Word-final Consonant and Cluster Acquisition in Indian English(es)*

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1. Introduction

In the acquisition of a second language, numerous factors interact simultaneously, including the patterns of the first language (L1), the patterns of the target language (L2), universals of language acquisition, and the amount and type of exposure to the L2. English is learned as a second language in India, where the first languages of the English learners differ widely in the phonotactics of consonants and consonant clusters. Because of the diversity of L1 phonotactics and the relative unity of the L2 target, variations in Indian English can be used to test the effect of the L1 phonotactics on the acquisition of the L2, i.e., the role of transfer. OT accounts have proposed a means for modeling two other important factors in L2 acquisition, in addition to transfer: markedness/universals, and input frequency (e.g., Hancin-Bhatt and Bhatt 1997, Broselow, Chen, and Wang 1998, Hancin-Bhatt 2000, Broselow and Xu 2004, Hansen 2004, Peng and Ann 2004, Barlow 2005). The variations in L2 Indian English word-final consonant and cluster acquisition let us test the success of the OT approach.

In this study, data from speakers of five different Indian L1s were recorded speaking Indian English, and their production of word-final consonants and consonant clusters was examined. Their productions of the voicing of final obstruents depended heavily on transfer from their L1 or the emergence of the unmarked, with voiceless obstruents prevailing for speakers of the L1 that did not allow any word-final obstruents. Their production of final consonant clusters also revealed the effects of markedness and transfer, but, in addition, suggests that L2 speakers of English treat final clusters ending in /-s/ as special, just like L1 speakers. Applying the Graduate Learning Algorithm (Boersma 1997, Boersma and Hayes 2001) helps to illustrate that the special treatment of /s/ in clusters cannot result from frequency alone, supporting the claim that Cs clusters should be treated as special in L2 as well as L1 phonology (Yildiz 2005).

2. Data Collection

Data was gathered in Hyderabad, India, from twenty-five proficient speakers of Indian English. The participants had similar levels of education in English, most having begun to learn English in nursery or at the beginning of school (ages 3-5), and having attended English medium school. The participants were generally in their early to mid-twenties, and were attending college or university in Hyderabad, where the medium of instruction was English. The twenty-five speakers came from five L1 groups, five speakers in each group (see Appendix A for further details on the speakers and the location of their L1 languages).

The five L1s belong to two distinct language families spoken in India. Gujarati and Hindi, spoken in northern India, are both Indo-Aryan languages, distantly related to English, and with similar phonotactics for word-final consonants and consonant clusters (Mistry 1997, Ohala 1999). The other three, Angami, Ao, and Mizo, are spoken in the north-east part of India in the states of Nagaland and Mizoram; these languages are from the Tibeto-Burman language family and require much simpler syllable structure. Angami allows only CV syllables, with no final consonants or clusters (Ravindran 1974). Mizo and Ao each allow only a single consonant word-finally, limited to either a sonorant or a voiceless obstruent (Gurubasave-Gowda 1972, Chhangte 1986, Lalrindiki 1992, Coupe 2003). Indian English, the target language, allows the same consonants and clusters word-finally as other varieties of English such as

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British or American (CIEFL 1972, Pandey 1981). The phonotactics of word-final consonants in these different languages can be summarized as in Table 1:

L1s	Angami	Mizo	Ao	Gujarati	Hindi	Indian English
allows final C	no	yes	yes	yes	yes	yes
allows final voiced Obs	no	no	no	yes	yes	yes
allows final CC	no	no	no	yes	yes	yes

Table 1: Word-final Consonant Phonotactics of L1s and Indian English

Speakers were recorded reading a word-list and sentences to elicit the greatest level of accuracy in production. The word list consisted of 95 words in isolation; the sentences included 98 isolated sentences and 29 short dialogues; these were designed for examining the segmental inventories and phonotactics of the Indian English. There was also one short paragraph passage for examining segmental and prosodic characteristics in connected speech (from the George Mason University Speech Accent Archive).

The interviewer was a speaker of Indian English, to try to reduce accomodation. The stimuli were recorded on a DAT recorder and transferred via a CSL computer for analysis (sampling rate = 44.1 kHz). Transcriptions were made by one phonetically-trained researcher of isolated words, keywords from isolated sentences and dialogues, and the short passage. Of the word-final consonants examined, 18 were single consonants, including voiced and voiceless obstruents and voiced sonorants, and 28 were clusters grouped into eight types (see Table 2), including 6 types of CC and 2 types of CCC clusters. The CC consisted of nasal-stop, lateral-stop, lateral-nasal, fricative-stop, stop-/s/, and stop-stop. The CCC were classed as CC plus /s/ vs. CC plus stop.

