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## Revisiting the benefit of contrastive analysis for early language learning

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**Abstract:** The new scientific paradigm proposed by cognitive science (cf. Gardner, 1989) gives researchers the chance to revisit the consideration and the role of assumptions, procedures and tools that became outdated with the incorporation of new theories and insights in numerous disciplines. An example for this situation is the treatment that contrastive analysis<sup>1</sup> (CA) has been given in different perspectives. Whereas within conductist-oriented theories, CA was expected to prevent learners from making errors and mistakes in the 60's, it was used for giving an explanation of the errors due to interference up to the mid 80's, before being banned from systematic research on second language acquisition (SLA) processes from the late 80's onwards. Notwithstanding, the application of the epistemological underpinnings of cognitivism onto first language and SLA processes allows for a reconsideration of the benefit of CA as a procedural tool for equipping the second language learner with the cognitive support that contributes to the active construction of the knowledge and skills of the future second language.

**Keywords:** Contrastive analysis, cognitive psychology, phonetological specialisation

## Reconsideración del beneficio del análisis contrastivo para la enseñanza temprana de las lenguas

**Resumen:** El nuevo paradigma científico propuesto por la ciencia cognitiva (cf. Gardner, 1989) proporciona a los investigadores la oportunidad de revisar la consideración y el papel de los supuestos, procedimientos y herramientas que quedaron anticuados con la incorporación de nuevas teorías e ideas en numerosas disciplinas. Un ejemplo de esta situación es el tratamiento que se le ha dado al análisis contrastivo (AC) en diferentes perspectivas. Mientras que dentro de las teorías conductistas se esperaba que el CA previniera a los estudiantes de cometer errores y equivocaciones en los sesenta, se utilizaba para dar un explicación de los errores debidos a la interferencia sobre mitad de los ochenta, antes de ser prohibido desde la investigación sistemática en el proceso de adquisición de la segunda

<sup>1</sup> It will be referred to as CA in this paper.

lengua (ASL) desde finales de los ochenta en adelante. Sin embargo, la aplicación de los refuerzos epistemológicos del cognitivismo sobre la primera lengua y sobre los procesos de adquisición de la segunda lengua permiten una reconsideración del beneficio del AC como una herramienta procedimental para equipar al aprendiz de la segunda lengua con el apoyo cognitivo que contribuye a la construcción activa del conocimiento y habilidades de la futura segunda lengua.

**Palabras clave:** Análisis contrastivo / psicología cognitiva / especialización fonetológica.

**Sumario:** Introduction. 1. Reasons for the weakness of CA in SLA studies. 1.1. The “psychological” weakness of CA. 2. The cognitive paradigm: a new change for revisiting CA in SLA models. 3. The role of CA with in the emerging constructivist SLA theories. Conclusion.

### Introduction

A detailed bibliographical review of the insight and research carried out on SLA processes throughout the recent two decades prove that CA has been rejected from second language acquisition processes both in its strong and weak version. Regarding the strong version, linguistic difference was proved not to imply correspondingly psychological difficulty. As for the weak version, interference of the L1 was recognised not to be the only source for mistakes and errors.

However, nowadays the role of CA takes over a new perspective in the light of cognitivismo. According to this approach, language acquisition is a complicated process involving both biological and cognitive factors<sup>2</sup>. This process can be either naturally and instinctively motivated, like in L1 acquisition, or artificially oriented, in the case of L2 acquisition. Both processes have a psycholinguistic nature. It means that linguistic competence has a double support: i) the neural-physiological support, which is responsible for the development of mental schemata and influenced by the material configuration of the human brain; ii) the cognitive support, which is responsible for developing the representations of the knowledge underlying in linguistic structures. Thus, the acquisition of language will always be influenced by this twofold nature. In the case of the L1 acquisition, the brain is instinctively equipped with inborn structures and capabilities for realising the instinct of language. The combination of these structures and capabilities are known as the “critical period” (cf. Lenneberg,...).

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<sup>2</sup> In line with the theories emerging in the area of cognitive psychology. According to this discipline, learning processes are influenced by the interaction of mental/internal aspects and contextual/environmental variables.

