Towards a description of Tamil English Standard Pronunciation

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This paper seeks to make a contribution to the description of an accent of English associated with educated professional speakers who speak Tamil as their mother tongue. Due consideration is given to the phonology of standard Tamil and to Indian English, but original data is derived from field work conducted in Salem, Tamil Nadu.

The methodology used for the production of perceptual and articulatory data has its origins in the applied linguistics study of intelligibility, and is explained in due course; because of time constraints in the field, attention is confined to just the segmental characteristics of the accent. The data is handled in detail and suggests some differences between Tamil English Standard Pronunciation, as the accent is designated, and the more general Indian English Standard Pronunciation; a comparison with Southern England Standard Pronunciation ('RP') is described in terms of systemic, distributional, realizational and lexical differences.

Tamil English Standard Pronunciation is deemed to be an important variety of English accent because of the size of its population which easily matches that of 'RP', and therefore merits the kind of attention that this paper offers.

Towards a description of Tamil English Standard Pronunciation

This paper aims to offer a contribution to the description of one kind of Indian English pronunciation, particularly in respect of educated Tamil English speakers' perception and articulation of word phonology. A group of 30 Tamil lecturers and professors whose academic life is conducted solely through English were willing to be subjected to a simple word perception experiment and to an articulation experiment that was processed by 5 British judges for intelligibility purposes.

The focus of attention was limited to the vowel and consonant constituents of word phonology. Prosodic features, like word stress, rhythm and intonation, were not tested, despite the widely claimed importance of them (Nihilani et al 1979:207; Bansal 1983:17), in order to keep the current project manageable. This is not to promote segmental competence unduly, but simply to recognize the size of the task that confronts the linguist when investigating the full range of phonological competence. Nevertheless, segmental competence is an essential component of the full phonological description of Tamil English.

There is no doubt about the validity and legitimacy of Indian English among linguists, but the question of intelligibility was a concern that was constantly expressed during field work in Tamil Nadu. The 30 subjects were all highly qualified academics in Higher Education, but not necessarily linguists. Their academic allegiances were to departments of Mathematics, Computing, Engineering, Electronics, Art & Fashion, English, Commerce and Human Resources. A constant concern was "Is my pronunciation good enough?" Their criterion appeared to be conformity to a standard form of native speaker pronunciation like British Received Pronunciation - in this project referred to as Southern England Standard Pronunciation (SESP). In reply, a constant reassurance was offered: Tamil English Standard Pronunciation (TESP) is perfectly acceptable and legitimate, but it is in some respects different from SESP. The issue of intelligibility between speakers of different accents of the same language is a valid issue for consideration. However it should be borne in mind that issues of intelligibility between TESP and SESP speakers are no different from those between SESP and American accents, or between Tamil English speakers and Urdu English speakers. A SESP speaker might have more difficulty in understanding a working

class accent from Tyneside (in the north of England) than in understanding an educated Tamil English accent.

This paper is devoted to the description of TESP, but will also discuss questions of intelligibility. It is a study of accents, not a study of interlanguage, as if the Tamil academics are 'learners' of the language. No, they are proficient users of Tamil English, but all concerned recognize that there are differences. It is also worth noting that the Tamil-speaking world has approximately the same population as the UK, and so potentially, the size of the SESP community (reckoned to be approximately 4% of the UK population) is probably no greater than the size of the TESP population. Nevertheless, there well may be a distinction in prestige, as SESP has a high status among native speakers in UK which is made available throughout the world via the BBC; it is perhaps more likely that TESP speakers will come into contact with SESP than vice versa.

This paper proceeds as follows: a presentation of standard Tamil word phonology will provide essential information to understand a number of characteristics of TESP, and a presentation of standard Indian English phonology will contribute a useful guide for comparison with SESP. The perception data will be presented with a review of the most salient features, and this is followed by the production data. The differences between the two accents should emerge, and areas of potential problems in intelligibility should be revealed.

Standard Tamil word phonology

Word phonology refers to the set of syllabic structures and systems of phonemes and prosodics that constitute the basis of the spoken form of words in a given language. For instance, in English, base forms of words (ie monomorphemic items like *boat, river, crocodile,* but not *boating, riverside, reptilian*) usually have a maximum of three syllables (although there are a few monomorphemic items with four, eg *caterpillar, catamaran, hullabaloo*), a prosodic system of degrees of word stress, phonemic systems of strong and weak vowels, and of consonants in specific phonotactic arrangements. Word phonology embraces all the structures and systems that are permissible in the formation of words that are characteristic of a given

language. Thus, the word phonology of Tamil will be distinctly different from the word phonology of English.

The following charts and discussion are based primarily on the following studies: Asher (1982), Steever (1998), Schiffman (1999), Krishnamurti (2003) and Keane (2004, 2006).

