Are individual differences in boundary extension associated with differences in eye movements during encoding?

Amanda P. Burns¹, Rachel S. Gerrie¹, Helene Intraub PhD², Irene P. Kan PhD³, Meghan D. Caulfield PhD¹ 1. Seton Hall University, Department of Psychology 2. University of Delaware, Department of Psychology 3. Villanova University, Department of Psychological & Brain Sciences

Introduction

- Recent research found that individuals with high **behavioral inhibition (BI)**, a temperament associated with increased risk for anxiety, show enhanced object-based processing in a mnemonic discrimination task¹.
 - We argued that those who are at high risk for anxiety may utilize a hypervigilance driven object-based focus, resulting in enhanced mnemonic discrimination.
- Here, we examined whether mnemonic differences associated with behavioral inhibition extends to scene memory.
 - Specifically, we investigated the association between behavioral inhibition and boundary extension, a well-established phenomenon where observers consistently misremember perceiving beyond the edges of a studied scene².

We hypothesize that individuals with higher self-reported BI will:

- 1. Spend more time fixating on objects within the scene.
- 2. Exhibit a diminished tendency to recall beyond the scene's boundaries (i.e., smaller boundary extension effects).

Participants (data collection ongoing)

Table 1. Mean values for self-report measures

	Female	Male	<i>p</i> *
Ν	12	8	.800
AMBI ³ (0-48)	18.42 (5.00)	14.25 (4.71)	.078
STAI-Trait ⁴ (20-80)	48.50 (8.21)	38.88 (7.97)	.018
STAI-State ⁴ (20-80)	40.25 (11.00)	31.75 (8.15)	.079

Note: Gender comparisons were calculated using χ^2 , all other comparisons calculated using independent samples *t*-test.

References

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Vide-angle memories of close-up scenes. Journal of Experimental Psychology: Learning, Memory, and Cognition, 15(2), 179 Measuring a behaviorally inhibited temperament style: development and initial validation of new self-report measures. Psychiati

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Methods

Self-Report Measures

AMBI = 25.00

Mean Boundary Ratina CC Trials = 0.00

Adult Measure of Behavioural Inhibition³: 16-item measure of behaviorally inhibited temperament. "Do you tend to introduce yourself to new people?"

STAI-Y⁴, **Trait**. 20-item measure of anxious temperament. "How you generally feel". "I make decisions easily"

STAI-Y⁴, State. 20-item measure of *current* anxiousness. "How you feel right now, at this moment". "I feel calm"

Preliminary Results - Hypothesis #1: Do people with high BI spend more time fixating on objects within the scene?

AMBI = 13.00

Mean Boundary Rating CC Trials = -0.60

AMBI

Figure 3. Eye tracking measures from two representative participants. 40 35 48 30 Ç AMBI 25 C 20 Ð Self-Rep 15 10 r(18) = .511, p = .030.

Total Fixation Duration on Object (seconds)

Conclusions

While we plan to continue data collection, preliminary findings suggest that high behavioral inhibition, a temperament related to increased risk for anxiety, may be associated with a hypervigilance driven object-based focus when viewing scenes. Our initial observations indicate that individual differences in boundary extension errors may be influenced by a combination of factors, including current anxiousness (State Anxiety) and temperamental risk factors (AMBI).

Future research could explore factors that influence hypervigilant, object-focused processing related to behavioral inhibition. The preliminary finding that State Anxiety may enhance the boundary extension error suggests that future studies should examine whether inducing anxiety influences boundary extension errors.



Figure 1. Task outline and boundary rating responses that would indicate correct performance, boundary extension and boundary restriction errors.





Figure 2. Boundary rating instructions and scale.

for predicting CC	boundary ra	tings.	
95% CI	t	р	
-0.088, -0.078]	-2.541	.023	
-0.003, 0.076]	1.948	.070	
-0.011, 0.045]	1.286	.218	
-0.046, -0.002]	-2.363	.032	
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