Visual attentional set-shifting and inhibitory control in children who stutter: preliminary results

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Background

- Attention consists of three separable networks, i.e. alerting, orienting and executive attention (Fan, et al., 2005) each computing different functions (Posner & Fan, 2007).
- Recent findings seem to suggest that both the appearance and maintenance of developmental stuttering can be linked to lowered proficiency on attentional set-shifting (Eggers & Jansson-Verkasalo, 2017; Ntourou, et al., 2018).

Participants

Participants:

- were recruited through an open call,
- had normal or corrected to normal vision,
- had no known neurological, psychological or developmental problems based on parental questionnaires,
- passed a hearing and language screening,
- had age appropriate scores on the Vocabulary & Block Design WISC-R (Georgas, et al., 1997),
- CWS ≥ 3% SLD per 100 words and at least ‘mild’ on the SSI-4 (Riley, 2009).
- had no significant between-group differences in SES, IQ-score, chronological age and simple reaction time ($p > .05$).

Research Questions

We sought to investigate whether:

- Both groups would have a slower response speed and lower accuracy during most attention demanding blocks (Block 2 & 3)
- CWS, compared to CWNS, would demonstrate difficulties in attentional set-shifting characterized by greater variability in response speed and accuracy.

Measures

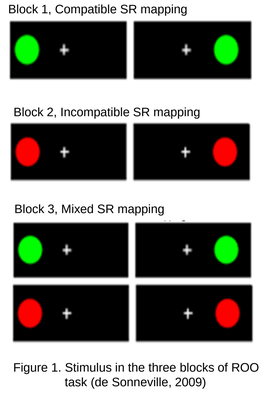

Figure 1. Stimulus in the three blocks of ROO task (de Sonneville, 2009)

Response Organization of Objects

- Attentional-set shifting was measured by comparing speed, speed fluctuation and accuracy during Block 1 and Block 3 (compatible part).
- Inhibitory control was measured by comparing speed, speed fluctuation and accuracy during Block 1 and Block 2.

Conclusions

- All participants were slower during attention demanding blocks (Block 2 & Block 3).
- CWS as a group showed variability in their speed within Block 3, indicative of difficulty in attentional set-shifting.
- A deeper, more sensitive analysis is needed in order to investigate possible differences in inhibitory control during switch trials within Block 3.

Results

MANCOVAs showed that

- all participants were significantly slower in attention demanding blocks (Block 2 & 3). No significant block differences were found as for accuracy (fig. 2).

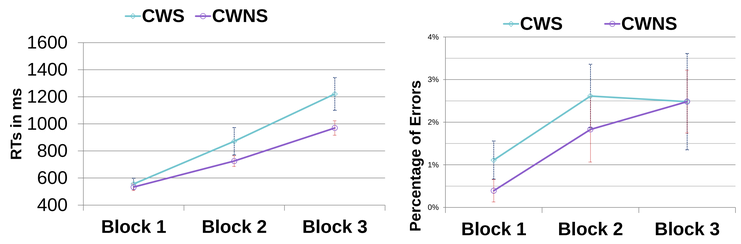

Figure 2. RTs (left panel) and percentage of errors for the two groups per the three Blocks.

- in the attentional set-shifting block (Block 3), the CWS group was progressively slower and more accurate, while the CWNS group was stable in speed and accuracy (fig. 3).

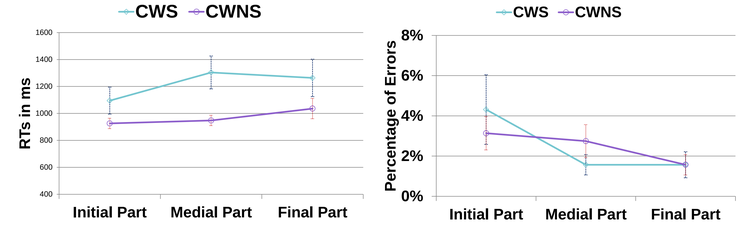

Figure 3. RTs (left panel) and percentage of errors (right panel) for the two groups at the beginning, middle and end of Block 3.

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Please scan QR code to view the references.

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