Consonant chart

	bilabial	labio-dental	dental	post-alveolar	retroflex	palatal	velar	glottal
Plosives	p (b)		t (d)		ʈ (ɖ)		k (g)	
Affricate				tʃ (dʒ)				
Nasal	m		n		ɳ	ɲ	(ŋ)	
Fricative		(f)	s (z)		(ʂ)			(h)
Tap			ɾ					
Lateral			l		ɭ			
approximant		ʋ			ɻ	j		

( ) = additional phonemes mainly confined to loan words

Vowel chart

iː i		uː u
eː		oː
e [ɛ]		o [ɔ]
	aː a	

		ũ
ẽ [ɛ̃]		õ [ɔ̃]
aɪ*	ã aʊ*	

* = relatively rare

See Asher (1982), Schiffman (1999) and Keane (2004) for full descriptions of the consonants and vowels. This discussion is confined to a consideration of those features that impinge on the description of TESP.

The plosive system of the native Dravidian lexicon does not employ voicing as a distinctive feature. Word-initially, plosives are voiceless; aspiration is either very light or not present at all, in noticeable contrast to the heavy aspiration of SESP voiceless plosives. Medially, they are voiced following a nasal, and are either voiced or fricativized intervocalically; however, a geminate voiceless plosive contrasts with singletons. They do not typically appear in final position as most Tamil words have suffixes with a final vowel.

As Tamil borrowed words from Sanskrit, Persian and English, a contrast in voicing has been established, mainly in word-initial and word-medial positions. The new extra phonemes are indicated by brackets in the consonant chart, and are exemplified in /ɓas/ ('bus') , /dɛnɔ̃/ ('daily'), /ɖaːkʈar/ ('doctor'), /maggu/ ('mug'); see Asher 1982: 213.

The affricate /ʧ/ follows the plosive pattern: voiceless in initial position; voiced following a nasal, and either voiced or fricativized (as [s]) intervocalically; a voiceless geminate version occurs contrastively intervocalically. /ʤ/ has also been established in word-initial position in loan words, eg /ʤuɾɔ̃/ ('fever'); see Asher 1982: 213.

Thus Tamil provides limited parallels to SESP plosives and affricates in word-initial and -medial positions, but not at all in word-final position. However, SESP speakers rely heavily upon the presence of aspiration to distinguish voiceless from voiced plosives, while TESP speakers appear not to. We might therefore expect realizational differences in the degree of voicing and aspiration between TESP and SESP; Narasimhan (2001: 245) confirms this. In respect of word-final position, considerations from universal phonological characteristics would lead us to expect an abandonment of a system based on voicing, in favour of voiceless plosives.

The Tamil nasal system is greater than that of English but includes equivalents of English /m, n, ŋ/. This suggests unproblematical TESP /m, n/ in word-initial and -medial positions, but nasals in final position might well be expected to constitute a problem since Tamil relies on nasalized vowels in that position; thus distinctions between the three nasals might well be lost in TESP in word-final position.

Fricatives are a greater problem altogether. /ʂ/ occurs word-initially, and as the allophonic realization of /tʃ/ in intervocalic position. It occurs in a few loan words in final position, eg /bas/ ('bus'), /ʂaɾkas/ ('circus'). /z/ only occurs in a few loan words: /zuː/ ('zoo'), /fiːz/ ('fees'). /f/ likewise: /foːʈoː/ ('photo'), /tɛlifoːn/ ('telephone'); Asher (1982: 214) notes that such loan words have an alternative pronunciation in Tamil with /p/. /v/ does not occur, neither do /θ/ and /ʒ/. [ð] occurs

as the allophonic realization of Tamil /t/ in intervocalic position. English /ʃ/ is represented in loan words as Tamil /ʂ/: /ʂaːppu/ ('shop'); the Indian name *Lakshmi* is /lakʂmi/. /h/ also occurs solely in loan words: /hindi/ ('Hindi'), although it is dropped by many speakers.

Tamil /ɾ/ currently represents a merger between /r/ and /ɾ/ (see Keane 2004: 113) and thus appears in both initial and medial positions. /ɻ/ occurs medially and finally, but is often pronounced with a lateral contact (Keane 2004: 113); indeed as Schiffman (1999: 7-8) explains, the name 'Tamil' is strictly /tamiɻ/. Tamil /ɾ/ has the distribution of SESP /r/, but is realizationally different: SESP /r/ is mainly realized as [ɹ].

Tamil /l/ occurs freely in initial, medial and final positions, but is articulated 'clear' in each case, unlike the 'dark' [ɬ] of English in syllable-final position. Tamil /ɭ/ represents English /l/ in loan words, in word-initial clusters and in final position: /gɭaːs/ ('glass'), /aːppiɭ/ ('apple') (Asher 1982: 216). Thus Tamil /l/ has the distribution of SESP /l/, but is realizationally different in word-initial clusters and in final position; Narasimhan (2001: 246) confirms this.

Tamil /ʋ/ occurs initially and intervocalically; it is the closest equivalent to both /v/ and /w/ in English. It is thus expected that SESP /v/ and /w/ will merge for many speakers, and that /v/ might not appear in final position. If it does appear in final position, consideration of universal phonology would lead us to expect it to be produced as /f/ by TESP speakers.

