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Deaf Children's modality preferences in a bimodal bilingual program

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The research study

- In-depth case studies of eight prelingually deaf preschool children and their English-speaking hearing parents

- Measured the children's communication skills, language and auditory development and parent language input every 2 months for 18 months

The research study (cont.)

- All children in the study were assessed as having normal cognitive skills
- Families had no previous experience with deafness
- No children were identified as having other developmental delays at the commencement of the study
- Assessments were conducted during the course of natural play

Research questions

1. Children's exposure to spoken and signed languages

   If deaf children are exposed to spoken and signed languages during their early developmental years, will there be evidence of age-appropriate skills acquired in at least one language within a normal maturational timeframe?

2. Bimodal bilingual communication exchanges

If parents and caregivers are adapting their communication and interactions to a bilingual approach, will there be more contingent responses?

3. Adults' bimodal bilingual competence

   If the parents' and caregivers' frequency of use in English and Auslan is rated high, will the children's language skills be close to age appropriate levels?

4. Children's language preference

   If the children are frequently exposed to both languages, will there be a point at which they will demonstrate a preference for one of the languages in expressive and receptive modes?

What we read in the literature

Yoshinaga-Itano, 2003

"Some families who have chosen oral methods of communication use very small amounts of oral conversation, while some families who have chosen sign language communication use small amounts of sign language and large amounts of speech.... The skill of the family in the use of the method of communication must play a significant role in the development of language."

- Early diagnosis leads to age-appropriate language development (Yoshinaga-Itano (1998, 2003)
- Early identified children's language is better than language of late-identified children

  (Yoshinaga-Itano (1998, 2003)
- Family's level of involvement in supportive programs contributes to positive outcomes for children's language (Moeller, 2000; Sarant et al, 2009)

"The challenge to respond flexibly to an emerging new era in the education of deaf children is one that must be accepted if the diverse needs of all deaf learners are to be accommodated and the relative benefits of all possible language and communication options are to be demonstrated".

(Mayer & Leigh, 2010)

Dispelling myths

- In bilingual programs, a deaf child's preferred language (L1) will be Auslan
- English will be L2 and will be acquired through literacy
- Auslan is easier than speech for deaf children
- Signing impedes speech development
- Parents will choose the 'easiest' modality to communicate with their deaf child

The challenges

- Difficult to control the numerous variables contributing to deaf children's language outcomes
- Very few appropriate early childhood Auslan assessment tools or tutorial resources available
- Assessing young deaf children in their home setting can present unexpected distractions
- Childhood illnesses often affected development and impeded data collection

Hidden developmental challenges

Although all children commenced the study with no evidence of additional developmental needs, many were diagnosed with significant problems during the course of the study:

- Expressive language disorder (3)
- Auditory Neuropathy (1)
- Autism (pending diagnosis) 2
- Sensory Processing Disorder (2)
- Chronic otitis media (2)
- Large Vestibular Aqueducts (3)

Children in the study

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CHILD	Age at start of study (months)	AGE at DIAGNOSIS (months)	Entry to EI (months)	DEGREE OF DEAFNESS L	R	LISTENING DEVICES L	R	Device wearing 1=seldom 5=always
1	17	1	2	Severe	Profound	HA	HA CI*	2
2	23	3	6	Severe	Profound	HA	HA	4-5
3	22	11	22	Profound	Profound	CI	CI	2-4
4	23	3	12	Severe-Profound	Severe-Profound	CI	CI	5
5	28	19	20	Profound - severe	Profound - severe	HA	HA	5
6	28	16	18	Moderate-Severe	Profound	HA	HA CI*	5
7	37	4	5	Profound	Profound	CI	CI	5
8	33	12	13	Severe	Profound	HA	CI (*end of study)	3-4

What we found

- Mothers were more active than fathers in their use of Auslan and child directed language
- Mothers were more skilled in their use of child-directed speech and sign
- Some children's preferred language changed frequently over the course of the study

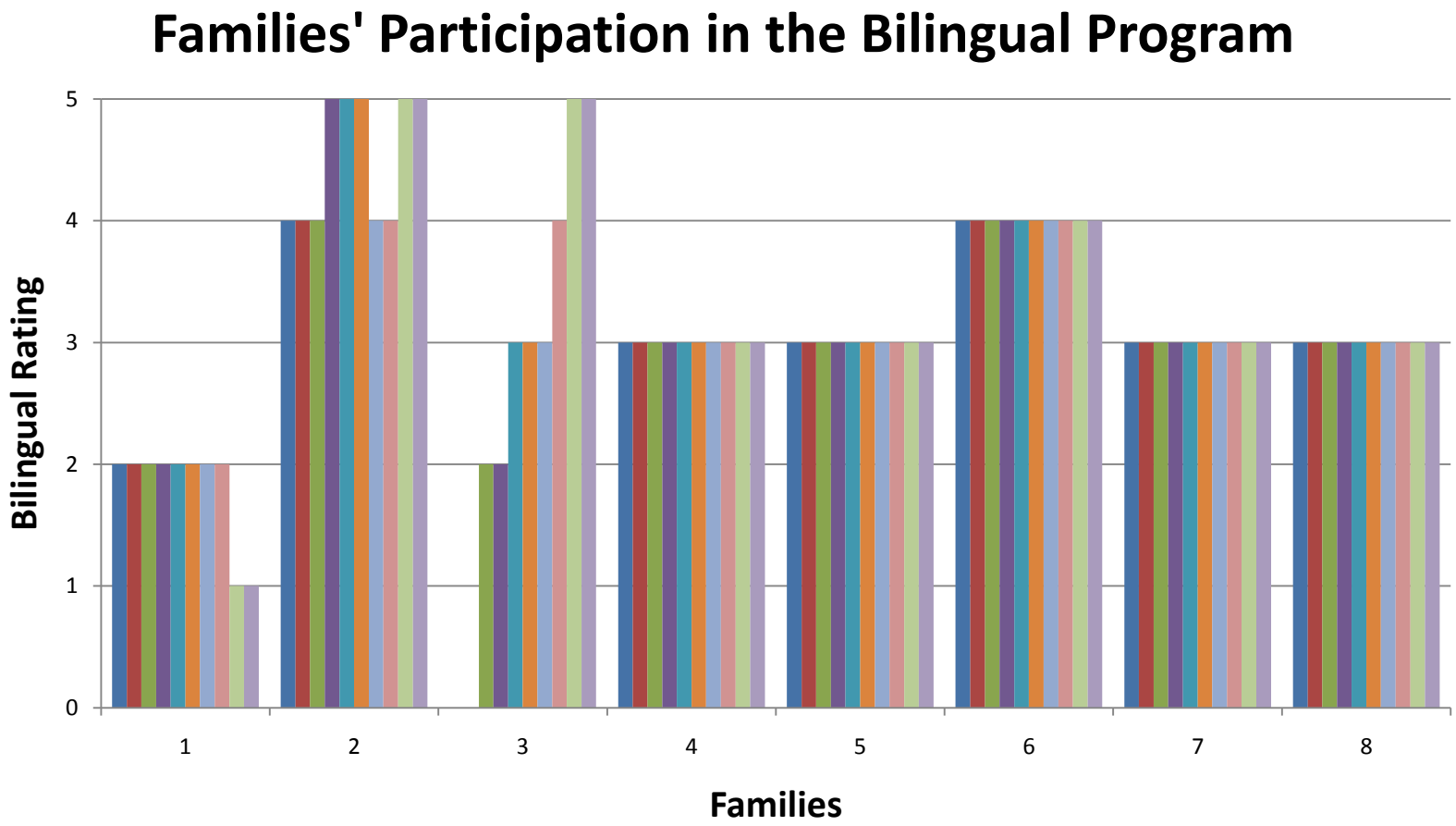
- Most families regarded bilingualism as a ‘safety net’ for their children’s language development
- Some families increased their Auslan input when their children’s speech did not emerge
- Some families decreased their direct Auslan input when their children received a cochlear implant
- Many families used Auslan to ‘repair’ their children’s utterances

Children's bilingual skills are better described as being on a 'Bilingual Spectrum'

- L1 can change frequently, depending on the communication context
- Children determine the modality that best suits their communication needs
- The relationship between Auslan and English is dynamic, with frequent code switching
- Sometimes parents' and children's modality preferences did not match

Measurement tools

- MacArthur CDI (Language)
- CASLLS (Language)
- Oral & Signed Language Development checklist (Bilingual)
- Functional Auditory Performance Indicators (Audition)
- DASI, WPPSI, Bayley (Cognition)
- Early Support Monitoring Protocol (General Devt.)
- Rating Scales: Bilingual participation, Auslan Proficiency, Device wearing, Auslan Resource use
- Video records – ELAN (language analysis program)



Bilingual Rating scale adapted from de Houwer, 2007; Geers & Brenner, 2003, Moeller, 2000

Level of participation in English/Auslan bilingual program by parents/caregivers of deaf children
[Adapted from de Houwer, 2007; Geers & Brenner, 2003, Moeller, 2000]

Rating 5 **(Balanced bilingual input)**	All family members use both languages most of each day, utilizing opportunities to involve other fluent Auslan users as language models for the child. Adults' competence levels are appropriate for the child's general developmental level (APRS P4/C4). Family actively engages in Auslan tutorials and accesses appropriate resources such as Auslan dictionaries, CDs/DVDs and websites to improve skills.
Rating 4 **(Balanced bilingual input for CDS - Child Directed Speech/Sign)**	Mother uses Auslan effectively when communicating with child but few other family members or visitors use fluent Auslan. Adults' competence levels are more 'formulaic' than native signers but are appropriate for the child's general developmental level (APRS P3/C3). Family uses Auslan resources such as Auslan dictionaries, CDs/DVDs and websites to improve skills.
Rating 3 **(Dominant English input, inconsistent Auslan input)**	Family has adequate competence in Auslan to communicate about routine events but predominately communicates with child in gesture and English, using other visual and situational cues (APRS P3/C3)
Rating 2 **(Limited Auslan input)**	Family has limited competence in Auslan and communicates predominately in English with some signs, gestures, contextual and visual cues (APRS P2/C2).
Rating 1 **(Absent or minimal Auslan input)**	Family communicates verbally with limited use of gestures or visual cues. Accept Auslan use by others e.g. EI workers, but have developed no purposeful Auslan skills themselves (APRS P1/C1).

