

Perceptual Attunement beyond the native language?
Effect of Syllabic Position on Korean consonant discrimination
by French-learning infants

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Perceptual attunement [1] postulates that, early in life, perception shifts from being language-general to language-specific through language exposure. For stops, this involves changes in VOT sensitivity, which were established for French, shifting from language-general boundaries (at ± 30 ms) at 4 months to language-specific boundaries (around 0ms) at 8 months [2]. However, Korean-learning 4/8-month-olds failed to show initial sensitivity to both native [3] and non-native [4] consonant contrasts straddling the language-general ± 30 ms boundary. These findings could stem from specific acoustic properties of these Korean contrasts, or from the role of language environment, given high variability due to diachronic change in Korean. To shed light on this question, French-learning 4-, 8- and 12-month-olds ($N=192$) were tested, using visual habituation and an alternating-stimulus paradigm, on two Korean contrasts (within-participant design) straddling the ± 30 ms VOT boundary: an inter-category fortis-lenis /**pp**/-/b/ contrast differing in various acoustic cues (VOT, F0, closure duration), and an intra-category fortis-fortis [**pp**]-[**pp**] contrast differing only in VOT (<30 ms vs. >30 ms). These contrasts were embedded either in word-medial /luCu/ (Exp.1) or word-initial /Culu/ (Exp.2) positions (between-participant design), to assess whether syllabic position modulates discrimination (facilitation by temporal processing word-initially, or by additional acoustic cues word-medially).

For both positions, we expected perceptual attunement, with a discrimination of both contrasts by 4-month-olds, and only of the inter-category contrast (given the additional acoustic cues) by 8- and 12-month-olds. Linear mixed models on looking times, performed separately for each position, revealed different patterns. Word-medially (Fig.1), 4-month-olds showed a contrast effect ($\beta=-0.06$, $SE=0.02$, $t=-2.45$, $p=.016$), 12-month-olds a trial_type effect ($\beta=-0.05$, $SE=0.02$, $t=-2.60$, $p=.011$). No effects were found at 8 months. Word-initially (Fig.2), 4-month-olds showed a trial_type by contrast interaction ($\beta=0.04$, $SE=0.02$, $t=2.42$, $p=.017$), with pairwise comparisons indicating discrimination of the inter-category contrast ($\Delta=-0.11$, $SE=0.05$, $t(186)=-2.12$, $p=.035$). At 8 months, trial_type ($\beta=-0.05$, $SE=0.02$, $t=-2.48$, $p=.015$) and contrast ($\beta=-0.07$, $SE=0.02$, $t=-3.10$, $p=.003$) effects emerged, while 12-month-olds showed a marginal trial_type effect ($\beta=-0.03$, $SE=0.02$, $t=-1.82$, $p=.072$) and a contrast effect ($\beta=-0.05$, $SE=0.02$, $t=-2.28$, $p=.025$).

These results do not align with attunement patterns: 4-month-olds failed to discriminate along the ± 30 ms boundary, while 12-month-olds (word-medially, Exp.1) and 8-month-olds (word-initially, Exp.2) did discriminate. This does not replicate previous findings in French [2]. We are exploring the possibility that our methodological choice of introducing acoustic variability (multiple *natural* tokens vs. one *synthetic* token in [2]) might have hindered discrimination at 4 months, while supporting the online building of new phonetic categories by older infants. Second, the finding of discrimination only in the syllable in word-final position at 12 months suggests language-specific effects (i.e. increased salience of that position in French), as found in wordform recognition [5]. Third, the similarity in developmental trajectory between the results of Exp.1 and the Korean findings [3] suggests that language environment does not entirely explain the perceptual patterns found with the Korean-learning infants, which would then be in line with perceptual learning rather than perceptual attunement.

