Incongruencies between Theory of Language Universals and Phonological Development: A Case Study of Urdu Speaking Children

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ABSTRACT

Based on the 'Universal Markedness' theory, the study investigated the phonological processes, simplification, and substitution in Urdu speaking children. The data were collected by observing and recording the parent-child interaction in the natural environment. We reached the findings, not in line with the theses of 'Language Universals' regarding the period of language acquisition common to all languages. It also contradicted Jacobson's theses on the acquisition of voiceless phonemes before voiced consonants. We also identified departures between the predictions of the Universal Markedness and children's production patterns, indicating that theory alone cannot fully explain the developmental patterns. We found that development is sensitive to the input from the parents and the context of language use. Hence, we concluded that integration of input hypothesis and the best phonotactic models are needed to indicate the sensitivity of the language development and a full explanation is required for this process of development.

INTRODUCTION

Roman Jacobson has extensively been discussed in the studies of language acquisition. He explains that similar laws govern the phonological development of child language and the synchronic structure of the world's languages. The hallmark of the theses forwarded by Jacobson is his notion of 'Markedness'. This theory leaves behind the theory of Native Language Interference (Jarosz & Alex 2013). He defends the thesis that the acquisition or loss of the complex segments of any language corresponds to the universal or near-universal laws operating the sound system of the world. This notion stresses upon the

hypothesis that children all over the globe synchronically show difficulty inherently in producing the phonemes which are difficult to produce or marked (Harrell 2014). Jacobson's theory of language universals is remarkable in its uniqueness of unifying the acoustics, the pattern of speech sounds across the languages, general perceptual theory and aphasia and language acquisition.

Several studies on language acquisition have a unified opinion about language development in physically and mentally normal children worldwide (Chen 2020; Kolaguina 2019; Yung 2019; Edwards et al. 2015; Miller et al. 2009; O' Grady 1996). Many other studies have discussed speed as the noteworthy feature of the initial period of language acquisition across the world languages (Jarosz & Alex 2013; Kager & Pater 2012; Moreton & Pater 2012; Archer et al. 2011). In any given linguistic environment, children acquire the language's phonology with the same speed within the broadly identical period as proposed by Jacobson. He further elaborates that the marked or rare phonemes are challenging to produce. The marked phonemes are replaced by already acquired phonemes. An elaboration on the pattern of phonemic distribution across the open and closed syllabic structure is extensively available (Bosma & Smit1993; Bane et al. 2014). This process is yet to be investigated in the Urdu language at the backdrop of 'Language Universals' theory.

The Urdu language started developing in Delhi, situated in Northern India, in the 12th century. It was influenced by the Arabic, Persian and Turkish languages. The Urdu language is also considered the 'sister language' of the Sanskrit and Hindi languages because of its shared written script of 'Sanskrit' and similar grammatical structure. During the struggle for independence from the British rule in Subcontinent, Urdu-Hindi became one of many other reasons for separating the land into two states: India and Pakistan. After independence, Urdu was declared the National Language of Pakistan.

This work mainly focuses on the period and order of consonants acquired by Urdu speaking children based on the language universals presented by Jacobson. It explores how far Jacobson's theory of language universals is appropriate to be applied to children with the Urdu language as their first/native language learning and whether language input is also involved in the development process or not. Input hypotheses claim that we acquire knowledge as per *i+1, where i is the existing knowledge, and +1 is added by the extralinguistic knowledge such as situational knowledge, in the study parents' language and context of the conversation* (Jarosz et al. 2016).

It discusses whether Urdu speaking children follow the same order in the acquisition of consonants or they exhibit variations. Furthermore, it investigates phonological processes such as simplification and substitution while making errors before acquiring the particular consonants. It also sheds light on the phonological processes corresponding to the theory of 'Universal Markedness' (UM) in Urdu speaking children.