Word-final Consonants	Types (and # words if > 1)	Tokens (per L1 group)
Voiceless Stops	p (2), t̪, ʈ/t (3), tʃ, k (2)	45
Voiced Stops	b (2), ɖ (3), dʒ, g (3)	45
Voiceless Fricatives	f, s (4), ʃ	30
Voiced Fricatives[1]	v (2), z (4)	30
Sonorants	l, m, n, ŋ	20
Totals	18 types	**170 tokens**
Word-final Clusters	Types (and # words if > 1)	Tokens (per L1 group)
Nasal-stop	mp, nt/ɳʈ (2), ndʒ, nd/ɳɖ (2)	30
Lateral-stop	lt(2), ld, lp	20
Lateral-nasal	lm	5
Fricative Stop	st (2),sk, ʃt	20
Stop-s	ps, t̪s, ʈs, bz,dz, gz	30
Stop-Stop	pt (2), kt (2)	20
CC-s	lts, mps, nts, fts, sks, sts, kts	35
CC-Stop	lpt, kst	10
Totals	28 types	**170 tokens**

Table 2: Word-final consonants and clusters, Types and Tokens, examined for each L1 group

[1] I examined the words "raise, wise, please, organize" for word-final /z/. The plural marker *s* is produced as [s] in all contexts by many Indian English speakers and therefore was avoided here. However, as the production of the plural as a voiceless fricative may be attributable to spelling, three of the four words used here may also be intentionally produced with the voiceless fricative /s/ rather than being cases of devoicing of an intended target /z/. There remains, however, a large difference between the behavior of the Tibeto-Burman L1 speakers and the Indo-Aryan (see Table 3), so that at least some speakers are treating these as final /z/.

3. Results

The productions of word-final consonants and clusters showed clear differences based on the L1 phonotactics; these results will be described first for single consonants (3.1) and then clusters (3.2).

3.1 Single consonants

Sonorant and voiceless obstruent: All speakers, from all L1s, produced sonorants and voiceless obstruents consistently and correctly. The results for sonorants are not listed in detail here because they are uniformly accurate, but note that even speakers of Angami, which allows no codas, have acquired word-final sonorants at this point.

Voiced Obstruents: The speakers of Tibeto-Burman languages, which allow no codas (Angami) or obstruent codas only if voiceless (Ao, Mizo) devoiced word-final consonants in their English far more than did speakers of Gujarati and Hindi, which do allow voiced obstruents in coda positions. Although the Gujarai and Hindi speakers do devoice occasionally, their overall averages are consistent with Edge's (1991, cited in Peng and Long 2004) findings of 2-16% devoicing for native English speakers performing similar tasks. Speakers of all L1 groups tended to devoice fricatives more than stops in word-final position.

	Angami	Ao	Mizo	Gujarati	Hindi
Voiced stops (45)	5	8	9	43	45
voiceless	39	37	36	1	0
deleted	1	0	0	0	0
Voiced Fricatives (30)	0	2	0	15	17
voiceless	29	28	30	13	13
deleted	1	0	0	2	0
% voiceless: stops	86.7	82.2	80	2.3	0
% voiceless: frics	96.7	93.3	100	43.3	43.3
% voiceless: overall	90.7	86.7	88	18.92	17.3

Table 3: Word-final Voiced Obstruents: numbers produced voiceless or deleted in English, by L1 groups

3.2 Clusters

Speakers of the L1s which do not allow clusters (Angami, Ao, Mizo) delete more often than speakers of L1s that do allow clusters (Gujarati, Hindi). Furthermore, not all types of clusters are subject to the same rates of deletion. Deletions were rare for nasal-stop and stop-fricative clusters for all L1s, and more common for fricative-stop.

