* A superior encoding of the higher tone or voice in polyphonic sounds has been found for 7-month-old infants in terms of a larger amplitude MMN in response to pitch deviant stimuli in the higher than the lower voice. Suggesting that the high voice superiority effect might originate in characteristics of the peripheral auditory system. Like 7-month-olds, 3-month-old infants process each tone in a separate memory trace and show greater saliency for the higher tone. Although MMN was smaller and later in both voices for the group of sixteen 3-month-olds compared to the group of sixteen 7-month-olds, the size of the difference in MMN for the high compared to low voice was similar across ages.   
  [*https://dx.doi.org/10.1016/j.neuropsychologia.2014.02.023*](https://dx.doi.org/10.1016/j.neuropsychologia.2014.02.023)
* ERP study of word stress pattern vs. phonemic discrimination in infants (6 and 10 month-olds). 21 of 46 of the total of infants investigated were prematurely born with low birth weight. In a passive oddball paradigm we used a word as standard, a pseudo-word as phoneme deviant, and an illegally uttered word as stress deviant. Our results showed no differences in MMN responses in the phoneme deviant condition between the groups, meaning a relatively intact maturation of phoneme processing of preterm infants as compared to their contemporaries. However, the mismatch responses measured in the stress condition revealed significant between-group differences. These results strengthen the view that the total length of intrauterine experience influences the time of emergence of prosodic processing.  
  <https://dx.doi.org/10.1016/j.ridd.2013.10.006>
* In infancy, **auditory** learning implicates the formation and strengthening of neural long-term memory traces, improving discrimination skills, in particular those forming the prerequisites for speech perception and understanding. Although previous behavioral observations show that newborns react differentially to unfamiliar sounds vs. familiar sound material that they were exposed to as fetuses, the neural basis of fetal learning has not thus far been investigated. Here we demonstrate direct neural correlates of human fetal learning of speech-like **auditory** stimuli. We presented variants of words to fetuses; unlike infants with no exposure to these stimuli, the exposed fetuses showed enhanced **brain** activity (**mismatch** responses) in response to pitch changes for the trained variants after birth. Furthermore, a significant correlation existed between the amount of prenatal exposure and **brain** activity, with greater activity being associated with a higher amount of prenatal speech exposure. Moreover, the learning effect was generalized to other types of similar speech sounds not included in the training material. Consequently, our results indicate neural commitment specifically tuned to the speech features heard before birth and their memory representations.  
  <https://dx.doi.org/10.1073/pnas.1302159110>
* ERP study of newborn speech-sound discrimination using fast multifeature mismatch negativity (MMN) paradigm vs traditional oddball paradigm. Newborns' MMN responses to five types of changes (consonant identity, F0, intensity, vowel duration and vowel identity) were recorded in the multifeature group (N=15) and vowel duration and vowel identity changes in the oddball group (N=13). Statistically significant MMNs in the 190-600 ms time range from the stimulus onset were found for most change types in both paradigms. **Newborn MMN responses were predominantly positive but a small number of participants elicited negative MMNs instead.** <https://dx.doi.org/10.1016/j.clinph.2013.02.014>
* Learning a spoken language presupposes efficient **auditory** functions. In the present event-related potential study, we tested whether and how basic **auditory** processes are related to online learning of a linguistic rule in infants and adults. Participants listened to frequent standard stimuli, which were interspersed with infrequent pitch deviants and rule deviants, violating a nonadjacent dependency between two syllables. Only infants who showed the more mature **mismatch** response for the pitch deviants (i.e., a **negativity**) showed a **mismatch** response to the rule deviants. Concordantly, the small group of adults who showed evidence of rule learning showed larger **mismatch** effects for pitch processing. We **conclude that the ability to extract linguistic rules develops in early infancy and is tightly linked to functional aspects of basic auditory mechanisms.**  
  <https://dx.doi.org/10.1073/pnas.1204319109>
* The finding that hyperarticulation of vowel sounds occurs in certain speech registers (e.g., **infant**- and foreigner-directed speech) suggests that hyperarticulation may have a didactic function in facilitating acquisition of new phonetic categories in language learners. This event-related potential study tested whether hyperarticulation of vowels elicits larger phonetic change responses, as indexed by the **mismatch negativity** (MMN) component of the **auditory** event-related potential (ERP) and tested native and non-native speakers of English. Data from 11 native English-speaking and 10 native Greek-speaking participants showed that Greek speakers in general had smaller MMNs compared to English speakers, confirming previous studies demonstrating sensitivity of the MMN to language background. In terms of the effect of hyperarticulation, hyperarticulated stimuli elicited larger MMNs for both language groups, suggesting vowel space expansion does elicit larger pre-attentive phonetic change responses. Interestingly Greek native speakers showed some P3a activity that was not present in the English native speakers, raising the possibility that additional attentional switch mechanisms are activated in non-native speakers compared to native speakers. **These results give general support for models of speech learning such as Kuhl's Native Language Magnet enhanced (NLM-e) theory.**<https://dx.doi.org/10.1016/j.brainres.2012.06.041>