Nonverbal Event Processing and Language Impairment in Aphasia

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INTRODUCTION

For centuries, researchers have been searching for a way to connect thought and language and they are still struggling to clearly define the underlying cognitive processes that occur when language is produced. The terms “thinking for speaking” (Stobin, 1996) and “event processing” have been introduced to refer to the translation of a schematization of a concept into verbal expression.

A number of recent studies have reported on a few individuals with aphasia who seem to show impairments in the underlying thought processes related specifically to understanding non-linguistic events occurring in the world. This deficit had an impact on selected areas of language, including sentence production, sentence comprehension, and verb retrieval, (Dean & Black, 2005; Marshall and colleagues, 1993-2005). In the current study, we investigated whether deficits in nonverbal event processing would be found in a larger group of 30 individuals with chronic aphasia, and explored which areas of language were most impaired when event processing deficits were present.

What is event processing?

Event processing is a set of nonverbal cognitive skills that are applied when translating conceptual information related to events occurring in the world into language. This encompasses information ranging from knowledge about the type of event that occurred to perspective taking. Many researchers have defined “event processing” as identifying the entities involved in an event and defining the roles and interactions between those entities.

Hypotheses:

1) Given a convenience sample of 30 people with aphasia, some will show event processing impairments on the Role Video Assessment.

2) People with event processing impairment will show deficits in at least these two areas of language:
   a) verb naming
   b) auditory comprehension of sentences

METHODS

Frequency histogram of Role Video

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Role Video

The Role Video assessment, developed by Marshall and colleagues (1993), presents each participant with 32 short video clips, each lasting only a few seconds, depicting a reversible or non-reversible event. No language or sounds are part of the videos. After watching each video clip twice, the participant is asked to identify a picture, from an array of three, that best shows the outcome of the event. Half of the videos depict reversible events and half depict non-reversible (see next section.)

We express our thanks to Carol Sachett, Jane Marshall and colleagues for allowing us to use the Role Video Assessment!

RESULTS

Example of response choices for one of the non-reversible event videos

A. Language testing (aphasia group only):
   1) Auditory comprehension subtests: basic word discrimination, commands, complex idiomatic material, syntactic processing (BDAE)
   2) Noun and verb naming and comprehension (TAWF)
B. Cognition testing (both groups):
   1) Nonverbal cognition subtests: symbol cancellation, symbol trails, design memory, mazes, design generation (CLQT)
C. Event processing task:
   1) Role Video (Marshall et al., 1993)
   2) Analyze data to determine if some participants with aphasia demonstrate event processing impairment.
   3) Analyze data to determine if those participants with impaired event processing have deficits in verb naming and syntactic comprehension.

Participants: People with Aphasia (PWA) n= 30, 22 males, 8 females

All PWA were at least 6 months post onset and ranged in Aphasia Severity Rating (ASR) on the BDAE as follows:

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<th>Count</th>
<th>Percent</th>
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Chi-Squared Analyses

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<tr>
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<tr>
<td>Total</td>
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Chi-Squared Analyses

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<tr>
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</tr>
<tr>
<td>Impaired</td>
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</tr>
<tr>
<td>Total</td>
<td>3</td>
</tr>
</tbody>
</table>

The control group scored significantly better on the Role Video assessment than the aphasia group. The researchers considered a participant “impaired” on the Role Video if that participant scored lower than 2 standard deviations below the mean of the control group. By this criteria, 17 PWA had impaired event processing and 13 fell within the normal range.

CONCLUSIONS

1) A large proportion (17/30) of individuals with chronic aphasia had impaired event processing abilities. This deficit may be more common than previously believed.

2) Individuals with deficits in event processing are likely to have impairments in auditory comprehension of sentences and verb naming.

REFERENCES


We thank Marshall and colleagues for allowing us to use the Role Video Assessment!