Question Use in Conversational Discourse Among Individuals With and Without TBI

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BACKGROUND

- Asking questions is key to maintaining engaging and coherent conversations (Kearsley, 1976).
- Specifically, questions can serve to clarify details, gather new information, and confirm understanding (Stivers, 2010).
- Diminished ability to use questions effectively is a recognized deficit in the conversational behavior of adults with right hemisphere disorders (Kennedy et al., 1994; Minga, 2020).
- Traumatic brain injury (TBI) shares similarities with right hemisphere disorders in causing communication difficulties due to cognitive deficits.
- Although the speech of individuals with TBI often appears fluent, their discourse is frequently perceived as off-target, disorganized, and tangential in casual conversation (Lê and Coelho, 2023).
- Despite the role of question use in profiles of pragmatic deficits, little is known about question use patterns in conversational discourse among individuals with TBI.
- Understanding question use in individuals with TBI can guide targeted interventions to improve communication and social interactions.

OBJECTIVES

This study aims to investigate question use patterns in conversational discourse among individuals with and without TBI, by examining

- The distribution of question types
- The social actions achieved through questions

METHODS

Dataset: 10-minute conversation transcripts extracted from the TBIBank English Coelho Corpus (Coelho et al., 2002)

Participants:

- No history of substance use of psychiatric illness
- Adequate hearing acuity for conversation
- Aphasia Quotient on the Western Aphasia Battery above 93
- No significant motor speech disorders
- Rancho Los Amigos Level of Cognitive Functioning of VII or above
- Galveston Orientation and Amnesia Test score of 75 or above
- Dementia Rating Scale score of 120 or above

	Closed Head Injury (CHI; n=45)	No Brain Injury (NBI; n=48)
Age	29.22 (12.85)	32 (13.60)
Sex (F:M)	12:33	16:32
Education Level (Years)	13.22 (2.49)	14.08 (3.02)
Employment (P:S:U)	17:15:13	17:13:18
Time Post Onset (Months)	11 (18.91)	n/a
Injury Mechanism	38 MVA, 5 Fall, 2 Struck by/against	n/a
Loss of Consciousness	<24 hours to 99 days	n/a

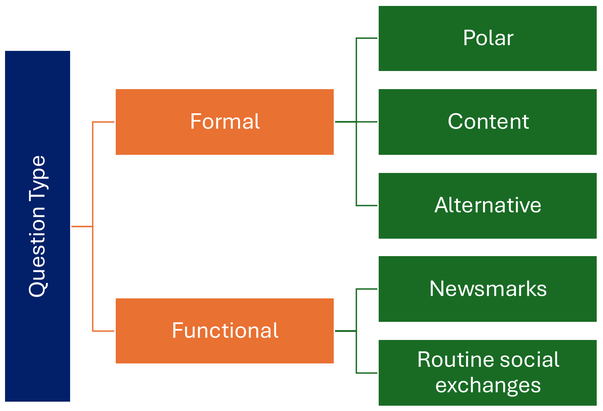
Note: P = Professional, S = Skilled, U = Unskilled
No significant differences in demographic backgrounds.

Analysis:

- The codebook follows the question-response coding scheme by Stivers and Enfield (2010).
- Deductive coding was applied first, followed by inductive coding to identify additional themes not captured in the original system.
- Chi-square tests were conducted to compare the proportions of question types and social actions in conversations.