Cluster (# of tokens)	Angami	Ao	Mizo	Gujarati	Hindi
Nasal-stop (30)	2	1	4	2	0
Lateral-stop (20)	2	2	4	1	1
Lateral-nasal (5)	1	2	3	2	0
Fricative Stop (20)	7	3	9	2	1
Stop-s (30)	0	0	2	2	0
Stop-Stop (20)	9	9	13	2	1
CC-s (35)	18	15	20	12	5
CC-Stop (10)	3	3	7	2	0
Totals	42	38	62	25	8
% altered (out of 170)	24.7%	20.6%	36.5%	14.7%	4.7%

Table 4: Word-final Clusters: numbers produced with C-deletion in English, by L1 groups

4. Analysis

Formulating the analysis as a ranking in Optimality Theory allows us to see that the results can be attributed partly to transfer and partly to the effect of universals. As with the results, I will first review the obstruent devoicing, followed by the cluster reduction (both in section 4.1). However, the results of cluster reduction reveal the need to modify the usual treatment of sonority sequencing, or consider a new factor, in order to explain the order of acquisition for clusters including /-s/. The learning algorithm is applied in order to illustrate the influence of L1 rankings on L2 acquisition, and to test whether frequency could be responsible for the acquisition order of stop-/s/ before /s/-stop in clusters (section 4.2). I conclude that frequency cannot be responsible if stop-/s/ clusters are treated as violations of sonority sequencing, and suggest that this provides support for treating stop-/s/ as special in word-final position..

4.1 Rankings in OT

4.1.1 Obstruent devoicing

Transfer and the emergence of the unmarked combined can, for the most part, account for the high rate of obstruent devoicing for speakers of L1s which allow either no codas at all or obstruents only if voiceless. A similar example of the emergence of the unmarked is analyzed in Broselow, Chen and Wang (1998), which drew on similar data for speakers of Mandarin Chinese L1. An additional observation here is the higher rate of voicelessness among fricatives than stops; this implies that perhaps voiced fricatives are even more marked than voiced stops. Such as implication is supported by languages such as Dutch, in which assimilation of word internal clusters results in voiced obstruents (stops and fricatives) in codas only when followed by a voiced stop in the onset; in other obstruent clusters, the presence of a fricative results in the cluster being produced as voiceless (Kager 1999).

The constraints to be ranked include at least a set of markedness constraints (1) limiting the appearance of consonants in the coda and the type of obstruents allowed in that position. The exact formulation of these constraints is not the focus here, so I will use the following for simplicity, while noting that some may actually be cover terms for the interactions of multiple constraints:

1) Markedness:

*CODA:	A syllable does not end in a C.
*OBSCODA:	A syllable does not end in an obstruent.
*VDOBSCODA:	A syllable does not end in a voiced obstruent.
*VDFRICCODA:	A syllable does not end in a voiced fricative.

Interacting with markedness constraints are faithfulness constraints, as in (2), which preserve the relationship between voicing values or voicing contrasts in the input and output forms, as well as the presence or absence of input segments:

2) Faithfulness:

IDENT-IO(voice):	An output segment is identical in [voice] to its input segment.
MAX-IO(C):	A C in input is present in output (no deletion).
DEP-IO(V):	A V in output is present in input (no epenthesis).

An OT account of devoicing as transfer involves using the L1 ranking of speakers of devoicing L1s as the starting points for learning the L2. In the L1s which have only voiceless obstruents in coda position, Mizo and Ao, markedness constraints against voiced obstruents in that position outrank constraints on faithfulness, so that any voiced obstruents in input would surface as voiceless. Conversely, in languages like Hindi and Gujarati, in which voiced obstruents do appear in coda position, the relative ranking must be reversed, with faithfulness outranking markedness. In both, the markedness constraints that prevent obstruents from appearing in the coda at all must be outranked by faithfulness, since these L1s do allow obstruent codas. For these languages, the L2 Indian English rankings are fundamentally the same as their L1 rankings:

3) **a) Ao, Mizo L1s & Indian English L2s:** obstruents allowed in codas only if voiceless
*VDOBSCODA, *VDFRICCODA >> MAX(C), DEP(V) >> *CODA, *OBSCODA, IDENT(voice)

b) Gujarati, Hindi L1s & Indian English L2s: voiced & voiceless obstruents allowed in codas
MAX(C), DEP(V), IDENT(voice) >> NOCODA, *OBSCODA, *VDOBSCODA, *VDFRICCODA

Both the ability of Hindi and Gujarati L1 speakers to produce voiced obstruents, and the tendency for Ao and Mizo speakers to produce voiceless obstruents in word-final positions, reflect their L1 rankings and can be attributed to transfer.

The situation for Angami is less straightforward, since in the L1 ranking, a markedness constraint against having any codas at all must rank higher than faithfulness constraints. The high ranking of *CODA obscures any effect of constraints such as *VDOBSCODA and *VDFRICCODA. If, following Gnanadesikan (1996) and others, we assume that L1 learners begin with markedness constraints ranked above faithfulness, to be lowered only in the presence of positive evidence that markedness can be violated, then we would leave these constraints against voiced codas ranked high in the Angami L1.

