

January 2007 Newsletter

Developmental Neurolinguistics Lab (DNL)

Happy New Year !!!

We hope that you and your family are happy and healthy this coming new year!

And thank you for helping with our research and your continued interest!



We still need help !!!!

For those of you who do not have the time to visit our lab again, we would like to track your child's language development until age 3 by visiting you at home. We will be contacting all of you that have had infants and toddlers in our studies to arrange a visit to our lab or a home visit. If you have moved out of the tri-state area (even as far as California!), it may be possible to arrange a local speech-language-pathologist to test your child's language! If this does not work out, a verbal report from you on your child's language development over the phone would help us enormously !!!

Do come and visit us at DNL !!

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One of our goals with this study is to relate babies' and toddlers' brainwaves to their later language development. Some of you have already decided to visit us on a regular basis, and we thank you for your time and continued participation!

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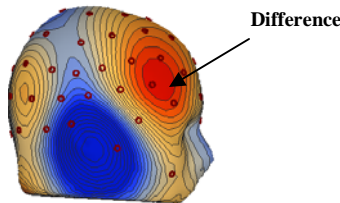
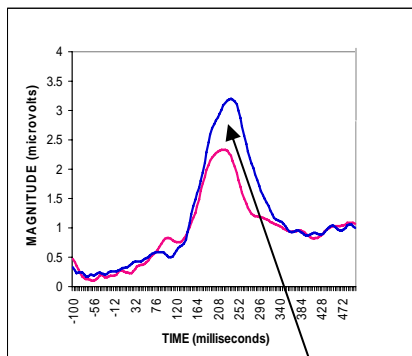
What we found so far

We have been studying whether children's discrimination of English vowels (such as in "bid" and in "bed") can tell us how well they will learn language, and whether they will have language-related problems at later ages. We also want to know how bilingual speech and language development differs from monolingual development. For example, we know that for Spanish speakers, distinguishing bid versus bed, is difficult, because Spanish does not make use of this vowel contrast.

Below you will see some details about our most important findings so far.

Babies

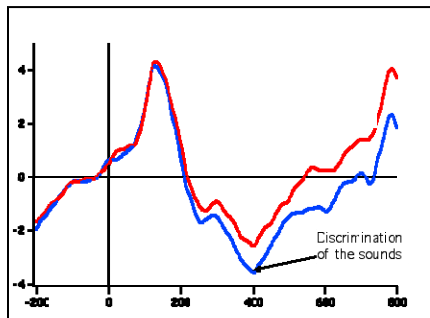
Your baby's brainwaves show us that he/she can distinguish the vowels we tested. This is true for both babies from English monolingual as well as Spanish-English bilingual households as shown below.



Children and Adults

As kids get older, their brainwaves change. By the time they are four, we see a negative rather than a positive deflection indicating discrimination. This response also comes faster in time. This tells us that the brain mechanisms used for noting differences changes with age and that children become faster at discriminating as they get older. The picture below shows how the discriminative brainwave response is seen to occur earlier in time in 6-7 year old children. By this time, the children are able to distinguish these vowels between $\frac{1}{4}$ and $\frac{1}{2}$ of a second in time.

As adults, bilingual listeners show better identification of the vowels than the monolinguals in a task where we asked them to tell us what sound they heard. Additionally, the monolinguals shows a second (later) brain response to the vowel difference that is not seen for the bilinguals.



6-7 yr-old children

The pictures above show a different magnitude response to different vowels (blue line vs. red line)

Differences between monolinguals and bilinguals

As we stated above, the bilingual babies and children in our study are showing similar brainwave responses to monolingual babies we tested. This indicates good discrimination of our speech sounds for both groups. The questionnaire that bilingual parents kindly filled out told us that most children in our study were hearing English at least 30 percent of the time.

The speech and language tests taken by the children indicate good English language skills for both bilingual and monolingual children. A few of our children were hearing Spanish less than 25% of the time, but this has not affected their English skills (though their Spanish scores were weaker than those of their peers). These findings have led us to think that children need exposure to any language, at least 30% of the time, (both in and outside the home), to give them good skills in that language.