

# **PERFORMANCE OF BILINGUAL CUBAN-AMERICAN APHASIC PATIENTS ON A TASK OF BODY PART IDENTIFICATION**

**Lillian Glass**

**Dept. of Communication Disorders**

**110 Shevlin Hall**

**University of Minnesota**

**Minneapolis, Minnesota 55414**

## **ABSTRACT**

Controversy exists with regard to which language is recovered following cerebral insult in bilingual aphasic patients. This study attempted to examine individual's gestural responses to a verbally presented body part identification task. Six non-aphasic non-brain damaged and eight aphasic Cuban immigrants were screened for knowledge of the Spanish and English languages and for the frequency with which each language was spoken. They were given the Body Part Identification Subtest of the Boston Diagnostic Aphasia Test (Goodglass, 1972). Results indicated that fewer errors appeared in the first learned language (Spanish), while more errors appeared in the second acquired language (English). In both the aphasic and the control group, there were more verbal paraphasic errors than literal paraphasic errors in the English language than in the Spanish language. The results of this study and its implication regarding bilingualism and aphasia were discussed.

Conflicting opinions exist as to the effects of aphasic conditions on the languages spoken by bilingual people. Based primarily upon case reports, authors have formed opinions and postulated rules regarding these effects, particularly as they relate to the process of recovery from aphasia. In an early paper, Freud (1891) states that in polyglot aphasic patients the earlier acquired language may survive the one in greater use. In a later paper Ribot (1906) concurs, suggesting that linguistic habits acquired early in life, as in childhood, are more resistant to aphasic damage than those linguistic habits acquired subsequently. This has become known as the "Rule of Ribot". Both authors' formulations appear to be based upon clinical observations and not upon controlled studies. If one assumes specificity of function of the neurological mechanism, the rule suggests that the neurological mechanisms responsible for recent memory are more vulnerable than those responsible for remote memory. If one assumes that a more general type of disturbance exists, the rule suggests that the neurological mechanisms associated with early childhood learning experiences are retained.

Pitres (1895) provided a somewhat different rule. He suggests that bilingual aphasic individuals retain the language used most often prior to aphasic insult. Pick (1913), as reported by Spreen (1973), also believes that the language practiced most is the one retained best in bilingual aphasic patients. In a more recent publication Geshwind (1958) agrees with Pitres and Pick. He observes that bilingual aphasic individuals often lose their first language and retain their second language, particularly if the second language has been more recently and intensively used. As in the case of the "Rule of Ribot", support for Pitres' view appears to be based upon informal clinical observation.

A third rule has been proposed by Minkowski (1928). He suggests that a bilingual aphasic individual's recovery of one language rather than another is due to unconscious affective or emotional ties with that language. Charlton (1964) used this rule to explain why two of the

ten polyglot patients he reviewed exhibited preference for one language over another. Fredman (1971) offers some data in support of Minkowski's rule. She provided therapy in the most recently acquired language (Hebrew) to 40 polyglot or bilingual aphasic individuals and reported that therapy has a positive effect on the language the patients acquired first. She observes that some attempts at Hebrew are interrupted by words in their mother tongue and she interprets these observations as supporting Minkowski's rule. Again, her interpretations are based on clinical observations and neither she nor Minkowski offers an operational definition that can be used to determine the language to which the speaker has the strongest affective ties.

Lambert and Fillenbaum (1959) offer still another rule. They suggest that aphasia is a generalized disorder that may affect both languages equally. Their conclusions are based on case histories of 14 "compound" bilingual persons - who have spoken English and French interchangeably for most of their lives. This is in contrast with the view that, in "coordinate" bilinguals who learn two languages in separate contexts, one language may be affected more than the other. Charlton (1964) has provided some support for Lambert and Fillenbaum's position. Based on case histories and interviews with friends and relatives of ten polyglot patients Charlton found that both or all languages were affected to a similar degree in all but two patients. In contrast to previous reports, he attempts to report the premorbid language status of the patients he studied. He used no formal language tests in this study.

It is apparent that throughout the literature there is confusion and controversy with regard to the way in which bilingual patients recover from aphasia. Concepts that do exist are based primarily on observations made during clinical activities. No formal language measures have been used and attempts to control variables have been minimal.

Because this controversy may be based partially on the lack of consistency regarding the aspects of language which have been observed, it seems warranted to examine the process using a testing procedure where data can be gathered in a replicable manner.

Because body parts are learned early in life (Meecham, 1959), this study was designed to examine the responses of individuals to linguistic tasks that involved their ability to identify body parts as verbally presented by the speaker. This investigation deals with the general question: which language is the first to recover in bilingual aphasic individuals? Specific experimental questions were: (1) Will subjects respond correctly more frequently in one language when asked to identify body parts in both languages? and (2) Are there different types of paraphasic errors made in the two languages?

It was hypothesized that there would be more correct responses on a body part identification task when presented in the subject's mother tongue (Spanish) than in the second language learned (English).

