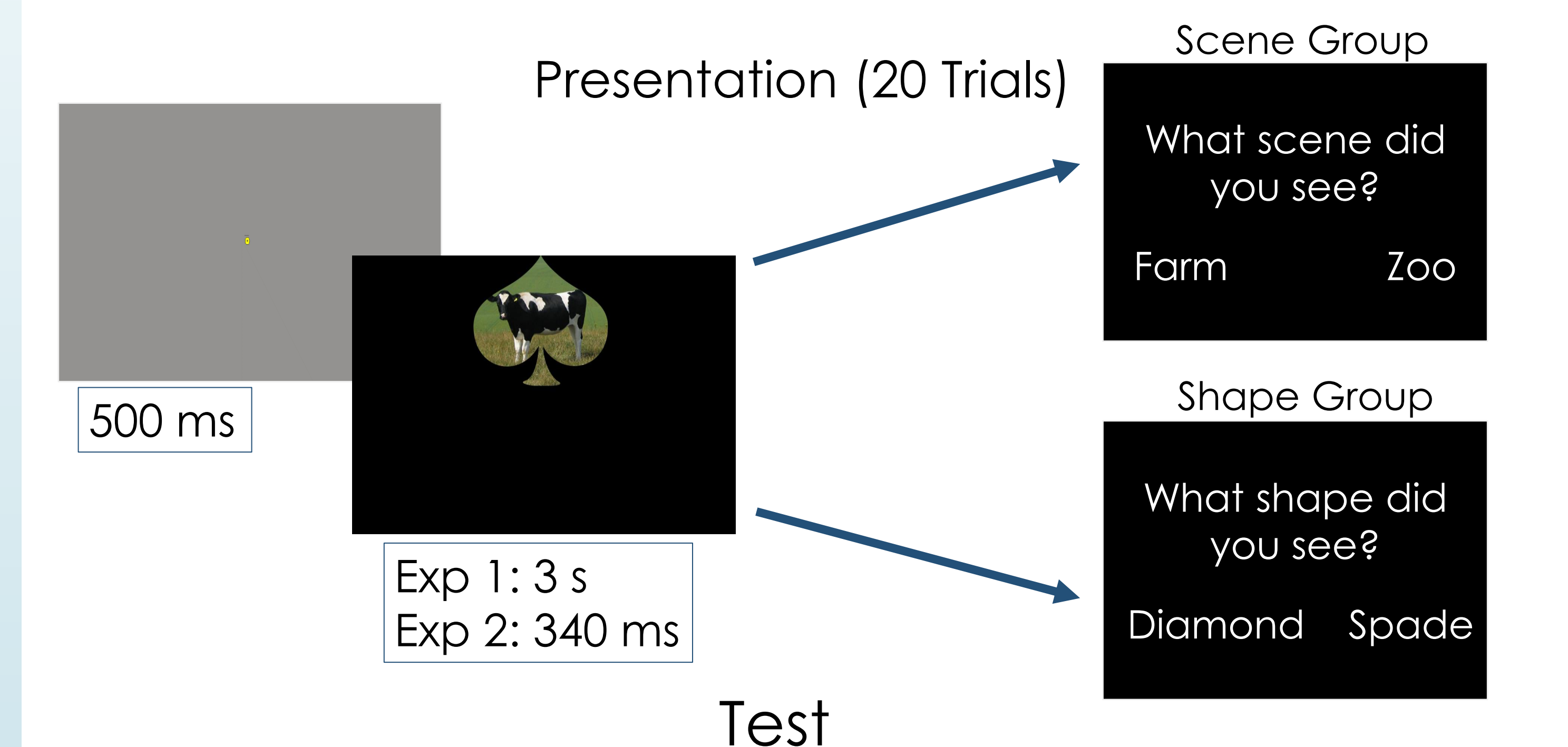


Research Questions

- 1) Do object-shaped scenes elicit scene construction?
- 2) If so, will an orienting task that biases attention to the object boundary eliminate or minimize BE?

