Literacy Skills of Cochlear Implant Users in Iberoamerica: Current Status and Intervention Strategies

Dr. Lilian Flores Ph.D., LSLS Cert AVT
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Research Group of Deaf and Hard of Hearing in Iberoamérica

Objective: Deepen the approach and management of hearing loss in Ibero-American countries

Founders Members:

- Jane Madell, PhD, FAAA, CCC A/SLP, LSLS Cert AVT
- Lilian Flores, PhD, SLP, LSLS Cert AVT
- María Fernanda Hinojosa, PhD, SLP/LSLS Cert AVT
- Brianda Campero, SLP
Main goal of the study

To have a closer view of the literacy development of children who are users of cochlear implants in Iberoamerica
About the study

We sent 3 questionnaires: for parents, school teachers and rehabilitators for each child with CI.

We asked information about diagnosis, audiological management, academics and literacy.

We also asked written samples following the PROESC guidelines.

We received 726 questionnaires, however only 412 complete of 104 children.

We only received 33 samples of these 104 children.
Participants

Nationality

<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>28%</td>
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<tr>
<td>México</td>
<td>17%</td>
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<tr>
<td>Brazil</td>
<td>15%</td>
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<tr>
<td>Spain</td>
<td>10%</td>
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<tr>
<td>Colombia</td>
<td>9%</td>
</tr>
<tr>
<td>Venezuela</td>
<td>6%</td>
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<tr>
<td>Guatemala</td>
<td>6%</td>
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<tr>
<td>Panamá</td>
<td>4%</td>
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<tr>
<td>Paraguay</td>
<td>4%</td>
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<tr>
<td>Costa Rica</td>
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Age

<table>
<thead>
<tr>
<th>Age</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>6 años</td>
<td>13%</td>
</tr>
<tr>
<td>7 años</td>
<td>16%</td>
</tr>
<tr>
<td>8 años</td>
<td>18%</td>
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<tr>
<td>9 años</td>
<td>13%</td>
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<tr>
<td>10 años</td>
<td>16%</td>
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<tr>
<td>11 años</td>
<td>12%</td>
</tr>
<tr>
<td>12 años</td>
<td>12%</td>
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</table>

Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Female</td>
<td>44%</td>
</tr>
<tr>
<td>Male</td>
<td>56%</td>
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General Results
**Age of diagnosis and implantation**

- Most of the participants were diagnosed before 2 years old.
- Most participants were implanted after 4 years old.

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**Age at CI surgery**

- Before 12 M.
- Between 1-2 Y.
- Between 2-3 Y.
- Between 3-4 Y.
- Older than 4 years.

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**Age at diagnosis**

- Before 6 M.
- Between 6 and 12 M.
- Between 12 and 24 M.
- Between 2 and 4 years.
- Older than 4 years.
Results related with audiological and approach intervention
¿At what intensity do you think your child is hearing?

Results related to audiological and approach intervention

- 23% in 20 dB or less
- 51% between 20 dB / 40 dB
- 8% between 40 dB / 50 dB
- 2% in 60 dB or more

17% OF PARENTS DON’T KNOW
Results related to oral and written competencies
Instruments to used to assess the linguistic competences n=33

**Psycogenesis of writing system:**
Ferreiro, E. y Teberosky, A., 1979; Hachén, R., 2002

**Writing skills:**
PROESC. Batería de Evaluación de los Procesos de Escritura
Cuetos, 2004

**Discourse Analysis: content and organization:**
Contenido del discurso:
Cuetos, 2004; Norris y Hoffman, P., 1993
Organización del discurso:
Cuetos, F., 2004; Applebee, A.N., 1989; Norris, E. et al., y Hoffman, P., 1993

**Sentences stage:**
Crystal, D. et al., 1976
Example of an analysis of a writing sample

School grade: 5th grade
Chronological age: 11 years
Psychogenesis of writing: Alphabetic level
PROESC: <3ºprim
Level of semantic abstraction: Action description

Discourse organization: ordered sequence & primitive narratives

Beginning

<table>
<thead>
<tr>
<th>Action</th>
<th>Number of events</th>
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<tbody>
<tr>
<td>1</td>
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<td>2</td>
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<td>6</td>
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<td>7</td>
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Sentence Stadium: Stadium 4

Results related to oral and written competencies

- Global sense to the story
- Introduction
- Is original
- Richness of vocabulary
- Events with consequences

- Ending coherence
- Ideas with logical continuity
- Use of literary figures
- At least 5 complex sentences
- Characters’ descriptions

Characters’ descriptions

Events with consequences
What do the parents perceive?

What do the teachers perceive?

Parents’ perception

Teachers’ perception

Results related to oral and written competencies
WRITTEN LANGUAGE SKILLS. PROESC

School grade vs. test performance according to PROESC

- School grade
- Performance according to PROESC
Results related to oral and written competencies

Sentence Stadium got through the samples

None of the participants got scores above 4.6 years
Most of the participants are in a level of semantic abstraction that is expected between 2-3 years of chronological age.
Results related to the oral and written competencies

NARRATIVE STADIUM

Narrative stadium got by the children

Only two stories showed characteristics that correspond to the highest narrative stadium.
Results related to oral and written competencies

None of the participants managed to reach the level corresponding to 7 years or more of chronological age.
Recommendations and management suggestions for success in literacy
1. Universal newborn hearing screening for early diagnosis and intervention

2. Adaptation of the necessary and cutting-edge hearing technology

3. Use of hearing devices ALL hearing hour

4. Earlier implantation
5. Use of microphone systems for ALL children with hearing loss

6. Technology and device check-up every three months

7. Periodic an COMPLETE audiological follow-up
8. Intervention with AVT from diagnosis. Therapy should include review of pragmatic, discourse ...

9. Speech language listening assessment once a year

10. Guidance for parents to read to children at least 15 minutes a day

11. Monitoring and intervention of discourse development and social cognition
Thank you very much!

52 (155) 2755 7639
lilianfb@yahoo.com
México City, MÉXICO
lilianflores22