



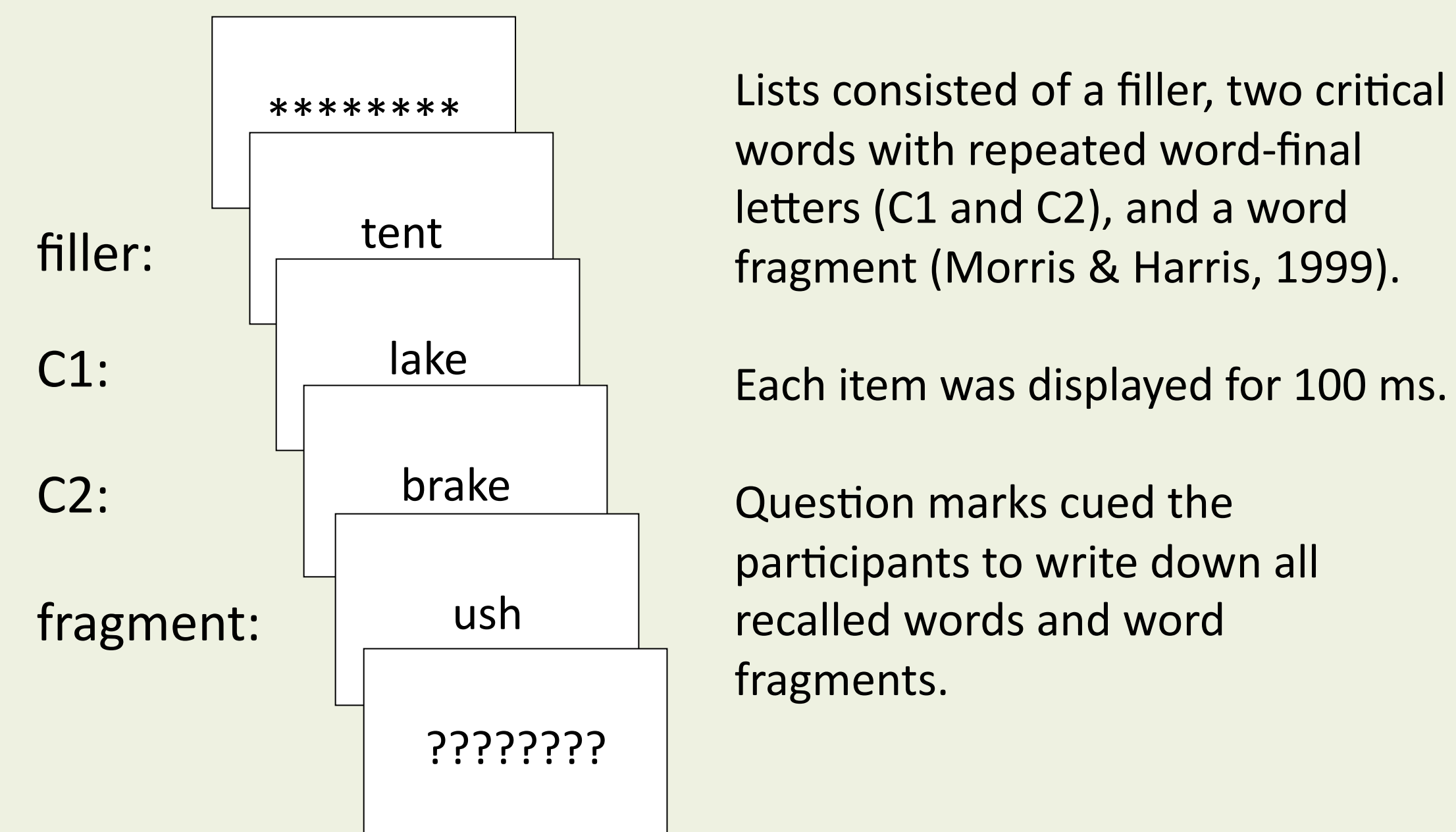
How Do Attention and Distinctive Colors Affect Orthographic Repetition Blindness?



