The Effect of Attentional Distraction in the Tempo-Naming Task

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Errors in word naming can reveal dysfunctions in the component processes of word reading. An abundance of regularization errors (e.g., naming PINT to rhyme with MINT) suggests an over-emphasis on sub-lexical spelling-sound correspondences relative to lexical knowledge. An abundance of lexicalization errors (e.g., naming WIFE as WHITE) suggests a malfunction in the influence of lexical knowledge. An abundance of positional errors (e.g., naming BROAD as BOARD) suggests a malfunction in the positioning of letters and/or sounds.

Kello and Plaut (2000) introduced the tempo-naming task as a method for inducing naming errors under extreme pressure for speeded responding. The results of three experiments showed that lexicalization errors predominated compared with regularization errors. They interpreted this pattern as indicating that pressure for speed caused an increase in the emphasis on lexical knowledge in the process of converting print to sound. Emphasis on lexical knowledge can also be found under manipulations of strategic control (Herdman, 1992), and in the reading errors that define phonological dyslexia (Coltheart, 1996).

In the current study, we examined the effect of distraction of visual attention on performance in the tempo-naming task. Attentional distraction was hypothesized to interfere with the process of identifying and positioning the letters of a word stimulus. Errors were used as window into the effect of attentional distraction on processes of word reading.

Method

Participants

Twenty undergraduates participated in the experiment for course credit. All participants reported English as their native language, and all had normal or corrected vision.

Stimuli

The experiment consisted of 600 monosyllabic words, sampled from a full corpus of English words to preserve the distributional characteristics of the full corpus. Words varied in frequency and regularity. For each participant, each word was randomly assigned to one of six blocks such that there were 100 words per block.

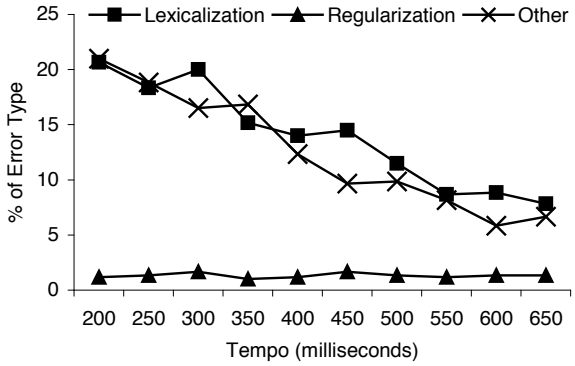
Procedure

On each trial, five beats of a simple audiovisual tempo were presented, and a printed word was displayed on the fifth beat. The tempo was varied between 200 ms and 650 ms (in steps of 50 ms), and each word was assigned to each tempo twice across participants. Participants were instructed to name the word in time with the sixth beat, and feedback on timing was given on every trial. Visual distraction was created by flashing white disks of varying size in random positions on the screen during stimulus presentation.

Results and Discussion

As tempo decreased (i.e., more pressure for speed), naming latencies and durations decreased, and overall error rates increased. These results replicated Kello and Plaut (2000).

The percentage of different types of errors is graphed as a function of tempo in the figure below. Lexicalizations were much more frequent compared with regularizations, and lexicalizations increased with faster tempos, but regularizations did not. The rate of lexicalizations was greater than that found in a comparable experiment (not reported here) in which there was no attentional distraction. Other error types included nonwords, stutters, and garbled pronunciations.



Results indicated that attentional distraction caused an increase in the emphasis on lexical knowledge. Future analyses are planned to examine the effect of attentional distraction on the rate of positional errors.

References

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