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An Interview with Brian MacWhinney on His Lifelong Commitment to Psychology and Language Learning Research

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¹Dear Professor MacWhinney, many thanks for accepting our invitation for the interview.

1. Edward and Hassan: Let's begin with some background. Could you please share with us your journey into the field of psycholinguistics? In other words, what sparked your original interest in this area of research in the first place? For example, were there any specific persons, experiences, or events that influenced your decision to pursue psycholinguistics/psychology, and how has your background in cognitive psychology shaped your approach to studying language acquisition and processing?

Brian: I have always had an interest in languages. When I was 13, I visited Mexico City as an exchange student with the son of Luis Echeverría who later became President of Mexico. Throughout High School, I studied Latin and eventually presented my own translation of

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Cicero's First Oration against Cataline winning a prize at the national Oratory competition. However, what really hooked me on Psycholinguistics was a summer school at Berkeley organized by Dan Slobin, John Gumperz, Eve Clark, and Susan Ervin-Tripp with themes ranging from child language to Conversation Analysis. Then classes from Chafe, Fillmore, Searle, Macneilage and others got me finally hooked on trying to understand language structure and language learning.

2. Edward and Hassan: As we know, you and Professor Catherine Snow set up the CHILDES platform that has impacted the field of psychology, psycholinguistics and language acquisition. Could you share with us the story behind the establishment of CHILDES (although you've written about this somewhere else)? Specifically, for example, what motivated you to create this platform, did you encounter any difficulties in the process? How has the platform facilitated collaboration and data sharing among researchers worldwide? Additionally, could you highlight some notable research findings or breakthroughs that have emerged from the CHILDES database? Also, would you do things differently if you had the chance to do this again?

Brian: The idea of setting up a computer database for child language originated during a workshop that Dan Slobin organized at the Max Planck Institute in Nijmegen in 1981. We were all working with paper copies of transcripts loaded with handwritten comments in the margins that could scarcely be read, let alone tabulated and shared. Roger Brown had attempted some form of data-sharing by running photocopies of his transcripts from Adam, Eve, and Sarah. However, we reasoned, why not computerize this data and share it more broadly. Then, in 1983, at a summer meeting in the Rockies of the MacArthur network for child development research, I mentioned the idea to Catherine Snow who said that she had been thinking exactly the same thing. We proposed the project to the MacArthur board and they accepted right away, providing funding for an organizational event that met in the snowy Winter in Concord, Massachusetts. Twenty child language researchers participated and we agreed on the framework for the project which was then further supported by MacArthur and eventually by NIH and NSF.

The biggest difficulties we encountered were those involved in transferring typewritten and even hand-written transcripts to computer files. Since then, the technology underlying CHILDES and TalkBank has blossomed along with the stunning advances in computers, AI, and the Internet, and we have extended the project into 14 separate topic areas including second language, Conversation Analysis, bilingualism, aphasia, child phonology and several others. Our biggest current problem involves trying to deal with the mass of new governmental regulations making data-sharing much more difficult than it was back in 1984, despite the stated importance of "Open Science".

Given the fact that over 10,000 published articles have relied on the data and programs from CHILDES and TalkBank, it is difficult to summarize the results of all this work. For child language, we now know so much more about differences between languages and children, variation in the ways in which constructions are learned, and ways in which parents help their children to learn. In a fundamental sense, our current picture of child language learning is based primarily on facts derived from CHILDES. Other areas of TalkBank have not yet matured to

this level, although the tools are now available to make similar progress for second language learning, bilingualism, and various language disorders.

Looking back, I find it hard to imagine doing things differently. My only possible regret is that I didn't manage to keep up with my learning of Mathematics.

3. Edward and Hassan: Your competition model has been highly influential in the broader fields of psychology, linguistics and education. Could you provide its basic assumptions and explain the key principles of the model and its implications for understanding language processing and acquisition? Moreover, could you provide examples of how the competition model has been applied to specific language phenomena or developmental stages, and what insights have been gained from these applications?

Brian: I think it might be best for readers to just refer to a recent chapter on this topic (MacWhinney, 2021).

4. Edward and Hassan: We noticed you recently guest-edited a special issue on the topic of neuroemergentism in the journal *Frontiers in Psychology*. Could you please explain the difference between emergentism and neuroemergentism? What are the key principles of neuroemergentism, and how do they account for the relationship between neural processes and mental phenomena? Finally, what implications does the framework have for language evolution, acquisition, and processing?

Brian: Neuroemergentism is a specific application of emergentist analysis to neural functioning. Emergentism was first articulated by George Henry Lewes in 1875 using the emergent properties of water as an example. With roots in Darwin's theory of evolution, there are many emergentist accounts of population distributions, genetic drift, pandemics, protein structures, and other aspects of Biology. Application of these ideas to human social structures such as language and memetics uses similar reasoning about proliferation, competition, selection, levels, constraints, mechanisms and timescales. When we look at the brain, we find a series of proposals about the emergence of structure and processing based on induction during embryogenesis, migration from the germinal matrix, competition of cortical projections to areas, gene expression, synaptogenesis and synaptic pruning, and neuromodulators. These various internal forces interact with incoming experience and the shape of the body to lead to the formation of structures on the linguistic levels of audition, articulation, morphology, lexicon, constructions, syntax, mental models, narration, and conversational interaction. Thus, neuroemergentism can be viewed as a specific type of emergence.