During this period, human beings carry out several tasks that enable them to acquire eventually their mother tongue. One of these tasks is the phonetological<sup>3</sup> specialisation (Gramley, S., 2012), by means of which the human brain comes to discriminate the phonological system of his/her forthcoming L1. So, the specialisation drives into a reduction of the hearing potentiality of children, what may turn out to be an obstacle for future language acquisition processes. In order to diminish the negative effect of the specialisation referred above onto the future learning of a L2, the possibility of using CA is proposed from a bio-linguistic perspective on the hypothesis that a methodologically treated exposure containing the differential elements between the L1 and L2 phonetological systems can result into a less specific hearing capacity. CA, therefore, is no longer preventive (strong version of CA), or explanatory (weak version of CA), but proactive since it will be used for enabling young L2 learners to recognise the schemata associated with the phonetological features falling on outside the scope of specialisation of the L1.

### 1. Reasons for the weakness of CA in SLA studies.

Language provides one of the most readily accessible windows into the nature of the human mind. How children acquire this complex system with such apparent ease continues to fascinate the student of human language. The last quarter of the previous century in particular has witnessed a qualitative leap in our knowledge of the language-acquisition process in young children. In recent years, researchers have begun to extend their scope of inquiry into the problem of second-language acquisition. The motivation underlying this new endeavour is twofold: first, it provides an added perspective on human language; and second, interest in second-language teaching and bilingual education has resulted in a greater need to understand the mechanisms underlying second-language acquisition. The focus of analysis has undergone distinct shifts in perspective as a function of our changing conceptualisations of what language is and also what the learner brings to the learning situation.

Principles such as imitation, positive and negative transfer, reinforcement, and habit strength were borrowed from the academic psychology of learning and incorporated into the CA view of second-language acquisition. Presupposing that language development consisted of the acquisition of a set of habits, errors in the second language were seen as the result of the first-language habits interfering with the acquisition of the

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<sup>3</sup> The term *phonetological* stands for “phonological and phonetic” (Gramley, S. (2012). *The history of English: an introduction*. London: Routledge).

habits of the second. In classroom practice, the principles of habit formation and interference led to the use of pattern drills in the audio-lingual method of second-language learning. On the basis of CA, difficult patterns were predicted and consequently emphasised in the drills.

The comparison of the structures of languages continues to be a respectable activity within contrastive linguistics and has come to be conducted within the framework of transformational generative grammar. Its status as a psychological approach to the investigation of the second-language-acquisition process, however, fell into disrepute for several reasons. One reason was the unfortunate association of CA with the behaviourist view of language acquisition, an account whose theoretical adequacy came to be seriously questioned, most notably by Chomsky (1959). In our view, a more devastating reason was that CA fared quite poorly once researchers, instead of relying on anecdotal impressions from the classroom, began collecting data in more systematic ways (Oller & Richards, 1973). From these data, analyses of learners' errors soon showed that a large proportion were not predictable on the basis of CA. In fact, many of these errors, such as rule simplification (as in "Mommy eat maize") and overgeneralisation (as in "He writed me a letter") exhibited a striking resemblance to those made by children acquiring a first language. Moreover, learners did not in fact make all the errors predicted by CA.

When the inadequacy of CA as a predictive model became apparent, Wardhaugh (1970) drew the useful distinction between strong and weak versions of the approach. The strong version claimed to predict errors, while the weak version simply accounted for errors that occurred. CA survives only in its weak form with an obvious shortcoming: it gives an incomplete representation of the second-language-acquisition process since it can account only for some, not all, of the errors.

Within a few years, the landscape changed considerably. In part this was the result of a vast array of new materials from studies of much greater depth than previously, in part from opening new topics to investigation. About 25 years ago, much of this work crystallised in a radically different approach to UG, the "Principles and Parameters" (P&P) framework, which for the first time offered the hope of overcoming the tension between descriptive and explanatory adequacy. This approach sought to eliminate the format framework entirely, and with it, the traditional conception of rules and constructions that had been pretty much taken over into generative grammar. The new P&P framework led to an explosion of inquiry into languages of the most varied typology, leading to new problems previously not envisioned, sometimes answers, and the reinvigoration of neighbouring disciplines concerned with acquisition and processing, their guiding

questions now reframed in terms of parameter-setting within a fixed system of principles of UG. So, the comparison between languages has served the purpose of the possibilities for parameterization rather than its contribution to SLA purposes, mainly due to the *psychological* weakness and doubts cast by the results of CA.