4) **Angami L1:** no obstruent codas allowed
*CODA, *OBSCODA, *VDOBSCODA, *VDFRICCODA >> MAX(C), DEP(V), IDENT (voice)
Angami Indian English L2: obstruents allowed in the coda if voiceless
*VDOBSCODA, *VDFRICCODA >> MAX(C), DEP(V) >> *CODA, *OBSCODA, IDENT (voice)

In learning English, Angami speakers have learned to violate the *CODA and *NOOBSCODA constraints in order to satisfy faithfulness. Their L2 Indian English productions reveal that the constraints against voiced obstruents remain highly ranked; thus the status of voiceless obstruents as unmarked and prefered in coda positions is revealed by their acquisition in L2 English before the acquisition of voiced obstruents. Thus, while transfer accounts for the presence of the voicing contrast in Hindi and Gujarati L1 speakers and for the lack of the contrast for Ao and Mizo speakers, here we see the emergence of the unmarked (TETU) is needed to account for the lack of a voicing contrast in codas for the Angami L1 speakers.

4.1.2 Deletion in clusters

Again, transfer from L1 and the emergence of the unmarked are factors in accounting for the cluster deletion results. In an OT analysis, clusters in final position would be limited by constraints on the complexity of the coda in terms of numbers of consonants, as well as constraints on sonority sequencing and sonority distance between the consonant members of the cluster (Steriade 1982, Selkirk 1984).

5) **Markedness:**

*COMPLEXCODA:	No consonant clusters in Coda.
SONSEQ:	Clusters fall in sonority in the coda.
MSD	Cs in the coda differ in sonority by a minimum of 2.[2]

These constraints are ranked in relation to the faithfulness constraints in (2) above. If all the markedness constraints in (5) are ranked higher than faithfulness, we expect consonant changes or deletions, or epenthetic vowels to appear in the output. If faithfulness ranks high, clusters will be faithfully produced. With constraints on markedness interleaved with faithfulness, we would expect some clusters to be produced accurately and others to be altered to satisfy the constraints on number or sonority.

The L1s of our speakers differ in their rankings of these constraints. Angami, Ao, and Mizo have no clusters allowed, so that *COMPLEX must rank high in the L1 grammar. If we again assume that learning

[2] These last two constraints in (5) are also simplified for expository purposes, and may instead be considered families of constraints whose members are strictly ranked with each other but may be interleaved amongst the faithfulness constraints.

an L1 in general begins with Markedness >> Faithfulness, L1 learners have no reason to rerank any of the markedness constraints that refer to types of clusters either, resulting in L1 grammars in which markedness outranks faithfulness.

6) **Markedness >> Faithfulness in the Angami, Ao, and Mizo L1 grammars**
*COMPLEXCODA, SONSEQ, MSD >> MAX(C), DEP(V)

On the other hand, Hindi and Gujarati allow complex codas; therefore speakers of these L1s have demoted the constraint *COMPLEXCODA in their L1 grammars. These codas clusters are subject to the constraints of sonority sequencing and minimal sonority distance, which means that these constraints remain ranked high and markedness and faithfulness are interleaved.

7) **Markedness and Faithfulness interleaved in the Gujarati and Hindi L1 grammars**
SONSEQ, MSD >> MAX(C), DEP(V) >> *COMPLEXCODA

Transfer of the L1 ranking predicts that speakers of Hindi and Gujarati will repair only clusters that are marked in terms of sonority sequencing/MSD, while speakers of Angami, Ao, Mizo will repair complex clusters of all kinds in their L2 Indian English. However by the effect of the Emergence of the Unmarked (TETU), if *COMPLEX is lowered first, then the role of SONSEQ and MSD can be revealed, so that Angami, Ao, and Mizo speakers too will acquire less marked clusters first. The results in Table 4 did show a higher number of deletions for speakers of the L1s that lack complex codas, ranging from 20.6% for Ao speakers up to 36.5% for Mizo speakers, while Hindi speakers had the lowest rate of deletions at 4.7%. Furthermore, the overall pattern for all speakers reveals more deletions in clusters which are very marked for sonority sequencing and distance, such as stop+stop and lateral+nasal clusters, and few if any deletions for the less marked nasal+stop clusters. However, there is one case in which the relative markedness and order of acquisition may have diverged, as shown in (8):

8) **Two consonant cluster markedness by sonority sequencing and the MSD:**

Least			Most
NS, LS	**FS**	**SF**	SS

Two consonant cluster acquisition order by speakers of Indian English:

First			Last
NS, LS	**SF**	**FS**	SS

Fricatives are generally ranked higher in sonority than stops, so that a post-vocalic fricative-stop sequence should better obey SONSEQ than a stop-fricative cluster, as we prefer for sonority to fall away from the syllable nucleus. However, deletions were more common in /s/-stop clusters than in stop-/s/. Two explanations seem most likely for this: either the markedness constraints on sonority sequencing do not treat stop-/s/ as more of a violation than /s/-stop, or an external factor such as the frequency of stop-/s/ clusters in final position in English is able to outweigh the apparent sonority violation. I turn to the role of frequency in the following section.