Language modality preferences

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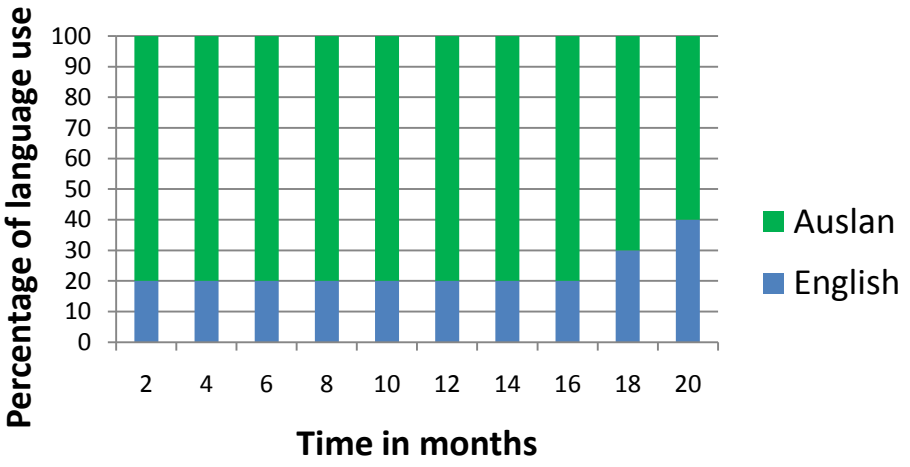
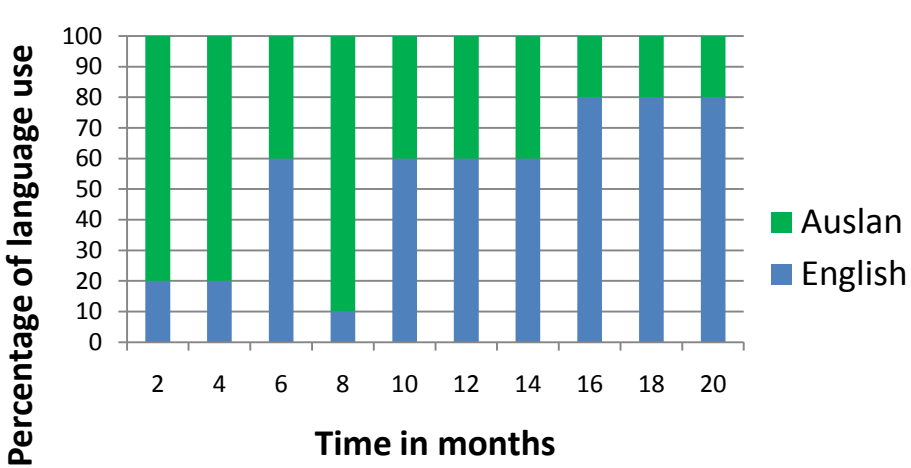
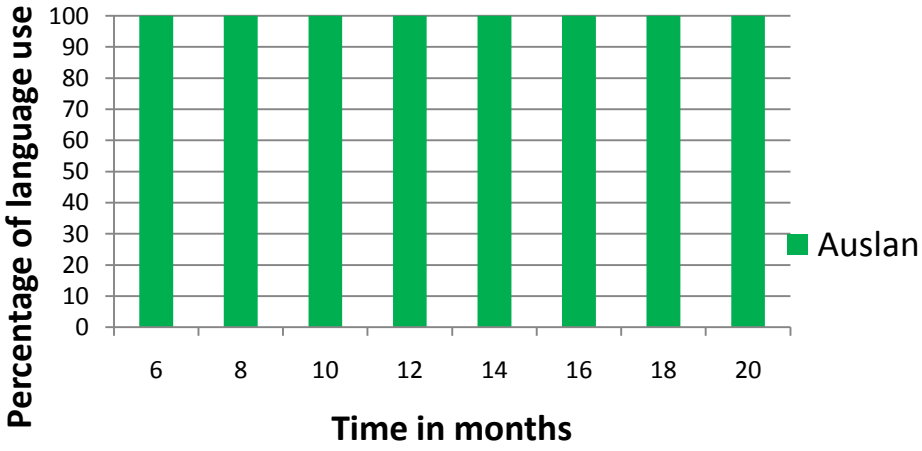
Child 1



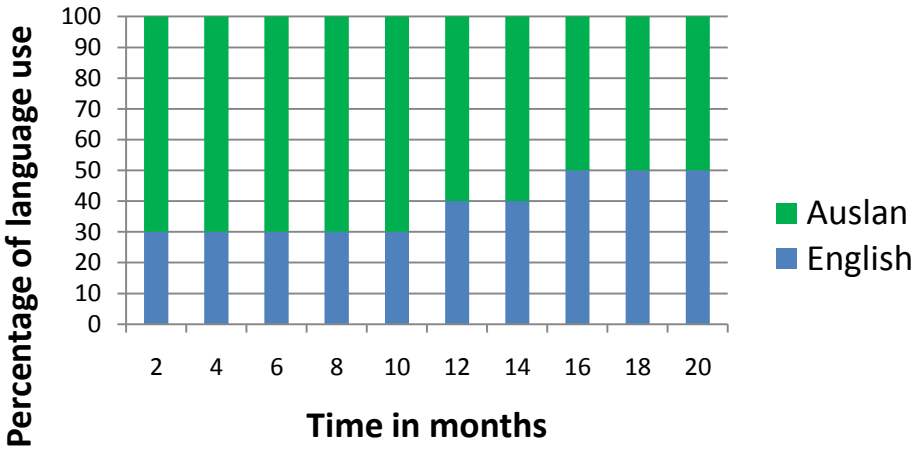
Child 2



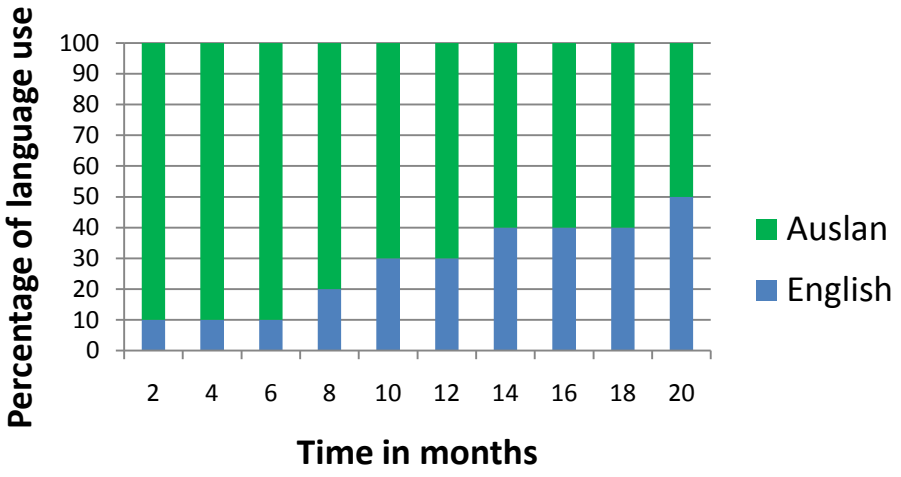
Child 3



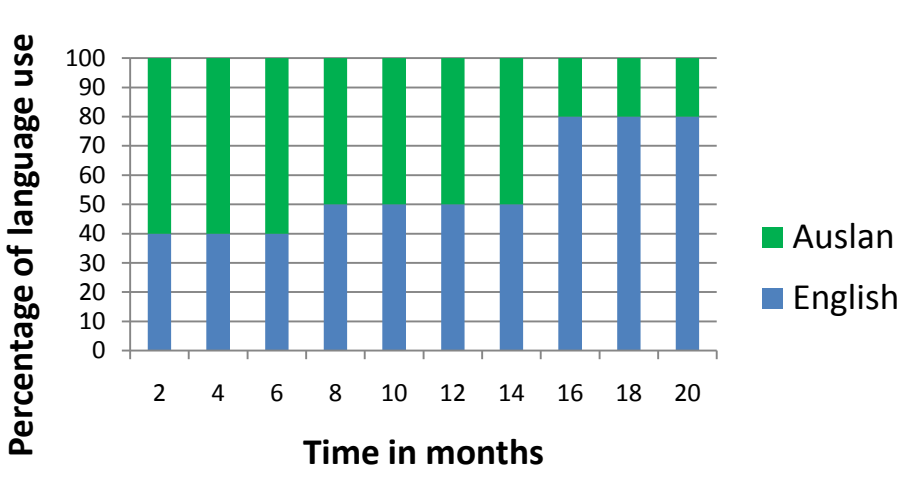
Child 4



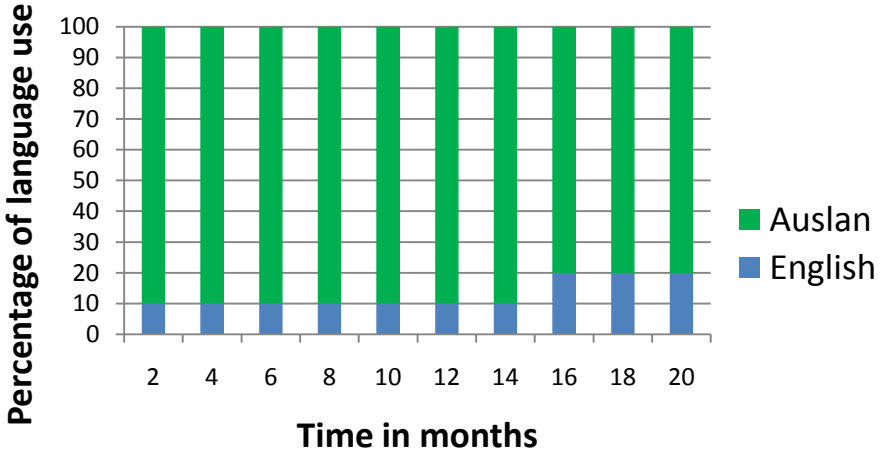
Child 5



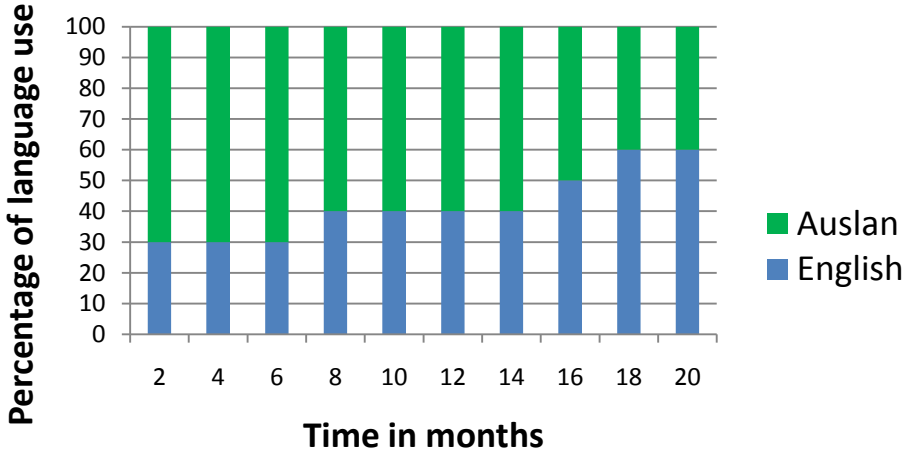
Child 6



Child 7



Child 8



Factors contributing to modality preferences

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- Age at diagnosis
- Early Intervention involvement
- Auditory skills development
- Hearing thresholds
- Hearing aid/Cochlear implant wearing
- Additional developmental challenges
- Parent language input – frequency, modality
- Parent Auslan proficiency

Auslan Proficiency Rating Scale

1 Unable to communicate in or comprehend Auslan

2 Uses/comprehends vocabulary limited to simple needs; most utterances consist of isolated signs

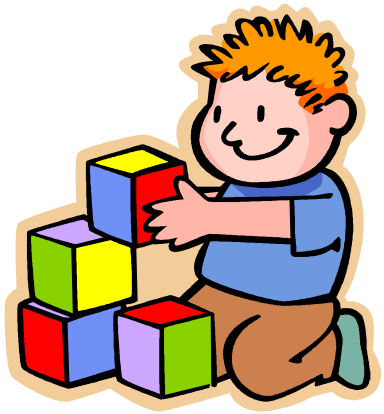
3 Uses/comprehends longer familiar/predictable utterances