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Orthographic Repetition Blindness



Participants frequently show repetition blindness for the repeated letters in C2 (e.g., recall *lake*, but not *brake*). If followed by a word fragment, participants report blending of the leftover letters from C2 with the fragment, forming an illusory word (e.g., *brush*).

Theories Explaining Repetition Blindness

Binding Theory (MacKay, Hadley, & Schwartz, 2005)

To be recalled, items must be bound to a node representing their episodic context. Repeated stimuli must be bound serially, so there is not enough time to complete binding at fast presentation times, resulting in repetition blindness.

Orthographic forms can be bound to font color independently from attention, color distinctiveness, orthographic repetition blindness, and episodic recall of C1 and C2.

Token Individuation (Kanwisher, 1991)

Repeated stimuli are separate tokens of the same type. Repetition blindness occurs when repeated tokens are not individuated as distinct events.

Tokens are only individuated when they are attended. Color distinctiveness does not affect repetition blindness because feature conjunction does not occur until after token individuation.

Research Questions

Using a letter-by-letter repetition blindness paradigm, Kanwisher (1991) found that repetition blindness only occurred when participants attended to both critical stimuli, and that repetition blindness was unaffected by critical stimuli occurring in distinctive colors.

What are the effects of attention and distinctive color on orthographic repetition blindness?

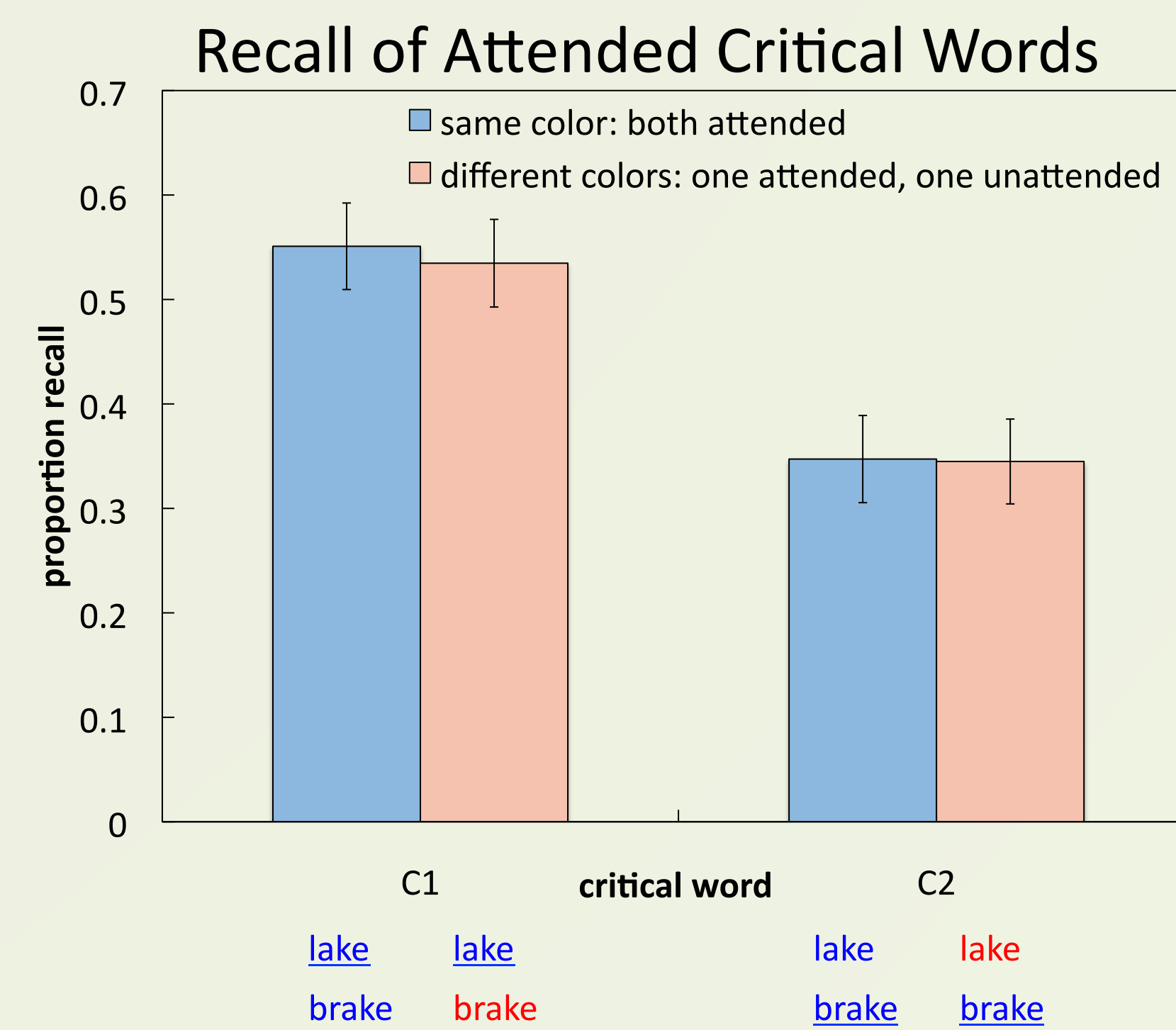
Do the results support binding theory or token individuation?

