

Neologisms are produced by the occurrence of several errors (additions, omissions, substitutions, transpositions) in the same target word. When embedded in fluent and well articulated speech, they are characteristic of neologistic jargon. Investigations of neologisms have led to different hypotheses about their nature. With reference to Patterson's (1986) model, two main hypotheses have been put forward, namely lexical vs postlexical deficits.

PARTICIPANTS

Three patients (two females - DLP and LM - and one male - DLC), affected by aphasia following left hemisphere ischemic stroke, were included in the study on account of their significant neologistic production. All patients underwent standard language assessment.

METHODS

Neologistic production was specifically studied by confrontation naming, reading aloud and repetition tasks, in which stimuli (n= 30, 124 and 124, respectively) were balanced for length, consonant clusters, frequency and imageability. Follow-up assessments were carried out at 6-7 month intervals (DLP and DLC: 3 assessments; LM: 2 assessments), during which all patients were treated by experienced speech therapists.

Errors were qualified as omissions, additions, substitutions and transpositions. Responses were classified as correct, single phonemic paraphasias (1 phoneme discrepancy relative to the target), neologisms (2 or more phonemes discrepancy relative to the target), semantic paraphasias and no response. Neologisms were further classified as target-related or non target-related (bizarre).

Quantitative response-to-target comparisons (i.e., measure of phonological relatedness) were performed by calculating the *Phonological Overlap Index* (POI, Bose et al, 2007) and a newly developed *Phonological Correspondence Index* (Indice di Corrispondenza Fonologica, ICF), which provides a more specific measure of transpositions (not scored as errors by POI).

Length and cluster effects (linked to postlexical deficits) as well as frequency and imageability (linked to lexical deficits) were analyzed.

Lexical deficit	Postlexical deficit
Naming < reading and repetition	Naming = reading = repetition
Frequency effect	Length effect
Imagery effect	Consonant cluster effect
Length response ≠ target	Length response = target

Phonological Overlap Index (POI) : $N \text{ shared} \times 2 / LT + LE$

Indice di Corrispondenza Fonologica (ICF): $N \text{ errors} / LT$

N shared = number of phonemes shared between target and error regardless of position

LT = phonemic length of target

LE = phonemic length of error

N errors = total number of errors including transpositions

	DLP		
	Naming (n=30)	Reading (n=124)	Repetition (n=124)
Omissions	23.0%	33.0%	29.5%
Additions	15.0%	9.3%	20.5%
Substitutions	50.0%	43.3%	37.8%
Transpositions	12.0%	14.4%	12.2%
Correct r.	0%	27.4%	10.5%
Phonemic p.	20.0%	24.2%	8.1%
Neologisms			
Non target-rel.	50.0%	13.7%	60.5%
Target-related	23.3%	34.7%	21.0%
Semantic p.	3.3%	0%	0%
No response	0%	0%	0%
Unclassified	3.3%	-	-

	DLC		
	Naming (n=30)	Reading (n=124)	Repetition (n=124)
Omissions	11.3%	20.0%	15.9%
Additions	29.6%	0%	18.8%
Substitutions	38.0%	80%	39.9%
Transpositions	21.1%	0%	25.4%
Correct r.	30.0%	96.0%	62.9%
Phonemic p.	0%	4.0%	9.7%
Neologisms			
Non target-rel.	20.0%	0%	9.7%
Target-related	50.0%	0%	17.7%
Semantic p.	0%	0%	0%
No response	0%	0%	0%

	LM		
	Naming (n=30)	Reading (n=124)	Repetition (n=124)
Omissions	35.3%	33.0%	23.8%
Additions	9.8%	22.3%	12.2%
Substitutions	41.2%	25.1%	47.0%
Transpositions	13.7%	19.6%	17.1%
Correct r.	33.3%	46.0%	41.9%
Phonemic p.	23.3%	13.7%	20.2%
Neologisms			
Non target-rel.	23.3%	12.1%	9.7%
Target-related	13.3%	28.2%	28.2%
Semantic p.	3.3%	0%	0%
No response	3.3%	0%	0%

	DLP	DLC	LM
NAMING	+++ Non target-related	+ Target-related	+ Correct r./Neol
READING	+ Target-related #	- Correct r. *	-/+ Correct r. #
REPETITION	++ Non target-related	-/+ Correct r.	-/+ Correct r.
LENGTH EFF.	Repetition (POI and ICF) #	Repetition (POI and ICF) #	Reading (POI and ICF) Repetition (ICF) #
FREQUENCY EFF.	Naming (POI) *	-	Naming (POI) Repetition (POI and ICF) *
IMAGERY EFF.	Reading (POI and ICF) * Repetition (POI) *	-	-
CLUSTER COMPLEXITY EFF.	-	-	-
LENGTH RESP/TARGET	Reading: resp < target *	Naming: resp > target #	Naming and repetition: resp < target *
CONSONANT/VOWELS ERR.	Consonant > vowels	Consonant > vowels	Consonant > vowels

* Lexical deficit
 #Post-lexical deficit

RESULTS

In all patients naming was the most impaired and reading aloud was the least impaired task. Substitutions represented the most frequent type of errors. Transpositions were not enough to bring out a significant difference between POI and ICF. Consonant errors were more frequent than vowel errors. Length, frequency and imageability effects were different from one patient to the other.

DISCUSSION

The analysis of neologistic responses revealed that different mechanisms can contribute to their production in different patients, suggesting that no single source of neologisms can be identified in all cases of jargonaphasia. Rather, different profiles of lexical and post-lexical deficits can be hypothesized in different patients, depending on functional site(s) of lesion.

REFERENCES

- Bose, A., Raza, O., Buchanan, L., (2007). Phonological relatedness between target and error in neologistic productions. *Brain and Language*, 103, 120-121.
 Patterson, K.E. (1986) Lexical but non semantic spelling? *Cognitive Neuropsychology*, 3, 341-367.