Cognitive disorders as sources of variation in dialogues
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To cite this version:
Caterina Petrone, Elisa Sneed, Simona Schiattarella, Giovanna De Bellis, Tim Mahrt, et al.. Cognitive disorders as sources of variation in dialogues. AISV 2017, Jan 2017, Pisa, Italy. <halshs-01459699>

HAL Id: halshs-01459699
https://halshs.archives-ouvertes.fr/halshs-01459699
Submitted on 7 Feb 2017

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Cognitive disorders as sources of variation in dialogues

INTRODUCTION

Multiple Sclerosis (MS)
- Neurodegenerative disorder including physiological, motor, cognitive and psychological impairments [1]
- Cognitive impairment (CI) in up to 65% patients with MS: deficits in planning and decision making, working memory, attention and speed of processing [2]

Read speech and CI:
- Articulation rate slower with low working memory capacity and slower processing speed [3, 4]
- Planning strategy -> longer time needed to plan the upcoming speech material

Comparison of healthy vs MS populations to get insight into cognitive constraints on speech planning

Interpersonal coordination
- Turn-taking is quick, but latencies in planning language production are longer [5]
- Question-answer (Q-A) pairs interesting for turn-taking coordination, because questions make a floor transfer relevant [6]
- Prosodic adaptation: similar prosodic patterns [7]

Research questions
(1) Is turn-taking timing differently adjusted in MS patients with/without cognitive deficits?
(2) Is prosodic adaptation related to cognitive deficits in MS?

Neurocognitive tests [3,4]
- Working memory: Letters and number sequencing task; SDMT
- Speed of processing: PASAT-3s
- Phonemic and Semantic fluency tests

METHODS

PARTICIPANTS

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<thead>
<tr>
<th></th>
<th>MS-CI*</th>
<th>MS-NCI*</th>
<th>Controls (C)**</th>
<th>Interlocutors (I)***</th>
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<td>N</td>
<td>6</td>
<td>6</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Age</td>
<td>50.6 (6.3)</td>
<td>44 (11.4)</td>
<td>36.9 (16.1)</td>
<td>23.4 (3.4)</td>
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<tr>
<td>Gender</td>
<td>5F/1M</td>
<td>5F/1M</td>
<td>10F/2M</td>
<td>10F/2M</td>
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<tr>
<td>EDSS</td>
<td>5 (1.18)</td>
<td>3.2 (1.25)</td>
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Neurocognitive scores

RESULTS & DISCUSSION

Speakers’ Gaps

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Interlocutors’ adaptation

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<th>Controls (C)**</th>
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CONCLUSION

- Cognitive constraints as source of variability in dialogues -> speech planning as flexible? [10]
- Speech-based technologies to complement CI screening and monitoring + training therapists
- Future work: finer-grained analysis of different question types.

Neurocognitive tests [3,4]
- Working memory: Letters and number sequencing task; SDMT
- Speed of processing: PASAT-3s
- Phonemic and Semantic fluency tests

Extreme group approach: MS-CI vs. MS-NCI [4]

Linguistic task
- Shipwreck scenario game [8]
- Dyads: MS vs. C / C vs. I (see table)
- Labeling of Interpausal Units and gaps in Q-A pairs (PRAAT)
- Adaptation by interlocutors

Statistics: Mixed models (p < .05)