1. Background

Linguistic diversity and implications for aphasia

Languages show striking differences in how they represent motion events. In particular, they either lexicalize or grammaticalize some spaces of information more than others (Talmy’s typology) [1]:

- Satellite-framed languages: He is running up, down, across, into, away... (lexicalization of Manner).
- Verb-framed languages: Il monte, descend, traverse, entre, part... en courant (lexicalization of Path).

Such properties constrain how speakers encode motion in discourse [2,3,4], thereby raising new questions concerning the relationship between language and cognition. They are also of great relevance for the study of aphasia in a cross-linguistic perspective, particularly in comparison to monolingual or bilingual aphasics who show dissociations between lexical/grammatical knowledge and who possess one or two languages with typologically divergent patterns. Despite a few available cross-linguistic studies of aphasia [5-6] little is still known about universal vs. language-specific aspects of the linguistic deficits and compensation strategies displayed by people with aphasia. Recent studies deal with this question which is of particular interest for our understanding of language pathology and for the development of tools towards language rehabilitation [7,8].

The aim of the study

The present study examines the extent to which the properties of two typologically different languages (French and English) constrain how controls vs. monolingual and bilingual aphasic speakers with agrammatism perform a production task involving visual stimuli about voluntary motion events (animated cartoons).

Questions and implications for language pathology:

- Controls should follow the typological properties of their language (lexicalization/grammaticalization patterns)
- Given their dissociations, do agrammatic patients, follow language-specific patterns?
- Or do these patients develop other compensatory strategies and of what nature?

2. Method

Participants

- 40 French and English monolingual adult speakers (20 per language)
- 2 French monolingual aphasics with agrammatism
- 3 French-English early bilingual aphasics with agrammatism

Background measures:

- Questionnaire: participants’ linguistic background (exposure to other languages)
- Diagnostic Battery: BDAE, DO80 and MT86 (for aphasic patients)

Material

Visual stimuli implying voluntary motion events with varied Paths (P) and Manners (M):
- Paths: up, down, across
- Manners: run, jump, climb, crawl, walk, ride a bicycle
- An additional set of control items maximized attention to Manner in order to elicit Manner verbs

Task

- Production: Stimuli were interspersed in a mixed list of items and presented in a pseudo-randomized order (e.g. Figure 1, 2). After they saw each stimulus, participants were asked to describe what had happened.

3. Results

Controls

Subjects’ linguistic performance differed in French vs. English in three ways:

- **Focus**: French speakers expressed both Manner and Path (MP), French speakers mostly Path (P).
- **Density**: As a result, utterance density was higher in English than in French (two semantic components systematically expressed).
- **Locus in Verbs vs. other devices**: In English compact structures systematically encoded Manner in verbs and Path in other devices. In contrast, French showed more variability. Speakers expressed mostly Path both in verbs and in other devices, but also some Path+Manner in the verb but less Manner in either locus and/or no other devices in the verbal network (Figure 3, see examples 1 and 2).

Aphasics:

- **Monolinguals**: Despite some inter-subject variability, French agrammaticas followed the pattern of their language. They mostly produced utterances of low density (one component expressed), with less Path information in both loci and no semantic information in the verbal network.
- Furthermore, these monolingual aphasics produced no Manner at all in other devices and clearly less Path information in the verb as compared to both controls and bilingual aphasics (Figure 4). French agrammaticas produced little Path in other devices as compared to controls. Note also that monolinguals sometimes omitted prepositions and verbal morphology from their utterances (see examples 3 and 4).
- **Bilinguals**: In French descriptions bilingual aphasic overall followed the typical lexicalization pattern of French, expressing Path in the verb and little information in the periphery. However, in comparison to French controls, they expressed even less Path outside of the verb and generally no semantic information in this locus.
- In their English descriptions the same participants produced fewer motion verbs, omitting verbal morphology when they used them (e.g. tensed auxiliaries), and/or expressed less Manner in their verbs as well as less Path in other devices than English controls. However, they nonetheless followed the typical lexicalization pattern of English, with Manner mostly expressed in the verbs and Path in satellites (Figure 5, examples 5-10).

4. Conclusion

Typological properties of languages clearly affect how all groups of speakers expressed motion events.

- The findings for both control groups are in line with previous studies showing typological constraints on production.
- Agrammatic aphasic speakers, whether monolingual or bilingual, follow a common strategy in French focusing on lexicalized components (Path in verb roots), omitting most grammatical elements, and expressing no other information in other devices.
- When speaking English, bilingual aphasics show a preference for the dominant English pattern but also compensated universal vs. path-related (Path), particular lexicalization (Manner), devices marking goals (top), or manner verbs alone in which they omit grammatical elements (running/swimming).

References


Figure 1. Example of ‘across’ cartoon stimulus

Figure 2. Example of ‘up’ cartoon stimulus

Typical utterances on the production task:

1. French Controls: There’s a kid over there. ( był dziecko)
   Verb=P Other=NO

2. French Controls: That’s a boy that crosses the river by swimming. (tołaczy się wodą)
   Verb=M Other=NO

3. Agrammatic 1: He went to the telephone pole.
   Verb=NO Other=NO

4. Agrammatic 2: (The boy) he will come... take left
   Verb=M Other=NO

5. Bilingual Agrammatic 1 (FR): It’s a boy that crosses the river by swimming. (The cat runs on the electric pole)
   Verb=P Other=NO

   Verb=P Other=No

7. Bilingual Agrammatic 3 (FR): (The cat is climbed-up to the pole)
   Verb=M Other=NO

8. Bilingual Agrammatic 1 (EN): A cat, it... climb
   Verb=M Other=NO

9. Bilingual Agrammatic 2 (EN): A boy... across river
   Verb=P Other=NO

10. Bilingual Agrammatic 3 (EN): He dived in, and... swimming
    Verb=M Other=NO

Figure 3. Information expressed in verbs vs. other devices ('P'=Path, 'M'=Manner) by French and English Controls

Figure 4. Information expressed in verbs vs. other devices in French Monolingual Agrammatism

Figure 5. Information expressed in verbs vs. other devices in Bilingual Agrammatism