

# Assessment of Speech and Language Environment as Part of Transdisciplinary Assessment

Sheryl Schaller, Mallene Wiggin, Susan Moore

## Introduction

Pathways to Assessment of Learning is a transdisciplinary play-based assessment model used at the Speech, Language, Hearing Center (SLHC) at the University of Colorado Boulder. It incorporates “family-centered practices, culturally responsive planning, and transdisciplinary teaming with specialists and family members” (Moore, Hyde-Smith, Pratt, McKnight, 2011). The team consists of the family, a speech language pathologist (SLP), an occupational therapist, a family resource consultant, an early childhood special educator, and four graduate SLP clinicians.

## Objectives:

- Determine if LENA will become an additional key component of the PAL assessment
- Determine whether the family interview and transdisciplinary assessment is consistent with the LENA findings
- Determine ways that LENA allows for additional parent training of language strategies

## Background:

### Five Components:

- Family-Centered
- Play-Based
- Culturally-Responsive
- Transdisciplinary
- Environmental Reliability – LENA

### Structure of the Assessment:

**Family Interview:** Three team members complete *Pathways: A Child and Family Journey* by guiding the family in an ethnographic interview and reviewing survey information completed independently by the family.

**Pre-Assessment Planning Meeting:** Using transdisciplinary collaboration, the team reviews the *Pathways* and completes the planning form to guide the assessment.

**Assessment:** Dynamic assessment occurs in a play-based setting with parent participation prior to parents transitioning to observing with the team.

### Post-Assessment Information Sharing:

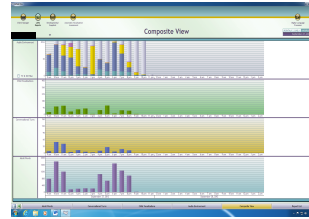
Immediately following the assessment the parents and the team meet to discuss the assessment and determine developmentally appropriate next steps, strategies, and resources.

## Rationale for Incorporating LENA

The PAL evaluation provides a snapshot of the child’s abilities that is supplemented with in-depth information from the parent interview and the home visit. LENA offers the PAL team a way to see if what they observed is consistent with the language skills and language environment of the child’s home. Research shows the language a child receives before the age of three is significantly and strongly associated with their subsequent language acquisition, cognitive development, school readiness, and academic achievement up to seven years later (Hart & Risley, 1992; Greenwood, Thiemann, Gilkerson, & LENA Workgroup, 2007; LENA Research Foundation, 2009; Rodriguez & Tamis-LeMonda, 2011; Walker, Greenwood, Hart, & Carta, 1994; Zimmerman, et al., 2009). Additionally, the home language environment impacts a child’s vocabulary size and MLU (Hart & Risley, 1992; Walker, et al., 1994). Research shows parent training is an effective way to change the form and content of a child’s natural language environment and support the child’s language development (Infoture, 2007; Wiggin, Gabbard, Thompspon, Goberis, & Yoshinaga-Itano, 2012).

## Case Study 1: AN

|                             |   |
|-----------------------------|---|
| Age                         | 29 months   |
| Gender                      | Female  |
| Additional Diagnosis        | Motor delay                                       |
| Primary Family Concerns     | Expressive language, social/emotional development |
| Maternal Level of Education | M.A.  |



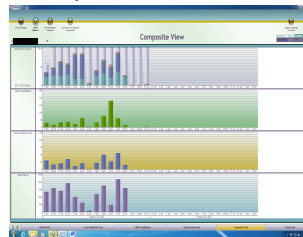
### LENA Scores:

Adult Word Count 31%ile  
Conversational Turns 6%ile  
Child Vocalizations 2%ile

**Child Specific Observations:** Recordings indicated she vocalizes less and has less diverse speech sounds than her same-age peers. Her mother reported at 2 pm AN was playing by herself in the basement and her mother could hear her vocalizing from the main floor of their home. Recordings also showed her vocalizations were not always in the context of a communication exchange with an adult. These results were consistent with parent report and the team’s observations and interpretations. Based on the observations during the evaluation, parent report, and the LENA analysis the team recommended the family pursue an autism evaluation. The recordings additionally revealed the benefit of language strategies used in intervention as AN wore the DLP while at toddler group at SLHC from 9-11 am. The team recommended the family pursue early intervention in order to learn additional strategies to support her communication development at home.

## Case Study 2: RVB

|                             |                     |
|-----------------------------|---------------------|
| Age                         | 34 months           |
| Gender                      | Male                |
| Additional Diagnosis        | Down syndrome       |
| Primary Family Concerns     | Expressive language |
| Maternal Level of Education | M.A.                |



### LENA Scores:

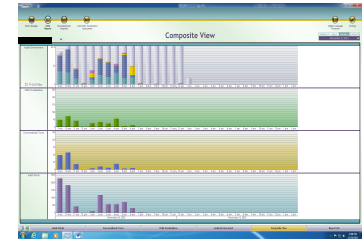
Adult Word Count 99%ile  
Conversational Turns 29%ile  
Child Vocalizations 8%ile

\*RVB had an expressive vocabulary 60 signs

**Child Specific Observations:** RVB wore the DLP the day of the evaluation. The evaluation was from 9-10:30 am. His parents reported he did not sleep well the night before his evaluation and that he was quieter than usual. The team tried to arrange a second day for RVB to wear the DLP that would be more representative of a typical day. Due to RVB being ill several times during the semester, a second recording was never completed. The recordings showed RVB is vocalizing less than his same-age peers, has less diverse speech sounds than his same-aged peers, and has access to a lot of language during the day. The recordings also indicated the high number of adult words could be negatively affecting RVB’s opportunities to participate in conversational turns. This indication supported the observations and conclusions of the team who recommended the parents use strategies (e.g., communication temptation) to provide RVB an opportunity and a reason to communicate.

