Young children build up sentences by combining words into clusters. Unification grammars such as HPSG, LFG, or Minimalism recognize the importance of such clusters, but rely on combinations of part of speech categories whose development is never explained. The alternative approach to clustering that I have developed emphasizes the role of item-based patterns in early acquisition. These patterns are initially specific to individual lexical operators such as “more”, “my” or “want”. Children then induce higher-level feature-based patterns through feature pruning, much as in the theory of Hierarchical Bayesian Models. A left-associative processor can use patterns on these various levels to generate the required sentence patterns of the target language.

In this talk, I will: (1) review developmental evidence for the shift from item-based to feature-based patterns; (2) explain how this shift provides a solution to the Logical Problem of Language Acquisition; (3) examine recent work in computational modeling of language learning and show why it needs to pay more attention to the shift from item-based to feature-based patterns; and (4) link the theory of item-based patterns theory to core facts about language processing in the brain.

Brian MacWhinney is Professor of Psychology, Computational Linguistics, and Modern Languages at Carnegie Mellon University. He has developed a model of first and second language processing and acquisition based on competition between item-based patterns. Data for these models come from the CHILDES (Child Language Data Exchange System) database, which he has developed. He is now extending this spoken language database system to six additional research areas in the form of the TalkBank Project. MacWhinney’s recent work includes studies of online learning of second language vocabulary and grammar, neural network modeling of lexical development, fMRI studies of children with focal brain lesions, and ERP studies of between-language competition. He is also exploring the role of grammatical constructions in the marking of perspective shifting and the construction of mental models in scientific reasoning.

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