4 Able to satisfy daily routine and limited social needs

5 Able to communicate in most familiar social situations, using basic grammar

Examples

Child 2



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CHILD	Age at start of study (months)	AGE at DIAGNOSIS (months)	Entry to EI (months)	DEGREE OF DEAFNESS L	DEGREE OF DEAFNESS R	LISTENING DEVICES L	LISTENING DEVICES R	Device wearing 1=seldom 5=always
1	17	1	2	Severe	Profound	HA	HA CI*	2
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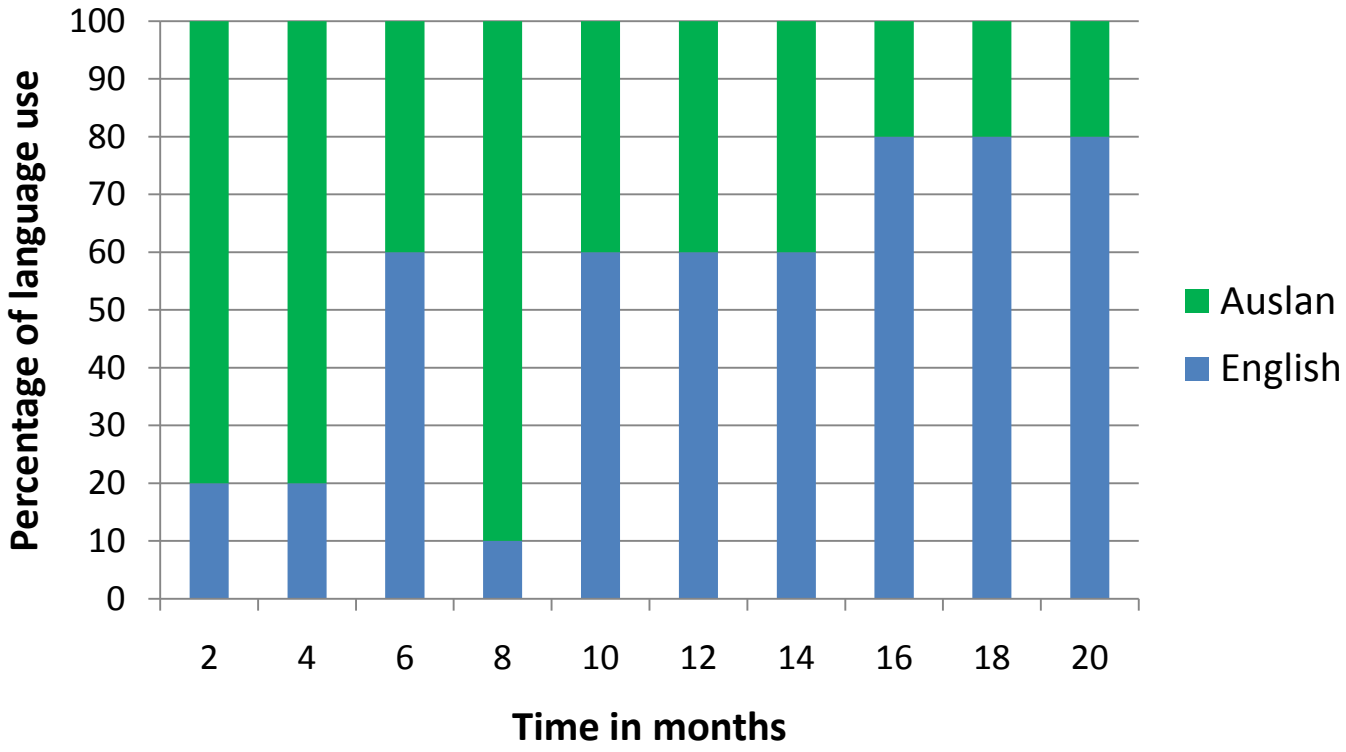
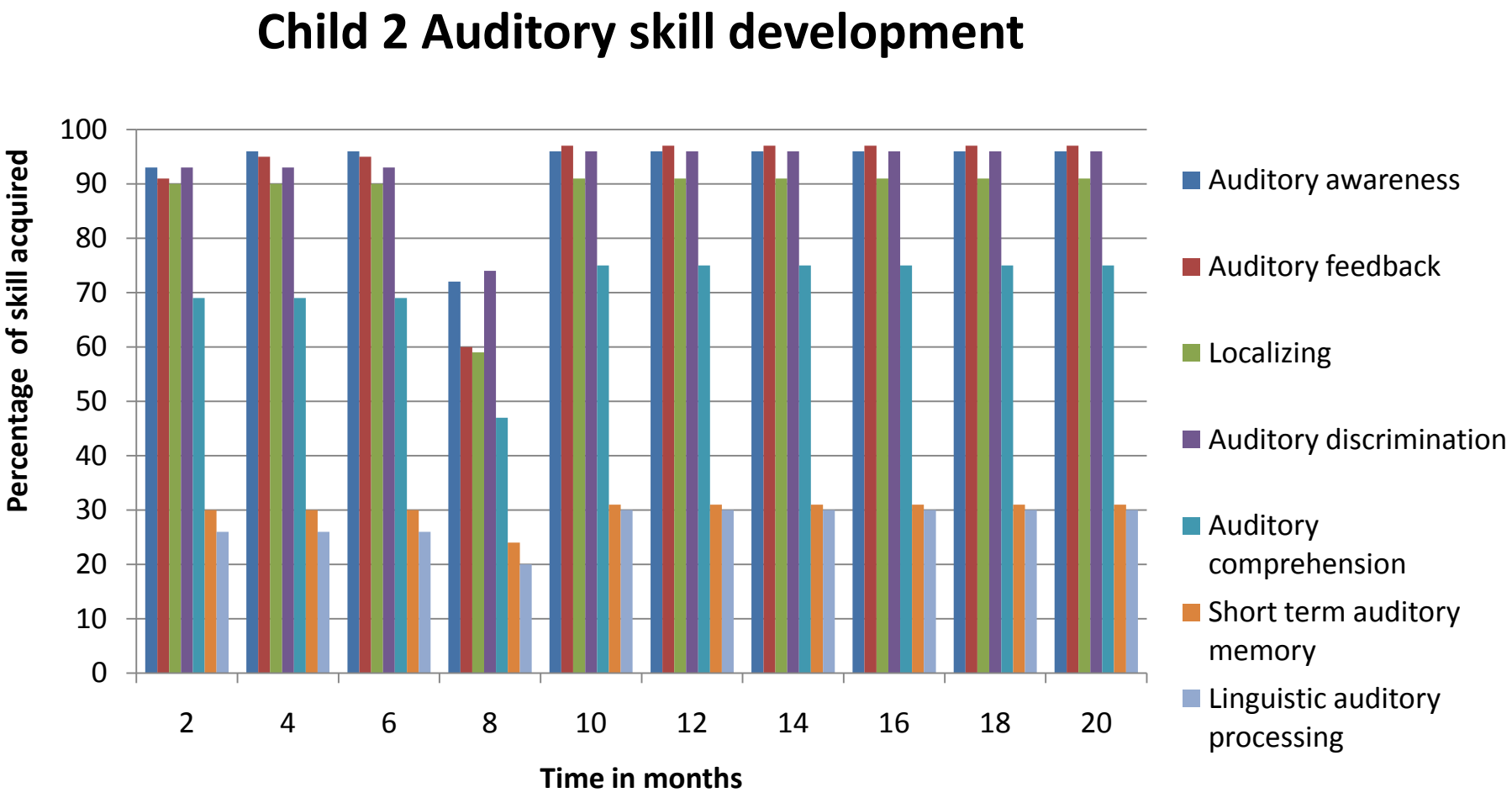
3	22	11	22	Profound	Profound	CI	CI	2-4
4	23	3	12	Severe-Profound	Severe-Profound	CI	CI	5
5	28	19	20	Profound - severe	Profound - severe	HA	HA	5
6	28	16	18	Moderate-Severe	Profound	HA	HA CI*	5
7	20	3 weeks	5	Severe	Severe	HA	HA	2-4
8	33	12	13	Severe	Profound	HA	CI (*end of study)	3-4

Child 2

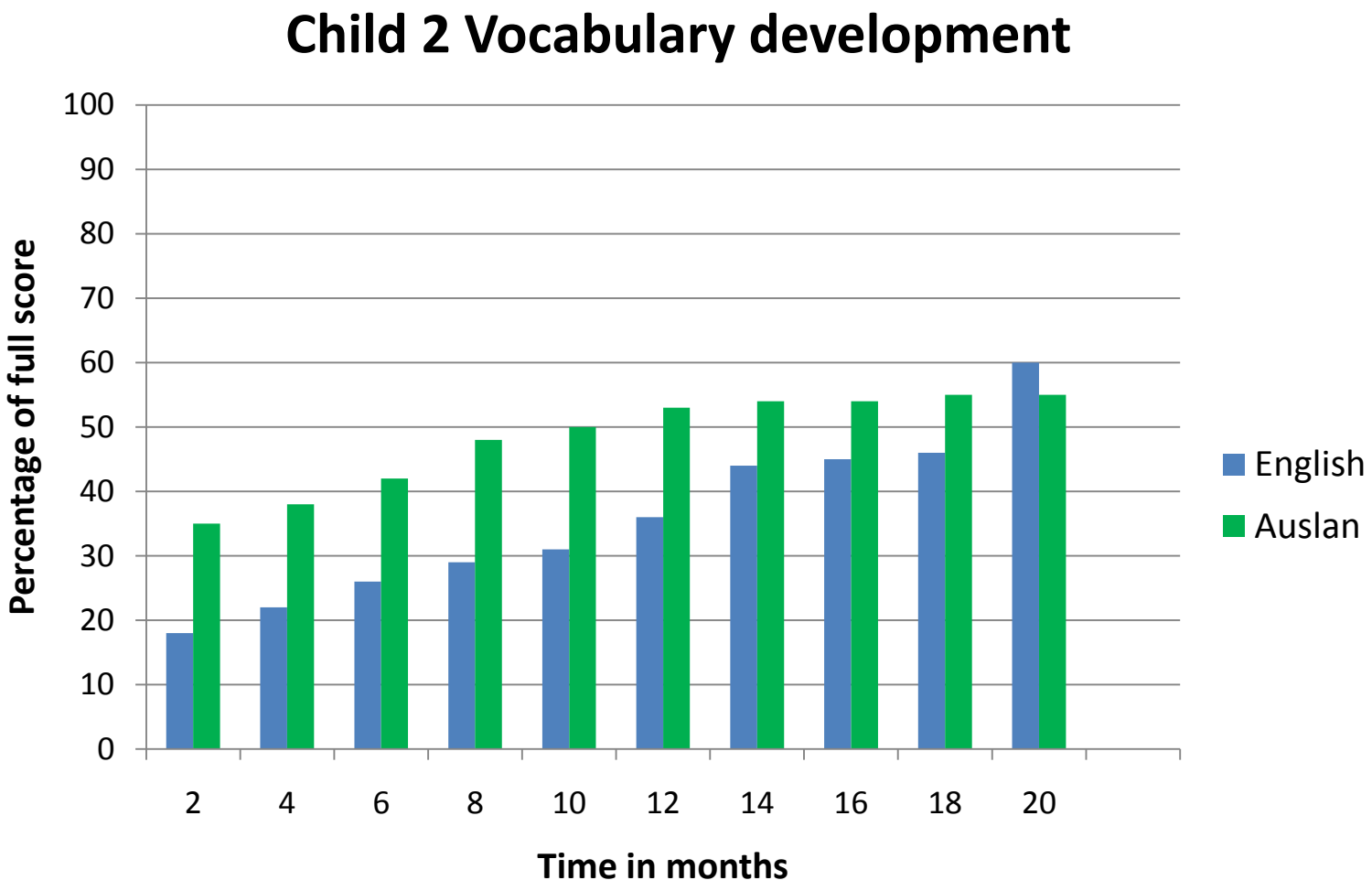
- Early diagnosis, early EI commencement
- Prolonged episodes of otitis media in the first half of study
- Fluctuating hearing thresholds
- Interrupted aid wearing
- More Auslan when access to speech was reduced
- Language skills approaching normal level
- Parent bilingual participation – high input
- Parent Auslan proficiency – adequate fluency for parent-child interactions

