Psychonomics 2017, our presentations

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Abstract

Was that a shift of attention or binding in a buffer? Charles J. H. Ludowici; Alex O. Holcombe (presented by Alex) 3:50-4:05 PM Friday 10 November, West Meeting Room 118-120 Cueing a stimulus can boost the rate of success reporting it. This is usually thought to reflect a time-consuming attention shift to the stimulus location.

Keywords

Cognitive Neuroscience (Subfield)

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Was that a shift of attention or binding in a buffer?

Charles J. H. Ludowici; **Alex O. Holcombe (presented by Alex)**

3:50-4:05 PM Friday 10 November, West Meeting Room 118-120

Cueing a stimulus can boost the rate of success reporting it. This is usually thought to reflect a time-consuming attention shift to the stimulus location. Recent results support an additional process of "buffering and binding" – stimulus representations have persisting (buffered) activations and one is bound with the cue. Here, an RSVP stream of letters is presented, with one letter cued by a ring. The presentation time, relative to the cue, of the letters reported are aggregated across trials. The resulting distribution appears time-symmetric and includes more items before the cue than are predicted by guessing. When a central cue is used rather than the peripheral ring, the data no longer favor the symmetric model, suggesting an attention shift rather than buffering and binding. To explore the capacity of buffering in the peripheral cue condition, we vary the number of streams, documenting changes in the temporal dispersion of letters reported and the time of the letter most frequently reported.

Negotiating a capacity limit in visual processing: Are words prioritised in the direction of reading?

by Kim Ransley, Sally Andrews, and Alex Holcombe

poster #1208 [revised title] 6-7.30pm Thursday 9 November

Experiments using concurrent rapid serial visual presentation (RSVP) of letters have documented that the direction of reading affects which of two horizontally-displaced streams is prioritised — in English, the letters of the left stream are better reported but this is not the case in Arabic. Here, we present experiments investigating whether this left bias occurs when the stimuli are concurrently presented English *words*. The first experiment revealed a right bias for reporting one of two simultaneously and briefly-presented words (not embedded in an RSVP stream), when the location of one of the words was subsequently cued. An ongoing experiment directly compares spatial biases in dual RSVP of letters with those in dual RSVP of words in the same participants. These findings have implications for understanding the relative roles of hemispheric lateralisation for language, and attentional deployment during reading. UPDATE: THE RSVP EXPERIMENTS REPLICATE THE DIFFERENCE BETWEEN LETTERS AND WORDS BUT GO ON TO SHOW THE SAME BIAS (UPPER VISUAL FIELD) WHEN THE STIMULI ARE ARRAYED VERTICALLY RATHER THAN HORIZONTALLY, CONSISTENT WITH READING ORDER. Come by to hear our exciting conclusion!

Can Systems Factorial Technology Identify Whether Words are Processed in Parallel or Serially?

Charles J. H. Ludowici; Alex O. Holcombe

https://doi.org/10.59350/jnh5g-tvr24

6:00-7:30 PM Friday 10 November poster session

To determine the capacity, architecture (serial or parallel), and stopping rule of human processing of stimuli, researchers increasingly use Systems Factorial Technology (SFT) analysis techniques. The associated experiments typically use a small set of stimuli that vary little in their processing demands. However, many researchers are interested in how humans process kinds of stimuli that vary in processing demands, such as written words. To assess SFT's performance with such stimuli, we tested its ability to identify processing characteristics from simulated response times derived from parallel limited-, unlimited- and super-capacity linear ballistic accumulator (LBA) models, which mimicked human response time patterns from a lexical decision task. SFT successfully identified system capacity with <600 trials per condition. However, for identifying architecture and stopping rule, even with 2000 trials per condition, the power of these tests did not exceed .6. To our knowledge, this is the first test of SFT's ability to identify the characteristics of systems that generate RT variability similar to that found in human experiments using heterogeneous stimuli. The technique also constitutes a novel form of power analysis for SFT.

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