Experiment 1: Attention

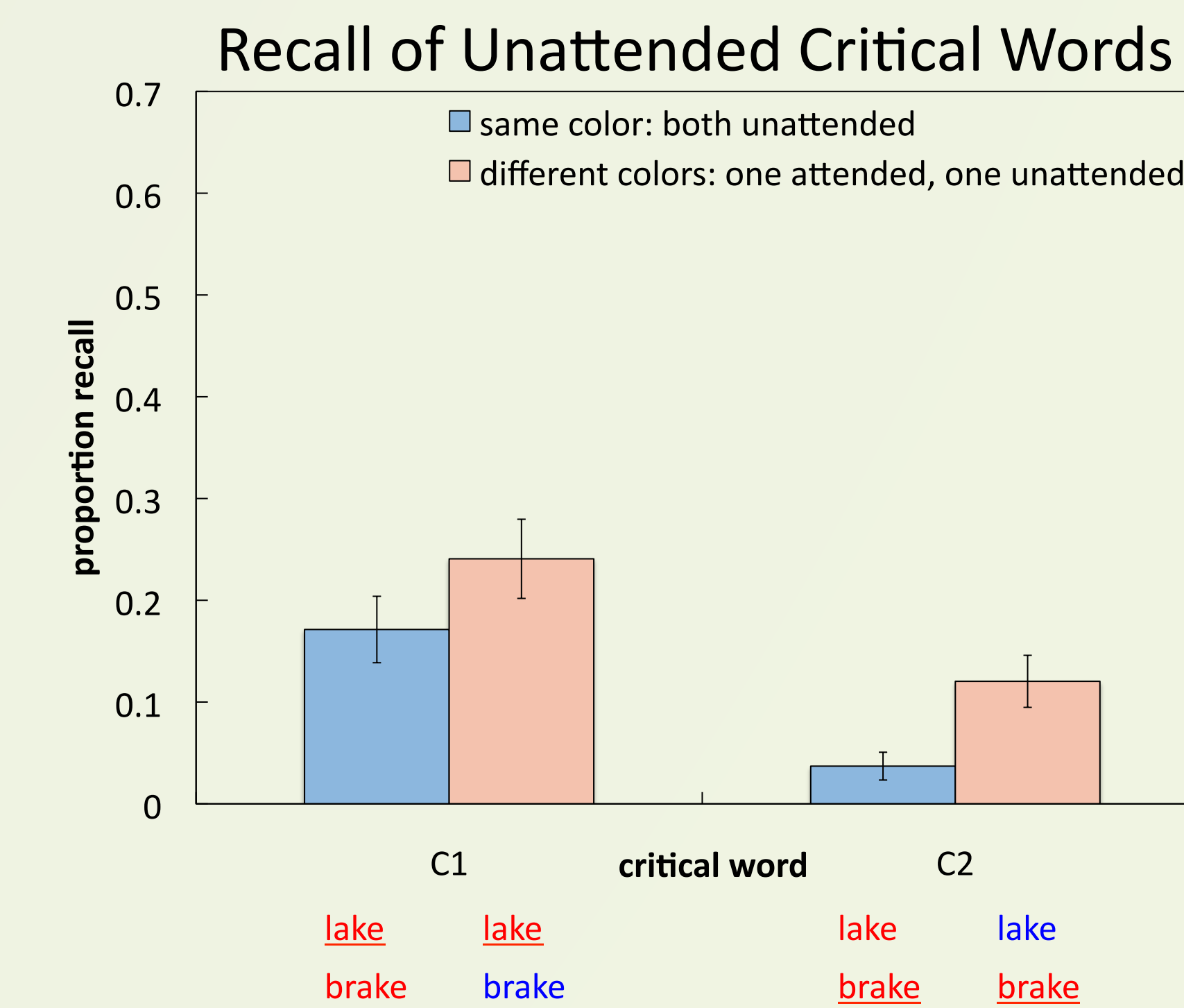
condition	filler	C1	C2	fragment
1	tent	lake	brake	ush
2	tent	lake	brake	ush
3	tent	lake	brake	ush
4	tent	lake	brake	ush
5	tent	lake	brake	ush
6	tent	lake	brake	ush