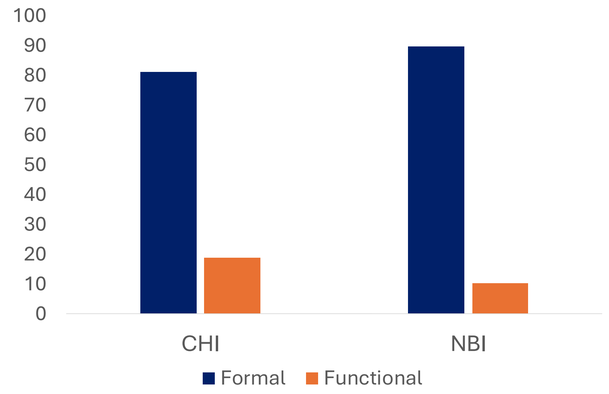
RESULTS

Question Types



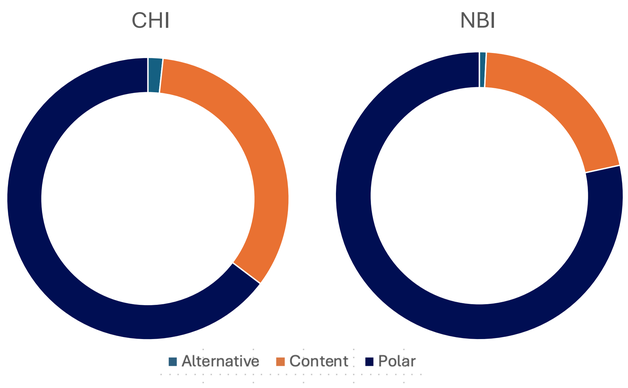
- Polar questions contain two possible answers in semantic terms: true/the case versus not true/not the case.
- Content questions are question that uses a "Q-word" or "WH- word."
- Alternative questions include the proposal of a restricted set of alternative answers
- Newsmarks are typically used to react to new information, such as "really?", "is it?", or "yeah?"
- Examples of routine social exchanges include inquiries about well-being, such as "how are you?"

Functional vs Formal Questions



- On average, individuals in the CHI group ask 10.02 questions, while individuals in the NBI group ask 6.76 questions (t = 1.85, p =.068).
- The CHI group used more functional questions and fewer formal questions in conversations comparing to the NBI group (χ^2 = 9.19, df = 2, p =.002).

The Use of Formal Questions



- The Chi-square test results for the different types of formal questions indicate a statistically significant difference between the CHI and NBI groups (χ^2 = 16.86, df = 8, p= .031).
- After adjusting for multiple comparisons using the Bonferroni correction, the only significant difference was observed in Polar Questions (adjusted p = 0.01).

Social Actions

Request for Information
These questions seek information that the speaker does not already know.
Example: "Which one do you like?"

Other Initiation of Repair (OIR)
Questions include open class repair initiators *('e.g., 'Huh?'' or ''What?'')* as well as partial repeats *(e.g., ''He went where?'')*.

Request for Confirmation
Questions that assert a proposition for confirmation
Example: ''So you're coming tomorrow night?''

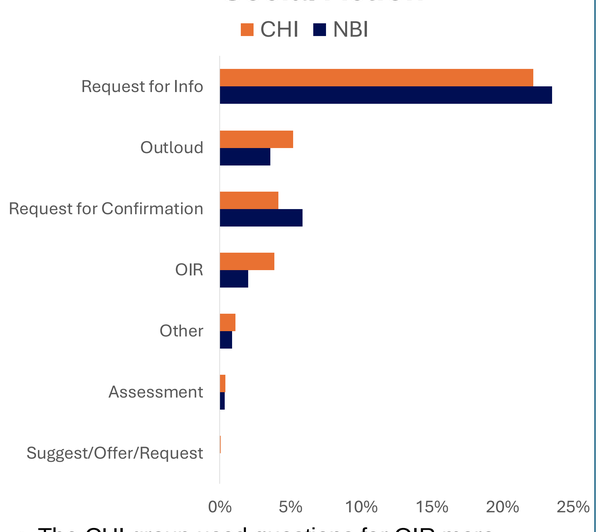
Assessment
Evaluations that are formatted to seek agreement such as *''Isn't it beautiful out today?'' or ''She's such a pretty girl, isn't she?''*

Suggest/Offer/Request
Questions that suggest, propose, or offer something to another, as well as questions that request something from another, such as *"Did you want some?"*

Outloud
Questions delivered to no one in particular often with lower volume and do not appear to be designed to secure a response (e.g., *''Now where are my keys.''* while looking in a bag)

Other
Questions expressing uncertainty in a context that the speaker may expect the conversation partner to respond (e.g., *"oh ǂ I don't even know the [/// near Stowe ?* ")

Social Action



- The CHI group used questions for OIR more frequently than the NBI group (χ^2 = 4.55, df = 2, p = .033). No group differences in other social actions.