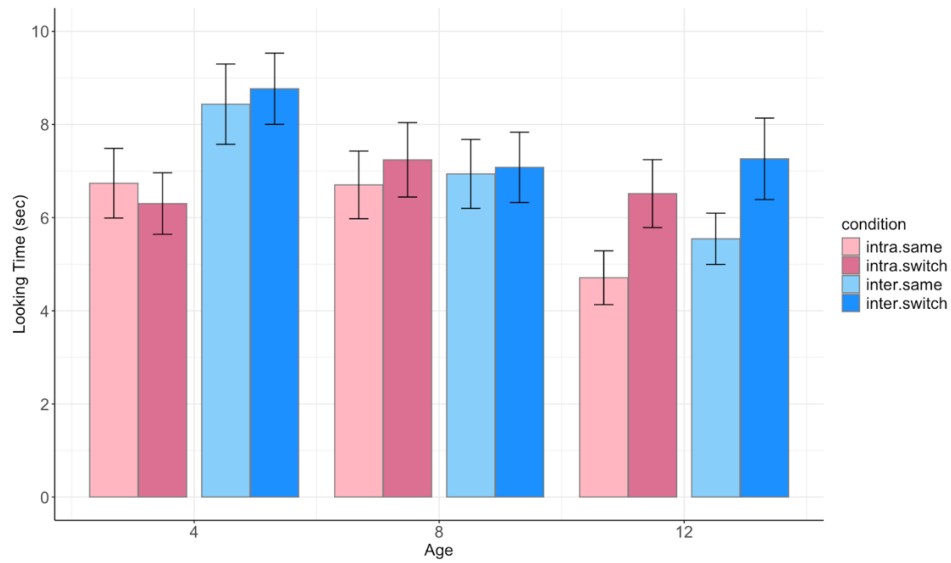


Fig. 1. Looking times (sec) distribution as a function of age (4, 8, 12), trial type (same/non-alternating, switch/alternating) and contrast (intra fortis-fortis, inter lenis-fortis) for the word-medial condition /lupu/ (Experiment 1)

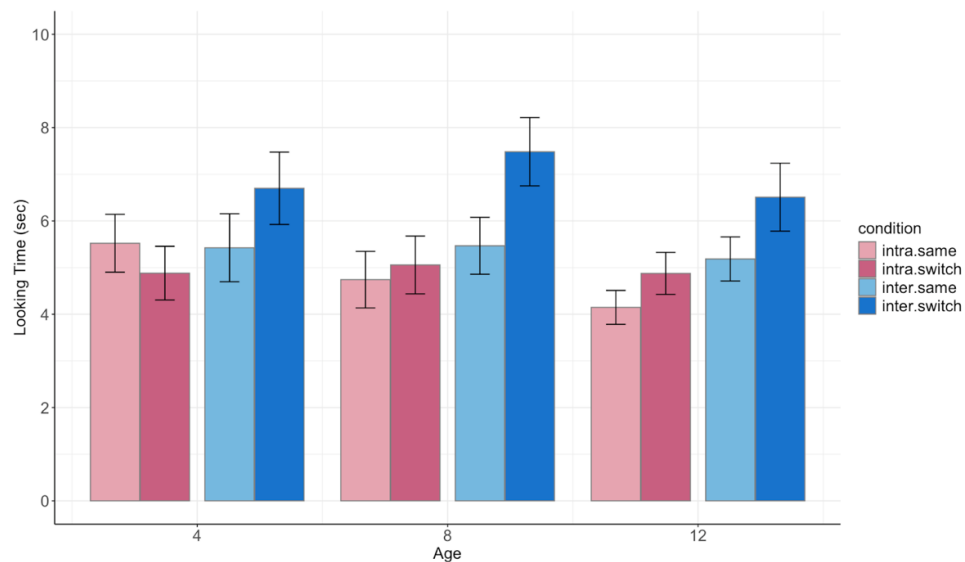


Fig. 2. Looking times (sec) distribution as a function of age (4, 8, 12), trial type (same/non-alternating, switch/alternating) and contrast (intra fortis-fortis, inter lenis-fortis) for the word-initial condition /pulu/ (Experiment 2)

References

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