Eventually, this work on the Urdu language can help understand language disorders and specific language impairment. An insight into the phonological development in Urdu based on the theory of 'Universal Markedness' can also help in understanding speech pathology. It is also significant in opening a new research arena in understanding the substantial character in the native language and the relationship among language, linguistic environment, and non-verbal developmental phases.

LITERATURE REVIEW

Jacobson's theses regarding the acquisition of phonology have been briefly summarized in this section. The central assumption is that phonological development needs to be accounted for in linguistic terms, as it is not simply derivable from physical, perceptual, or conceptual limitations in children. Forwarding the central assumption, the theory of language universals suggests that linguistic accounts are primarily for the phonological development keeping physical, perceptual, and conceptual limitations at the secondary level (Jacobson 1968). He further assumes that the relative phonological development remains the same in every child (universal) and at all times.

Universally, children start with the combination of a vocalic and consonant sound. So, this consonant-vowel (CV) template becomes the basic construction on which the complex template is based. The initial stage is simply babbling that places random reduplication of sounds in children's speech without any semantic significance. At the transition of babbling, reduplication occurs with semantic features. It normally occurs in labials, nasals and dentals. In stops, bilabials and nasals (/p/ & /m/) are acquired first. Whereas velar stops appear after dentals.

Proposing the thesis about the manner of articulation, he claims that voiceless obstruents are acquired before the voiced ones. He stresses one significant aspect that children learn those phonemes first, which are common to all languages across the globe, whereas the phonemes particular to the mother tongue are acquired later (also supported by Chen 2020; Harrell 2014).

Jakobson further stresses that similar laws operate in the phonological acquisition and the synchronic structure of world languages. In this regard, the fricatives appear later than stops in all the languages in the same way. Hence, fricatives cannot exist without stops. Liquids appear after obstruents. /r/ in almost all languages belongs to their last acquisition. Many studies align with this proposed thesis (McAllister 2011; Moreton & Pater 2012; Roland et al. 2006).

Changing one sound into another leads to the substitution of velar stops with dental stops (Kolaguina, 2019). For instance, a Swedish child utters 'tata' for 'kaka', an English child 'tut' for 'cut' and a Japanese' top' for 'kopf'.

Theory of Universal Markedness illustrates the 'Marked' phonemes as challenging to acquire in one's first language and that phonemes are 'marked' because they do not exist in most of the world's languages. In other words, these are 'marked' because these consonants are specific to that particular language. Children have, inherently, more difficulty in producing the marked consonants. Moreover, less marked phonemes are mastered first (Tessier 2009; Song & Fred 2019; Yung 2019). Hence, in English speaking children,/p/ is acquired before /k/ being 'marked' phoneme. Yavas (1998) supports the 'UM theory' that phonemes of world languages and the pattern of language acquisition in children have many standard features. He comprises the data on the acquisition of fricatives in a study that in total participants of 438, about 75% exhibited difficulty producing fricatives. He also argued that fricatives are challenging to acquire in all languages because they are 'marked', and even children learning English as Second Langue (ESL) show difficulty in

learning fricatives. Comparatively, stops are easily acquired because they are prevalent universally in all languages. Therefore, stops are rarely produced with error. Succinctly, no matter what a child's first language is, he tends to produce some phonemes, inherently, with difficulty because they do not exist in most of the languages of the world, hence, are 'marked'. Interdental is the classic example of 'marked' phonemes (Viheman, 1978). As Jacobson's (1968) claim of language universals has been explained above, the researchers in this study have attempted to give an account of language development in other languages, too, so that the findings can be validated.

Grady provides a detailed consonant acquisition composition as per its enunciation's place and manners (Grady, 1996). The first mentioned exhibits the order of acquisition as labials, alveolars, velars and alveo-palates, marking inter-dental as last in this sequence. The second mentioned sequence stops before fricatives. They further explain that laterals are substituted before their actual occurrence. Richtsmeier comes up with an essential finding that children voice all initial devoiced consonants (Richtsmeier, 2010).