## METHOD

### Subjects

Subjects were six non-aphasic non-brain damaged individuals and eight aphasic patients who had left hemispheric cerebral lesions. Members of each group ranged from 42 to 78 years of age with a mean age of 60. Time since onset of aphasia in the aphasic subjects ranged from two to sixteen weeks. All subjects were Cuban immigrants who resided in the Miami, Florida area.

Criteria for inclusion of all subjects in the study were: (1) knowledge of the English and Spanish languages, (2) no prior knowledge of English upon emigration from Cuba to Miami, (3) the acquisition of the English language subsequent to immigration, and (4) adequate hearing for the purposes of this study. The bilingual aphasic population was selected from the clinical caseload of speech pathologists in the Miami area on the basis of availability for participation in the study and fitting the criteria listed above. Information regarding the first three criteria was obtained through a questionnaire where subjects or other informants answered yes-no questions concerning languages they had knowledge before and after emigration from Cuba. Judgement of the subject's hearing ability was based upon the subject's ability to respond to questions posed by the examiner. All of the subjects had knowledge of Spanish prior to immigration and one subject had knowledge of Yiddish as well as Spanish.

Subjects were then screened in order to determine the frequency of each language spoken. The subject, family and friends of the subject, or both, were given a questionnaire which rated the everyday usage of specified languages in certain situations. The frequency of the language inputs in the home, at work, during social encounters, and leisure activities were evaluated as a percentage. Zero percent indicated that the subject never used the language; twenty five percent indicated that the subject rarely used the language; fifty percent indicated that the subject used the specified language half of the time; seventy five percent showed the subject used the specified language the majority of the time; and one hundred percent indicated that the subject always used the specified language. Both questionnaires were presented in English and in Spanish to aid the respondent who may have better comprehension of the questions in a specified language.

### PROCEDURE

The examiner, who was fluent in both languages, gave half of the subjects the instructions in the Spanish language first and in the English language second. The other half of the subjects were given the instructions in English first and in Spanish second. This was done in order to control for the order effect. Each subject was told he would be given a task in which he would be asked to point to certain body parts. He was told to respond to the command by pointing to the body part the examiner asks him to point to. The examiner gave the subject an example by requesting the subject to point to "hair". If the subject did not respond, the examiner demonstrated the task. Another sample item, "point to teeth", was given to the subject by the examiner. These two stimulus items were not part of the actual test used in this study but served to acquaint the subject with what was required of him during this procedure.

The body part stimuli that the subjects were given were taken from the Body Part Identification Subtest of the Boston Diagnostic Aphasia Examination (Goodglass, 1972). This test was translated into Spanish for the purpose of this study. To control for the order effect, seven subjects were given the pointing to body part task in English first and in Spanish second and the other seven subjects were given the test in Spanish first and in English second.

Subjects were told to point to a specific body part by the examiner. The following 18 body parts were point to by the subject in the identification process: ear, nose, shoulder, eyelid, ankle, chest, neck, middle finger, wrist, thumb, thigh, elbow, chin, lips, eyebrow, cheek,

knee, and index finger. The subject was asked to point to these same body parts in the same order in their respective Spanish translations.

In order to obtain information regarding affective preference of one language over the other, the subject was asked which language he preferred speaking and which language meant the most to him. He was asked the following question: "If you had to choose between the Spanish and English language which language would you choose?"

## RESULTS

Data obtained from the questionnaire regarding the frequency with which each subject spoke a specific language revealed that the majority of subjects received more input in the Spanish language (50 to 75% of the time) than in the English language (25 to 50% of the time). Most of the Spanish input came from home and social situations while most of their English input came from work situations and during leisure time activities (television, radio, newspaper, magazines). Thus, it appeared that the language which was used most often by these subjects was the language which was also their "mother tongue" - Spanish. Subject #3 who spoke Yiddish most often (75% of the time) also spoke the language most often that happened to be her mother tongue.

Although aphasic individuals made more errors than the control group in both languages, literal and verbal paraphasic errors were present in both populations. Both groups exhibited more verbal paraphasic errors (substitutions of words related in a connotative sphere) than literal (phonemic) paraphasic errors. Many of the verbal paraphasic errors made by both populations in the English language were identical, as seen in Table 2. In the Spanish language none of the control population made verbal paraphasic errors, while the aphasic population made some verbal paraphasic errors. Table 2 also indicates that both populations showed more variety of literal paraphasic errors, as they had fewer literal paraphasic errors in common, in the English language. However, in the Spanish language they showed identical literal paraphasic errors. One subject in the aphasic population showed evidence of a perseverative paraphasic error, where a word just used previously crops up again for a new word (Goodglass and Kaplan, 1972).