Child 2 modality preferences



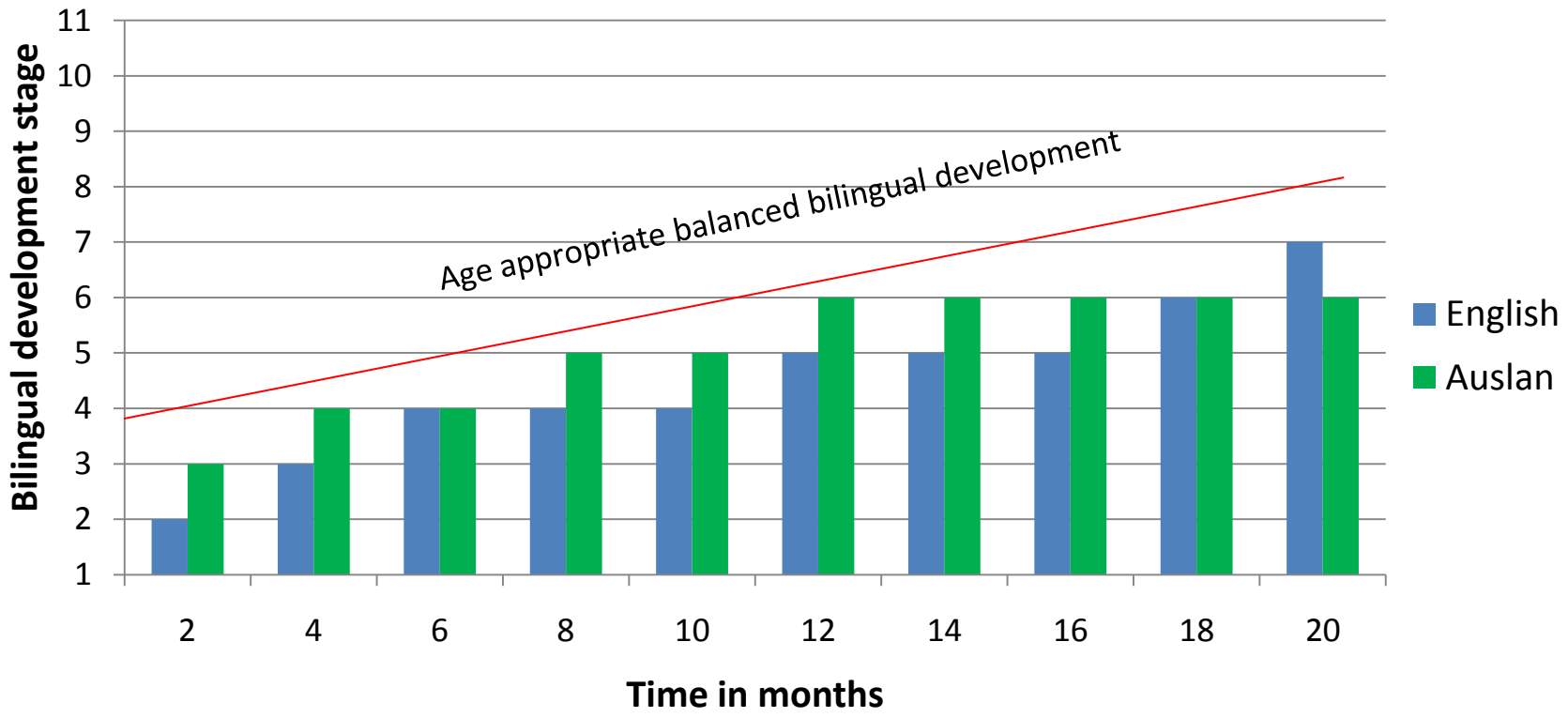

Child 2 Auditory skill development
Percentage of skill acquired
100
90
80
70
60
50
40
30
20
10
0
2
4
6
8
10
12
14
16
18
20
Time in months
Auditory awareness
Auditory feedback
Localizing
Auditory discrimination
Auditory comprehension
Short term auditory memory
Linguistic auditory processing

MacArthur CDI

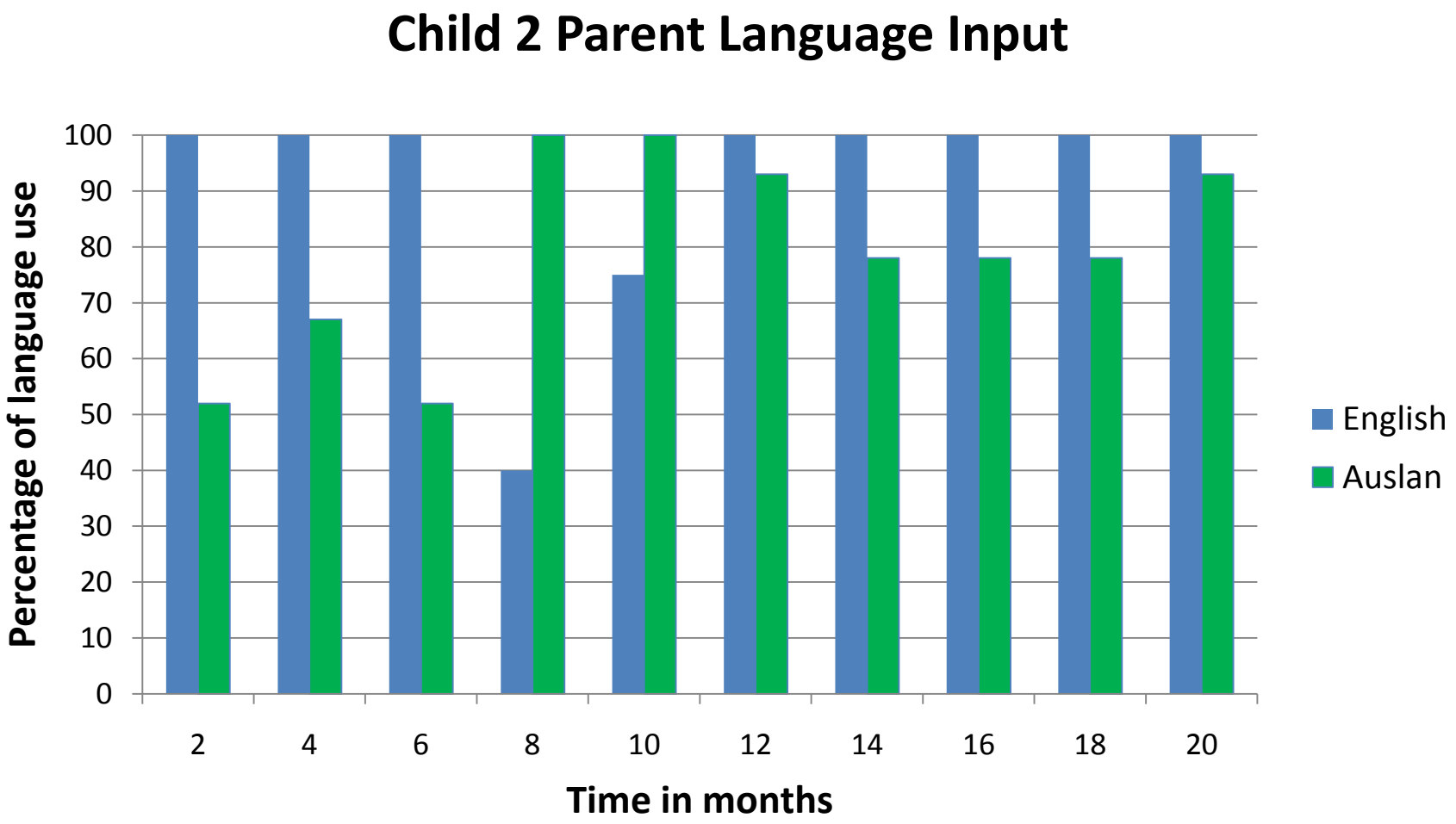


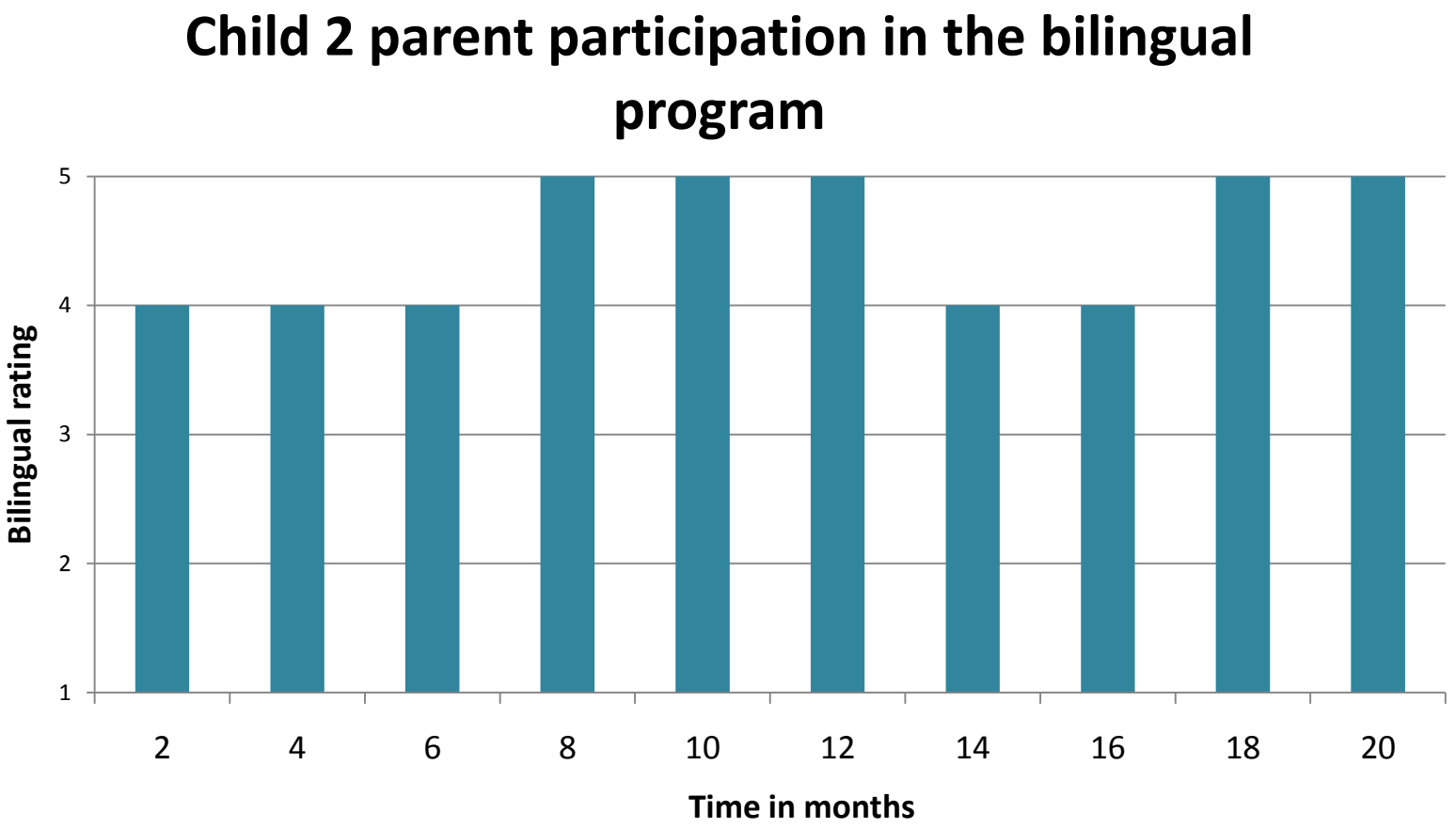
Oral & Signed Language Development Chart

