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Generative and Psycholinguistic Features of Language Acquisition

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Abstract

An adequate theory of second language acquisition is one that offers an account of what speakers know when they know language, how this knowledge is constructed and what factors may prospectively interfere with the construction of this knowledge. While numerous theoretical models have been proposed, Chomsky's generative model stood the test of time as it provides a discussion of the underpinning modularity that generates structures and the parametric configurations of syntactic structures. His theory, however, is predominantly concerned with the development of first language. The present study, thus, has the goal of stretching the underlying conceptual tenets of Chomsky's model to the process of second language acquisition and offering a theoretical discussion of the role of UG in the development of L2 mental grammar. The present study highlights the main contentions in the Critical Period Hypothesis in light of the generative Chomskyan principles.

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1. *Introduction*

Over the past few decades, a particular emphasis has been placed on the cognitive aspects related to language acquisition, learning and use. Such a trend in linguistics was motivated by the newly emerging Chomskyan approach to language studies. A theory of syntax, according to Chomsky (1964), seeks after not only a descriptively accurate representation of the rules governing a given corpus/language but also an explanatorily adequate theory of grammar that warrants the understanding of how children optimally acquire language (Carnie, 2013). Syntax, thus, served as a purveyor for other disciplines which were on the brink of defining their epistemologies and methodologies .

Second Language Acquisition (hereinafter SLA) comes into the equation as a disciplinarily miscellaneous subject of enquiry. While the Chomskyan theory of grammar was peculiarly interested in the way children acquire their first language, a theory of SLA is interested in "the study of the acquisition of a non-primary language" (Gass & Selinker, 1994, p. 01). That is, SLA revolves around the study of the way languages subsequent to the mother tongue are learnt/acquired. An interesting piece of trivia in SLA is that it shares its scope with other fields in linguistics inasmuch as it studies the formal aspects of the language acquired and the functional uses thereof .

A Second Language Acquisitionist, for want of a better appellation, is concerned with how learners acquire the second language in the same fashion that a cognitive linguist would be concerned with how children acquire their first language. However, a seeming difference is that traditional cognitive linguistics is interested in addressing Plato's problem, that is, how children acquire an ideal linguistic competence notwithstanding the penurious input (Mhamdi, 2017) whereas SLA seeks to explain why only a handful of learners are able to achieve a native-like status in the language they are learning despite the rich input.

The bulk of literature available thus far offers insightful, yet sometimes contradicting, views on the cognitive and behavioural nature of L1 and L2 acquisition and interdependence. Explanatory grounds that account for L1 acquisition show discrepancies that translate to differing views about the way L2 is learnt. This, consequently, is illustrated in diverse perceptions, and sometimes even complete refusal, of the interdependence of the mother tongue and all other subsequently learnt languages. It is noteworthy that the terms learning and acquisition are used loosely in an interchangeable fashion, and the term second language is used to refer to any language that is learnt/acquired after the mother tongue. Although such a fashion of terminological use may offer some

theoretical complications, the scope of enquiry of the present study overlooks such complications inasmuch as the focus is on languages that are taught formally in school environment, hence, eliminating the trivia of natural vs. formal instruction. The following sections highlight the main theoretical grounds about the nature of L1 and L2 relationship.

2. *First and Second Language Acquisition*

Enter A very insightful statement is cited in O'Gardy and Cho's work (2011, p. 326) about the way children acquire their first language. It seems that "the only language men ever speak perfectly is the one they learn in babyhood, when no one can teach them anything!". Such an observation has caused scholars to contemplate upon the human capacity to acquire such a complex system with little, if any, conscious monitoring. Behaviourists generally argue that children acquire language as part of their acquisition of other complex and psycho-motor behaviours. Stimulus that is offered to children via primary linguistic input helps condition them via external reinforcement. Behaviourism has always been criticized for being over-simplistic and in a complete boycott of the mental and humanistic aspect of language learning. Clearly, there is more to language acquisition than mere processes of mechanical repetition, which excludes any prospective elements of creativity .

