Examining the influence of learning method on symbol recognition

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Purpose

To explore the extent to which the method, specifically the stroke order, in which a symbol is learned influences recognition

Background

Dynamic characteristics of a symbol influence perception of that symbol[1,2,3]

Knowledge of the method by which a symbol was drawn enhances the recognition of static symbols[1] as well as influences symbol reproduction[2]

Visualization of a letter in dynamic form facilitates faster recognition and a more rapid response to questions asked about the letter than when the letter is visualized in static form[3]

Practicing writing symbols by hand influences recognition[4,5]

Variability in the perception of a symbol throughout the learning process facilitates recognition[4]

Methods

Participants: 42 children (M = 4.51 years, 26 males)

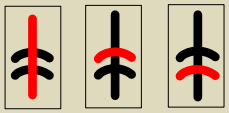
Stimuli: 3-stroke symbols with the strokes either colored or shown entirely in black

Training: Children learned eight three-stroke symbols by drawing them three times each; stroke order production was either self-directed or instructed

- Instructed group: 20 children drew symbols in a specified stroke order
- Self-directed group: 22 children drew symbols in any chosen stroke order

Testing: Stated "yes" or "no" to whether or not they learned each symbol shown in a Powerpoint

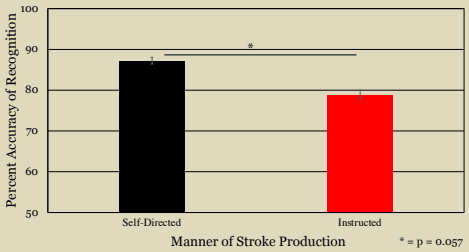
- Included learned and unlearned symbols shown in learned and unlearned stroke orders
- Correct response was for the symbol itself, not the stroke order

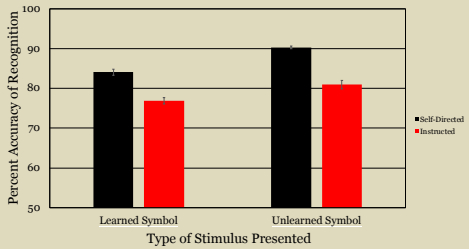


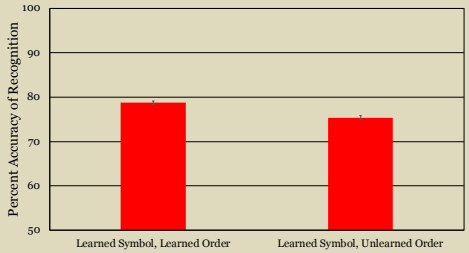
Example of Stimuli on Training Slides Shown to Instructed Group

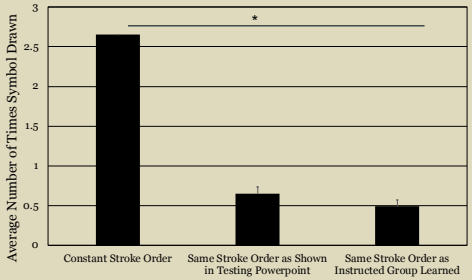
Example of Stimuli on Training Slides Shown to Self-Directed Group

Results









Results

Self-directed group was more accurate at distinguishing between learned and unlearned symbols

- More accurate at recognizing unlearned symbols as symbols they did not learn during training
- On average, children in self-directed group did not vary the stroke order in which they drew each symbol; the chosen stroke orders did not match the orders in which the symbol was shown during testing or the orders that were learned by the instructed group

There was no significant difference in the recognition of learned symbols shown in learned versus unlearned stroke orders by the instructed group

Discussion

Recognition of dynamic symbols shown in variable stroke orders appears to be enhanced when a symbol is learned in a self-chosen, rather than forced, stroke order, as was seen in the self-directed group

Learning a symbol in a particular stroke order does not appear to enhance recognition when a symbol is shown in a learned order as compared to an unlearned order

A group that is forced to draw symbols in variable stroke orders during training is needed to fully evaluate the role of stroke order in symbol recognition

Additional analysis on the differences in recognition between the self-directed and instructed groups for symbols in which the self-directed group drew the symbol in the same stroke order as was learned by the instructed group needs to be performed. This would further our understanding of the role of choice of learning method in symbol recognition.

References

1 Freyd, J. J. (1983). Representing the dynamics of a static form. *Memory & Cognition, 11*(4), 342-346.
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5 Longcamp, M.; Zerbato-Poudou, M.T.; Velay, J.C. (2005). The influence of writing practice on letter recognition in preschool children: A comparison between handwriting and typing. *Acta Psychologica* (115), 67-79.