e.g., blue attended, red unattended

Participants (N = 36) viewed 36 lists from Morris & Harris (1999) designed to induce repetition blindness and illusory word report. Items were presented in blue and red text, with two items appearing in each color. Participants were instructed to attend to and recall items appearing in one color, while ignoring the other color.



Attended critical words were recalled with nearly equal mean and variance when the other critical word was either attended or unattended.



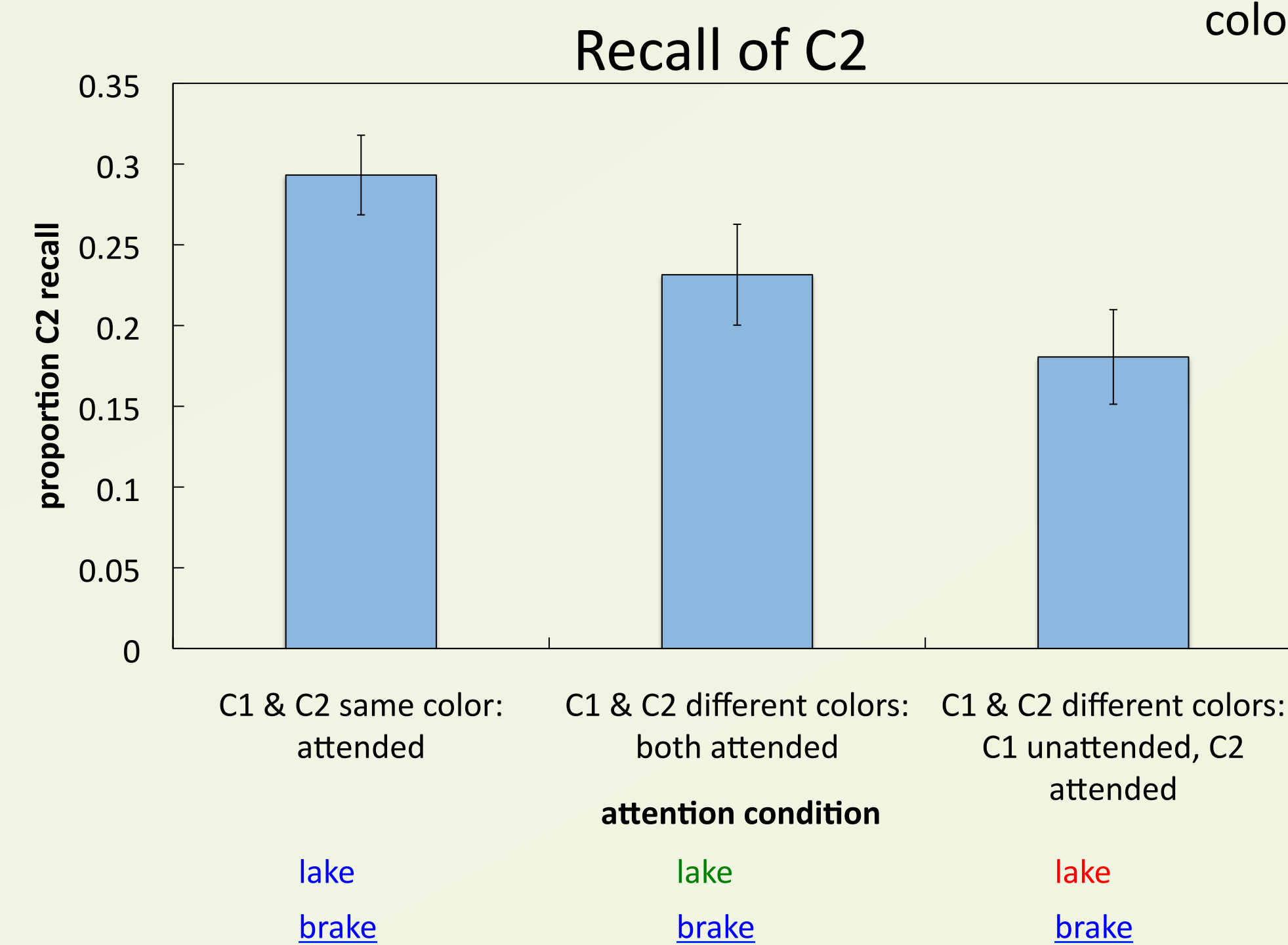
Unattended critical words were mistakenly reported more often when the other critical words was attended than when both were unattended.

