

## THE ROLE OF COMMUNICATIVE FACTORS FOR ACQUISITION OF LANGUAGE AND THEIR IMPLICATIONS FOR CHOMSKYAN NATIVISM

RM Singh\*

### ABSTRACT

*The present article aims at assessing the role of different communicative factors for their critical role in language acquisition and their implication for Chomskyan nativism. When it comes to Chomskyan position on the question of language acquisition, it is found that they largely tend to legitimize their own position on the basis of imputing non-existent and indefensible positions to their opponents. The vast amount of literature that is reviewed in the present essay has however failed to find evidence for anti-nativists holding any such extreme views. What the anti-nativist theorists (often referred to as developmentalists/ constructivists/ neuro-constructivists, etc.) are generally found to be doing is articulation of their position in terms of constraints and role of experience with linguistic input that facilitate and restrict definite species-specific cognitive achievements rather than swearing by Lockean belief in human mind as a tabula rasa. Such a reasoning can hardly be thought of as the guiding spirit of researchers whose work is discussed and reviewed here. Therefore, Chomskyan nativism is not the only available position when it comes to explaining language acquisition by humans as there is a vast middle ground that falls between the extremes of Lockean tabula rasa approach and Chomskyan nativism. It is one of the endeavors of the present essay to direct our attention to this middle ground and demonstrate this to be more of a viable alternative to the other two extreme positions of radical empiricism and Chomskyan nativism.*

### 1. EVIDENCE AGAINST AUTONOMY OF GRAMMAR

The belief in the proposal of innateness of Universal Grammar and the dedicated nature of a processing device for its implementation has undoubtedly been most dear to Chomskians (Chomsky, 1975, 1980, 1993; Piattelli-Palmarini, 1980; Laurence & Margolis, 2001). However, in recent years this proposal has come under sustained attack from researchers concerned with the issues of investigating the nature of innateness and brain plasticity (Elman et al. 1996; Johnson 1997 & 1999) as well as those working in the broad area of language acquisition (D'Souza & Karmiloff-Smith, 2016; Elman et al., 1996; Ibbotson & Tomasello, 2016; Karmiloff-Smith & Johnson, 1991; Karmiloff-Smith, 1992; Mareschal et al., 2007; Quartz, 1993; Quartz & Sejnowski, 1997). In the context of the present paper, the work of Bates and her colleagues is particularly important for being in the forefront in challenging both the autonomy of grammar from other aspects of language as well as the existence of a dedicated grammar processing device. The series of studies and reviews by Bates and her colleagues (Bates & Goodman 1997 & 1999) show that many characteristic features of language are explainable without postulation of any dedicated device for the purpose of acquisition and representation of grammar and the lexicon. The evidence for this comes from two sources: (i) a strong form of lexicalism entailing that grammar and the lexicon are handled by same set of mechanisms; and (ii) the fact that mechanisms responsible for processing grammar and the lexicon are not dedicated for language use alone. Many of these tasks are accomplished by domain-general mechanisms whose operations extend beyond language processing (Karmiloff-Smith, 2006; Saffran, 2002). Many researchers have reported through several studies of normally developing and language handicapped children that demonstrate strong dependence of grammar on the vocabulary size (Bates & Goodman 1997 & 1999; Dekker & Karmiloff-Smith 2010; D'Souza et al. 2017; Tomasello 2000a). The nature of this dependence of early grammar on the vocabulary size has been found to be "so strong and the nonlinear shape of this function is so regular that it approaches the status of a psychological law" (Bates & Goodman 1999, 51).

One way to test Bates and Goodman's hypothesis is to see whether grammar development proceeds at a normal rate even in children with abnormally high or low vocabulary size for their age. If this is found to be happening in a correlated way as predicted by the hypothesis, then there would be reason to believe that grammar and lexicon are implemented by distinct modules with their distinct time schedule for maturing. Thal and her co-workers (Thal et al. 1997 & 1996) as part of a larger project examined this issue and their results could show no dissociation between grammar and vocabulary.

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\*Department of Philosophy, University of Delhi, Email: [rmsingh@philosophy.du.ac.in](mailto:rmsingh@philosophy.du.ac.in)

And as expected, grammar development appeared to be closely tied to the lexicon even in the case of children with very low or exceptionally high vocabulary scores.