Regarding substitution, Grady et al. (1990) describe three processes. The first process is stopping because it stops substitute fricatives before appearing in the child's language. Linguists find that voiced and word-initial fricatives are more subjected to substitution to stops (Smit 1993; Lock 1983; McAllister 2011; Moreton & Pater 2012; Roland et al. 2006).

The second process is fronting; a place of sound moves ahead like /ʃ/ in (Ship) moves ahead like /s/ in (Sip) as found in (Kolaguina, 2019).

The third process is gliding, in which liquids are replaced by glides (also marked by Bernhardt & Stemberger 2003). A study observes stopping glides (Smit 1993).

Open and compact syllabic structures are two templates over which a child oscillates in his early acquiring stage. Consonant-Vowel and Vowel-Consonant/Consonant-Vowel-Consonant templates are studied in this regard. The consonant-Vowel template appears first in a child's language because it is easy to pronounce (Hodson & Paden 1991; Ingram 1989). CVC template being more complex syllabic form, tends to be acquired later (Hayes & Zsuzsa 2006; Jarosz & Alex 2013; Chen 2020).

Concisely, universal language theory addresses various levels of language acquisition such as phonemic universals, semantic universals and grammatical universals. But, Jacobson's basic distinctive features relevant to this study are Phonology, that is, the speech sounds acquisition in the Urdu Language.

METHODOLOGY

This study included 16 Urdu speaking children from both genders. In this longitudinal study, to collect the data, the age of the subjects started from 12 months, and we collected the data till the age of 30 months. Moreover, each child was visited at home for 18 months to collect the data. Visual aids such as pictures, toys, colour books and items familiar to them were used for the natural conversation and interaction between parents/ caretakers and children. It helped to elicit the phonological errors from children. The researcher observed the parent-child conversation for 2-3 hours on every visit. The researchers themselves have had a conversation with the children. Data were saved by the use of electronics, compiled and further transcribed.

ANALYSIS AND DISCUSSION

The study reveals that the sequential progression of the phonemes and their phonological appearance *was less in line with the 'Language Universal' theses forwarded by Jacobson (1968).* It aligns with the claim that the phonological processes are universal and hierarchical in nature as far as the babbling stage is concerned. In the earliest babbling stage, children start with an open or low vowel and a single consonant, a stop. No matter what the language is, children start with babbling in canonical or variegated form without semantic association. In Urdu (b, ḍ, m,) appeared in this stage as evident in *Table 1* as compared to Disney's "(p: b, m, t̪, ḍ, n, k, g, s, h, w, j)" comparison in other languages. It appeared in canonical [bababab, ḍaḍaḍaḍaḍa] or variegated form as in [baḍabaḍa] by the age of 12 months.

Jacobson (1968) provides the order of phonological development regarding the place of articulation as labials > dentals > alveolars, explaining that front consonants are acquired first. But the data show the existence of both labials and dentals at the same age. It seconds the input hypothesis. So, at the transitional babbling stage, the study reveals that children start *familiarizing themselves with the input from the parents and the context* gave the semantic significance of their utterances. *Regarding the importance of a combined family system in Pakistan, children start naming the most intimate and frequent interactive relationships, their parents and grandparents from the father's side.* The observed phonological pattern at this stage is evident in the following examples obtained from the data.

/baba/

/ḍaḍa/

/mama/

Hence, opposing the place of articulation in 'Language Universals' /p/ (labial) appears after / ḍ/ (dental). This process occurs by 20 months accompanying /t/ voiceless dental. It also *deviates Jacobson's proposal on 'Language Universals' regarding voicing* as he explains that voiceless consonants appear first. The study exhibits that voiced consonants appear earlier than voiceless consonants in Urdu speaking native children.

(Richtsmeier's 2010) the study answers this puzzle in his research; as mentioned in the previous section, children's initial utterances are formatives of consonants sounds. Further, it has been backed up in the study of Grady et al. (1996) as labial, and dental voiced [b, ḍ] > labial and dental voiceless [p,t̪]. So, it can be assumed that voicing plays a significant role in the placing of consonants. Furthermore, the initial voicing of devoiced consonants changes into devoicing of voiced velars (/g/ into /k/) as moving towards the back in the oral cavity. These findings were also evident in the study of (Richtsmeier 2010).

