

Communicative effectiveness of individuals with dysarthria following traumatic brain injury

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BACKGROUND

- Approximately 10-60% of individuals who sustain a TBI will exhibit persistent dysarthria and reduced speech intelligibility¹.
- Research in dysarthria subsequent to TBI has commonly focused on the physiological impairment²⁻⁴.
- The relationship between level of intelligibility and perceived communicative effectiveness in individuals with dysarthria following TBI remains unexplored.
- An understanding of these relationships is important to the development of speech interventions focused upon the improvement of communicative effectiveness and quality of life.

RESEARCH QUESTIONS

- Do individuals with TBI and their communicative partners agree on the communicative situations that present the most difficulty?
- Does a correlation exist between level of speech intelligibility and perceived communicative effectiveness?

HYPOTHESES

- Individuals with TBI and their communicative partners will agree on the communicative situations that present the most difficulty.
- For speakers with TBI, a correlation will exist between level of intelligibility and perceived communicative effectiveness.

METHOD

- **Participants:** Eight adults with chronic dysarthria subsequent to severe TBI (mean age = 45 years, SD = 11 years) and their nominated communication partner. All participants with TBI were at least 24 months post-injury.
- **Tasks:** (1) conversational speech sample (TBI participants) and (2) Communicative Effectiveness Survey⁵.
- **Communicative Effectiveness Survey (CES):** Seven-point scale where 1= "not at all able" and 7= "very effective". Administered separately to individuals with TBI and their communicative partner to avoid interference effects.

METHOD

- **Intelligibility:** Rated by 10 students of speech pathology using direct magnitude estimation (free modulus paradigm). Intelligibility described as "the ease with which speech could be understood"⁶.
- **Statistics:** CES ratings of TBI participants and their communicative partners compared using Mann-Whitney *U* tests with alpha at 0.01⁷. Spearman rank order correlation employed for correlation analysis.

Table: Mean CES results for the participants with dysarthria following TBI and their communicative partners.

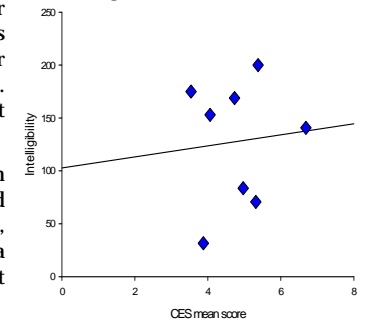
Communicative Situation	TBI participant	TBI partner
Speaking to a friend when you are emotionally upset or when you are angry	3.63	2.21
Having a conversation with someone at a distance	3.81	3.81
Conversing with a stranger over the telephone	4.00	3.57
Participating in a conversation with strangers in a quiet place	4.19	4.88
Having a long conversation	4.56	3.36
Being part of a conversation in a noisy environment	4.63	4.06
Talking over the phone to service people	4.81	3.21
Having a conversation while travelling in a car (as a passenger)	4.81	5.13
Speaking to young children	5.00	4.88
Conversing through the outdoor speaker system	5.00*	2.25*
Conversing with someone who is hard of hearing	5.00	4.36
Speaking outdoors (e.g., sporting event)	5.06	4.44
Having a conversation with a few friends	5.69*	4.38*
Speaking in front of a small group	5.93	4.71
Conversing with a familiar person over the telephone	6.25	5.19

*Trends towards statistical significance observed ($p < .05$ but greater than $p < .01$).

RESULTS

- In general, participants with dysarthria perceived their communicative effectiveness as higher than their communication partners. However, this was not statistically significant.
- Speaking to a friend when upset or angry was reported as most difficult task, followed by having a conversation with someone at a distance.
- There was no relationship between level of speech intelligibility and average ratings of perceived communicative effectiveness ($r = .02$, $p = .93$).

Figure: Relationship between intelligibility and average CES rating.



DISCUSSION

- Individuals with dysarthria following TBI tended to rate their communicative effectiveness higher than their communication partners. It is possible that the TBI group exhibited reduced insight into their communication problems.
- Increased participant numbers may have resulted in the observed trends becoming significant.
- The lack of correlation between level of speech intelligibility and perceived communicative effectiveness highlights the need for careful examination of activity and participation during assessment and goal setting.
- Future research should include: (1) larger participant numbers and (2) examination of cognition in the group with TBI.

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