**Speech and Language Development**

Miah is a cheerful and friendly child who enjoys interacting with others. She appears to be eager to learn in a playful setting. She has been receiving Auditory Verbal Therapy since she was 10 weeks and her Phonak hearing aids were turned on at 3 months. Although her chronalogical age is 11 months, her hearing age is 8 months. Since early detection and intervention were a factor, Maih seems to be hearing producing many sounds as a typical child at her age. There are a few sounds and skills that Maih will need to work on to get her fully on track. She is well on her way as Maih’s speech and language appears to be developing well as new skills are emerging and she is showing progression.

As observed on a recent video recording, she smiles, gestures, claps, and is tuned in to her communicative partner. During play with her AVT Therapist, Loretta and her mom, Maria, Miah was observed to laugh, squeal and yell. She also produced bilabial trills (“raspberries”) and alternating ingressive and eggressive sequences (IES) using nasalized quasi-vowels when excited. Miah created rising and sloping pitch quasi-vowels, indicating that she is developing some suprasegmental elements of speech. Miah produced several lax, central, open vowels (/ɛ, æ, ∧, ʊ/) and the following consonants during the short play session: voiceless palatal fricative /ʃ/, voiceless bilabial stop /p/, voiced bilabial plosive /b/, voiced alveolar nasal /n/, voiced bilabial nasal /m/, voiced bilabial glide /w/, and voiceless glottal fricative /h/. Some reduplicated babbling (/nænæ/) and variegated babbling (/mːæmænæ/) was observed. Miah also produced several CV (/bu/), VC (/∧p/), VCV (/əʃæ/) and CVC (/nːæn/) combinations. A transcription of the sounds observed on the video sample is below.

|  |  |  |  |
| --- | --- | --- | --- |
| /æ̃/ | /∧nuː/ | /hɛmː/ | /mːæmænæ/ |
| /ɛ̃/ | /∧waʊ/ | /bu/ | /nːæ/ |
| /∧/ | /h/ | /mː/ | /nːæn/ |
| /əʃæ/ | /hãʊ/ | /mːæ/ | /nːænæ/ |
| /∧p/ (not referring to “up”) |  |  |

**Sounds Produced**

ː = long duration

~ = nasalized

laughing, squealing, yelling

RASP bilabial trill (“blowing raspberry”)

rising and sloping pitch quasi-vowels with clapping

alternating ingressive and eggressive sequences (IES)

nasal quasi-vowels indicating excitement, pleasure

|  |  |
| --- | --- |
| /æ̃/ | front near open |
| /ɛ̃/ | front open mid |
| /∧/ | back open mid |
| /∧p/ (not referring to “up”) |  |
| /əʃæ/ | near open near front |
| /∧nuː/ elongated consonant | close back |
| /∧waʊ/ | open front rising to back close |
| /h/ | Unvoiced glottal fricative |
| /hãʊ/ | Nasalized vowel |
| /hɛmː/ elongated consonant | central open mid |
| /bu/ | CV voiced bilabial plosive |
| /mː/ elongated consonant | nasal |
| /mːæ/ elongated consonant | CV  |
| /mːæmænæ/ elongated consonant | CVCVCV variegated babbling |
| /nːæ/ elongated consonant | CV |
| /nːæn/ elongated consonant | CVC |
| /nːænæ/ elongated consonant | CVCV reduplicated babbling |

Some reduplicated babbling (/nænæ/)

Some variegated babbling (/mːæmænæ/)

Some CV (/bu/), VC (/∧p/), CVC (/nːæn/), VCV (/əʃæ/ /∧nuː//∧waʊ/) combinations

Elongated nasal consonants

Not a lot of consonantal variety

Lax, central, open vowels (/ɛ, æ, ∧, ʊ/)

Nasalized vowels

|  |  |  |
| --- | --- | --- |
| Speech/ArticulationSkills | ReceptiveLanguage | ExpressiveLanguage |
| Non-Reflexive* Quasi-Resonated Nuclei (QRN’s) range in sound from a syllabic nasal consonant-like production to a high, mid, unrounded vowel-like production with much nasal emission

-Can be produced with mouth closed* GOO or Cooing- a QRN sounding like a rounded back vowel such as /u/ in combination with a velar or uvular closure
* Cooing can be CV or VC
* Nasalized vowel-like sounds
* Laughter
* Vocal play
* Suprasegmental patterns

-duration-intensity-pitch* Mouth and tongue positions vary
* Action of closing and opening the mouth while the vocal folds vibrate producing single-syllable-like vocalizations
* Vowels include mostly the central/ε,æ,Ι,Λ,υ/
* Early consonants appear
* CV or VC VCV CVC
* Fully Resonant Nuclei (FRN)
* Yelling (YEL) and whispers
* Raspberries (RSP)- bilabial or labiolingual trills
* Squealing (SQ) (500Hz or higher)
* Ingressive/Eggressive Sequence (IES) – inhaling and exhaling
* Canonical babbling or