4.2 Modeling Lerning in OT using the GLA

The Gradual Learning Algorithm (GLA) in Stochastic OT (Boersma 1997, Boersma and Levelt 1999, Boersma and Hayes 2001) can be modeled in Praat (Boersma and Weenik). In this model, learning procedes by an error-driven algorithm, as the grammar compares the forms that it generates to a set of input-output pairs and changes the ranking if the forms it generates do not coincide with the target. The learning can be based on input-output pairs with different weights, to represent the frequency that the learner uses the pairs for learning. The model has been applied to L1 learning (Boersma and Levelt 1999), who stop the learning at different stages in the learning process to investigate the order of acquisition of syllable types. I follow their procedure here, with a change in the starting state to make the model suitable for investigating L2 learning. The initial grammar of the learning of an L1 is usually assume to be either a set of constraints with of equal ranks, or a set with all markedness constraints outranking all faithfulness constraints. Here, in order to model the effects of L1 transfer on L2 acquisition, I begin with the constraints pre-ranked to an L1 setting.

4.2.1 Devoicing

In section 4.1.1, I divided the L1s into three groups with distinct L1 rankings: Gujarati and Hindi L1s allowed obstruents to contrast in voicing in the coda, Ao and Mizo allowed obstruents only if voiceless, and Angami allowed no obstruent codas. Applying the GLA to input-output pairs from English, which allows voiced obstruent codas, and beginning with the L1 ranking, we model the order of acquisition found, as in (9):

(9) Acquisition of coda segments: sonorants, voiceless obstruents, voiced stops, voiced fricatives

- sonorant codas before obstruent codas
- voiceless obstruent codas before voiced obstruent codas
- voiced stop codas before voiced fricative codas

However, beginning the learning from a set of unranked constraints, or Markedness >> Faithfulness, and using the same input-output pairs, resulted in errors that the Ao, Mizo, Hindi, and Gujarati speakers do not make, such as deletion of single consonant codas, or extensive devoicing for the Hindi and Gujarati speakers. By virtue of their acquisition of their L1 rankings, such speakers begin learning their L2 from a different starting point and avoid these outputs.

4.2.2 Cluster simplification: markedness and input frequency

Applying the L1 rankings to input-output pairs from English with various clusters results in L1 speakers of Angami, Ao and Mizo speakers deleting more in all clusters of English than do L1 Hindi and Gujarati speakers. As with learning devoicing, starting from unranked constraints did not show this effect. The model was first run with the constraint SONSEQ marked as violated by stop-/s/ clusters, and satisfied by /s/-stop clusters. With this evaluation of the constraint, regardless of the initial ranking of the constraints, the GLA does not learn stop-/s/ clusters before /s/-stop.

(10) If stop-/s/ violates SONSEQ more than /s/-stop, we always get acquisition of:
NS and LS before FS SF before SS
and FS before SF (no matter where we start– unranked or L1 rankings)

As /-s/ is a common word-final morpheme (present tense, plural), one possible explanation for the early acquisition of stop+/s/ clusters is their frequency. Broselow and Xu (2005) suggest that input frequency influences learners' order of acquisition of other constraints, and test this using the GLA. However, the case here is different in that we are comparing two clusters that may differ only in a single constraint; can a more marked cluster be acquired earlier due to greater frequency alone? I first attempted to estimate the actual frequency ratio of stop-/s/ to /s/-stop clusters in word-final position; based on the first 2000 words of Wikipedia, this ratio was only 49:46, a ratio that had little effect on learning at all. Next, I exaggerated the difference to 100:1, which also did not result in learning stop-/s/ faster than /s/-stop; the effect of manipulating the frequency ratio was to slow the rate of /s/-stop acquisition, as more frequent stop-/s/ meant slower /s/-stop acquisition. With stop+/s/ having one additional markedness violation over /s/+stop, additional frequency alone could not account for the earlier acquisition of stop+/s/ in the GLA.