A more plausible account is offered by the innatist school of thoughts where a particular emphasis is placed upon the human's pre-existing faculty of language learning. Here, scholars argue that children are equipped with a pre-existing algorithm for language learning which requires activation via external linguistic stimulus. The idea that children do not start their language acquisition from naught is cogently elucidatory of the fact that children are capable of learning complex grammatical rules in relatively short periods of time .

Chomsky's ideas, however plausible, still exclude the social aspect of language learning. Interactionists, hence, argue that language is, notwithstanding the cerebral integralness thereof, a heavily social phenomenon inasmuch as the language children acquire is representative of the knowledge that is acquired via physical interaction with the environment (Nor & Ab Rashid, 2018). Vygotsky (1978) makes the claim that language cannot be discerned out of its socio-interactionist context, given that language is subliminally constructive of thoughts, and it is salient in social interactions .

Second language learning, regardless of the fact that it is similar in objective to L1 learning, is different from first language acquisition in many regards. First, second language learners approach the target language with an already existing

experience with language learning. Knowledge about the way language works translates to learners' likelihood of demonstrating instances of metacognition and metalinguistic understanding of the structural patterns of language. This knowledge is more likely to interfere in the outcome of learning a new language. In fact, research demonstrates significant differences between the mental setup of a child acquiring their first language and one learning a second language (Verhoeven, 2000; Wenner, 2009). The following section highlights the main theoretical ground accounting for the interplay between first and second language.

3. *Chomskyan Model of Language Acquisition*

The discussion of language acquisition raises some very interesting observations about the nature of human cognitive, psychological and behavioural setup. First, "it … seems apparent that much of the actual speech observed [by children acquiring language] consists of fragments and deviant expressions of every sort" (Chomsky, 1965, p. 215). However, the acquisition of the first language yields in a completely developed system of syntax that remedies the shortcomings and irregularities of the ***Primary Linguistic Data*** (PLD). Second, the language input that children are exposed to is very penurious and not comprehensive by any manner of means, yet, against all odds, they are able to avail themselves of that and develop a far richer and more wide-ranging linguistic system that transcends the narrowly circumscribed constraints of the initial language input. Third, it is interesting how "children acquire first or second languages quite successfully even though no special care is taken to teach them and no special attention is given to their progress" (Chomsky, 1965, p. 215). Incontestably, the acquisition of first language is rapid and requires little monitoring while learning other languages requires constant supervision and is, more often than not, a less efficacious endeavour.

A good theory of grammar, according to Chomsky (1964), must be capable of accounting for not only the set of structural rules governing a given linguistic corpus nor only the native speakers' judgement of well-formedness but also the principles underlying children's language acquisition. If a theory meets all of the three requirements, it is accepted as a satisfactory theory of grammar that is ***observationally***, ***descriptively*** and ***explanatorily adequate*** (Chomsky, 1964). While the theory of generative grammar is observationally and descriptively adequate, it lags behind in terms of its capacity to meet the requirements of the explanatory level of empirical adequacy (Carnie, 2009).

Chomsky's subsequent model is arguably of an empirical adequacy at the three levels as it offers a formal analysis that can

account for the "significant generalizations that express underlying regularities in the language" (Chomsky, 1964, p. 63). The following sections examine the Chomskyan model for language acquisition and highlight the empirical validity and internal consistency of such a model. The subsequent sections also attempt at extending the theory to second language acquisition settings and projecting the tenets of the Chomskyan model on the theoretical ground of SLA.

Over the past 70 years of research in the field of cognition and psycholinguistics, many an account has been offered to explain the sheer disparity between the acquisition of the first language and the learning of all other subsequent languages. The Chomskyan model of analysis is built upon the premise that there is an innate ability to acquire language (formally referred to as ***the Language Faculty***) that requires minimum linguistic input (***Primary Linguistic Data***) that is tested against a set of ***Principles*** and ***Parameters*** leading to an internalized linguistic system that is activated by both the external linguistic elements and the internal mental processing of these elements.

