

Chapter 1

MLW and Bilingualism: Case Study and Critical Evaluation

Daniela López De Luise

CIIS Lab – Buenos Aires, Argentina

Débora Hisgen

CIIS Lab – Buenos Aires, Argentina

ABSTRACT

The language acquisition and generation process is complex and non-linear. The child goes through a series of progressive stages with distinct characteristics. The statistic study of production by age or linguistic groups can be complemented with linguistic models based on morphosyntactic wavelet technology to improve the understanding of concurrent phenomena, which underlie linguistic reasoning.

INTRODUCTION

Psycholinguistics is cross-discipline area of knowledge between linguistics and psychology. Its main subject of study is the relation that can be established between linguistic knowledge and the mental processes implied by it (Dictionary ELE, 2012).

As an example of the first contributions that work across linguistics, neuropsychology and psychology, we can mention: Leonard Bloomfield, Hans Furth, Ivar Lovaas, Alfred Strauss, Paula Menyuk (Bloomfield, 2009; Furth, 1966; Lovaas, 1977; Strauss & Werner, 1942; Menyuk, 1969) and among the most recent ones, Bertrand Russell, Karl Pribram, Juan Azcoaga, etc. (Russell, 1905; Pribram, 1971; Azcoaga, 1986).

Even with their differences (behaviorist, innatist and constructivist theories) they share the common element of an interest in studying the impact of the acquisition of languages that are alternative to the mother tongue in the process of reasoning.

The aim of this work is to present a model of language manipulation and automated extraction of essential information from a set of given expressions from natural language. This model was implemented in a prototype, and expects to become a tool for the evaluation and simulation of the psycholinguistic processes that take place during comprehension and speech. The different aspects of the model as applied in the prototype have been already evaluated before (López De Luise & Soffer, 2008a, 2008b; López De Luise,

DOI: 10.4018/978-1-4666-6042-7.ch001

2010a, 2010b, 2010c, 2010d). The main focus here is the evaluation of the model in the context of bilingualism. For this, we shall first lay out the current accepted theories about bilingualism, and analyze the formal and technical aspects that have been left uninterpreted or given a biased interpretation. The use of linguistic computation can cover these problems or at least contribute to a better understanding of certain aspects. Later we shall describe the main aspects of the linguistic reasoning model, which consists of Morphosyntactic wavelets. We then present cases from real texts and the result of applying the model to them. We shall also undertake comparative statistics to gain a deeper understanding of the influence of second language acquisition at an early age in the reasoning process. The chapter concludes with details some of the implications, derivations and applications of the model to the field.

EARLY BILINGUALISM AND ITS CONSEQUENCES

The first researches in the field suggest that learning two languages in childhood was detrimental for the child's cognitive capacity (Darcy, 1963) and that bilingualism was a source of mental confusion and brought about linguistic disadvantages.

Today all of these statements are challenged by other authors who consider them to be unfounded (Cummins, 1978). From the results obtained in the application of the model we can infer that both perspectives can be thought as being right and wrong in some respect.

When the child speaks two languages fluidly, he knows more than a word for the same object or concept. Some researches consider this as an element in favor of the child's cognitive flexibility.

In relation to the model and the evaluations of the statistics section, this multiplicity appears as an element that might in some respect significantly focus the reasoning process, not as a weakening

factor but as a mere adaptation to the requirements of the environment.

Many works in the field of psychopedagogy point out certain cognitive advantages that bilingualism may generate in the development of reasoning. Technically they are based in works by Ellen Bialystok, who has published several works which at the same time are extensions of ideas presented by her during the 80s.

According to a study by Ellen Bialystok on children of 4 to 8 years of age (Bialystok, Michelle, & Martin, 2008), bilingual children appear to be more efficient at solving problems with deceptive information than monolingual ones. This tendency can be observed both in verbal and non-verbal tasks. It suggests that the development of the executive function¹ in general terms, and of the inhibitory function in particular, is influenced by bilingualism. Although this has not been proved conclusively, statistic evidence allows us to establish some kind of relation between bilingualism and the reasoning process. The problem on which this work is focused is learning the true nature and features of this relation, something that might not be as simple and direct as the author implies. The evaluation of the construction of the model will allow us to analyze these nontrivial aspects.

On *In Other Words* (Hakuta & Bialystok, 1994) Ellen Bialystok and Kenji Hakuta suggest that bilingualism forces the child to think in a more complex manner and increases metalinguistic awareness, that is, it brings about a greater language sensitivity in general and a greater awareness of meaning and structure in the language (Bialystok, 1988). However, in Bialystok's own works, her statistics show significant deficiencies in vocabulary management (Bialystok, 2001).

On this matter, Cummings found that if a second language (L2) is acquired when the first language (L1) or mother tongue still has not reached a certain competence threshold, the child might develop "semi-lingualism" or "limited bilingualism," a state of low linguistic competence in every

30 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/chapter/mlw-and-bilingualism/108712

Related Content

Audio-Visual and Visual-Only Speech and Speaker Recognition: Issues about Theory, System Design, and Implementation

Derek J. Shiell, Louis H. Terry, Petar S. Aleksic and Aggelos K. Katsaggelos (2009). *Visual Speech Recognition: Lip Segmentation and Mapping* (pp. 1-38).

www.irma-international.org/chapter/audio-visual-visual-only-speech/31063

A Proposal to Study of Cross Language Information Retrieval (CLIR) System Users' Information Seeking Behavior

YooJin Ha (2014). *Computational Linguistics: Concepts, Methodologies, Tools, and Applications* (pp. 779-798).

www.irma-international.org/chapter/a-proposal-to-study-of-cross-language-information-retrieval-clir-system-users-information-seeking-behavior/108751

Adaptive Digital Filtering and Its Algorithms for Acoustic Echo Canceling

Mohammad Reza Asharif and Rui Chen (2007). *Advances in Audio and Speech Signal Processing: Technologies and Applications* (pp. 225-285).

www.irma-international.org/chapter/adaptive-digital-filtering-its-algorithms/4688

Semantic Methods for Textual Entailment

Andrew Neeland and Max H. Garzon (2012). *Applied Natural Language Processing: Identification, Investigation and Resolution* (pp. 479-494).

www.irma-international.org/chapter/semantic-methods-textual-entailment/61066

Digital Speech Technology: An Overview

H. S. Venkatagiri (2010). *Computer Synthesized Speech Technologies: Tools for Aiding Impairment* (pp. 28-49).

www.irma-international.org/chapter/digital-speech-technology/40857