Child 2 bilingual development

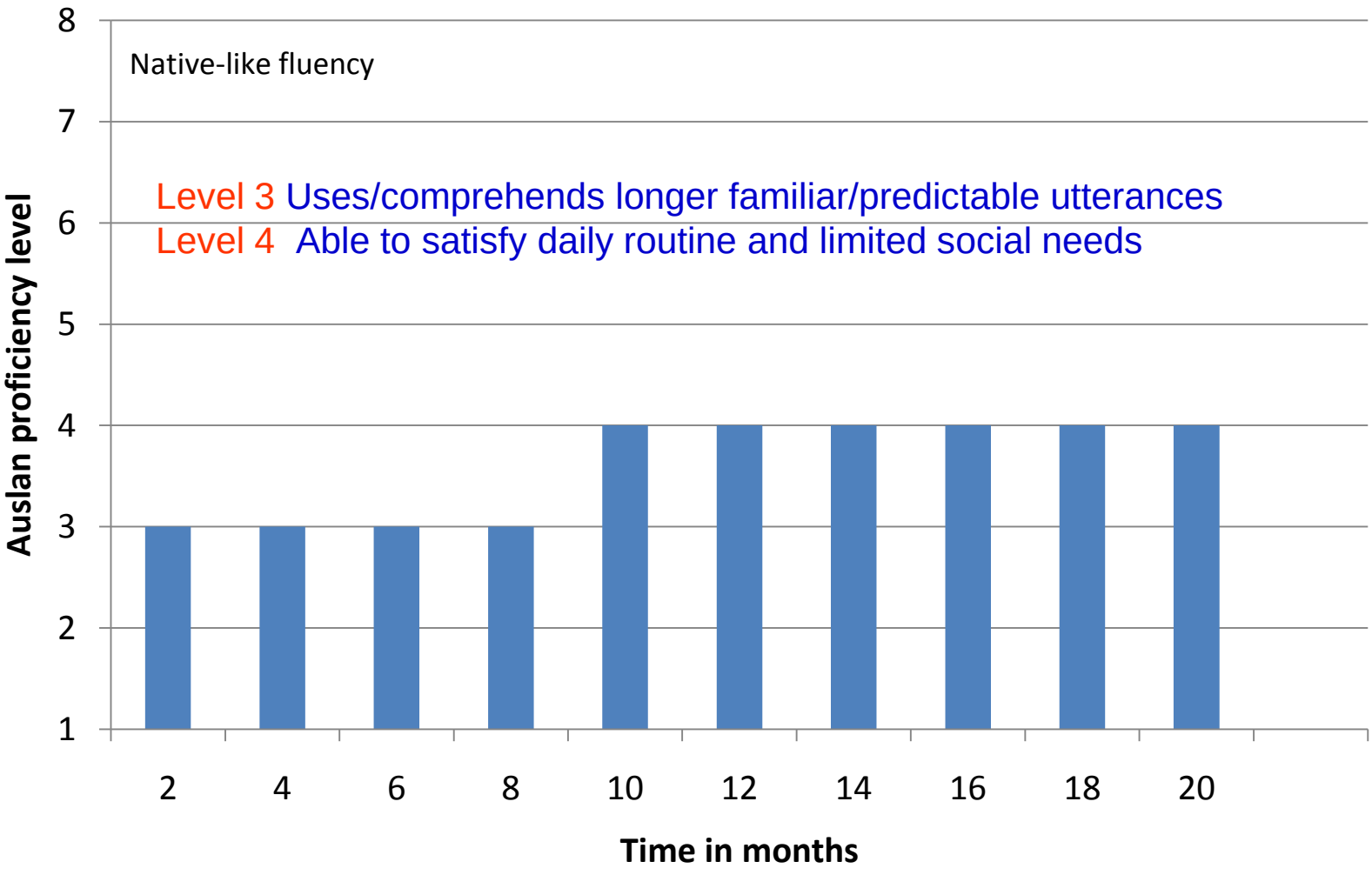


Parent-child communication checklist




Child 2 parent participation in the bilingual program
Bilingual rating
5
4
3
2
1
2
4
6
8
10
12
14
16
18
20
Time in months

Auslan Proficiency Rating Scale



Child 3

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CHILD	Age at start of study (months)	AGE at DIAGNOSIS (months)	Entry to EI (months)	DEGREE OF DEAFNESS L	DEGREE OF DEAFNESS R	LISTENING DEVICES L	LISTENING DEVICES R	Device wearing 1=seldom 5=always
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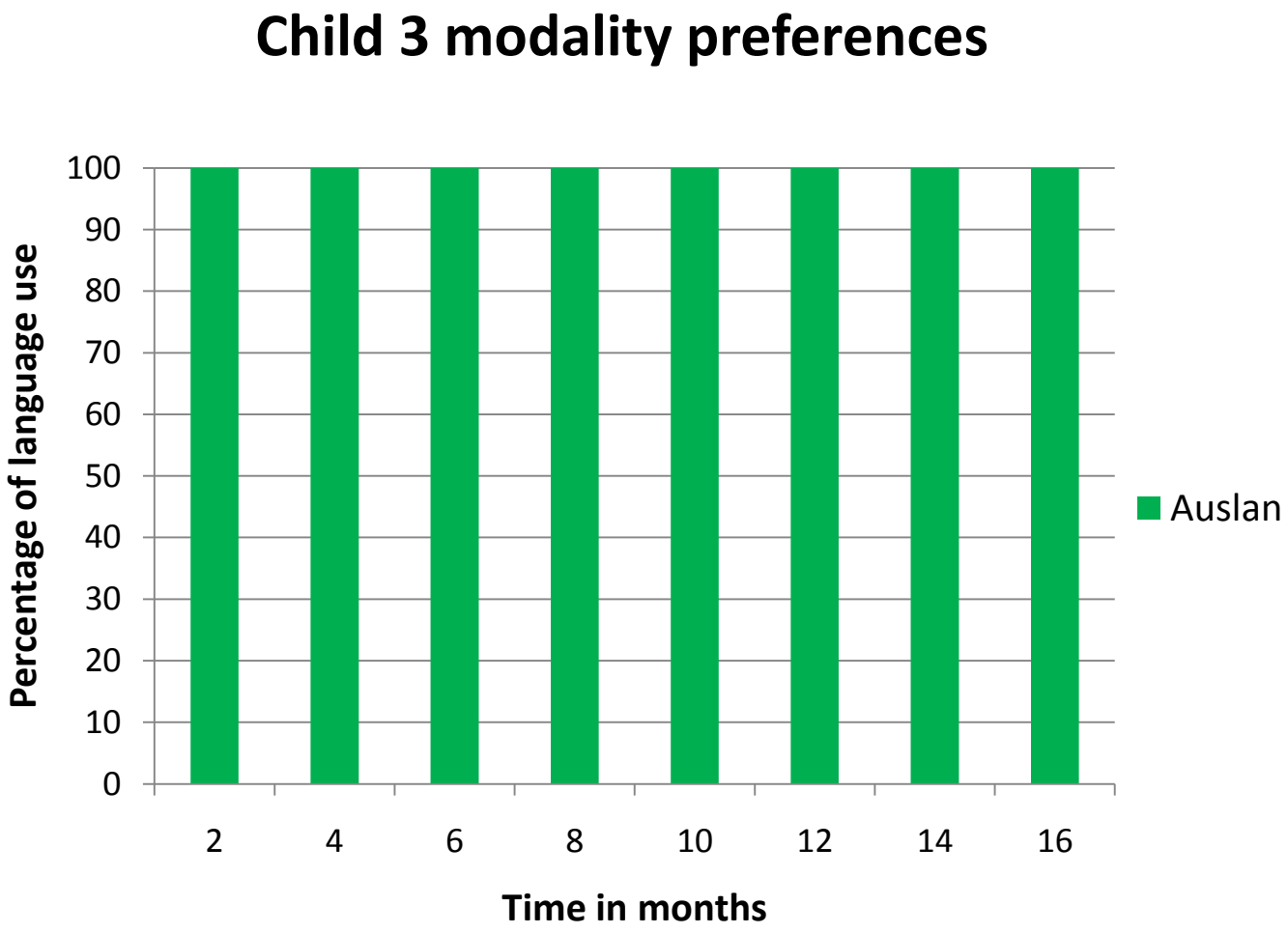
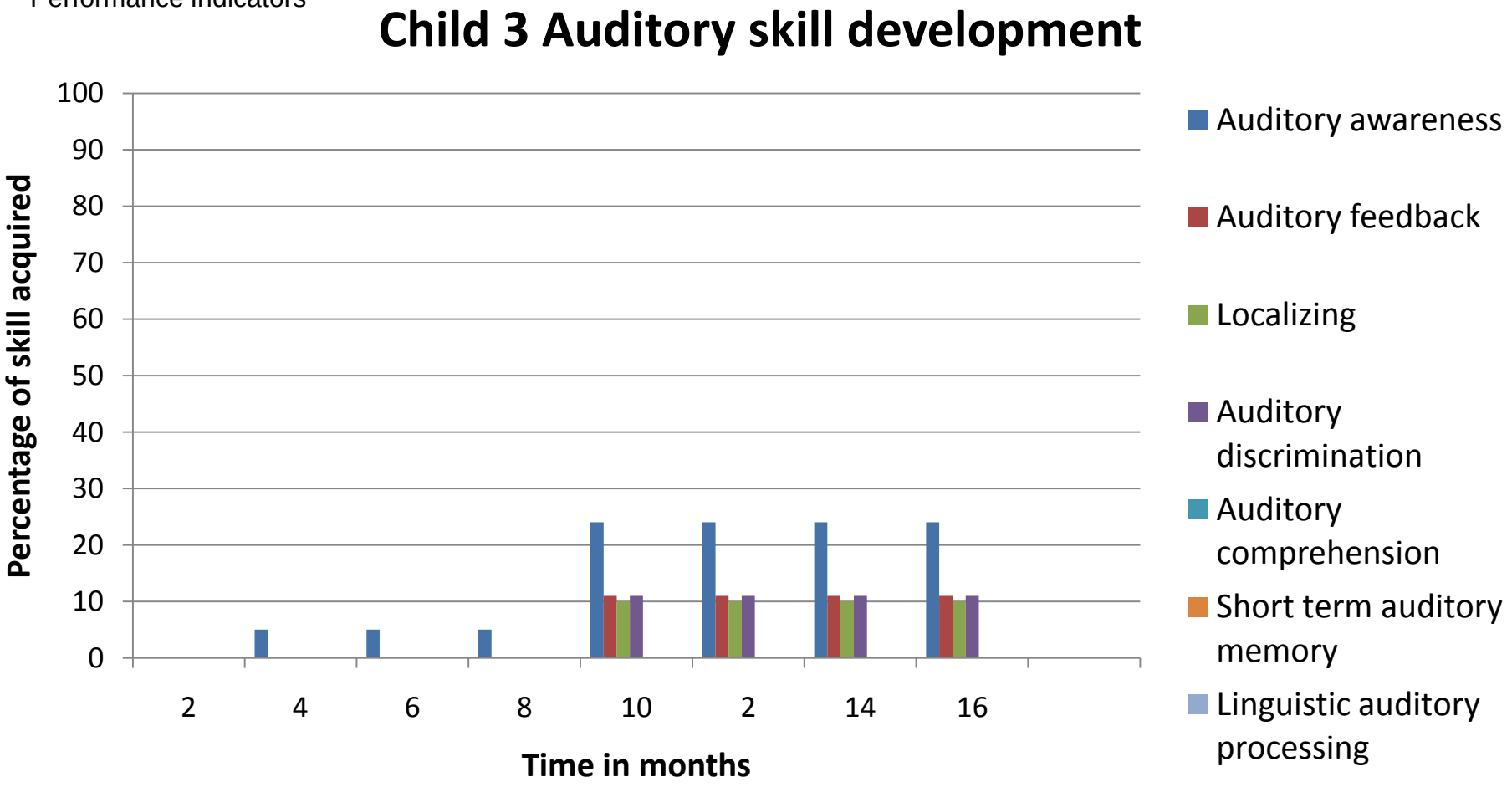
4	23	3	12	Severe-Profound	Severe-Profound	CI	CI	5
5	28	19	20	Profound - severe	Profound - severe	HA	HA	5
6	28	16	18	Moderate-Severe	Profound	HA	HA CI*	5
7	20	3 weeks	5	Severe	Severe	HA	HA	2-4
8	33	12	13	Severe	Profound	HA	CI (*end of study)	3-4