Reduplicated Babbling (RB) -repeated strings of identical syllables are limited to only two syllables (/nænæ/)* CV strings that possesses timing characteristics of speech
* Marginal babbling- combinations of consonant and vowel-like elements- transitions can be very slow and shaky (/mːæmænæ/) hers are all nasal and vowels
* Single consonant babbling
* Labial consonants (/p,b,m/)co-occur with central vowels
* Variegated babbling-multi-syllabic sequences which are consonants changing from one syllable to the next (/mːæmænæ/)
* Gibberish
* Stops (/p,b/) and Nasals (/m, n, ŋ/) are dominant
* Lax central vowels (/ε,æ,Λ,υ/) are stable
 | * Attends closely to unfamiliar voices such as the AVT, Loretta
* Smiles when spoken to
* Responds to songs
* Moves eyes in direction of sounds
* Responds to changes in tone of your voice
* Notices toys that make sounds
* Pays attention to music
* Responds differently to different intonations (ex. friendly, angry)
* Begins to respond to requests
* Turn taking
* Begin to understand what is said to them
* Recognizes phrases from songs
 | * Share sounds with parents
* Talk that occurs with parents is overlapping
* Cooing denotes contentment
* Turn-taking
* Babbling sounds more speech-like with many different sounds, including *p, b* and *m*
* Chuckles and laughs
* Vocalizes excitement and displeasure
* Makes gurgling sounds when left alone and when playing with you
 |
| * Vocalize when paid attention to
* Babbling has both long and short groups of sounds
* Uses speech or noncrying sounds to get and keep attention
* Uses gestures for communication (waving, holding arms to be picked up)
* Eye and hand gestures
* Pointing
* Responds to “No”
* Recognizes words from routines (ex. Waves to “bye-bye”
 |

**Sounds and Speech Needed**

* Velars/g/and/k/ occur in the back of the mouth without being coupled with vowels
* Nasalizations of vowels disappear
* Vowels appear and are more fully resonated
* Growling (GRL) (150Hz or below)
* Only nasal consonants with reduplicated and variegated babbling…needs more consonant play
* Alveolars (/t,d,n/) with front vowels and velars (/k,g/)
* Variegated babbling-multi-syllabic sequences which are vowels changing from one syllable to the next (ex. /mæmunΛ/)
* Jargon- non-meaningful sequences full of stress and intonational patterns
* Missing the fronted high vowel (/I/)
* Imitation

During the Auditory Verbal Therapy session on the video, they were playing a game with bubbles. The therapist would blow bubbles and the mother and her would model the sound “pop pop pop” while bursting the bubbles. Miah imitated some oral motor movements (opening and closing her mouth, labial movements by bringing her lips together), but made no sound. She frequently had an open-mouthed posture during the video. Turn taking co-occurring with the mother was observed with gestures (clapping) and vocalizing (nasalized vowel sounds like /æ̃/). When the therapist held up a bubble wand, counted to three, and waited, Miah requested the bubbles by vocalizing /æ̃/ and waving her hands. Maih responds well to exaggerated suprasegmental speech from others. There was not a lot of wait time at this point for Miah to respond during her turn but in the phone interview, the mother had mentioned that is what they are working on now and are quite successful.

Maih is able to produce and respond to suprasegmentals. When speakers are speaking in “baby talk”, she responds well taking turns with laughter, smiles and cooing. Maih is also able to produce babbling with lots of intonation ranging from duplicated, variegated and high pitch squealing and laughing combinations. Her vowels are long in duration as well as some of her nasals. Sometimes it is hard to tell whether it is a continued nasal with a short nasalized vowel or a CV nasal and long vowel. The volume, when excited can be quite loud and high where sometimes she is only mouthing or producing IES. Her babbling will start to take on a more sentence like structure as she progresses. The most important note here about her suprasegmentals is that she responds to others and is able to make sounds that vary in duration, pitch and intensity. In time, they will evolve to become more complex structures.

Maih still needs to work on certain skills that will keep her progressing towards her goal. Her hearing age is only 3 months behind her chronalogical age and this time gap will converge seamlessly with some effort and continued therapy. Many of her vowels are still nasalized and could use more resonance. The only central, lax vowel not present in her repertoire is, /I/ and should be worked on using speech including /bIt/, /It/, /sIt/, /kiss/, etc. This will get her perceiving the sounds so that she will be able to produce them in the near future. Consonants that she doesn’t possess are /t,d,k,g,ŋ/. These consonants should also be used playfully in simple words. She is beginning to imitate sounds so modeling variegated and reduplicated babble using the consonants and vowels will help to reduce the nasalization in the vowels and get her articulating these other sounds. Other vowels can be introduced as well to get all of the vowels in her range. Maria reports that Miah is beginning to imitate some words, such as an approximation of “yummy” after her mother’s model.

 Maih’s speech and language are developing at a good pace. She seems to be within the range of typical hearing children at her hearing range. Further analysis will be necessary to ensure that her hearing aids are working and her speech and language continues to develop in a progressive manner.