### 1.1. The “psychological” weakness of CA.

As we have pointed out in the introduction, CA exists in a strong and a weak form (Wardhaugh 1970). The *strong* form claims that all L2 errors can be *predicted* by identifying the differences between the target language and the learner’s first language. As Lee (1968: 180) notes, it stipulates that “the prime cause, or even the sole cause, of difficulty and error in foreign language learning is interference coming from the learner’s native language”. The strong form of the hypothesis was common before research began to show that many of the errors produced by L2 learners could not be traced to the L1.

The *weak* form of the hypothesis claims only to be *diagnostic*. A contrastive analysis can be used to identify which errors are the result of interference. Thus, according to the weak hypothesis, CA needs to work hand in hand with the analysis of errors. First, actual errors must be identified by analysing a corpus of learner language. Then, CA can be used for establishing which errors in the corpus can be put down to differences between the first and second language. Implicit in the weak version is the assumption that not all errors are the result of interference. The weak form claims a less powerful role for the L1 than the strong form of the hypothesis.

The strong form of the hypothesis has few supporters today. It is now evident that the L1 is not the sole and probably not even the prime cause of grammatical errors. Nevertheless, the weak form is not very satisfying. It makes little sense to undertake a lengthy comparison of two languages simply to confirm that errors suspected of being interference errors are indeed so. As James (1980) points out, this is a “pseudo procedure”. In order to hypothesise that the errors in a corpus are interference errors, a *de facto* CA must have taken place. It makes little sense to conduct a complicated CA simply to confirm what a *de facto* analysis suggested. If CA is to be worthwhile, it should be predictive. Diagnosis will then remain the job of Error Analysis.

Ideally, the psychological aspect of CA should deal with the conditions under which interference takes place. That is, it should account for instances when linguistic differences between the first and second languages lead to transfer errors and instances when they do not. It is because it is not

possible to predict or explain the presence or absence of transfer errors solely in terms of linguistic differences between the first and second languages that a psychological explanation is necessary. What are the non-linguistic variables that help to determine whether and when interference occurs?

One possible variable is the setting in which SLA takes place. Marton (1980) argues that whereas interference need not be a major factor in naturalistic SLA, it will always be present in classroom or foreign language learning. In naturalistic SLA learners have the chance of extensive and intensive contacts with the target language, but in classroom SLA learners will always use their L1 between classes, and this strengthens proactive inhibition.

Another variable may be the learner's stage of development. Taylor (1975) argues that there are quantitative differences in errors produced by elementary and intermediate students. Whereas the former rely on transfer, the latter rely to a greater extent on overgeneralisation of target language rules (e.g. they overgeneralise the use of the regular past suffixed to irregular verbs, as in "goed").

There have been, however, no clearly articulated theories that explain how such variables as type of learning and stage of development affect the mechanisms of transfer. Thus, a major failing of CA has been the lack of a well-developed psychological theory. This has been one of major sources of criticism of CA.

However, this psychological weakness is no longer a problem within a different paradigm, the cognitive one. Now, the focus is not on the prediction or explanation of mistakes, but on providing learners with the abilities and strategies to construct new knowledge. In this sense, the so-called psychological failure of CA to predict and control the learning variables can be restored by providing CA a new role in the process of equipping the L2 learner with the abilities and strategies that will enable them to improve their language learning. The focus is not on error prediction or explanation, but on constructive and cognitive abilities. Within the cognitive paradigm CA no longer serves the purpose of errors rather than the benefit of cognitive structures and abilities, as a significant component of cognitive psychology.

### 3. The cognitive paradigm: a new chance for revisiting CA in SLA models<sup>4</sup>.

The multidisciplinary and interdisciplinary nature of the cognitivist paradigm does not only affect the origin of the contributions, but also impacts upon the light that new perspectives can shed upon the same object of study. In this context a bio-linguistic approach to the nature of language emerges, and by extension to the very nature of the linguistic sign, from positions close to the precepts of biology and to psycholinguistics. According to Nubiola (2009: 8),

The viewpoint of those who think that language appeared by natural selection as an adaptation for communication and that from this grew our mental life as a derivative product is persuasive.

