Assessing the bimodal bilingual language skills of young deaf children

Elizabeth Levesque PhD
What we’ll talk about today

- Bilingual First Language Acquisition
- Bimodal bilingualism
- Bimodal bilingual assessment
- Measuring parental input
- Assessment tools
Bilingual First Language Acquisition

Bilingual literature generally refers to children’s acquisition of two languages as *simultaneous* or *sequential* bilingualism (McLaughlin, 1978)

**Simultaneous:** occurring when a child is exposed to both languages within the first three years of life (not be confused with simultaneous communication: speaking and signing at the same time)

**Sequential:** occurs when the second language is acquired after the child’s first three years of life
Routes to bilingualism for young children

- One parent-one language
- Mixed language use by each person
- One language used at home, the other at school
- Designated times, e.g. signing at bath and bed time
- Language mixing, blending

(Lanza, 1992; Vihman & McLaughlin, 1982)
Bimodal bilingualism

- Refers to the use of two language modalities:
  - Vocal: speech
  - Visual-gestural: sign, gesture, non-manual features
    (Emmorey, Borinstein, & Thompson, 2005)

- Equal proficiency in both languages across a range of contexts is uncommon

- Balanced bilingualism: attainment of reasonable competence in both languages to support effective communication with a range of interlocutors
  (Genesee & Nicoladis, 2006; Grosjean, 2008; Hakuta, 1990)
Dispelling the myths.....

Infants’ first signs are acquired earlier than first words

- No significant difference in the emergence of first signs and words - developmental milestones are met within similar timeframes (Johnston & Schembri, 2007)

- Slight sign language advantage at the one-word stage, perhaps due to features being more visible and contrastive than speech (Meier & Newport, 1990)
Another myth.....

Spoken language and sign language are processed in different parts of the brain

- Spoken and signed languages have a similar degree of neural organization and lateralization in the left hemisphere of the brain

- The temporal lobe plays the most dominant role – this part of the brain has previously been considered as the area processing only auditory information (Hickock et al., 2002)
And one more myth.....

Children’s exposure to sign language interferes with their development of spoken language

- Early sign language acquisition does not prevent deaf children from learning spoken language, but can actually support the language process (Swanwick, 2001)

- The key to deaf children’s development of language in either modality is the quality and quantity of input and their ability to access both languages on a sensory level
Setting the bimodal bilingual context

- In the 1990s and 2000s, the Sign Bilingual model proposed that sign and written modalities were pathways to language competence and gave less focus to spoken language (Johnson, Liddell & Erting, 1989; Svartholm, 1995, 2010).

- Improvements in audiological technology have led to more deaf children accessing programs that promote increased attention to phonological processes (Mayer & Leigh, 2010).
A contemporary approach

- A new generation of bilingualism for deaf children supports access to all aspects of both language modalities and allows the child to determine the way in which language is used (Swanwick et al., 2014)

- Translanguaging promotes the notion that bilinguals make use of the linguistic features of each language that best support their communication and learning needs (García, 2009)

- Although many deaf children develop intelligible spoken language, many wish to continue to be bilingual learners (Swanwick et al., 2014; Wheeler et al., 2009; Yoshinaga-Itano, 2006)
Language use by Australian deaf children

LOCHI study (Longitudinal Outcomes of Children with Hearing impairment), involves 451 children:

- Oral/aural: 67%
- Manual only: 1%
- Oral + manual: 22%
- Not reported: 10%
- Not attending: 2%

Combined oral and manual methods included manually coded English (Signed English) and AAC (Augmentative and Alternative Communication systems. ‘Manual only’ children were grouped with ‘oral and manual’ children (Ching et al., 2013)
Are deaf children ever ‘manual only’??

- Deaf children who communicate in sign language (L1) are in fact bimodal bilinguals. When they use fingerspelling, lipreading and engage with literacy, they are encoding and decoding forms of the spoken language (L2) (García, 2009; Rinaldi et al., 2014)
Assessing children’s bimodal bilingual skills

- Very few assessment tools effectively measure the full repertoire of young deaf children’s bimodal bilingual language skills

- Both modalities should be assessed together - single language scores may not elicit the diversity of the child’s language skills (Rinaldi et al., 2014)
Assessing children’s bimodal bilingual skills

- The assessment of competencies for both languages needs to take into account the relationship between the two languages in terms of cross-modal language use, language blending and code-switching (Baker & van den Boegarde, 2008; Rinaldi et al., 2014)

- Bimodal bilingual assessment tools such as criterion referenced scales should be augmented by annotated video data e.g. ELAN
Assessing children’s bimodal bilingual skills

