This experiment examines selective attention to one level of hierarchical letters (global/large letters made from local/small letters). Previous research indicates high difficulty in ignoring an irrelevant global level. Here, we find that selective ignoring can be strengthened through multiple repeated exposures (MRE) to hierarchical letters: specifically, the influence of irrelevant global information can be reduced during a run of similar presentations. This shows that attentional control over what information is processed can be improved over multiple exposures.

METHOD

Here, trials, or runs of stimuli, consisted of mostly incongruent letters; the target letter is present at the relevant level while other incongruent letters appear at the other (irrelevant) level. When such stimuli are repeated, ignoring of the irrelevant level should strengthen. Baseline runs consisted of all incongruent letters (black in data figure >). The irrelevant level’s influence was measured by inserting a single congruent stimulus early or late into a run. Would that letter have an influence — would it produce facilitation (faster responding) because of its congruence? And would the influence be reduced late into the run?

Each trial was a run of 7 stimuli; observers responded to each stimulus at the specified level (LARGE or SMALL). Response times (RT) were recorded for each stimulus. Target was always present in critical data runs and the critical manipulation was congruence. Runs mostly had incongruent (irrelevant level contained non-target letter) letters but sometimes (position 2 or 6) had congruent (irrelevant level contained target letter) letters. These runs were compared to the baseline runs.

- **Examined facilitation effect caused by congruence**
  - From RT comparison between congruent (4 green data points in figure) and incongruent letters (from baseline runs) at the same position.
- **Compared facilitation effects between positions 2 and 6.**

Try a run!
Try to determine the presence of the letter “A” at the SMALL level! (Proceed from left to right)

Irrelevant global influence was reduced over the runs: with a focus on the local (small) level, the global (large) influence (facilitation) was reduced from 40 ms at position 2 to 5 ms at position 6.

In contrast, irrelevant local influence was not reliably reduced over the runs: with a focus on the global (large) level, the local (small) influence (facilitation) was reduced from 20 ms at position 2 to 15 ms at position 6.

DISCUSSION

Procedure: Each run consisted of 2 phases, setup and position. This setup phase occurred once at the start of a run and instructed participants to focused on one level and gave a target letter for the run (e.g., SMALL “A”). Following this, participants moved to the position phase where participants were shown a hierarchical letter and had to provide a response to indicate target letter presence at the focused level of the hierarchical letter. Following the response, participants moved to the next position phase. This repeated until after position 7 (i.e., end of the run).

- See Navon (1977) and Kimchi (1992) for information regarding global precedence.
- See Lamb et al. (1998) and Ward (1982) for information on MRE paradigms.
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