Child 3

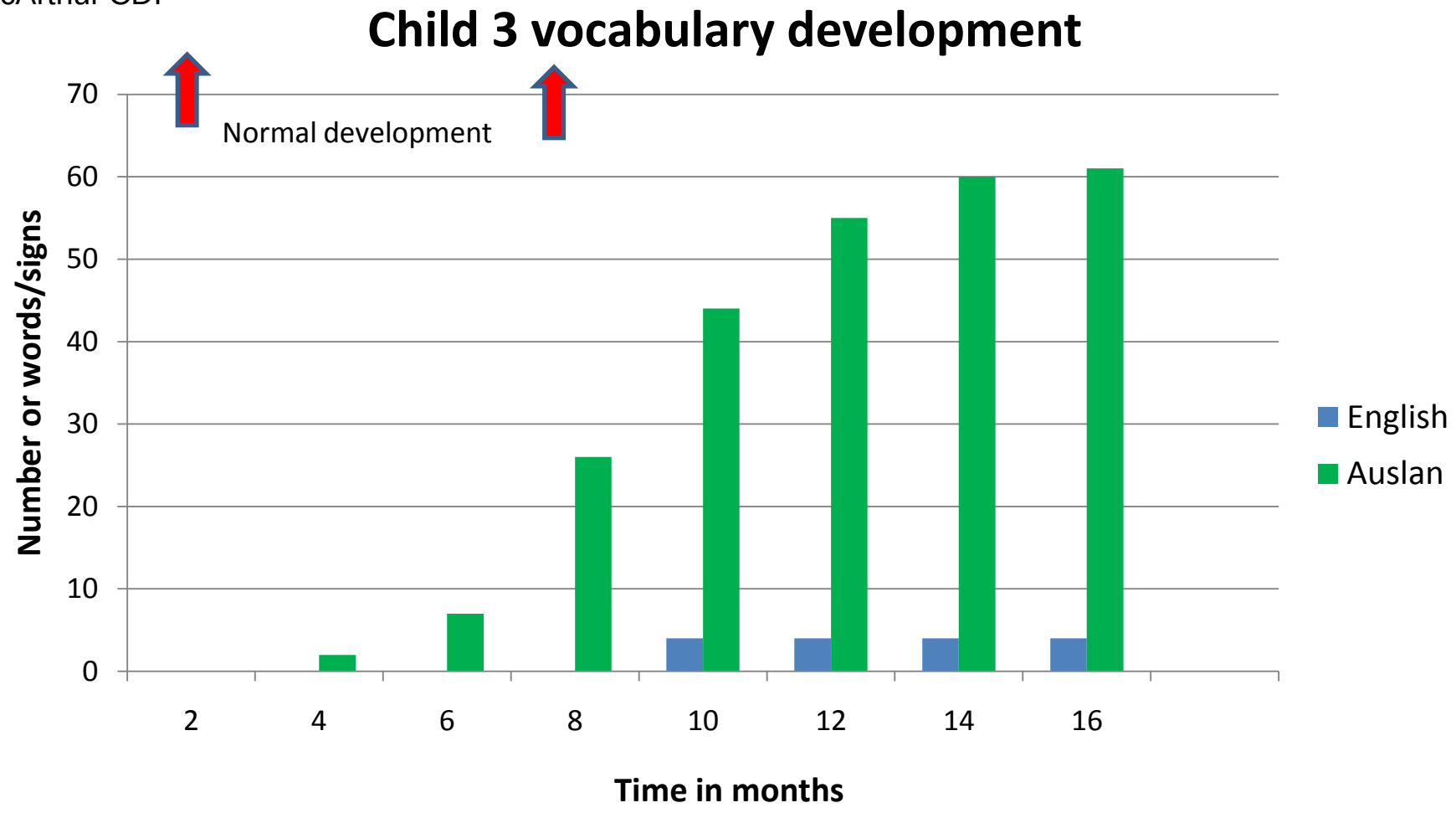
- Diagnosis 12 months, EI 23 months
- No amplification prior to cochlear implants at start of study (23 months)
- Limited CI wearing first 6 months of study
- Auditory skills not supporting speech development
- Language input for first half of study - English
- Increased attention span when Auslan used
- Family's use of Auslan increased in second half of study
- Auslan - child's preferred modality, but delayed


Child 3 modality preferences
Percentage of language use
100
90
80
70
60
50
40
30
20
10
0
2
4
6
8
10
12
14
16
Time in months
Auslan

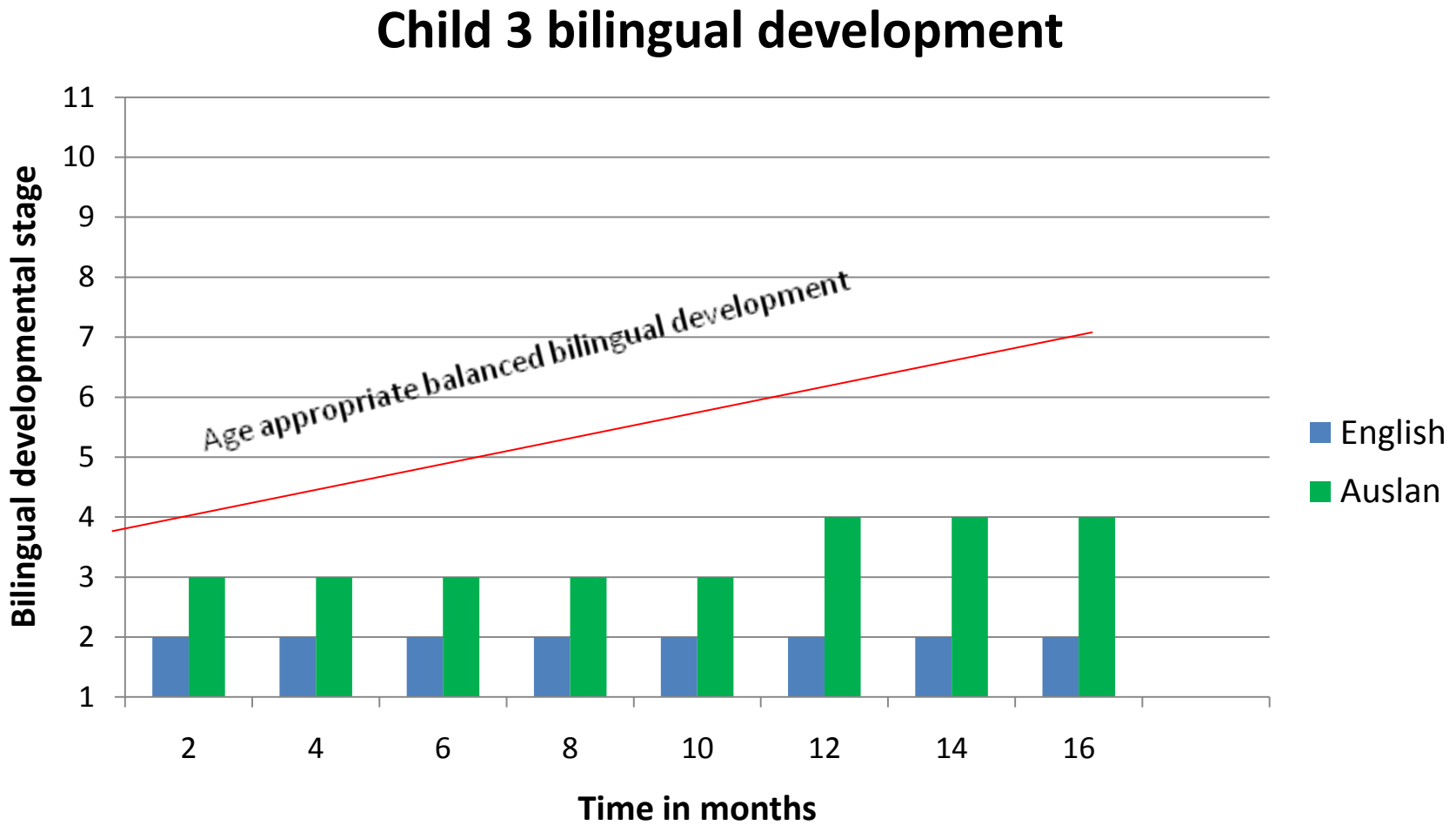
Functional Auditory Performance Indicators