Experiment 1&2 Design & Procedure

- | | |
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| <p>Scene Group</p> <ul style="list-style-type: none"> • Instructed to focus on scene and not let shape distract them • Forced choice question (scene) | <p>Shape Group</p> <ul style="list-style-type: none"> • Instructed to focus on shape and not let scene distract them • Forced choice question (shape) |
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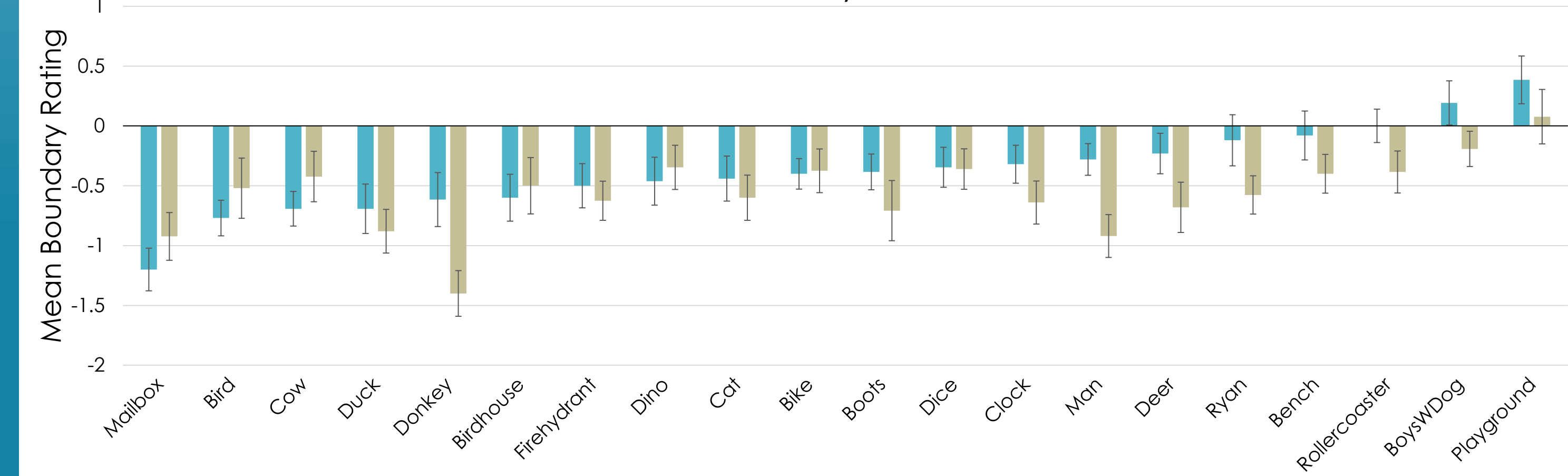
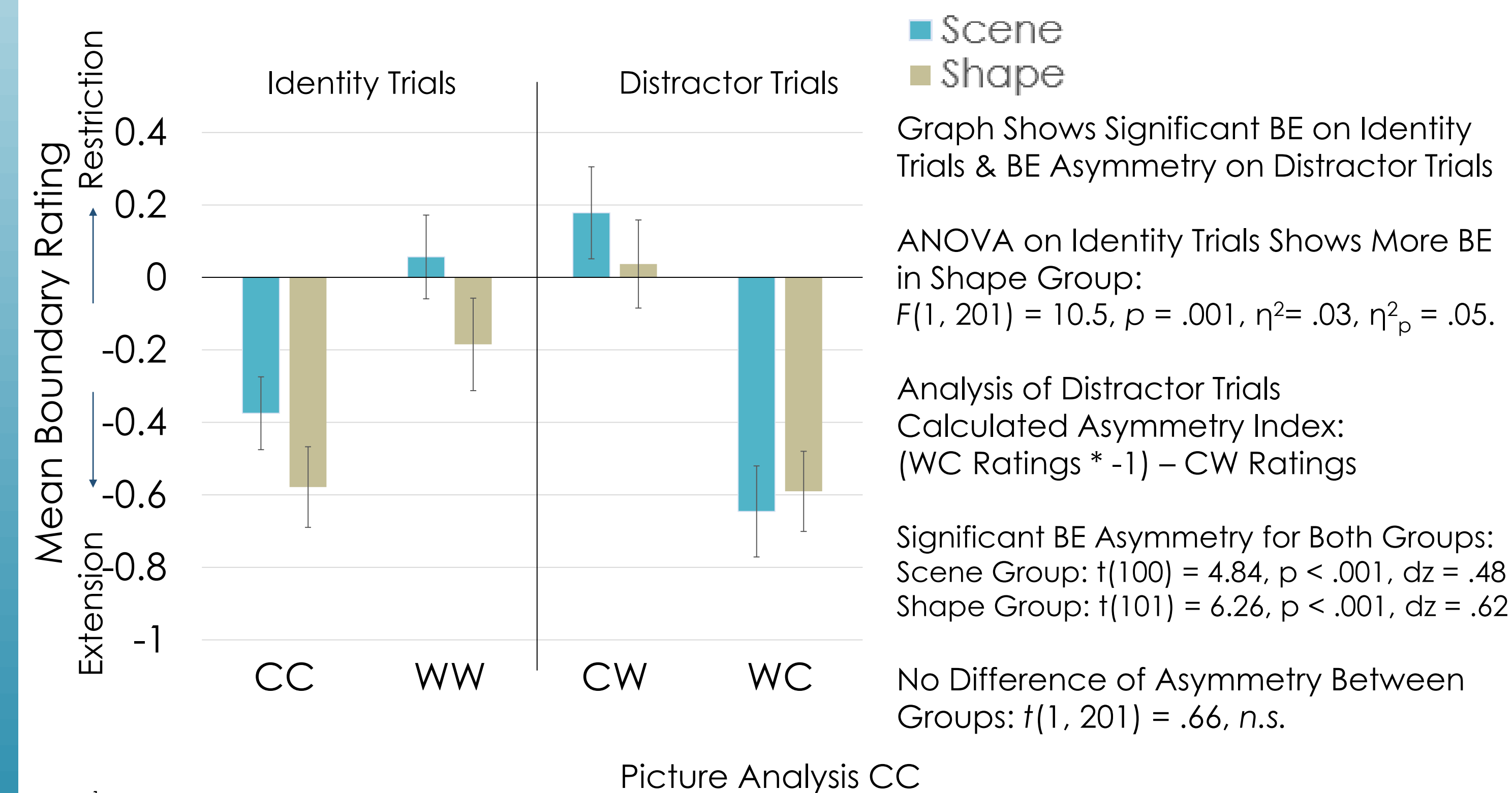
Identity Test Trials: 5 Close tested by Close (CC) & 5 Wide tested by Wide (WW)
Distractor Test Trials: 5 Close tested by Wide (CW) & 5 Wide tested by Close (WC)