3.1 The Language Faculty

Perhaps the most satisfying and plausible account relevant in the discussion of language acquisition is that of Noam Chomsky. Chomsky (1972) argues that there is a rapid and uniform pattern to the way children acquire their first language grammar, and much of this characteristic uniformity and rapidity is attributable to a biological endowment referred to as the Language Faculty (Radford, 2009). This biological configuration entails that there is an innately pre-existing algorithm that transforms linguistic experience (input) into an integrated system of grammar. The contention of the Innateness Hypothesis helps account for the fact that children develop intricate grammatical forms based on a penurious and sometimes irregular input.

What is understood from the discussion above is clearly stated in Chomsky's own wording: "there are very deep and restrictive principles that determine the nature of human language and are rooted in the specific character of the human mind" (1972, p. 102). To him, language can analogically be compared to all other senses, such as sight and touch, which are pre-existing as cognitive faculties and are enhanced through exposure to the external stimuli. The pre-established grid of linguistic concepts and structures serves as a lattice with which elements of language input are organised, categorised and, if necessary, scrutinised for prospective irregularities.

Chomsky further borrows argument for the instinctive capacity of language acquisition from the fact that all human beings, notwithstanding their linguistic acumen,

achieve decent levels in the command of language grammar. It would be, "otherwise[,] impossible to explain how children come to construct grammar . . . given conditions of time and access of data" (Chomsky, 1972, p. 113). Indeed, children with relative mental deficiencies are still able to construct language within relatively short periods of time that even an intelligent adult cannot achieve in learning their second language.

It transpires that Chomsky's account for first language acquisition meets the theoretical requirements of internal consistency and external validity. In fact, unless we assume that there is a genetic component to the acquisition of language enabling children to establish regular patterns, we cannot account for the fact that "ideal" grammatical competence is achieved despite the considerable level of input irregularities and "performance" errors. Indeed, "a good deal of normal speech consists of false starts, disconnected phrases, and other deviations from idealised competence" (Chomsky, 1972, p. 158). It will be, otherwise, far-fetched to understand how ungrammatical input yields grammatical linguistic output and how deficiencies in the language performance of adults are rectified in the linguistic competence of children.

While René Descartes wonders about how human being are able to identify geometric shapes even if there are irregularities in the way they are drawn, Chomsky draws an analogy in the language acquisition context. Conspicuously, the mental constructs that are developed for the geometric shapes are not necessarily congruent with the actual geometric shapes presented to the observer. By analogy, the lateralized grammatical constructs of the linguistics structures in the brain are not necessarily congruent with the irregularities and linguistic ungrammaticalities that children are frequently exposed to. Human beings are, hence, by default predisposed to analyse shapes as regular despite their representational indiscretions, and they, on equal footing, are genetically predisposed to analyse sentences as compatible with language regularities notwithstanding the representational deformities of language tokens.

Another aspect of inquiry that is often liaised with the acquisition of the first language revolves around the fact that the primary linguistic input that children receive from the exposure to adults' language is not only qualitatively fragmented, irregular and lacks structurality at times but also quantitatively insufficient and by no means exhaustive. Indeed, children are not exposed to all possible structures in the language nor to every lexico-syntactic combination there is, nor are they receiving language input as extensively as it would, otherwise, be hypothetically assumed. However, as they

acquire language, it ensues that the language competence developed by the children surpasses the primary linguistic input not only in qualitative regularity but also in quantitative diversity.

It is intriguing how comprehensive the acquired language is compared to the limited instances of language input and how children are able to create lexico-syntactic combinations that they have never heard before. Chomsky's model offers a sound account for the interconnectedness of the biological endowments with the extraneous language performance. The rejection of the contention that there is an innate ability that needs activation through instances of language renders it rather challenging to understand how children are capable of making generalisations about language patterns by dint of small tokens of language stimuli. The faculty of language in the Chomskyan model if predicated upon the belief that language has universal aspects that allows for some variations. Children are equipped with the universal aspects of language, and language acquisition is a process of outlooking which of the variations allowed by language universals match the language around them. The terminological uses for the two features in Chomskyan model are referred to as principles and parameters. The following sections discuss these two features with reference to first and second language research.

3.2 Principles and Parameters

In the Chomskyan model of analysis, three elements are needed as prerequisites to the acquisition of language: a. the genetic endowment, which refers to the set of principles pre-existing in the brain making the process possible; b. the external data, which refers to the instances of exposure to language in order to activate the language faculty; and c. principles not specific to the language faculty, which refers to the ability of the human organism to evolve and grow as a natural process.