- If a bilingual child’s language level is assessed when skills in one language are weaker, or if the language proficiency tests are insensitive to the qualitative aspects of language, the general impression may be that neither language is competent (Cummins, 2006; Skutnabb-Kangas, 2007)

- A valid assessment of young deaf children’s bimodal skills can be achieved by using a combination of approaches, including parent interviews and informal descriptive evaluation (Rinaldi et al., 2014)
There are very few assessment tools materials that suitably measure the spoken and sign language skills of young deaf children. Many formal tests provide only a limited view of the rich and complex nature of communicative interactions in their natural environments (Lichtig et al., 2011)
When assessing a young child’s bimodal bilingual skills, consider:

- Has the child been exposed to the spoken and signed language as separate languages?
- Is the child exposed to a range of communication partners who use one or both languages?
- Does the child have access to fluent speakers and signers?
- Is the signing input always accompanied by spoken language, e.g. SimCom or sign supported speech?
Assessment of a young child’s bimodal bilingual skills also needs to consider:

- Parents’/caregivers’ sign language competence
- Parents’/caregivers’ quality and quantity of input
- Use of measurement tools that are sensitive to bimodal use and development

Also consider the child’s:

- Age at diagnosis
- Auditory processing skills
- Use of amplification
- Exposure to consistently high quality spoken language input
Children’s bimodal bilingual development may be influenced by:

- Parents’ commitment to bilingualism
- Family attitudes towards deafness
- Parents’ sign language competence
- Access to sign language resources
- Quality and quantity of language input
- Child’s age when first exposed to bilingual input

Remember that more than 90% of deaf children are born to hearing parents who often have had minimal or no experience in raising a deaf child
Also consider the parents’ sensitivity to their child’s:

- Communication needs
- Modality use
- Auditory skills
- Visual attention
- Attentional state
Can young deaf children simultaneously process two languages of different modalities while they are still acquiring both languages?

- There are concerns about the ability of young children to simultaneously process two different modes of language input because of limited memory capacities (Marschark & Spencer, 2006).

- Signed and spoken languages do not share the same phonological code - an equivalent output is therefore impossible (Marschark & Lee, 2014).
Stages of Attention Control
[Reynell, 1977]

**Level 1** (0-1 year) Extreme distractibility
The child’s attention flits from one thing to another. Any new event will distract him/her

**Level 2** (1-2 years) Single-channelled attention, ignores all else
The child can concentrate on a task but will not tolerate any intervention by another person

**Level 3** (2-3 years) Single-channelled attention, other directed
The child still cannot attend to information from different sources also cannot attend to competing auditory and visual stimuli
Level 4 (3-4 years) Single-channelled attention, self-directed. The child still has to alternate his/her full attention between sources of information, but can do this independently.

Level 5 (4-5 years) Two-channelled attention
The child can now understand verbal instructions related to the task without interrupting the activity to look at the speaker or seek visual information.

Level 6 (5-6 years) Integrated attention
All sensory channels are now well-integrated and attention is well established and maintained.
Bimodal Bilingual Development Scale  
(Levesque, 2014)

- Measures the development and use of spoken and sign language by children aged from birth - 8 years
- Shows developmental sequence of acquisition
- Endorsed by Auslan linguists
- Based on research data drawn from Auslan, ASL, BSL, and several European sign languages
- Criterion referenced (performance measured against a fixed set of criteria)
- Recommended to be used together with annotated video data e.g ELAN
<table>
<thead>
<tr>
<th>Age</th>
<th>English</th>
<th>Auslan</th>
<th>Pragmatic Language Skills</th>
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<tbody>
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<td>1;0-1;6</td>
<td><strong>Receptive Language</strong>&lt;br&gt;- understands up to 50 words&lt;br&gt;- follows 2 word commands&lt;br&gt;- listens to favourite story&lt;br&gt;- points to pictures/objects when asked (1;0-1;3)&lt;br&gt;- turns when name called&lt;br&gt;- responds appropriately to wider range of sounds, words, phrases through listening</td>
<td><strong>Receptive Language</strong>&lt;br&gt;- understands up to 50 signs by 1;6&lt;br&gt;- follows simple instructions, e.g. book (point) + give + Daddy&lt;br&gt;- sustains attention to favourite story&lt;br&gt;- points to objects when asked (signed)&lt;br&gt;- responds consistently to visual and tactile attention-gaining strategies</td>
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<td>3</td>
<td><strong>Expressive Language</strong>&lt;br&gt;- intonation and jargon babbling&lt;br&gt;- makes animal sounds (1;0-1;3)&lt;br&gt;- longer vocalizations have recognizable words and sounds, but meaning is unclear</td>
<td><strong>Expressive Language</strong>&lt;br&gt;- ‘unmarked’ handshapes: flat, point, spread, fist, good, cup, 1 handed O’&lt;br&gt;- joints closest to torso e.g. shoulder, elbow, usually used ('proximalization')</td>
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<td><strong>Pragmatic Language Skills</strong>&lt;br&gt;- imitates other children&lt;br&gt;- initiates routines&lt;br&gt;- uses words/signs to: request information&lt;br&gt;- label&lt;br&gt;- comment&lt;br&gt;- respond&lt;br&gt;- greet&lt;br&gt;- call&lt;br&gt;- responds to adult conversation but often not on the same topic&lt;br&gt;- chatters/signs to self while playing&lt;br&gt;- more initiation and response to joint attention&lt;br&gt;- plays ‘ready set go’ games</td>
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Looking at parents’ skills
Parent-Child Communication Scale