The other damaging evidence against Chomskyan approach comes from children's early focal lesions. If grammar and the lexicon are implemented by distinct neural mechanisms, then it is not unreasonable to expect that children with congenital injury to left frontal region including Broca's area will show delays in processing of grammar and children with damage to their left posterior regions including Wernicke's area will show delay in lexical processing. Bates and Goodman in their extensive review of the literature on the topic (1999), however, report that they could find no evidence to support such a conjecture. No evidence is available for any dissociation between grammar and the lexicon even from children diagnosed with Williams syndrome<sup>1</sup>. But Bates and Goodman do not rule out that "a modular distinction between grammar and the lexicon may emerge at a later point in development, in accordance with the processes of *modularization*" (53, emphasis author's). Such an outcome would, however, be more of an effect of development rather than its cause (Karmiloff-Smith 1992 & 1998). There is thus "no evidence for the claim that grammar and the lexicon are mediated by separate, dedicated, domain-specific neural systems" (Bates & Goodman 1999, 71). Studies by Rollins & Snow (1998), Tomasello (2000 & 2003), Yont *et al.* (2003) further extend the findings of Bates and her colleagues. These studies show that pragmatic factors, like engagement in joint attention, function as a kind of precondition for making progress in grammar. So, contra Chomskyan expectations, progress in grammar is not only tied to developments in the lexical domain but to pragmatic skills as well<sup>2</sup>. The results of studies by other researchers are also supportive of the view that the quality of children's social and linguistic environment also affects language acquisition (Ginsborg 2006; Letts *et al.* 2013; Pan *et al.* 2005; Snow 1999; Yont *et al.* 2003). Snow also cites evidence indicating that recognition of and responsiveness to children's communicative intents are helpful in language acquisition (1999, 267).

The review of data on children's vocabulary size as reported by Snow (1999) and Hoff-Ginsberg & Tardiff (1995) is also very revealing in the sense that it highlights strong correlation between children's vocabulary size and the socio-economic and educational background of children's families. The data clearly reveals that lack of child directed talk language (Cristia, 2013; de Boer, 2012; Hohle, 2009; Mol *et al.*, 2017; Vallabha *et al.*, 2007) as well as lack of socio-economic and educational resources severely affect vocabulary size of children Ginsborg (2006; Letts *et al.* 2013; Hoff 2003). Since lack of resources is responsible for impoverished nature of linguistic input in terms of both quantity and quality, Arriaga *et al.* (1998) studied their effect on children's performance on the sentence complexity scale. The results demonstrate that children coming from socio-economic and educationally impoverished environments show either a delay or some deficit in grammar. By suggesting that significant social-class differences affect linguistic capacities including mastery of grammatical complexity these findings pose considerable difficulties for the Chomskyan view that postulates grammar as an independent and innately driven biological mechanism. The results are troublesome because they highlight variation in grammatical complexity as a function of both quantity and quality of input. Snow's conclusion, derived from an extended review of the literature<sup>3</sup>, that "language environments that limit opportunities for vocabulary development also limit opportunities for grammatical development" (1999, 272) also does not seem to augur well for the Chomskyan claim that development of grammar follows its own time schedule and is not affected by the nature of linguistic input.

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<sup>1</sup> The dissociation observed in samples from children suffering from Down Syndrome and Specific Language Impairment are accountable on other grounds. See Bates & Goodman (1999, 61f.) and D'Souza *et al.* 2017 for details.

<sup>2</sup> In this context it is necessary not to overlook the fact that Snow and her co-workers do not deny the role of child's developing cognitive capacities about the knowledge of the world or the role of syntax at later stages. Their basic intent is to delineate the role of child's early reliance on "pragmatic bootstrapping" (Snow 1999, 266).

<sup>3</sup> It is significant to note that Snow's data also includes samples from single parent families as well as households who live in social isolation for some reason or the other. That such conditions would affect the richness of knowledge of language is to be expected and data confirms this hunch.