**Table I: Mean Number of Correct and Incorrect Responses on Body Part Identification Test**

|             | Aphasic Population |         | Control Population |         |      |
|-------------|--------------------|---------|--------------------|---------|------|
|             | English            | Spanish | English            | Spanish |      |
| Correct     | 7.1                | 16.6    | Correct            | 13.6    | 17.8 |
| Incorrect   | 3.7                | .5      | Incorrect          | 2.0     | .05  |
| No Response | 7.1                | .9      | No Responses       | 2.3     | 0    |

**Table II: Types of Paraphasic Errors Made by Aphasic and Control Population**

| APHASIC POPULATION               |               | CONTROL POPULATION               |               |
|----------------------------------|---------------|----------------------------------|---------------|
| English                          | % of Subjects | English                          | % of Subjects |
| <u>Literal Paraphasias</u>       | 30            | <u>Literal Paraphasias</u>       | 16            |
| tongue for thumb                 |               | tongue for thumb                 |               |
| breast for wrist                 |               | tie for thigh                    |               |
| hips for lips                    |               | sheet for cheek                  |               |
| sheet for cheek                  |               |                                  |               |
| little finger for middle finger  |               |                                  |               |
| cheek for chin                   |               |                                  |               |
| <u>Verbal Paraphasias</u>        | 60            | <u>Verbal Paraphasias</u>        | 44            |
| eye for eyelid                   |               | eye for eyelid                   |               |
| eye for eyebrow                  |               | eye for eyebrow                  |               |
| foot for ankle                   |               | eyelid for eyebrow               |               |
| all fingers for middle finger    |               | all fingers for middle finger    |               |
| finger for thumb                 |               | eyelash for eyelid               |               |
| arm for elbow                    |               | index finger for middle finger   |               |
| moustache for eyebrow            |               | all fingers for index finger     |               |
| all fingers for index finger     |               |                                  |               |
| middle finger for index finger   |               |                                  |               |
| <u>Perseverative Paraphasias</u> | 10            | <u>Perseverative Paraphasias</u> | 0             |
| nose for shoulder                |               |                                  |               |
| <br><b>Spanish</b>               |               | <br><b>Spanish</b>               |               |
| <u>Literal Paraphasias</u>       | 5             | <u>Literal Paraphasias</u>       | 5             |
| muñeca (doll) for muñeca (wrist) |               | muñeca (doll) for muñeca (wrist) |               |
| <u>Verbal Paraphasias</u>        | 20            | <u>Verbal Paraphasias</u>        | 0             |
| all fingers for middle finger    |               |                                  |               |
| neck for wrist                   |               |                                  |               |

With regard to emotional factors, all subjects reported that they preferred Spanish over English and felt more comfortable with the Spanish language than they did with the English language with the exception of Subject 3 who preferred the Yiddish language which was her mother tongue.

## DISCUSSION

The results of this study appear to support Ribot's view that the mother tongue is less likely to suffer following aphasic insult than the language which was most recently acquired.

Evidence that bilingual aphasic individuals showed better performance on a body part identification task in their mother tongue than in the language most recently acquired would lead one to support Ribot's view. However, we cannot exclusively support this idea. Lambert and Fillenbaum (1959) who considered both Ribot's and Pitres' viewpoints found that the first learned language, the mother tongue, was oftentimes the language that was most used and the one which returned first following aphasic insult. Their finding appears to be upheld in this study. The aphasic individuals performed better on the body part identification task when it was given in their mother tongue - Spanish, which also happened to be the language which they spoke most often. Data gathered on the frequency with which each language was spoken indicated that all subjects used their mother tongue most often.

A case example which helps to illustrate this point could be seen in the 78 year old aphasic subject in this study who made one hundred percent correct responses on the body part identification task in her mother tongue (Yiddish) which was also the language which she spoke the majority of the time. She made sixty percent correct responses when the task was presented to her in the Spanish language - the language she acquired while she was in her late twenties. She made ten percent correct responses when the task was given to her in English - her most recently acquired language. This seems to suggest that performance in a particular language mirrors the time that a particular language was learned. Thus performance on this body part identification task decreased with regard to recency of the language learned.

In applying the various viewpoints to this study, Minkowski's (1928) view of affect cannot be overlooked. All of the subjects in this study reported that they preferred their mother tongue over their newly acquired language. It may be that since each of these subjects had to leave their homeland under duress they may still retain their mother tongue.

In essence, we can see that all of these viewpoints, Pitres', Ribot's, and Minkowski's may have an input with regard to which language is the first to recover.

## CONCLUSION

At present it cannot be reported that there is one viewpoint that may be accepted concerning which language is the first to recover following aphasic insult. The answer may lie in a combination of these three views, as pointed out in the study. The study of polyglot aphasia is a relevant issue in this mobile world of today. By determining which language is the first to recover, the clinician could obtain more insight into the difficulties that the bilingual aphasic patient may encounter. The clinician may also want to gear therapy towards the specific language which would provide the patient with optimal conditions for his habilitation. There the effect of therapy in both the mother tongue and the language most recently acquired would be worth investigating.

**Reprint requests should be mailed to:**

Lillian Glass  
Dept. of Communication Disorders  
110 Shevelin Hall  
University of Minnesota  
Minneapolis, Minnesota 55414

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