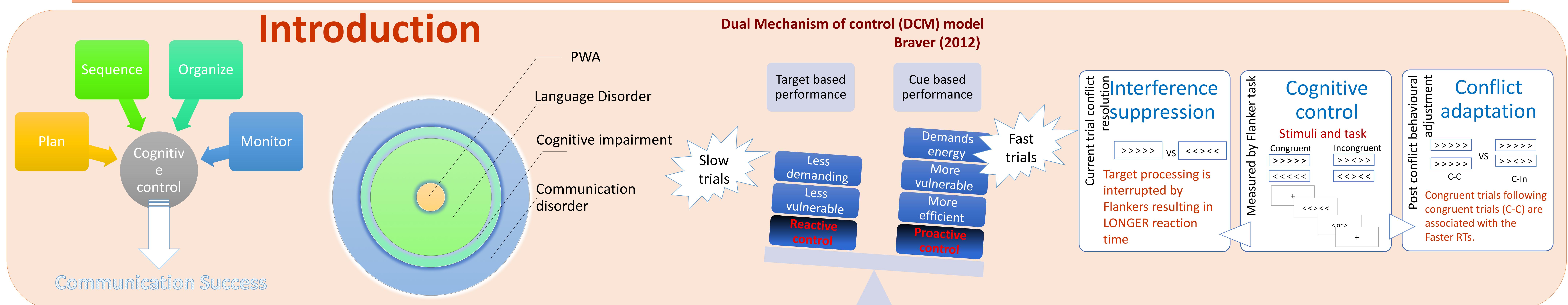


Conflict adaptation and interference suppression in stroke-induced aphasia

Evidence from multiple-single case studies

Tanya Dash, Edith Durand, Michèle Masson-Trottier & Ana Inés Ansaldo
Centre de recherche de l'Institut universitaire de gériatrie de Montréal