One of the interesting implications of the Chomskyan model comes from the fact that a Chinese child raised in Algeria would speak Algerian Arabic as a native speaker in the same fashion that they would learn Chinese had they been raised in China. This implies that the Language Faculty in action is dependent on some aspects of ***Universal Grammar*** that enable any child with the proper mental setup to acquire language with relative ease. It, therefore, follows that acquiring language owes it to both the universal mental configurations (LF) and the universal characteristics of grammar. It is, thus, viable to assume that language universals are the result of biological universals in the first place. The main assumption in the Chomskyan model is that children have some sort of linguistic competence that is already present in the brain prior to any linguistic input which is "part of the genetic information about

language with which we are biologically endowed at birth" (Radford, 2009, p. 19).

The uniformity of language acquisition process leads to the logical conclusions that the language faculty is universal, and the similar stages of acquisition suggests that there are some universals about the grammar of language. Chomsky was highly interested in understanding the nature of the Language Faculty, and he and Lasnik (1993) made the claim that understanding the nature of our unique ability to acquire language is achievable only by knowing the characteristics of ***Universal Grammar*** which are reflected in language universals.

It is generally believed that children are equipped with ***Principles*** for constructing universal grammar, which are "a mold upon which the grammar of any given language (GL) is poured" (Mhamedi, 2017, p. 02). The fundamental inquiry at this juncture is: if the grammar of Language comprises principles that are universal, how come that the grammars of different languages are ever so distinct? To answer that, we need to examine the second tenet of the Chomskyan model of analysis.

The ***Principles of Universal Grammar*** do not suggest that the grammars of all languages are identical; otherwise, children would be faced only with the task of acquiring vocabulary and norms of social appropriateness. Rather, the principles determine the broad spectrum of language grammar and acknowledge language-peculiar grammars that children need to acquire alongside vocabulary and sociolinguistic competence. Language-specific variations in the grammar are referred to as ***Parameters*** and, hence, languages are distinct in terms of their ***Parametric Variations***. These parameters are shaped in consonance with the linguistic experience (exposure to PLD). To illustrate, language universals are switches with two, or more, options *a* and *b*. The linguistic experience and exposure to the Primary Linguistic Input determine whether the switch will be set on *a* or *b*. The two options are referred to as ***Parametric Variables*** and consist an instance of ***Parametric Variation***.

A common example that is offered in this context is the ***null/overt subject languages*** or ***pro-drop languages*** (White, 1985, Cook, 2003). In null subject languages, such as Modern Standard Arabic or Italian, the subject of the verb can have no phonological form.

xaraʤnaa baʕda maɤiibi ʃʃamsi
went-1PPL after fall the-sun
We went out after sundown

At first encounter, the Arabic sentence does not contain a subject. However, it is one of the ***Principles*** of universal grammar that all verbs predicate a subject. The morphological richness of Standard Arabic helps the interlocutors understand the subject without the ***overt*** spell-out. It can be said that the obligation of having a subject

is a ***Principle of Universal Grammar*** while the overt or null spell-out of the subject are language-specific ***Parameters*** that are acquired by the child after the linguistic experience. If the child is raised in an English speaking community, the switch (Principle) with be set on the overt spell-out option (Parameter), and if the child is raised in an Arabic speaking community, the switch (Principle) with be set on the null spell-out option (Parameter). The operation by which the parameters are determined is referred to as ***Parameter Setting*** (Chomsky, 1981; Manzini & Wexler, 1987; Henry, 1995).

3.3 The Chomskyan Model and Second Language Acquisition

The Chomskyan model for language acquisition is relevant in the discussion of second language learning in the sense that his model is established upon the conundrum of grammaticality judgments and cognitive processes pertinent to unconscious learning. While Chomsky (1986) argues that ideal native speakers are capable of judging the grammaticality of structure that were never presented to them by dint of activated principles and parameters, Cook (1973) Anglejean and Tucker (1975) among other researchers came to the conclusion that also second language learners of English are capable of identifying, with a native-like faithfulness, ungrammatical structures with which they are totally unacquainted. The interesting observation that Cook (1973) Anglejean and Tucker (1975) make is that such knowledge is not solely experience-driven. Rather, some cognitive properties of the mind come into play and aid L2 learners in their grammaticality judgment tasks.

