

**Brian MacWhinney** is a Professor of Psychology at Carnegie Mellon University. He received a Ph.D. in psycholinguistics in 1974 from the University of California at Berkeley. MacWhinney's work on crosslinguistic studies of language processing led to the formulation of the Competition Model during the 1980's (MacWhinney & Bates, 1989). This work examined normal adult sentence processing (McDonald & MacWhinney, 1995), the development of sentence processing in childhood (MacWhinney, Pléh, & Bates, 1985), and language processing in aphasia (MacWhinney & Osman-Sági, 1991; MacWhinney, Osman-Sági, & Slobin, 1991). The Competition Model simulations of language acquisition published during the early 1990's relied exclusively on the back-propagation algorithm. These include models of the learning of the German declensional system (MacWhinney, Leinbach, Taraban, & McDonald, 1989), English verb morphology (MacWhinney & Leinbach, 1991), lexical categorization (MacWhinney, 1989), conceptual cryptotypes (Li & MacWhinney, 1996), and vocabulary acquisition (Gupta & MacWhinney, 1997).

The major support for nativist theories of both first and second language acquisition has been a series of claims and conceptual analyses that are known as "the logical problem of language acquisition". A major weakness of empiricist accounts of language learning has been a failure to take the arguments involved in the "logical problem" seriously enough (MacWhinney, 1993). In an attempt to correct this situation, MacWhinney has worked with Ping Li to construct simulations that use the distributed feature map architecture of Miiikkulainen (1993) coupled with the predictive recurrent syntax architecture of Elman (1993).

To further facilitate the empirical study of language acquisition, he has constructed a system of computer programs and database called the CHILDES (Child Language Data Exchange System) Project which is used by over 800 researchers in 46 countries. This system is now serving as the basis for the development of a wider project, called TalkBank, which will build tools for using the Internet to share multimedia data on all forms of human communication. This system will be of use to workers in psychology, linguistics, anthropology, sociology, education, literature, business, and law.

MacWhinney's recent experimental work has focused on the development of techniques for measuring on-line aspects of sentence processing in children between the ages of 3 and 12. The techniques he has been using here include crossmodal priming, auditory gating, fMRI measures of activation, and ERP methodology. Using each of these techniques, he has investigated the organization of the brain for language processing in children with focal lesions pursuant to cerebral infarct during the first year. The results of these studies support the view that the dynamic functional circuitry of the brain allows children with lesions to recover normal language functioning. They have also shown that left frontal lesions lead to the recruitment of contralateral frontal areas for language processing, whereas left parietal and temporal lesions lead to a more distributed pattern of organization including both the spared hemisphere and areas of the lesioned hemisphere. These results provide some of the most direct evidence regarding the ways in which the brain organizes support for language after early lesions.

In the theoretical area, MacWhinney (1999) has been developing a model of language processing based on the function of perspective-switching in an embodied model of cognition. The basic claim here is that the shape of human language is determined for the process of perspective-taking and perspective-switching as it works during sentence production and comprehension.

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