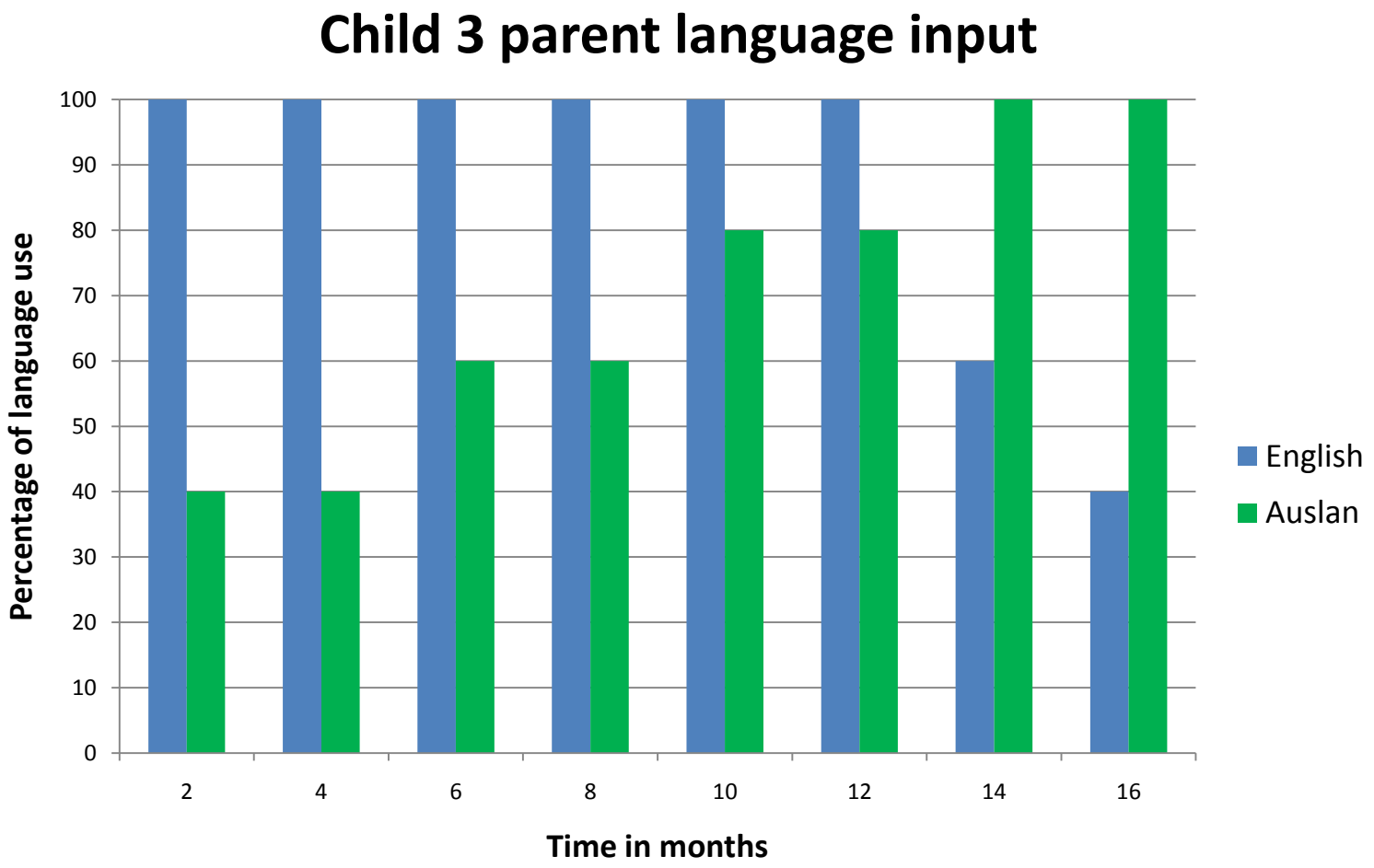
MacArthur CDI



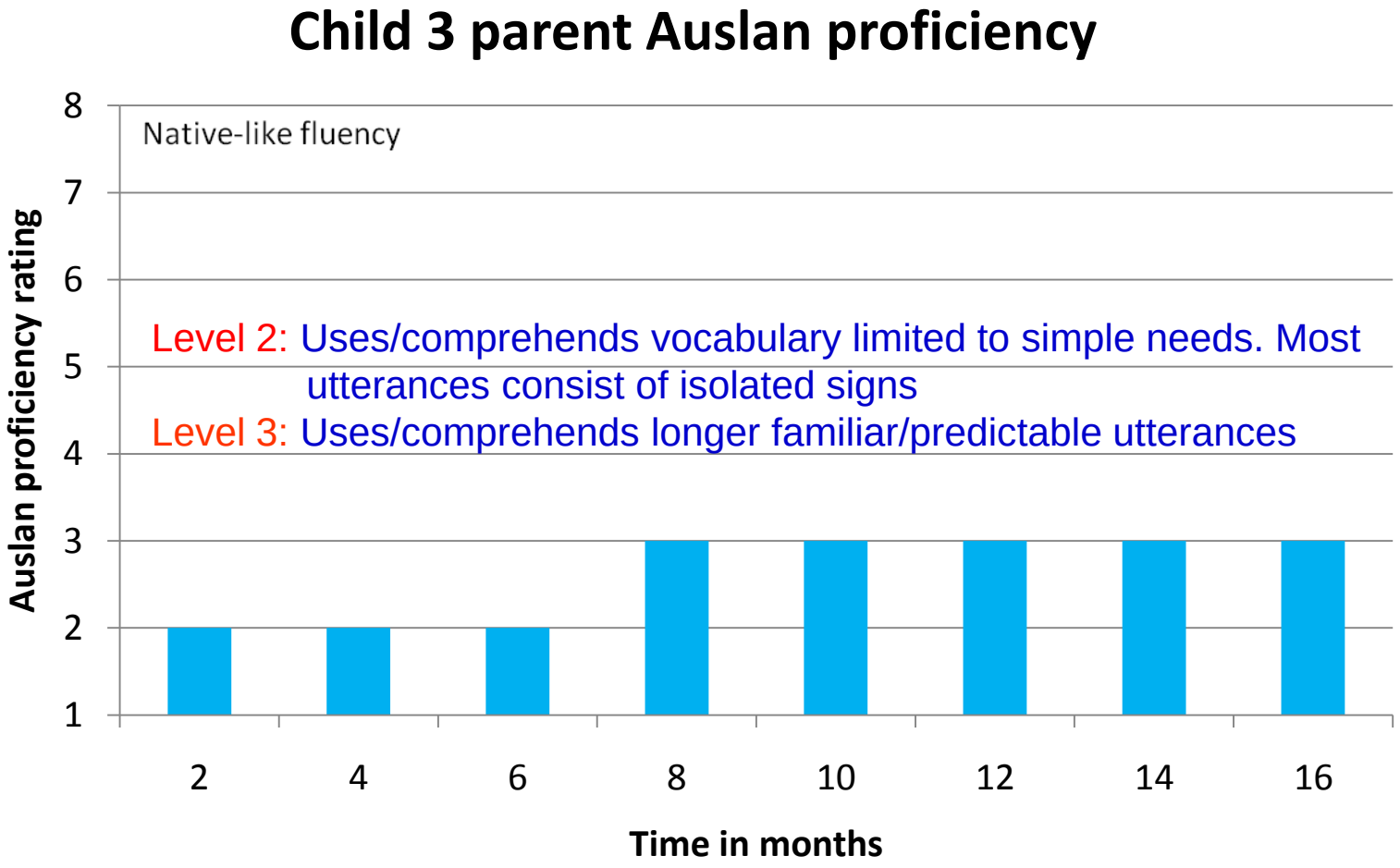
Oral & Signed Language Development Chart



