

# Investigating the AB Effect in an Irregular RSVP Stream

--- Attenuating AB with a Salient Temporal Cue

IOWA STATE UNIVERSITY Department of Psychology

Midwestern Psychological Association's Annual Meeting, Chicago

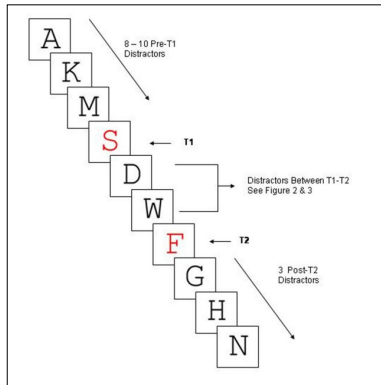
May 5, 2006

Wah Pheow Tan, Jeremiah D. Still & Veronica J. Dark

## Introduction

When subjects identify two targets (T1 & T2) in a rapid serial visual presentation (RSVP) task, T2 identification is low when (a) T1 is identified and (b) T2 appears within 500 ms of T1. This phenomenon is known as the attentional blink (AB). Still, Tan and Dark (2006) found that a salient temporal cue *prior* to each target attenuated AB. The present study examined whether presenting a salient temporal cue *after* T1 modulates the AB.

Figure 1. RSVP Sequence Used to Examine AB

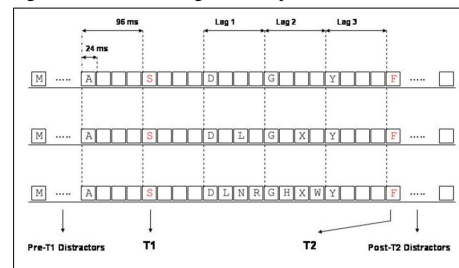


## Experiment 1

A 3 (Cue Saliency: High, Low, None) x 5 (Lag: 3-7) within subjects design was used. Lag was defined as the number of 96 msec time blocks elapsed after T1. Subjects identified two red letters amongst black distractors. Temporal cue saliency was manipulated by varying the inter-stimulus interval (ISI) for distractors occurring between

targets while keeping T1-T2 stimulus onset asynchrony (SOA) constant. When the ISI was reduced, the RSVP stream was quickened, creating the salient temporal cue.

Figure 2. Schematic Diagram of Experiment 1



## Experiment 2

A potential confound is that termination of the quickened RSVP stream just prior to T2 acted as a cue for T2 onset. In Experiment 2, distractor ISI change was localized to 192 ms after T1 offset. Hence, termination of the quickened RSVP stream no longer predicted T2 onset.

Figure 3. Schematic Diagram of Experiment 2

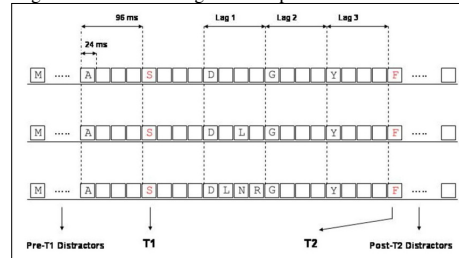


Figure 4. Experiment 1 Results

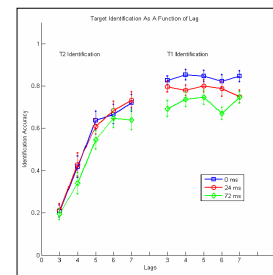
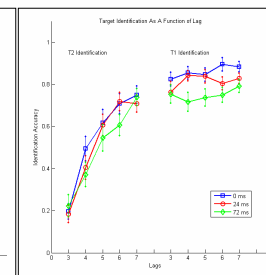


Figure 5. Experiment 2 Results



## Results

The pattern of results for both experiments was highly similar. Both T1 and T2 identification were improved by a salient temporal cue. T1 identification varied as a function of temporal saliency, while T2 identification was not affected by temporal cue saliency as both the high and low saliency conditions yielded similar improvements.

## Discussion

Both interference (Shapiro, Raymond & Arnell, 1994) and processing models (Chun & Potter, 1995) would predict worse T2 identification and no difference in T1 identification. The opposite was found here.

Still et al. (2006) suggested a salient temporal cue prior to T1 allowed processing to *begin* earlier, resulting in an attenuated AB. In the current experiments, the salient temporal cue changed *after* T1 and did not predict target onset.

Chua (2005) suggested that AB results from the failure to pass attentional control from T1 to T2. Our findings are consistent with Chua's account. The salient temporal cue signaled T1 termination and allowed a faster attentional disengagement. Hence, the visual codes of distractors appearing after T1 were less likely to undergo attentional enhancement. T1 was then better identified due to less distractor noise. When attention disengaged from T1 more quickly, it allowed attentional control to be passed onto T2 more rapidly. Hence, T2 was engaged earlier and AB attenuated. However, the discrepancy between the pattern of T1 and T2 identification as a function of cue saliency suggests that the process of attentional disengagement from T1 and attentional engagement on T2 might be different. Further research is needed to clarify this issue.

## References

- Chua, F. K. (2005). The effect of target contrast on the attentional blink. *Perception & Psychophysics*, 67(5), 770-788.
- Chun, M. M., & Potter, M. C. (1995). A two-stage model for multiple target detection in rapid serial visual presentation. *Journal of Experimental Psychology: Human Perception and Performance*, 21(1), 109-127.
- Shapiro, K. L., Raymond, J. E., & Arnell, K. M. (1994). Attention to visual pattern information produces the attentional blink in rapid serial visual presentation. *Journal of Experimental Psychology: Human Perception and Performance*, 20(2), 357-371.
- Still, J. D., Tan, W. P., & Dark, V. J. (2006). *Is the magnitude of the Attentional Blink affected by number of items or time?* Poster presented at the meeting of the Midwestern Psychological Association, Chicago, IL.