- Five point Likert-style scale adapted from existing tools that measure parent-child interaction (Brown, 2002; Hafer & Topolosky, 1995; Kyle, Woll & Ackerman, 1989; Mohay, 1988; Spencer, 2001)

- Parents rate frequency of use and proportion of time devoted to using specific strategies

- Measures quality of parental input in spoken and sign language and use of specific communication strategies known to enhance interactions with young deaf children
<table>
<thead>
<tr>
<th>Communication strategy</th>
<th>Date</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tbody>
<tr>
<td><strong>Facial expression and body language</strong></td>
<td>1= weak; 5=strong</td>
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<td>I give clear visual signals about my emotional state (happy, sad etc.)</td>
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<td>I use exaggerated gestures or signs to convey meaning to my child</td>
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<td><strong>Gaining child’s attention</strong></td>
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<td>I call my child’s name to gain his/her attention</td>
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<td>I call out to my child in a sing-song voice to gain his/her attention</td>
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<td>I wave in my child’s visual field to gain his/her attention</td>
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<td>I tap on my child (arm, leg) to gain his/her attention</td>
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<td>I use tapping (hand on table, foot on floor) to gain attention</td>
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<td>I move an object into my child’s line of vision to redirect attention</td>
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<td>I place a hand over an object/toy to redirect attention</td>
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<td>I move my head and body in my child’s visual space to gain attention</td>
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### Communication strategy

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<tr>
<th><strong>Responding to communication</strong></th>
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<tr>
<td>I respond in speech to my child’s cues and comments</td>
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<tr>
<td>I imitate my child’s gestures, facial expressions and comments</td>
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<td>I expand my child’s comments (adding more information) in speech</td>
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<tr>
<td>I expand my child’s comments (adding more information) in Auslan</td>
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<td>My responses to my child are directly related to his/her topic</td>
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<td>I encourage my child to ‘repair’ his/her communication by trying again</td>
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| **Parent language use** | | | | | | |
| I communicate with my child in Auslan (A) for: questioning | | | | | | |
| I communicate with my child in speech (S) for: requesting | | | | | | |
| directing attention | | | | | | |
| negotiating | | | | | | |
| labelling objects | | | | | | |
| expressing emotions | | | | | | |
| referring to past events | | | | | | |
| referring to future events | | | | | | |

| **Child language use** | | | | | | |
| My child uses voice/speech to communicate about an object or event | | | | | | |
| My child uses Auslan to communicate about an object or event | | | | | | |
| My child understands me when I communicate in speech | | | | | | |
| My child understands me when I communicate in Auslan | | | | | | |
| My child combines points with words or simple phrases | | | | | | |
| My child combines points with signs or simple phrases | | | | | | |
| My child ‘repairs’ or persists when language is not understood – speech | | | | | | |
| – Auslan | | | | | | |
What analysis of the video data showed

- Parents usually use more English than Auslan
- Parents often use Auslan less frequently than they report in self-rated scales
- Wide variation in parents’ lexical diversity, length of utterances, complexity of grammar
- Parents produce more reciprocal utterances when their children’s utterances are more intelligible
- Children have better language outcomes when their parents accommodate their modality preferences
Bimodal Bilingual language outcomes

CHILD 1

CHILD 2
Finally......

Young deaf children’s bimodal bilingual development is dependent on the quality of their input. Parents and caregivers therefore need to be provided with adequate support and resources to be confident communicators and fluent bilingual language models.

Are we doing enough to support them?
Thank you for your attention

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