## 2. FINDINGS FROM CROSS-LINGUISTIC RESEARCH

In the cross-linguistic context, one of the strategies used by researchers to examine the Chomskyan claim has been to follow the path of linguistic development across different languages. It has been useful to follow this direction of research as early work on English speaking children, for example, had led many researchers to believe in the existence of some innate constraints that guide children's decisions about which meanings to encode (e.g., Markman 1990). The important finding in this context has been that while English speaking children do show considerable pre-disposition to acquire nouns before verbs, data from Korean (Bowerman & Choi 2001; Choi 1997 & 2000; Kim 1997) and Mandarin-Chinese (Tardif 1996) speaking children show a verb spurt before their first noun spurt. In the present context the important thing to note is the fact that these differences correlate very well with language specific and socio-cultural input factors. For example, studies by Choi & Gopnik (1995) and Gopnik & Choi (1995) show that while American English-speaking mothers in their sample produced more object nouns than verbs in their interaction with children, the situation was reversed in the case of Korean speaking mothers. Significantly enough this difference in input correlates well with the differences in acquisition of nouns and verbs by children from these two linguistically distinct environments<sup>4</sup>. Other studies by Choi & Bowerman (1991) and Choi (1997) show that from very early age children's semantic categorization is being shaped by the language specific system they are exposed to. In their studies, children from two different linguistic groups were found to differ systematically in their early syntactic and semantic structure with differences reflecting language specific patterns of the adult language.

The other significant finding of Choi's work is that "children's spatial expressions are organized according to language-specific grammatical principles virtually from the beginning of language development" (Choi 1997, 63). Levinson's (2001) work also extends these findings and shows how there is a "substantial variation in the semantic parameters employed in languages for spatial description" (573). For example, Levinson's review of spatial description across languages shows that there is a high level of "variation in the fundamental kinds of coordinate system employed" (576) in different languages. Levinson's findings are very significant as they link the observed variation with the language used to describe spatial relations. Studies by Choi and her co-workers have further reinforced these findings (Choi, 2006; Gollera *et al.*, 2020; Yun & Choi, 2018). Work by Tomasello (1992, 1999, 2001 & 2003) and Akhtar (2001) also shows that children first pick up words for things and/or events that are most salient in their learning environment. Their studies show that children begin their linguistic journey wherein their early utterances are limited and their linguistic constructions are item based. Children's behaviour does display occasional use of complex syntactic structures but these are limited to patterns that are most heard by them from adults surrounding them. That is, children's early syntactic structures are data driven and mastery of syntax is a gradual process. Other scholars have also argued that language can be acquired without the hypothesized biological endowment surrounding Chomskyan proposals and acquisition of language is guided by "exposure to exemplars" (Culicover & Nowak 2003, 4 & 41). Givon (1999) in his review of empirical data on grammatical relations also finds numerous cross and intra linguistic variations and finds Chomskyan to be guilty of ignoring massive empirical data coming from cross-linguistic contexts as well as from single language contexts. From the review of large-scale data, Givon finds, contra Chomskyan claims, "rules of grammar" to be functioning much like "prototype-based categories" (102).

## 3. EVIDENCE FOR THE ROLE OF COMMUNICATIVE FACTORS

As far as the role of communicative factors is concerned, the undermining of communicative function of language by Chomskyan is legendary (Chomsky, 1995, 2005 & 2010; Lightfoot, 1991; Anderson,

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<sup>4</sup> For the controversies surrounding these findings the reader may consult Dromi (1999) and Bowerman & Levinson (2001). In the context of this controversy between nouns vs verbs, Kuczaj (1999), following Nelson (1995), seems to make an important point while suggesting that it may not be very appropriate to work with the nouns vs verbs distinction in so far as the question of speech of very young children is concerned. He rightly points out that "Rather than arguing about whether young children find it easier to learn nouns or verbs, it seems more important to remember that young children's early words are based on aspects of the world that they can directly experience, regardless of whether the words are nouns, verbs, or adjectives" (143).

2012). Given their extreme pronouncements on the topic, it appears very problematic to suppose that resource starved evolution would allocate considerable brain resources when language was to play no evolutionary role for communication; something which is so essential for survival of a species that has largely flourished living in socially complex groups called human societies? This becomes even more intriguing and unacceptable when we recall that leave aside visual, vocal and use of different body parts for communication with conspecifics by higher animals, there is even very intricate and widespread use of chemical signals for communication even amongst lower animals as it helps in survival of those species. Can we ever stop marveling at the intricate waggle dance movements used by honeybees for communication purposes? Regular symbiotic communication relationships between unrelated species have also not been uncommon. Let us look at the research that has been specifically directed to assess the role of communicative factors.