Boundary Rating: test picture looks

much closer-up	a little closer up	the same	a little farther away	much farther
-2	-1	0	+1	+2

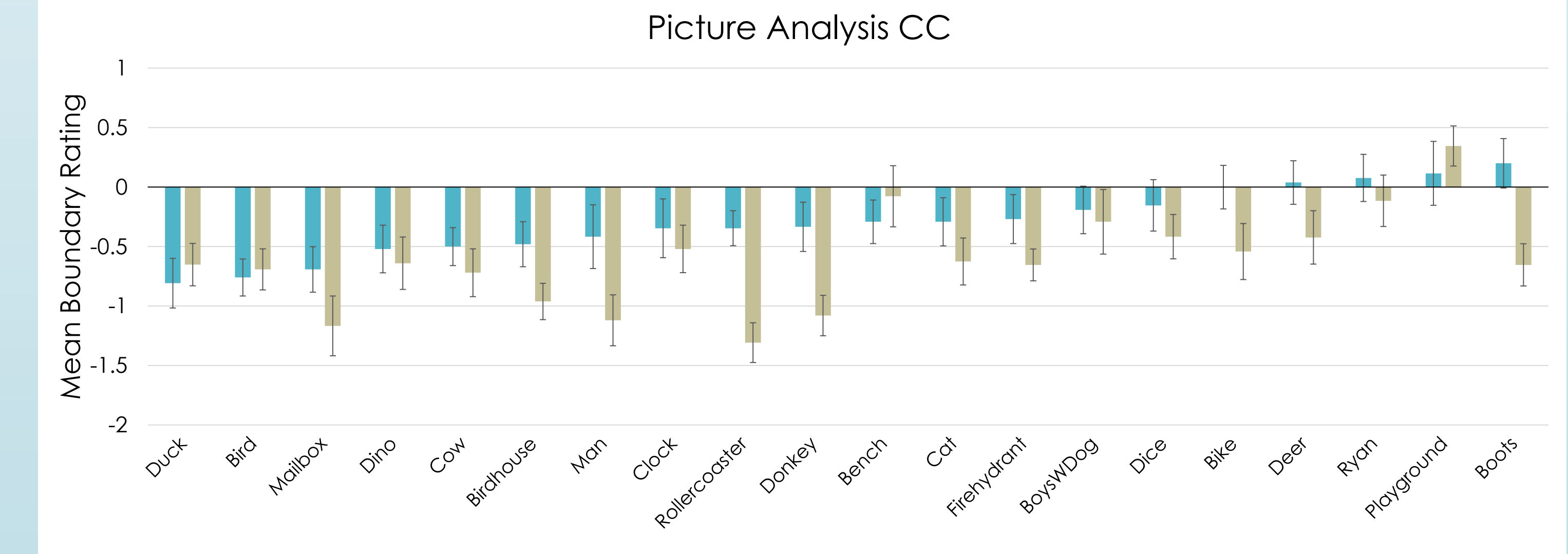
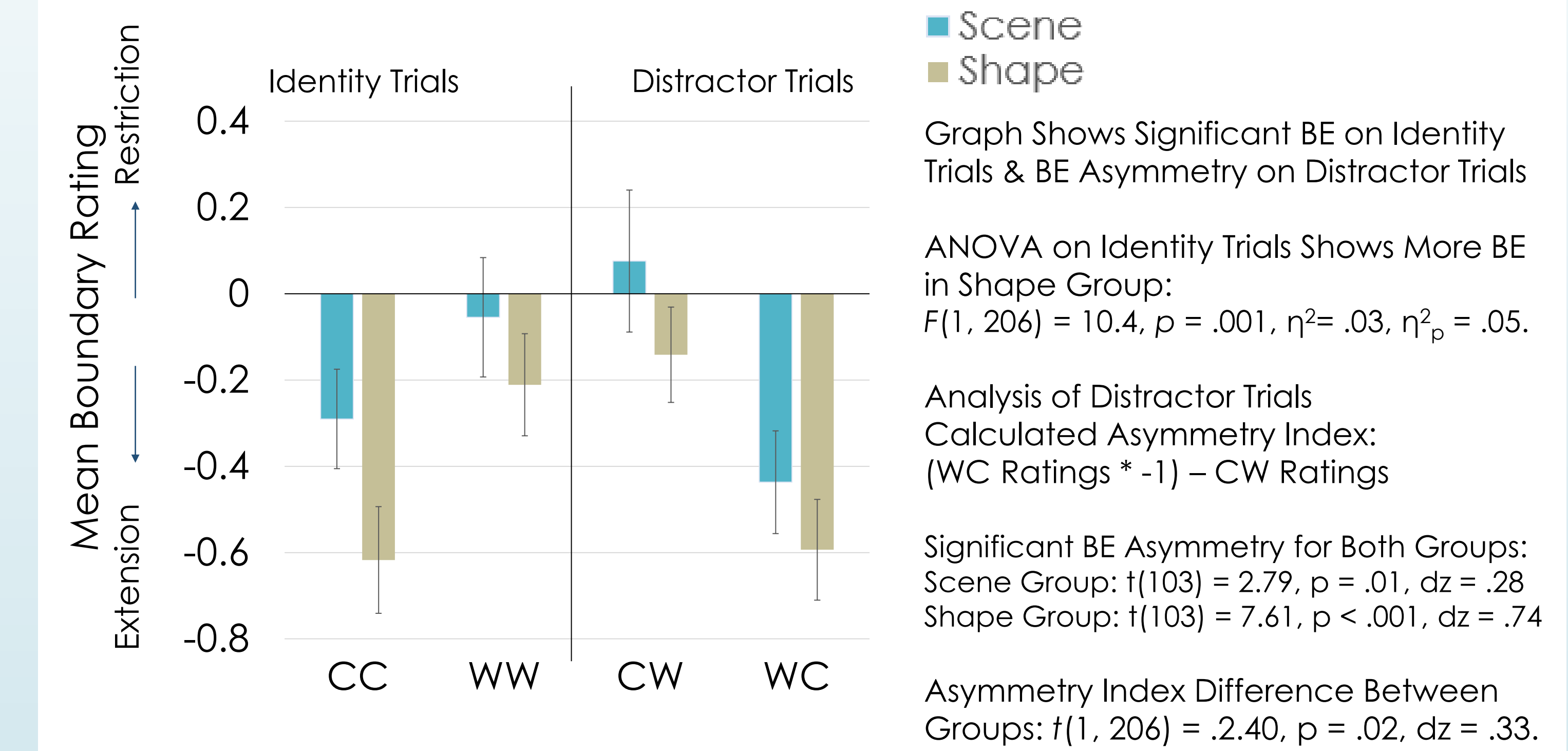
Experiment 1: 3 Second Duration Results (N = 208)