A second possible explanation for the acquisition of stop+/s/ clusters is that they are not more marked in word-final position than /s/+stop clusters. There have been numerous proposals within phonology to the effect that a word-final /s/ is external to the coda, as an appendix or extraprosodic, so that it does not trigger a violation of sonority sequencing, which applies only internal to the coda. When the GLA learns based on marking SONSEQ as either violated by both clusters or satisfied by both, the results were that the

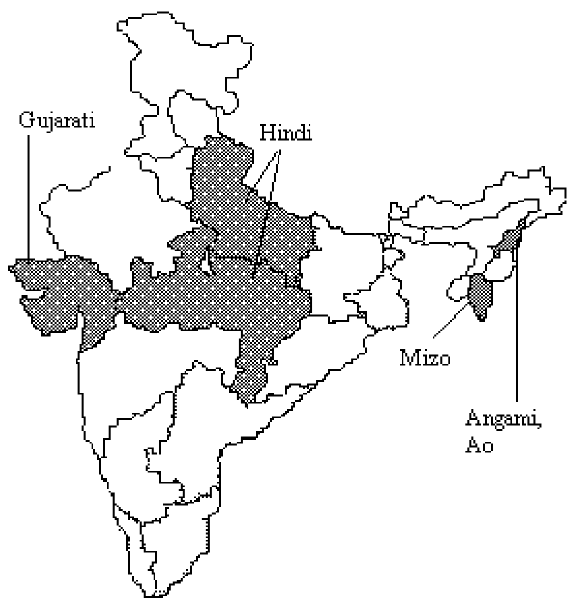
GLA learned the more frequent cluster first. This L2 acquisition data and the GLA modelling of it lend support the idea that stop+/s/ clusters are special in English.

5. Conclusions and further questions

This project illuminates how speakers starting from different L1 rankings reach different grammars along the way to acquiring the same L2, and showed that transfer and TETU can be modeled in the GLA. Using data from SLA provides a window for testing the role of markedness constraints vs. frequency in input. Frequency may not be able to overrule a markedness constraint, though it can affect the rate of acquisition. The use of relative frequencies in production also provides a way to evaluate markedness of various clusters, in this case supporting stop-s clusters as equally or less marked than s-stop, in word-final position.

This study has been based on a relatively small number of words from a relatively small number of speakers of each L1; furthermore, participants were reading, which may lead to different results than spontaneous speech. The results are suggestive of directions for future research, to check whether the generalizations of acquisition of voicing contrasts and cluster production hold true when measured for more speakers and/or a larger, more varied, corpus of data. Furthermore, an additional factor in the acquisition of voicing and clusters has not been explored here at all, that of perception (as in, e.g., Broselow and Xu 2004). Speakers of L1s that lack voiced obstruents in the coda, for example, may not uniformly or reliably perceive the contrast in voicing in the coda of the L2 English, and this would certainly affect their productions of the L2 as they may be aiming for a voiceless target. Future research should include measuring the perception in speakers of these L1s, as well as simulating interference from inaccurate perception when learning using the GLA.

Appendix A



Gujarati: 1M/4F, ages 18-24**,** geographically diverse: Calcutta (1), Mumbai (1), Hyderabad (3); parents all speak Gujarati as L1. Four began learning English in nursery (age 3-4), one in school (age 5 yrs old); all speak Hindi as well as English and Gujarati.
Hindi: 3M/2F, ages 21-25; from Delhi (2), Lucknow (2), and Jabalpur MP (1); parents all speak Hindi as their L1 and each had at least one parent who spoke English as well. Started learning English in nursery or KG (aged 3-5), English medium throughout.

Angami: 2M, 3F, ages 21-26; all from Kohima district. Parents' mother tongue was also Angami (or Tenyidie); parents and subjects generally speak Nagamese and Hindi (less fluent) as well as Angami and English. English-medium from nursery or LKG; never used local languages in school.
Ao: 3M/2F, ages: 21-25; from various areas in Nagaland: Dimapur (1), Tuensang (1), Mokokchung (3). Parents' mother tongue Ao ,though they reported different varieties (Changki, Chungli, Mongsen). Three parents also had some English. School was English medium throughout.
Mizo L1: 2M/3F, ages 22-28; from Mizoram, Aizawl (3), Lunglei (1), Chhimluang (1); parents' L1 Mizo, and most parents speak some English as well. Four had English as the medium from KG (age 4-5), but one did not start until class 8 (age 12), with ESL.

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