Equally, Pinker and Bloom (1997) point out that “according to this hypothesis, to be intelligent is not – as many have assumed – to have a language, but rather to have a language is what makes one intelligent”. However, Nubiola (2009: 9) clarifies:

It is worth adding straight away that not all aspects of intelligence are reducible to language, since there is clear proof of this both in the intelligent conduct of pre-linguistic children and in the remarkable intellectual life of individuals lacking language.

One of the best examples of this type of study is given by the work of Antonio Damasio and in particular his last contribution entitled *Y cómo el cerebro creó al hombre* (Damasio, 2010), in which he explains the manner in which neuronal connections lead to our mind and the awareness of it.

Therefore, in the line of cognitivist studies of a psycho-biological nature, the search for the essence of human nature must pause to explore the analysis of the nature of language. Thus, Nubiola (2009: 8) affirms that “this strange capacity to unite and to relate disparate elements is exclusive to homo sapiens, and it is perhaps this exclusivity which is the most incomprehensible aspect for many scientists”. For this reason, it is the capacity to establish a relation between disparate elements through an element considered to be common and capable of leading to this relation or union which points to the distinction. It is something which animals could never attain, which explains why “the tireless attempts to teach sign language to chimpanzees and other higher primates clearly demonstrate that in their greatest communicative activity they do not manage to reach this triadic structure (object / flower, sign / the flower, and the agent conscious of its articulation), rather they do not pass beyond the stage of the pre-linguistic

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<sup>4</sup> The term *model* is used according to Ricards (1997).

babbling of an infant of only a few months calling for its mother's milk" (Nubiola, 2009: 11).

In this way the psycho-bio-linguistic approach attempts to fill the gap in our scientific culture in which we pass from biology to linguistics without explaining this leap, which even in evolutionary terms appears so extraordinary (Percy, 1996). And thus, it is that towards the end of the 20th century human beings appear as creatures divided between biology and linguistics without a sufficiently comprehensible global explanation being proffered. The human being cannot be understood without intentional communicative strategies, that is, one cannot talk to someone without pondering what the other is thinking. Even silence is communicative. From its birth the human baby is programmed for communication (Aguado, 1995). For this reason, the appearance of language can only be explained if it is considered a shared instrument of communication.

This approach is coherent with Chomsky's proposal of a "principles-and-parameters" model of language acquisition, which represents the steps towards an account of the genetic basis of grammar (Chomsky, 1981, 1986, 1988a, 1993). The principles refer to conditions specified by the linguist's theory of universal grammar and are assumed to be part of man's biological endowment, a *Bauplan*<sup>5</sup> for human language. The parameters are variables left open in the statement of the principles which account for the diversity found in human languages. The goal of the bio-linguist interested in question How is knowledge of language acquired?, is to come up with the formulation of genetic principles of UG narrowly enough constrained to account for the child's ability to learn structural properties of grammar of great subtlety from impoverished linguistic data, and at the same time, find parameters which can account for the manifest variation among, say, Germanic or Romance languages, or between these and non-Indo-European languages. As Chomsky remarks, these subsystems are not genetically pre-programmed down to the last detail. If they were, there would be only one human language. But heredity does set rather narrow limits on the possible ways that the rules governing each subsystem's function can vary. Languages like English and Italian, for example, differ in their choice of genetically permitted variations that exist as options in the universal grammar. You can think of these options as a kind of linguistic menu containing mutually exclusive grammatical possibilities.

For example, languages like Spanish have chosen the "null subject" option from the universal-grammar menu: In Spanish you can say *left* when

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<sup>5</sup> *Bauplan* is a German term for the body plan of an organism. It is used here for the fundamental design of human languages, as specified by the theory of UG.



you mean “He left” or “She left.” English and French have passed up this option and chosen instead the rule that requires explicit mention of the subject. (Chomsky, 1983: 411)<sup>6</sup>.

Part of the study of language acquisition is to determine what the set of parameters are that are found on the “universal-grammar menu.” Another candidate is word-order.