TABLE.1: An inventory of consonants development from age 8-30 months in group

Age/ months	8-10	10-12	12-18	18-24
Consonants	[b, ḍ]	[b, ḍ, m, n]	(b:ḍ,:m: n: p: t̪,: l)	b, ḍ: m, n, p, t̪, l, k]

An inventory of a two-year-old child has been presented in Table 2. It exhibits departure between the consonants acquired at the same age across the languages compared with the results of (Grady et al. 1996). This contradiction appears in reporting fricatives [f,s,h] in two-year-old inventory by (Grady et al. 2009).

(Jakobson 1968), on the manner of articulation in his theory of 'Language Universals,' describes that stops precede fricatives. Stopping is less marked in all languages. The results of this study support Jakobson's theory of markedness. By 30 months, all the stops occur more frequently, as reflected in table 2. It has been confirmed in the study of (Grady 2009) that stops appear before the fricatives. As explained by (Jakobson 1968), Fricatives are challenging to acquire no matter what the language is.

Table 2 also reflects the appearance of lateral /l/ before fricatives. It also goes in line with the theory of language universals. Jakobson stresses the acquisition of stops and laterals before any other consonant.

Thus, fricatives are subjected to stopping, as explained by (Jakobson 1968; Grady et al. 1990). The Phonological development in Urdu speaking children exhibits the same process as evident in the results of this study. This substitution process has been reflected in the data collected from the age of 24-30 months. Other than stops and laterals, all the consonants are substituted before they are acquired. (Jakobson 1968), in his theory of 'Language Universals,' also stresses the omission of sound in phonological development.

TABLE 2: Consonants Acquired after substitution process

Age/months	24-30
Consonants	[g, ʈ, ɖ, f, v, j, h, s, z, ʃ, tʃ, dʒ, r, pʰ, bʰ]

As Jacobson (1968) described in the previous section, stopping occurs in the acquisition of fricatives during phonological development. Further review of the existing literature in the last section has confirmed the substitution of fricatives by their corresponding stops, such as voiced fricative by voiced stops and vice versa. The results of the study on Urdu speaking Children also confirmed the replacement of /ʃ/ by /ʈ/ and /z/ and /ʒ/ by /ɖ/. The former mentioned is the substitution of voiceless fricative by voiceless stop, whereas voiced stop substitutes voiced fricative in later mentioned. Hence, children of all languages recognize the voice in the process of language acquisition. *Another essential explanation for this process is caretaker speech's significance as an input. As observed in this study, parents talk to their children in such a way that they get the information in the form of substituted speech such as /seib/ as /teib/ (English apple) and /ki:l/ as /ʈi:l/ (English nail).* Table 3.1 reflects the process, whereas table 3.2 shows some examples from the data.

Another phonological process, as described by (Jacobson 1968) and others in the previous section, is fronting. The phonological development in Urdu speaking children also confirms this, as reflected in table 3.1.

TABLE 3.1: Phonological processes of fronting and stopping

Stopping		Fronting		Gliding
/ʈ/	/t̪/	Retroflex	Dental	*None*
/ɖ/	/d̪/	Retroflex	Dental	
/f/	/p/	Labio-Dental	Bilabial	
/v/	/b/	Labio-Dental	Bilabial	
/s/	/t̪/	Alveolar	Dental	
/z/	/d̪/	Alveolar	Dental	
/ʃ/	/t̪/	Post- Alveolar	Dental	
/ʒ/	/d̪/	Post-Alveolar	Dental	
/k/	/t̪/	Velar	Dental	
/g/	/d̪/	Velar	Dental	