## Case Study 3: PBS

|                             |  |
|-----------------------------|--|
| Age                         | 31 months  |
| Gender                      | Male   |
| Additional Diagnosis        | West syndrome, STXBP1 genetic deletion, cortical visual impairment |
| Primary Family Concerns     | Expressive language; interpreting child’s communication            |
| Maternal Level of Education | M.A.   |



### LENA Scores:

Adult Word Count 40%ile  
Conversational Turns 7%ile  
Child Vocalizations 1%ile

**Child Specific Observations:** PBS has motor, speech, and language delays due to infantile spasms associated with West syndrome and STXBP1 genetic deletion. At the time of the evaluation he had recently started rolling from his back to his stomach and from his stomach to his back. He was not independently sitting up. During the evaluation, he used gestures for the communication intentions of requesting for action, requesting for object, answering, and acknowledging. PBS wore the DLP on a day when he attended toddler group at SLHC. The recordings showed PBS vocalizes less and has less diverse speech sounds than his same-age peers. These results confirmed information gained through the MacArthur-Bates CDI: Words & Gestures questionnaire, research about West syndrome, information from his current student clinician in toddler group, and the team’s observations during the evaluation. Together this information showed PBS’ expressive language is developmentally delayed and that he communicates more with his gestures than with vocalizations. Based on all of these sources of information, the team recommended developing consistent responses to indicate understanding, increase the consistency of expressive communication through use of a Big Mac and bringing objects to his midline, and increasing meaningful vocalizations (e.g., say “mmm” while eating).

## Conclusions:

- LENA was a valuable addition to the PAL assessment
- Family interview and transdisciplinary assessment are consistent with LENA findings
- Feedback from LENA allowed for:
  - In-depth conversation of specific strategies and times of the day parents could implement those strategies to support their child’s development
  - Visual representation of language use in the home
  - Provided families insight into times where they could maximize language opportunities
  - Strengthened findings of the PAL assessment based on the consistency of their child’s language in the assessment and the home environment
  - Supported families enrollment in outside intervention services

### Acknowledgments

We would like to thank the families and children who participated in PAL and who graciously allowed us to use their information for this presentation.

**References:**  
Greenwood, C.R., Thiemann, K., Gilkerson, J., & LENA Workgroup. (2007). *Assessing a child’s home language environment using automatic speech recognition technology* [PowerPoint slides]. Retrieved from <http://www.lenafoundation.org/Research/Paper/Presentation.aspx>  
Hart, B. & Risley, T.R. (1992). *American parenting of language-learning children: predicting differences in family-child interactions observed in natural home environments*. *Developmental Psychology*, 28(6), 1096-1105. doi: 10.1037/0012-1649.28.6.1096  
Infoture, Inc. (2007). *Child language development symposium: the language environment of american children ages 2 to 36 months* [PDF document]. Retrieved from <http://www.lenafoundation.org/Research/Paper/Presentation.aspx>  
LENA Research Foundation. (2009). *SLCD preconference: development of children with hearing loss* [PDF Document]. Retrieved from <http://www.lenafoundation.org/Research/Paper/Presentation.aspx>  
Moore, S., Hyde-Smith, A., Pratt, C., & McKnight, B. (2011). *Pathways to Assessment of Learning: A Family-Centered, Culturally Responsive Approach to Transdisciplinary Assessment in Early Childhood: Perspectives on Language Learning and Education*. *PLS*, 4(4-6). doi:10.1045/4PLS.409  
Rodriguez, E.T. & Tamis-LeMonda, C.S. (2011). *Importance of the home learning environment across the first 5 years: associations with children’s vocabulary and literacy skills at prekindergarten*. *Child Development*, 82(4), 1058-1075. doi: 10.1111/j.1467-8624.2011.01614.x  
Walker, D., Greenwood, C., Hart, B., & Carta, J. (1994). *Prediction of school outcomes based on early language production and socioeconomic factors*. *Child Development*, 65(2) 506-521. doi: 10.1111/j.1467-8624.1994.tb00771.x  
Wiggin, M., Gabbard, S., Thompspon, N., Goberis, D., & Yoshinaga-Itano, C. (2012). *The school to home link: summer preschool and parents’ Seminars in speech and language*, 33(4), 290-296. doi: 10.1002/SLD.12010  
Zimmerman, J.A., Gilkerson, J., Richards, J.A., Christakis, D.A., Xu, D., Gray, S., & Vignati, U. (2009). *Teaching by listening: the importance of adult-child conversations to language development*. *Pediatrics*, 124(4), 342-349. doi: 10.1542/peds.2008-2287