There are some theoretical complications that arise from the conclusion that L2 learners perform a set of mental processes that are similar to those performed in the assessment of L1 structures' grammaticality. These complications arise from the fact that L2 learners have already acquired the grammar of L1 with the principles of universal grammar being slotted in and the range of parameters being assigned their parametric setup. The bulk of literature shows differing views about the nature and extent to which principles of universal grammar interfere with second language acquisition. One of the views is that L2 learners have an indirect access to the rules of universal grammar. Proponents of the Fundamental Difference Hypothesis (Bley-Vroman, 1989) argue that L2 learning is non-modular. That is, second language learners acquire the target language not by means of resetting the parameters of universal grammar but rather by their problem-solving abilities such as hypothesis testing, inductive and deductive reasoning and analogy (Farahani, Mehrdad & Ahghar, 2013). Other researchers (e.g. Schachter, 1988; Clahsen & Muysken, 1989) argue that L2 learners have a partial access to the rules of universal grammar

and acquire their second language by means of the aforementioned problem-solving abilities in addition to other modular tasks related to the language faculty. Finally, some scholars (e.g. Epstein, Flynn & Martohardjono, 1996; Schwartz & Sprouse, 1996) argue that L2 learners have a full access to the rules of universal grammar and that the acquisition of L2 is achieved via the resetting of UG parameters which, in turn, constrain learners' interlanguage.

Although the Chomskyan model does not offer a direct insight into the way rules of universal grammar interfere with the acquisition of languages subsequent to the mother tongue, the projection of his principles can help account for certain phenomena relevant to SLA theory. The theory of linguistic typology goes in line with the tenet of universal grammar inasmuch as certain linguistic structures are more natural than others (Ellis, 2003). This natural capacity of such structures is referred to as the ***theory of markedness*** (Kean, 1970; Beletti, Brandi & Rizzi, 1979, Chomsky, 1981). Unmarked structures are those which are shared across all languages and are governed by rules of universal grammar. Marked structures, on the other hand, are language-peculiar and are believed to the result of historical change or accidental language change (Ellis, 2003). It is generally acknowledged that unmarked structures are acquired prior to the marked ones as they demand fewer linguistic token for acquisition.

Given the fact that unmarked structures are more natural, more prevalent and are governed by rules of universal grammar, it is expected that second language learners acquire unmarked structures with relative ease. Such structures are, however, expected to be more subject to crosslinguistic influence since rules of universal grammar are readily accessible to L2 learners. The discussion of universal grammar principle is essentially a theory of how children acquire language. This means that the age variable is peripheral in the discussion as children acquire language within relatively the same genetic calendar. SLA, however, takes into account age as an important variable that can determine the process and outcome of language learning. The following section discusses one of the theoretical models that best-capture the essence of age in SLA research.

4. *The Critical Period Hypothesis*

The third element of enquiry with regard to the discrepancy between the acquisition of the first language and all subsequent languages revolves around the apparent incongruity between the high rate at which individuals acquire their first language and the relatively slower rate at which they learn any subsequent language. Chomsky's model avers that there is an innate device for acquiring language but does not specify the lifespan nor the number of languages

that such a system accommodates. Put otherwise, Chomsky's model does not give details about the possibility of being a native speaker of more than one language, nor does it inform about the maximum capacity of the Language Faculty. Moreover, it is not clear in Chomsky's model whether there is a temporal limitation for the activation of that system. That is, is there a deadline for the activation of the Language Faculty, the passing of which results in an impaired acquisition of language?