DISCUSSION

- Both groups tend to use formal questions more frequently than functional questions.
- Compared to individuals with NBI, individuals with CHI demonstrate a higher use of functional questions, particularly newsmarks, relative to formal questions.
- Among formal questions, individuals with CHI ask fewer polar questions compared to individuals with NBI.
- For both groups, the primary purpose of questions is to request information.
- The CHI group asks more clarification questions than the NBI group.
- Findings of the current study aligns with the general literature of English speakers that polar questions are used more frequently than content and alternative questions in conversations (Stivers, 2010).
- Similar to individuals with right hemisphere disorders (Minga 2020), individuals with CHI also shows reduced polar question use, suggesting challenges in structuring questions that limit the response to a choice between two options.
- Using functional questions is effective for maintaining conversation flow, but an overreliance on these questions may reduce the richness of dialogue.
- The increased use of questions to initiate repairs suggests that individuals with CHI may face greater challenges in understanding the conversation, yet they also put in active effort to clarify their comprehension.

Limitations:

- The lack of participants' race limits the ability to examine the intersection between race, a critical covariate, and question use.
- Conversations conducted in lab settings may restrict the variety of question usage. For instance, there is little to no occurrence of suggestions, offers, or requests in both groups.

ACKNOWLEDGEMENT

We greatly appreciate the contribution of the TBIBank for providing a comprehensive corpus of individuals with TBI. We also extend our thanks to Catherine Barr at the Cognitive-Communication Lab at Syracuse University for her dedicated work in qualitative coding and analysis.

KEY REFERENCES

- Coelho, C. A., Youse, K. M., & Le, K. N. (2002). Conversational discourse in closed-head-injured and non-brain-injured adults. *Aphasiology*, *16*(4–6), 659–672. https://doi.org/10.1080/02687030244000275
- Kearsley, G. P. (1976). Questions and question asking in verbal discourse: A cross-disciplinary review. *Journal of Psycholinguistic Research*, *5*(4), 355–375. https://doi.org/10.1007/BF01079934
- Kennedy, M. R., Strand, E. A., Burton, W., & Peterson, C. (1994). Analysis of first-encounter conversations of right-hemisphere-damaged adults. *Clinical Aphasiology*, *22*, 67–80.
- Lê, K., & Coelho, C. (2023). Discourse Characteristics in Traumatic Brain Injury. In A. P.-H. Kong (Ed.), *Spoken Discourse Impairments in the Neurogenic Populations: A State-of-the-Art, Contemporary Approach* (pp. 65–80). Springer International Publishing. https://doi.org/10.1007/978-3-031-45190-4_5
- Minga, J., Fromm, D., Williams-DeVane, C., & MacWhinney, B. (2020). Question Use in Adults With Right-Hemisphere Brain Damage. *Journal of Speech, Language, and Hearing Research : JSLHR*, *63*(3), 738–748. https://doi.org/10.1044/2019_JSLHR-19-00063
- Stivers, T. (2010). An overview of the question–response system in American English conversation. *Journal of Pragmatics*, *42*(10), 2772–2781. https://doi.org/10.1016/j.pragma.2010.04.011
- Stivers, T., & Enfield, N. J. (2010). A coding scheme for question–response sequences in conversation. *Journal of Pragmatics*, *42*(10), 2620–2626. https://doi.org/10.1016/j.pragma.2010.04.002

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