Introduction



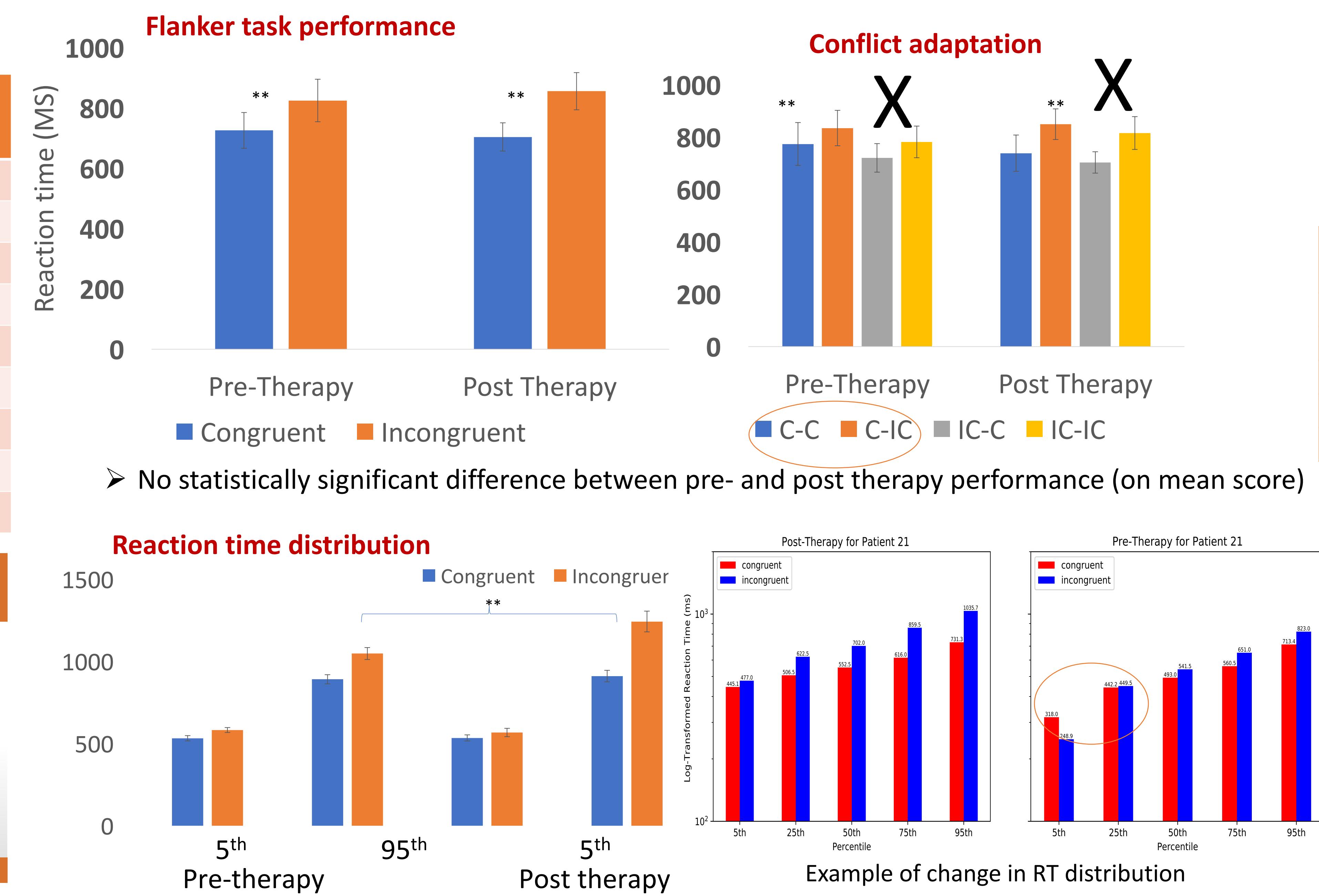
Methodology

Participants

| Code | Age (year) | Gender | Education (year) | TPO (month) | Aphasia type |
|------|------------|--------|------------------|-------------|--------------|
| VA04 | 74 | M | 18 | 49 | Broca |
| VA17 | 65 | W | 18 | 84 | TMoA |
| VA21 | 72 | M | 8 | 23 | TMoA |
| VA27 | 55 | W | 12 | 36 | Broca |
| VA30 | 59 | M | 12 | 56 | Broca |
| VA33 | 72 | W | 11 | 408 | TMoA |
| VA39 | 72 | M | 18 | 46 | Anomic |
| VA41 | 56 | W | 11 | 252 | Broca |
| VA57 | 63 | W | 18 | 33 | Anomic |

Procedure

| Language therapy (mAOT) | Flanker task | Other language and neuropsychological evaluation |
|---|--|--|
| 15 therapy sessions (1hour each 3 times a week) | Performance was recorded at 2 time points. | Recorded at 2 time points |



Results

Qualitative comparison of the performance

Qualitative comparison of the performance of PWA on different tasks suggests different pattern of change in performance that doesn't reach statistical significance. For example:

| | TMT A | TMT B | WM | Naming | Comp | CETI | PrX-G | PrX-BF | Rep | IS | PC | RC | CAE | LThG |
|----|-------|-------|----|--------|------|------|-------|--------|-----|----|----|----|-----|------|
| 4 | ↑ | ↓ | ↑ | ↑ | ↓ | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ | ↓ | ↑ |
| 17 | ↑ | ↑ | ↓ | ↑ | ↓ | ↑ | x | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ |
| 21 | ↓ | ↓ | ↑ | ↑ | ↑ | ↑ | x | x | x | ↑ | ↑ | ↑ | ↑ | ↑ |
| .. | | | | | | | | | | | | | | |
| 39 | ↑ | ↓ | ↓ | ↓ | ↓ | ↓ | ↑ | ↑ | ↑ | x | ↓ | ↑ | ↓ | ↓ |

Note: TMT, Trail Making Test; WM, Working memory (nBack test); CETI, Communication effectiveness index; PrX-G, Praxis Gestural; PrX-BF, Praxis bucofacial; Rep, repetition; IS, Interference suppression; PC, Proactive control; RC, Reactive control; CAE, Conflict adaptation effect; LThG, Language therapy gain.

Statistical significance

- Both flanker effect and conflict adaptation showed negative correlation with language skills (verb naming, repetition skills) and praxis scores.
- In addition, Conflict adaptation skills showed positive correlation with the working memory performance.

Discussion

- Interference suppression was demonstrated by all the PWA (IC>C). 8 PWA showed better preserved interference suppression abilities post therapy.
- Presence of conflict adaptation for PWA, when the previous trial is congruent (C-IC>C-C). Conflict adaptation was not seen when the previous trial is incongruent indicating impairment in adaptation of behavior in high conflict situation (I-I>IC-C). Thus, indicate irregularities in conflict adaptation effects.
- 5 PWA showed better preserved conflict adaptation (C-IC>C-C) post therapy. Interestingly, 3 participants started demonstrating conflict adaptation for the high conflict situation (I-I>IC-C).
- PWA tend to use more of the **reactive control strategies** for the performance in flanker task, when comparing pre- and post therapy performance. However, the changes in **proactive control strategies** were demonstrated by 5 out of 9 participants (Not significant).

- Correlation analyses found that nBack scores were related to the conflict adaptation effect. As both working memory and cognitive adaptation are influenced by previous trial effect. We find some interesting trend (not significant enough) in the performance of the flanker task and other language and neuropsychological tasks. Although, no predictive model can be generated at this point; but it is worth exploring.

Perspective: These results are based on small sample size and the findings are preliminary; a larger ongoing study, will provide further evidence on impact of language therapy on cognitive control in 4 time points. It is important to find more robust tests to assess the cognitive control skills that allows us to find the statistical significant effect with smaller sample also (ANT in use).