Forced Choice Question Results: 91% correct (Scene Group) & 92% correct (Shape Group)



Experiment 2: 340 ms Duration Results (N = 208)

Forced Choice Question Results: 90% correct (Scene Group) & 93% correct (Shape Group)



Summary

- Scene construction appears to be automatic
- BE was elicited for scenes in meaningful objects
 - For long (3 s) and for brief (340 ms) picture durations
- Orienting people to object boundary (Shape Group) did not eliminate or minimize BE
- Instead, Shape Group's BE was greater than the Scene Group' BE
 - For long (3 s) and for brief (340 ms) presentations
- Why?
- As in Intraub, Daniels, Horowitz, & Wolfe (2008), withdrawing attention from the scene likely reduced visual memory
- This likely caused participants to misattribute more of the constructed scene to having been viewed

These experiments tested in LTM. We have since asked our questions using more complex object shapes (US States) in a WM mental rotation task and results support the same conclusion.

In conclusion, we view scenes through foliage, crowds, natural and manmade apertures (cave entrance, door). The shape of the view, even if it is a meaningful shape (e.g., hand) does not limit scene construction.

References

Gottesman, C. V., & Intraub, H. (2003). Constraints on spatial extrapolation in the mental representation of scenes: View-boundaries vs. object-boundaries. *Visual Cognition, 10*(7), 875-893.

Intraub, H. (2010). Chapter 6 - Rethinking Scene Perception: A Multisource Model. In *Psychology of Learning and Motivation* (Vol. 52, pp. 231-264). Academic Press.

Intraub, H. (2012). Rethinking visual scene perception. *WIREs Cognitive Science, 3*(1), 117-127.

Intraub, H., Daniels, K. K., Horowitz, T. S., & Wolfe, J. M. (2008). Looking at scenes while searching for numbers: Dividing attention multiplies space. *Perception & Psychophysics, 70*(7), 1337-1349.

Nelson, R., & Palmer, S. E. (2001). Of Holes and Wholes: The Perception of Surrounded Regions. *Perception, 30*(10), 1213-1226.