INTRODUCTION
According to the perceptual availability hypothesis, an event within a story that blocks the protagonist’s view of a salient object will decrease a reader’s ability to recall information about that object when questioned. Recalling information about an occluded object presumably extends response time because it involves increased cognitive load.

Pupillary responses are used to identify increases in cognitive effort during perceptual tasks. Using pupillometry, we sought to establish a timeline for the changes in cognitive effort that occur during visual occlusion, and thereby identify when perceptual availability impacts narrative comprehension.

METHODS
1. Forty-three undergraduate students listened to 16 narrated stories while viewing an illustration of each story’s setting. Each story was 7 sentences long:
   • The 4th sentence of each story mentioned a target detail within the protagonist’s imaginary line of sight.
   • The 6th sentence mentioned an event that blocked the protagonist’s view of the target detail in 4 stories, and left the target detailed unblocked in 4 stories.
   • 8 control stories did not contain an occlusion event.
2. While listening to the stories, a head-fixed eye tracker recorded the pupil dilations of each subject’s left eye.
3. After each story, the subject answered a yes-or-no question about the target detail.

RESULTS
During the 5 seconds after the 6th sentence...
A) Average pupil dilation activity increases in the stories where the protagonist’s view becomes blocked
B) Average pupil dilation activity decreases in the stories where the protagonist’s view remains unblocked producing a significant difference (t = 2.59, p = 0.013)

During the 5 seconds after the question...
C) Average pupil dilation activity increases in both the stories where the protagonist’s view becomes blocked and the stories where the protagonist’s view remains unblocked; (t = 0.15, p = 0.879)

DISCUSSION
• Contrary to the predictions of previous research, the average response times in the blocked-view stories did not differ from those in the unblocked-view scenarios (t = 0.09, p = 0.925)

CONCLUSIONS
• Pupil dilations increase when a listener perceives an occlusion event in a story, suggesting an increase in cognitive effort.
• Pupil dilations increase when retrieving information about an object in the story—regardless of changes to the protagonist’s view of the object.
• According to previous literature, these results suggest that the situational model is built immediately during the narration.
• Unlike previous studies, this study introduced a visual representation of the narrated stories; subjects may have used the illustration as an external aid in building and accessing the situation model. This may explain the lack of difference between blocked and unblocked responses.

REFERENCES