5. Edward and Hassan: How have you seen the field of cognitive psychology and psycholinguistics evolve throughout your career from the 1980s to now, and what significant advancements or changes have you observed? For instance, have there been any paradigm shifts, methodological advancements, or interdisciplinary collaborations that have shaped the trajectories of the field? Additionally, how have these changes influenced your own research and theoretical perspectives?

Brian: Cognitive Psychology has gone through massive changes in the last five decades. The 1950s saw the shift from behaviorism to a system of symbolic AI led by MIT and CMU. In the 1980s, connectionist models challenged the prevailing symbolic models. In the 1990s, new experimental and imaging data supported an increasingly important role for embodied cognition in perception, action, and language. In the early 2000s fMRI studies initially support a rather modular view of language processing, but with the refinement of those methods, a much more interactive view emerged. We are now seeing a convergence of usage-based, crosslinguistic, and corpus Linguistics, AI modeling through large language models, situation sampling, data-sharing, and more dynamic use of imaging methods that are helping us understand how language structure emerges in the society and the learner.

6. Edward and Hassan: With the recent emergence and prominence of artificial intelligence (AI) and large language models (LLMs), what are your thoughts on their potential contributions to psycholinguistics and language acquisition research? In particular, given that one of your early developed CHILDES tools was also (incidentally) called ‘CHAT’, which in retrospect was very forward-looking as the current ChatGPT prevails, how do you see LLMs enhancing our understanding of language processing and acquisition, and what challenges or limitations do you foresee in incorporating these technologies into empirical psycholinguistic research?

Brian: I don’t think that choosing CHAT as the name for our transcription format really foretold the advent of ChatGPT. But it is certainly true that we are now using trainable Transformer models to automatically transcribe, code, and analyze all types of data in TalkBank. Of course, these models don’t learn the way humans do, but we can work with variations on these models, such as including more realistic multimodal input and conversational training to allow them to serve as better models of human learning.

7. Edward and Hassan: What is your stance on the difference between first and second language acquisition? Considering your extensive research on second language acquisition, what key insights or findings have you uncovered that could inform language teaching and learning practices? For example, are there any specific strategies or approaches that have been shown to be particularly effective in promoting second language acquisition, and how can educators and language learners benefit from these insights?

Brian: There are various differences between first and second language learning, but also many similarities, including the ambient language, human nature, the body, and the brain. The two biggest differences relate to the impact of the first language and the changing nature of the social pressures on the learner. Thinking of these differences in terms of some Critical Period is not very illuminating, although there certainly are changes involving some loss of plasticity with age. We have a complete account of this in a recent paper (Caldwell-Harris & MacWhinney, 2023).

8. Edward and Hassan: As a renowned expert in the scientific and interdisciplinary fields of psychology, linguistics, language education and computer science, what advice would you

give to young researchers who are interested in pursuing a career in psycholinguistics or language acquisition? Are there any specific areas of research or methodologies that you believe will hold great potential for future advancements in the field? If possible, what books/titles you would recommend for newcomers to read before they enter psycholinguistics?

Brian: One can pursue language studies either in an academic context or a commercial context. However, for both pathways, it is important to acquire two types of skills. One relates to specific methods such as neuroimaging, corpora, statistics, machine learning, clinical applications, or sociolinguistics. The other is learning and thinking about basic ideas supporting both the science and practical applications. It is easy now to focus on acquiring technical skills, because they have become so important and complex. However, understanding the general scope of language function, structure, and learning allows one to better understand the possible contributions from the various methods.

9. Edward and Hassan: Looking ahead, what do you see as the most pressing challenges or unanswered questions in the field, and where do you think future research efforts should be directed? Are there any emerging topics or interdisciplinary avenues that you believe deserve more attention, and how can researchers address these challenges to further our understanding of language and cognition?

Brian: For child language learning, we need complete working models of language learning based on data available in CHILDES and new data that will be available with new technology. For second language learning, we need to enroll learners in studies that use wearable devices to track the course of their language learning in terms of amount of exposure and specific interactions.

10. Edward and Hassan: After a remarkable career and numerous contributions to the field, what are your plans after retirement, and do you have any ongoing projects or plans that you would like to share? Are there any particular areas or questions that you hope to explore in your post-retirement endeavors, or any ways in which you aim to continue supporting the field and mentoring research students and junior colleagues?

Brian: For me, retirement means handing over the running of TalkBank to the new generation. It would be a shame to see it evaporate. Of course, I will be available for advice on how to make things work. Once I do that, I want to write up a complete view of what we know about the emergence of language.

11. Edward and Hassan: Lastly, based on your vast experience and knowledge, what do you envision as the future of psycholinguistics and its potential impact on our understanding of language and cognition? Are there any exciting advancements or emerging trends that you believe will shape the field in the coming years (say in 10 years), and how do you foresee these advancements influencing other disciplines or real-world applications of language research?

Brian: This seems like questions 6 and 9, to me. I think we are seeing advances on virtually all fronts. The trick is putting the pieces together and that is why emergentist theory is important.

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