Experiment 2: Attention vs. Distinctive Color

condition	filler	C1	C2	fragment
1	tent	lake	brake	ush
2	tent	lake	brake	ush
3	tent	lake	brake	ush
4	tent	lake	brake	ush

e.g., blue and green attended, red unattended

Participants (N = 36) viewed 36 lists from Morris & Harris (1999) designed to induce repetition blindness and illusory word report. Items were presented in blue, green, and red text. Participants were instructed to attend to and recall items appearing in two colors, while ignoring the remaining color.



C2 was recalled less frequently when C1 occurred in an unattended color than in the same or different attended color.

C2 was recalled less frequently when C1 occurred in a different attended color than when it occurred in the same color as C2.

Discussion

Experiment 1

Our results: Manipulating attention to C1 did not affect the frequency of recall of attended C2, and vice versa. This suggests that attention did not affect the occurrence of repetition blindness.

Previous findings: Kanwisher (1991) found that repetition blindness only occurred when both critical stimuli were attended.

Conclusions: We were unable to replicate the results of Kanwisher (1991). Our results are consistent with the binding theory explanation.

Experiment 2

Our results: C2 was recalled less frequently when C1 was unattended than attended. C2 was recalled less frequently when C1 occurred in a distinctive attended color than when it occurred in the the same color.

Previous findings: Kanwisher (1991) found no effect of distinctive color on repetition blindness and showed that repetition blindness only occurred when both critical stimuli were attended.

Conclusions: Our results are not consistent with the predictions of either token individuation or binding theory. A new explanation is required.

Possible Explanations

Why did attention and distinctive color affect orthographic repetition blindness differently than other types of repetition blindness?

Participants may have been less able to effectively ignore the unattended items in our experiments because they were words, rather than letters.

In order to follow task instructions in experiment 2, participants needed to determine whether to encode each item based on font color. It was easier to re-activate the "encode this" instruction when the next word was the same color than when it was a different attended color. It was especially hard to activate the "encode this" instruction immediately following the "do not encode" instruction.

References

- Kanwisher, N. G. (1991). Repetition blindness and illusory conjunctions: Errors in binding visual types with visual tokens. *Journal of Experimental Psychology: Human Perception and Performance*, 17(2), 404-421.
- MacKay, D. G., Hadley, C. B., & Schwartz, J. H. (2005). Relations between emotion, illusory word perception, and orthographic repetition blindness: Tests of binding theory. *The Quarterly Journal of Experimental Psychology*, 58A(8), 1514-1533.
- Morris, A. L., & Harris, C. L. (1999). A sublexical locus for repetition blindness: Evidence from illusory words. *Journal of Experimental Psychology: Human Perception and Performance*, 25(4), 1060-1075.