The study of principles and parameters in language is much like that undertaken by the developmental biologist, who seeks to find the mechanisms of gene control or other cellular mechanisms in an effort to explain the differentiation of the zygote (fertilised egg) into its final state. As Chomsky has noted, “the gene-control problem is conceptually similar to the problem of accounting for language growth. In fact, language development really ought to be called *language growth*, because the language organ grows like any other body organ” (Chomsky, 1983: 407). By “gene-control problem,” Chomsky is referring to “the ways that genes regulate embryological development”. Although the study of the language growth problem is in its early stages and is in part based on the study of abstract formal properties, as was Mendelian genetics initially, the ultimate aim is an explication of the mechanisms underlying language.

The basic idea, then, is that there is a universal *Bauplan* for language, described by the theory of UG, which specifies the set of principles that largely determine the growth of language. These principles may vary according to the parameters discussed above, depending on the particular language being learned. Another way to think about it is that there is actually only one language in a biological sense, sometimes called “Human,” and that English, Spanish, Japanese, etc., are instantiations of Human, depending on which parameters have been fixed by environmental input. As Chomsky has put it:

The major task is to determine what are the principles and parameters that constitute the initial state of the language faculty and thus determine the set of possible human languages. Apart from lexicon, this is a finite set, surprisingly; in fact, a one-membered set if parameters are in fact reducible to lexical properties. Notice that this conclusion, if true, would help explain the surprising fact that there is more than one possible human language; namely, it would follow that in an interesting sense, there is only one such language. (Chomsky, 1991b: 26).

The view that there is only one language, Human, apart from minor variation, is diametrically opposed to the view advanced in structural

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<sup>6</sup> This is from a reprinted version of *Omni* interview by John Gliedman (Gliedman, 1983).

linguistics, that “languages could differ from each other without limit and in unpredictable ways,” as Martin Joos put it (Chomsky, 1986; Joos, 1957).

The fact that the language organ permits a limited range of variation is thus no more surprising than the fact that the heart, the circulatory system, the visual system, or any other system of the body (or mind/brain), exhibits similar variation, corresponding to different courses of experience, within the limits imposed by the genetic endowment. It is a task for the bio-linguist to determine the mechanisms that fix the parametric options in the developing microcircuits of the nervous system.

One of these parametric processes is known as the phonetological specialisation. On the basis of the articulatory possibilities of the vocal track, the Human language will be implemented by means of a set of phonemes with different distinctive features specific to the mother tongue.

### **3. The role of CA within the emerging constructivist SLA theories.**

As has just been pointed out, the bio-linguistic perspective regards the language faculty as an “organ of the body”,’ along with other cognitive systems. The implementation of this faculty is the result of a prewired potentiality resulting into the development of a communicative skill. That process is known as language acquisition. Thus, it is consequently a cognitive process by means of which the individual develops new skills, contents, and attitudes as of her/his previous knowledge, skills, and attitudes. In this process, the individual plays a key role, a leading role<sup>7</sup>. In essence, the individual builds up the new knowledge from the tools she/he has.

In the specific case of second language acquisition, the student will construct her/his learning from her/his previous linguistic knowledge. One component of this previous linguistic knowledge is the phonetological one, established in a natural and instinctive way in the process of linguistic specialisation that takes place in the initial stages of the critical period of language acquisition. The parameterization that takes place throughout this period will turn out to be the basis upon which the individual will interpret the phonological and phonetic elements of the linguistic input they are going to get in the future. Therefore, the development of the phonetological component of the L2 will be influenced by the corresponding phonetological

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<sup>7</sup> Cognitive science stands at the crossroads where the natural sciences and human sciences meet. It looks down both roads at once: one of its faces is turned toward nature and sees cognitive processes as behaviour; the other is turned toward the human world, the life-world, and sees cognition as experience.

component of the L1. The L1 specialization will be used as the model for constructing new knowledge and oral skills. In this way, it could be concluded that *the less narrow and specific the phonetological specialization is, the higher the potentiality for constructing new phonetological knowledge.*

### Conclusion

It can be concluded that CA of the L1 and L2 phonetological systems can provide researchers and methodologists with the scope of parameters covered and implemented by these two languages. As a result of it, the phonetological range of both languages should be taken into account when designing materials to introduce early learners into SLA processes. Consequently, the main contribution of this paper will be the justification of the contrastive analysis as a procedural tool for the educational intervention in the second language learning process during the critical period of language acquisition. So, paraphrasing James' statement, CA keeps on being worthwhile within the cognitive paradigm, since it proves to be proactive and constructive.

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