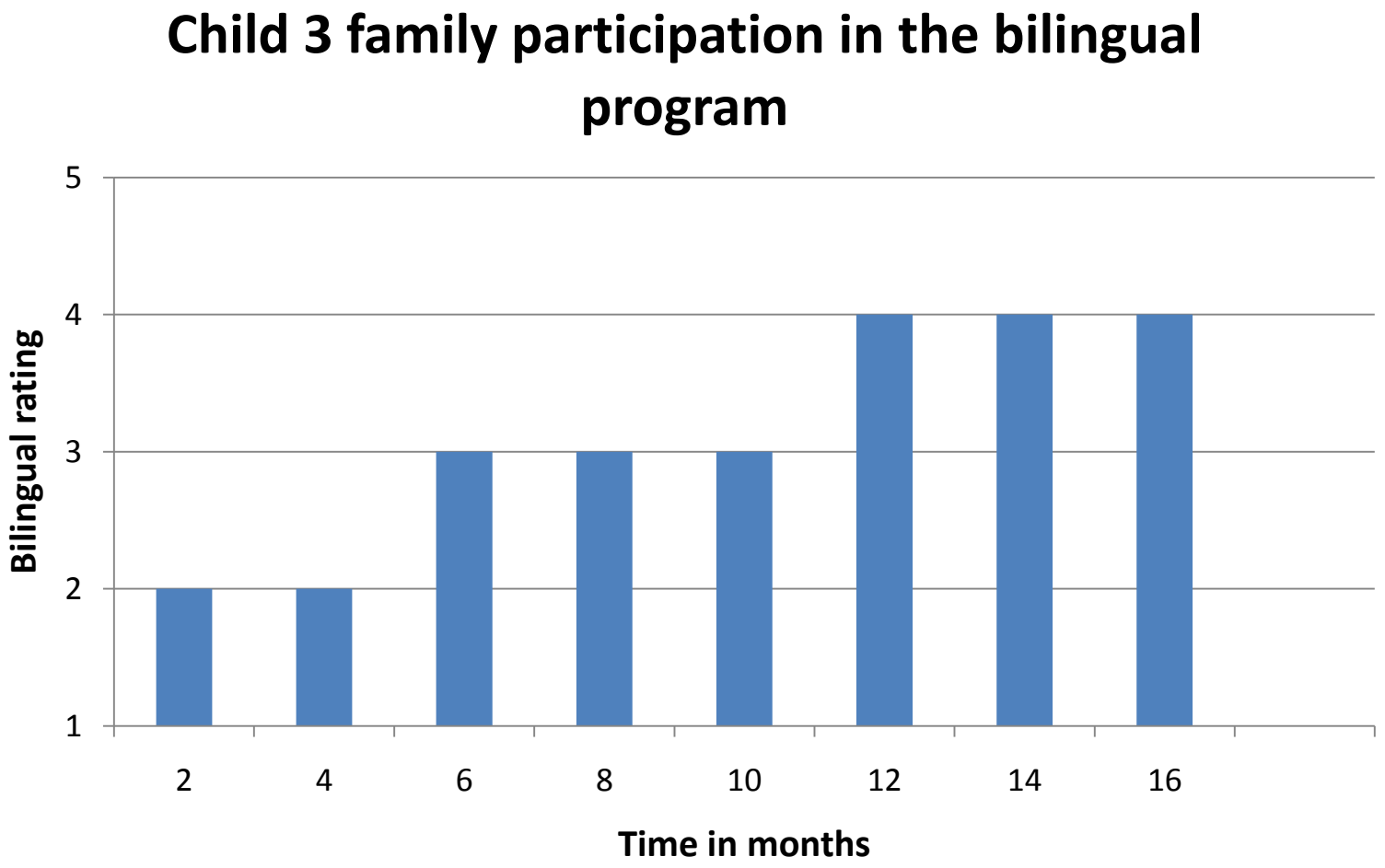
Parent-child communication checklist



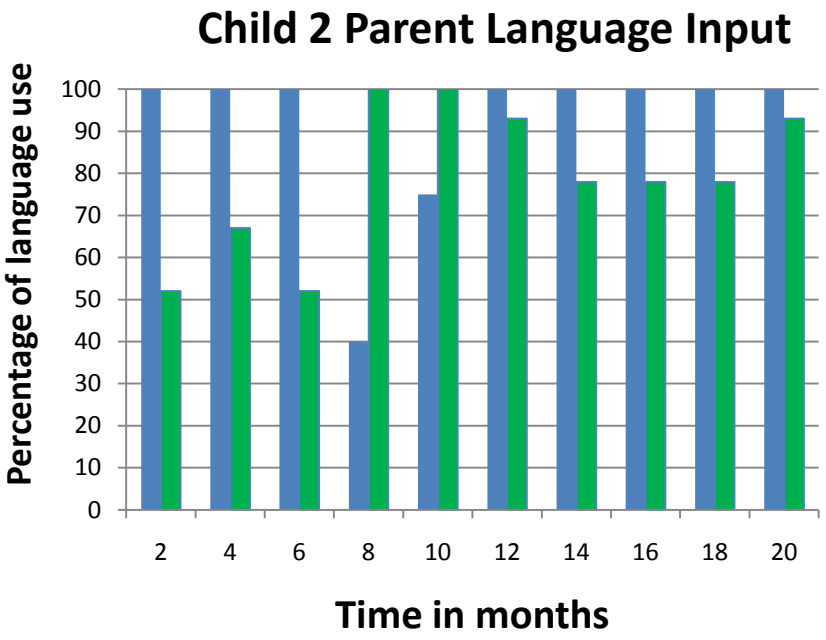
Auslan Proficiency Rating Scale

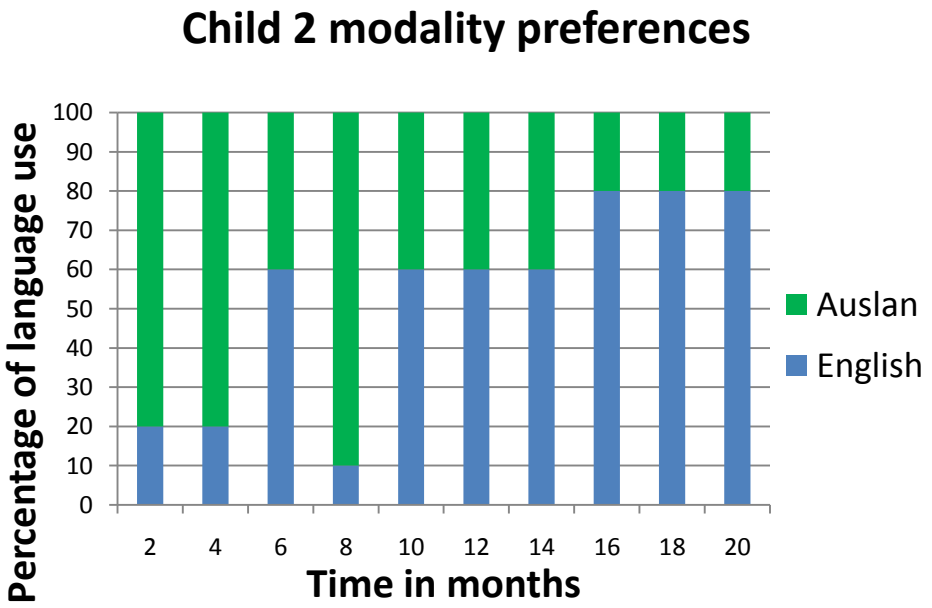


Bilingual Rating Scale



Modality preferences


Child 2 Parent Language Input
Percentage of language use
100
90
80
70
60
50
40
30
20
10
0
2
4
6
8
10
12
14
16
18
20
Time in months
English
Auslan


Child 2 modality preferences
Percentage of language use
100
90
80
70
60
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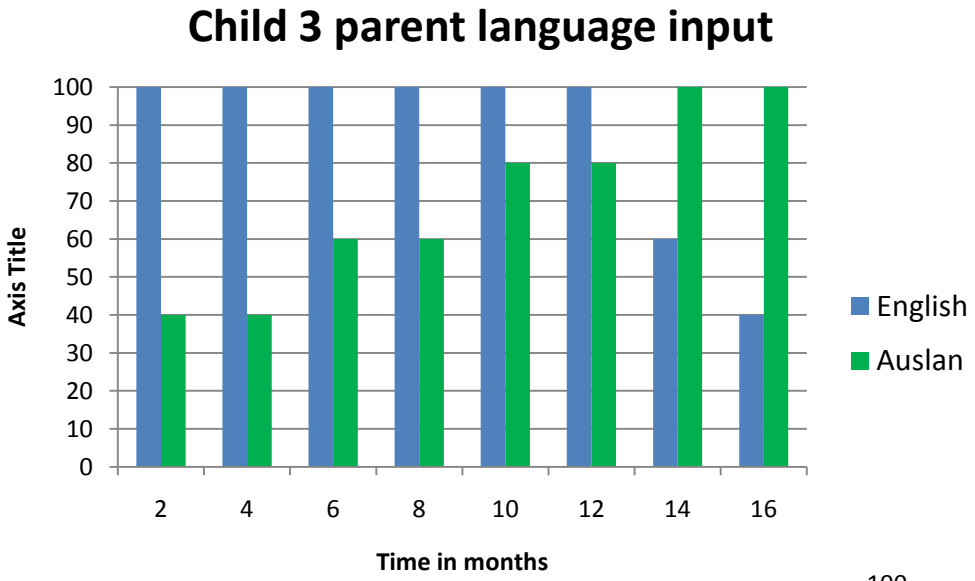
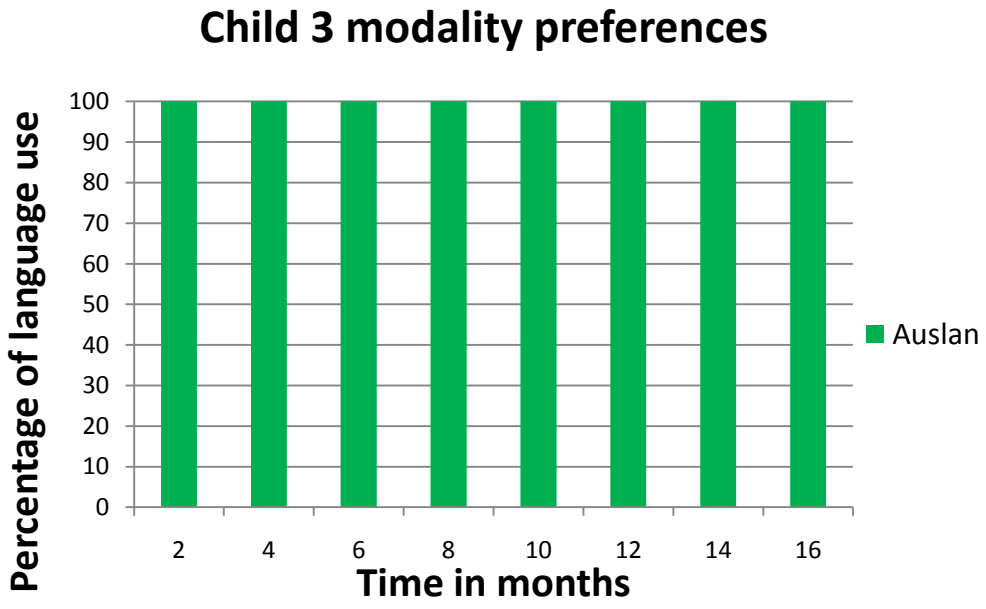
10
12
14
16
18
20
Time in months
Auslan
English


Child 3 parent language input
Axis Title
100
90
80
70
60
50
40
30
20
10
0
2
4
6
8
10
12
14
16
Time in months
English
Auslan


Child 3 modality preferences
Percentage of language use
100
90
80
70
60
50
40
30
20
10
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2
4
6
8
10
12
14
16
Time in months
Auslan

Conclusions

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- Children's bilingual use moves along a spectrum
- Children's language use can change frequently depending on access to spoken language, communication partners, language environment
- Measuring languages separately does not give a clear picture of bilingual use
- Some children gained language in Auslan first then transferred vocabulary to English

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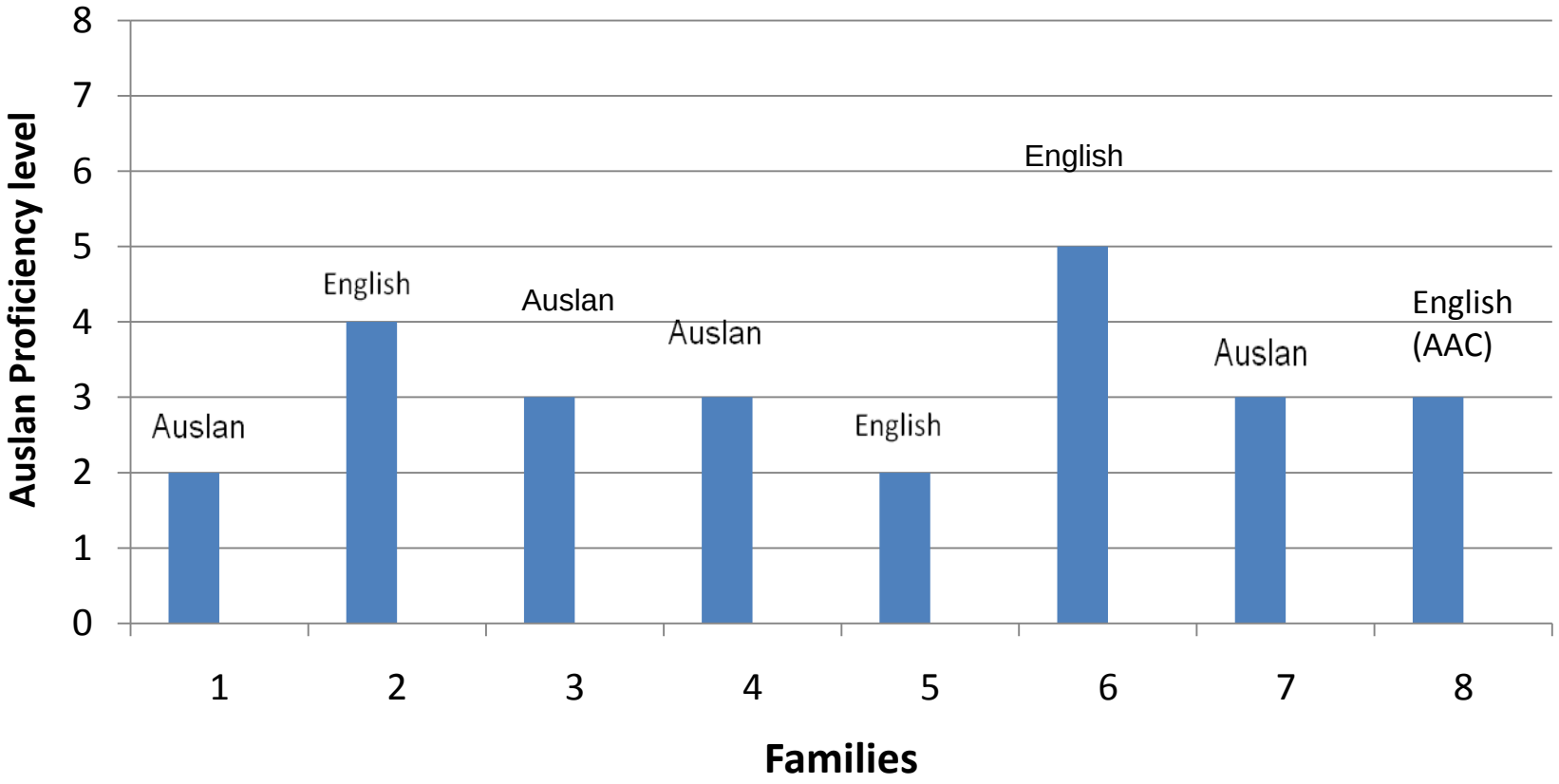
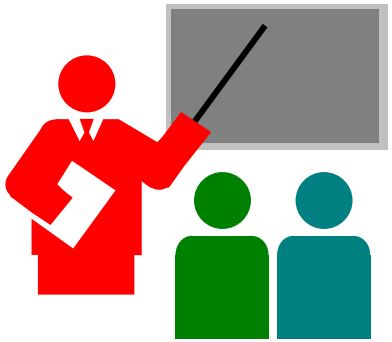
- A relationship was found between the children's ability to process auditory information and their preference for English or Auslan
- No relationship was found between the children's diagnosed degree of deafness and their preferred modality
- Audiograms do not reveal whether a young child is able to use auditory information effectively for processing language
- Additional developmental challenges may impact on deaf children's modality preferences

- Some children who had access to more Auslan preferred English by the end of the study
- Parents frequently requested more support to acquire higher levels of Auslan
- At the start of the study, all families stated that they wanted their children's preferred language to be English, but that they believed Auslan would help them communicate effectively with deaf peers

Families' Auslan proficiency and children's preferred modality at end of study





Thank you for your attention

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