TABLE 3.2: Examples of stopping and fronting

Stopping		Fronting		Gliding
Adult	Child			
ʈrʌk (truck)	t̪ʌk	Retroflex	Dental	*None*
ɖol (doll)	d̪ol	Retroflex	Dental	
foʈu (photo)	pot̪u	Labio-dental	Bilabial	
Væn (Van)	Bæn	Labio- dental	Bilabial	
so (sleep)	t̪o	Alveolar	Dental	
ziːra (cumin)	d̪iːlɑ	Alveolar	Dental	
ʃer (lion)	t̪el	Post- alveolar	Dental	
/ʒɑlɑ/ (Hailing)	/d̪alɑ/	Post- alveolar	Dental	
kuʈa (garbage)	t̪ula	Velar	Dental	
gẽnɖ (ball)	d̪ẽn	Velar	Dental	

Thirdly, Grady (2009) illustrated that glides take over laterals but failed to find any such evidence in Urdu-speaking children. Urdu doesn't possess /w/, while sound /j/ do exist without replacing /l/ while, /l/ is industrial at early stages. (Smit 1993) finds that occasional obstructions of glide /w/, in Urdu glide /j/, are replaced by stop / d̪/. *Examples are given in Table 4.*

TABLE 4: Stopping of glides

Child's Speech	Adult Speech	English Translation
d̪at̪	jad̪	Remember
d̪e	Je	This

Eimas 2010) exemplify, children cannot mark differences among /r/ and /l/. (Jakobson 1968) opined that /r/ sound is the last one in language learning uniformly among all languages. *The data collected in this study also exhibits the same findings. But it also has evidence from the input hypothesis that parents and caretakers talk to their children substituting /r/ with /l/.* Table 5 shows a few examples from the data collected from Urdu speaking children.

TABLE 5: Substitution of /r/ by /l/

Child's speech	Adult Speech	English Translation
Lo	Ro	Weep
*lo*ţĮ	roţi	Bread
*la*ţ	raţ	Night

This substitution process agrees with Jakobson's theory of 'Language Universals'. As explained in the previous section, phonemes common to all languages are easy to acquire, whereas phonemes particular to one language are marked and appear later in a child's language. The data explained in this section reflects that aspirated consonants, which are marked phonemes of the Urdu language, do not appear in Urdu speaking children until 30 months. But it departs from the theory as many labial and dental aspirated phonemes are acquired before the non-aspirated alveolar and fricatives, as indicated in table 2. Urdu velars /X/ and /ɣ/ are also marked phonemes. This acquisition process gains evidence from the input hypothesis because parents use simplified speech with their children most of the time.

Process of deletion, another significant feature of phonological development as argued in the theory of language universals, Urdu speaking children also employ this simplification process. This does not mean that children cannot acquire specific phonemes, but when there is a complex syllable, children, even by the age of 30, delete somewhat marked sounds to simplify the CVC/CCVC template. *This acquisition process gains evidence from the input hypothesis because parents use simplified speech with their children most of the time.*

Table 6 represents a few examples from the data collected from 24-30 months.

TABLE 6: Process of simplification in Urdu Speaking Children

Child's speech	Adult Speech	English Translation
ənnã	əndɑ	Egg
ţʌk	ţrʌk	Truck
gəm	gərm	Hot
ţẽn	ţrẽn	Train
Ũni	Ũgli	Finger

CONCLUSION

The study was conducted to explore the phonological development in Urdu speaking children until 30 months. Considering the time constraints, the researchers focused only on the limited aspect of phonology. Mapping the phonological features of Urdu on Jacobson's phonemic development theory, it can be concluded that the findings of this study do not go along language universals completely. The conclusion regarding consonant acquisition in the fixed period from Urdu speaking children *departed* the theses proposed by Jacobson (1968) and mapped into the input hypothesis. Moreover, phonological processes of stopping, fronting and simplification also exhibited the features of the theory of language universals integrated with the input hypothesis. However, on the acquisition of voiceless phonemes before voiced consonants and initial voicing of devoiced consonants changing into devoicing of voiced consonants as moving towards velars from labials, the theses proposed by Jacobson requires full explanation concerning this study.

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