Other researchers, namely Lennenberg (1967), suggest that there is a lifespan for the language faculty based on the premise that the human organism has a tendency to dispense with elements that are non-functional. By way of explanation, the ability to acquire a language is analogous to the physical organs; if they are not used, they start to putrefy until they eventually perish. In his discussion on the "biological foundations of language", Lennenberg (1967) suggests that individuals can achieve native competence in a given language provided that the language is learnt/acquired before puberty, and individuals who learn language after puberty rarely, if ever, achieve a native-like competence. The theoretical foundations of such an assumption are referred to as the Critical Period Hypothesis (CPH) by Lennerberg (1967).

The Critical Period Hypothesis draws support from the poignant incident of a child with the case name "Genie", "the feral child" (Cherry, 2019) or "the wild child" (Curtiss, 1977), a child born in 1957 and deprived of any social and linguistic interactions until she was discovered in 1970 after her mother sought help. Genie was locked in a room tied down to a potty chair by her abusive father. At the age 13, Genie had not acquired any linguistic or social skills whatsoever, and her case soon spread prompting public sympathy and scientific curiosity.

The National Institute of Mental Health (NIMH) provided funding for research projects on Genie's psychological and cognitive development. A member of the team was Susan Curtiss, a graduate student of the department of linguistics at the University of California, Los Angeles. The rehabilitation team of Genie reported a very rapid progress in some of her motor skills and cognitive abilities as she learnt how to use the toilet properly and dress herself without assistance. However, her linguistic abilities were still highly underdeveloped even compared to a three-year-old ordinary child. It was reported that she managed to learn vocabulary at a very high rate, but her syntax never truly developed (Radford, 2009). Moreover, Curtis (1977) reported that Genie relied more on non-verbal communication to compensate for her lack of syntactic competence.

The details of Genie's life generated debates at all possible levels but more pertinently within the psycholinguistics community. Prior to Genie's incident, a heated debate was constantly reopened between the nativists and the empiricists about the nature of language acquisition. While the empiricists argue that language acquisition is a process that is the result of environmental factors, Chomsky, and his fellow nativists, argue that it is, rather, a process that is instigated by innate faculties, and environment plays a role of only activating these faculties. It seems that the nativist view gained more plausibility from Genie incident, for she never learnt syntax efficiently, and she was evaluated as not being able to achieve a native-status. From a nativist standpoint, language acquisition device is a system that gradually atrophies until it is completely shut down around the age of puberty, and this is why Genie's acquisition of syntax was greatly apprehended.

Even though the Critical Period Hypothesis is in congruence with the internally consistent nativist view, it still lacks some elements of validity and internal consistency that a good theoretical framework inherently comprises. First, claiming that there is a specific age for the achieving a native-like status requires more empirical evidence to allow the gross generalizability of the claim. Indeed, incidents like Genie's are rarely, if ever, available to the scholarly community to warrant the hypothesis retesting, and "our morality does not allow us to conduct deprivation experiments with human beings; [and that] these unfortunate people are all we have to go on" (Harlen Lee, cited in Cherry, 2019, para. 6). Consequently, the Critical Period Hypothesis will remain a hypothesis unless there are more empirically verifiable case study materials. Second, the hypothesis grossly avers that learning a language at young ages allows the learner to achieve a native-like status. However, it does not specify under which conditions a language is considered to be "learnt/acquired". Indeed, there are instances where children are schooled in a given language long before the age of puberty, but their competence in that language remains inadequate, and they never achieve native-like competence. It is, therefore, necessary for the CPH to highlight the level of linguistic competence at which an individual is considered to have learnt that language.

SLA research entertains the scientific merit of both theoretical and applied research; it draws significantly on theories offered by psychology, social psychology and linguistics to build its epistemological and methodological repertoire. It also transfers the developments in theory and methodology to the context of second language teaching practices. The following section discuss the way SLA as a disciplinarily miscellaneous area of inquiry benefits from the theoretical discussion

above to shape a better understanding of the theory and practice of second language learning.

5. *CONCLUSION*

The conclusion of a research paper needs to summarize the content and purpose of the article. The conclusion of a research paper needs to summarize the content and purpose of the article. The conclusion of a research paper needs to summarize the content and purpose of the article. The conclusion of a research paper needs to summarize the content and purpose of the article. The conclusion of a research paper needs to summarize the content and purpose of the article. The conclusion of a research paper needs to summarize the content and purpose of the article.

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