Locke (1993) in his review of literature on language acquisition argues that infants do not set out to acquire the knowledge of language but have a deep biological need to interact emotionally with the people who love and take care of them. The sounds are thus not the only thing that infants confront in their immediate environment. What they confront are animated bodies involved in transmitting all kinds of signals to each other and the infant. He contends that infants are not likely to learn language without an orientation to the cues by people to communicate with each other<sup>5</sup>. Locke cites several studies that examine and confirm the positive role of physical cues associated with faces and voices. For example, Mulford (1983 & 1988) reports from an extensive examination of the role of vision on children's initial vocabulary that sighted infants are more likely to attempt words that contain labial consonants relative to non-labials as compared to visually challenged infants.

Based on his research on primate and human cognition, Tomasello and his colleagues have also underlined the importance of pragmatic understanding in language acquisition (Tomasello 1998; Carpenter *et al.* 1998; Baldwin & Tomasello 1998). Carpenter *et al.* (1998), and Tomasello (1999) report children's engagement in joint attentional behaviours and perspective taking involving treating of others as an intentional agent like the self as a pre-requisite for language learning. Similarly, Nelson (1995), and Baldwin & Tomasello (1998) report extensive evidence for utilization of social cues for word learning in children of about two years of age. Evidence for the role of engagement in joint attention for lexical acquisition also comes from studies by Tomasello *et al.* (1996). Studies by Hollich *et al.* (2000) also demonstrate children's progress in language learning to be correlated with their gradual shift from their own perspective to accommodation and taking into account of others' intentions (26 & 103). Tomasello (1999) in particular reports individuals with autism to be specifically lacking in this ability. This to an extent, for him, explains why autistic children perform so poorly on linguistic tasks. For Tomasello, about half the autistic children do not learn any language "presumably because they do not understand the communicative intentions of others in the species-typical manner" (1999, 133). From extensive studies, his findings are that "early in ontogeny individual human beings learn to use their species-universal cognitive, social-cognitive, and cultural learning abilities to comprehend and acquire the linguistic constructions their particular cultures have created over historical time by processes of sociogenesis" (135).

Further support for the role of communicative factors in language acquisition comes from the work of Catherine Snow. For Snow, children's early words neither express semantics nor are they syntactic but express children's intention to reach out to others and communicate. Her studies show that children's first words as well as their early word combinations are result of children's attempt to express their communicative intents, expressive of their desire to be part of social interactions (1999, 265). A study by Snow *et al.* (1996) also shows strong correlation between engagement in joint attention and syntactic development. Yet another study (Rollins & Snow 1998) aimed at assessing the effects of pragmatic skills demonstrated engagement in joint attention as a "prerequisite to the development of productive syntax" (670). More importantly, Rollins & Snow (1998) by including data on six individuals with autism from "a truly longitudinal perspective" show how the past research on

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<sup>5</sup>Also see works by Tomasello, Snow and their co-workers for further investigations of these effects (Snow 1999; Tomasello & Akhtar 1995; Tomasello 2000b; Yont *et al.* 2003).

individuals with autism was “biased by a modular competency-based model” (670). The clinical observation that individuals with neurodevelopmental disorders (eg., Down syndrome, fragile X syndrome, Williams syndrome, etc.) display lack of attentional disengagement and that it could be resulting in problems in language development has also been further reiterated in recent studies by D’Souza *et al.* (2020). It is significant that Snow (1999) could successfully “predict children’s grammatical status at later ages from frequency of participation in the communicative exchanges of social participation and of regulating attention, for normally developing children and for children with autism” (266).

#### 4. CONCLUDING REMARKS

The review of extensive literature presented here tends to support considerable critical role for different communicative factors in language acquisition. The empirical research reviewed here also undermines the autonomy of grammar thesis that is so central of nativist claims of Chomskyans. The literature presented here also undermines Chomskyan contention that non-nativists hold extreme views. As opposed to the caricatured versions by Chomskyans of their opponents, non-nativistic are found to be articulating their views in terms of different constraints at play and infants/children’s extensive utilization of different pragmatic cues rather than advancing any simplistic and radical empiricist thesis. This has serious implications for Chomskyan nativism as critical examination of the literature presented here demonstrates Chomskyan nativism to be not a viable position when it comes to explaining language acquisition by humans. The literature on how different languages employ and shape different attentional resources further emphasizes how domain specific knowledge of language could be emerging from mechanisms that are not domain specific to begin with. This further strengthens viability of non-nativist intuitions about language acquisition and renders Chomskyan nativism to be an untenable position.

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