Tamil /j/ shares the realizational and distributional features of SESP /j/. However, a feature of Tamil /ʋ/ and /j/ is distinctive: they occur automatically as onsets to words beginning with respective close vowels. (Keane 2004 explains this (p. 114), but curiously ignores /ʋ, j/ otherwise.). We might well, therefore, expect some TESP speakers to pronounce *east* as /jiːst/ ('yeast') and *ooze* as /ʋuːz/ ('woos').

Asher (1982: 226) lists the following word-initial consonant clusters in Tamil:

/pɾ, bɾ, tɾ, dɾ, ʈɾ, kɾ, gɾ, kʂ, sp, st̪, sk, sn, sʋ, vj/ and /stʈɾ, skɾ/;
also /gl̪/ in /gl̪aːs/ (‘glass’) (p 216). The most notable ‘absences’ from a SESP point of view are most clusters with /l̪/, and most clusters with /j/ and /w/. Clusters with /f, θ, ʃ/ are also missing, as is /sm/.

Word-final clusters are fewer in number: /lb, lk, ɾʈ, ɾɖ, ɾk, ks, ŋk/. Asher (1982:226) comments: “This is indicative of the possibilities rather than definitive. Clusters may be lost through the discontinuation of the use of certain loans, or the set may be increased by the introduction of new loans.” All word-final clusters are loan words only. In SESP, there are 20 final consonant clusters with /l/ alone, plus another 32 combinations, besides all the morphologically complex clusters with <-ed> and <-es>. We would, therefore, expect TESP initial clusters to match most of those in SESP but speakers to simplify most of the final ones.

Tamil has a neat symmetrical set of 5 vowel qualities with two degrees of length, a pair of diphthongs /ai, au/ and a set of 4 nasalized vowels (there is no [ĩ]) . The close pairs /ɪ, iː/ and /ʊ, uː/ have near Cardinal Vowel values and only approximate to SESP /ɪ, iː/ and /ʊ, uː/ (but see also below). The mid front pair /e, eː/ (note that Asher (1982) transcribes the short vowel as [ɛ]) approximates to SESP /ɛ, eɪ/ and the matching back pair /o, oː/ might be considered as approximating to SESP /ɔː, əʊ/ but not /ɒ/. The open pair /a, aː/ approximates to SESP /æ, ɑː/, but nothing approximates to SESP /ʌ, ɜː/. The diphthongal pair approximates to SESP /aɪ, aʊ/, but nothing approximates to /ɔɪ/ or the centring diphthongs /ɪə, ɛə, ʊə/, nor to the weak vowel /ə/.

However, the situation is not as simple as this. Tamil /a/ in final position is articulated as [ə]; /u/ in final position retains its quality if the preceding vowel is rounded, but becomes [ɨ] otherwise. This indication of vowel harmony leads us to consider a rather more important case: a syllable containing /i, u/ will not be followed by syllables containing /e, a/ (Asher 1982: 229), and /ɪ, u/ in an open syllable are lowered when the next syllable contains /a/ or /ai/ (Keane 2004: 114). /j, ʋ/ onsets to otherwise initial front and back vowels were mentioned above.

Nasalized vowels occur, phonologically, only in word-final position; phonetically, they also occur between nasal consonants. (Note that Asher (1982: 221-2) transcribes /ẽ/ as [ɛ̃], and /õ/ as [ɔ̃]; /ũ/ changes to [ʉ̃] when preceded by an unrounded vowel.)

The implications for TESP might be as follows:
1 corresponding vowels, though not necessarily realizationally identical, to
/iː, ɪ [i], eɪ [eː], ɛ, æ [a], ɑː, ɔː, əʊ [oː], uː, ʊ [u], aɪ, aʊ/;
2 vowels with no correspondence /ɒ, ʌ, ɜː, ɔɪ, ɪə, ɛə, ʊə/ which might merge with those vowels listed in 1 above; this is partly confirmed by Narasimhan 2001: 245;
3 /ə/ in word-final position only;
4 a tendency to add in word-initial position /j/ before front vowels, and /w/ ([ʊ]) before back vowels;
5 nasalization of vowels instead of vowel + nasal in word-final position.
6 the vowel harmony of Tamil might have a 'transferred' effect on the articulation of vowels in adjacent syllables.

Tamil has no lexically contrastive stress, but Keane (2004: 115; 2006) notes that word-initial syllables tend to have some phonetic prominence. Tamil is also said to tend towards syllable-timing (Asher 1982: 230-1). Thus, TESP is likely to be characterized by these prosodic tendencies from Tamil.

Indian English Standard Pronunciation

We turn now to a brief review of the accent associated with Educated Indian English speakers. We are indebted in particular to Bansal's intelligibility studies (Bansal 1976, 1983) and to the codification of Indian English produced by Masica (see CIEFL 1972) and Nihilani, Tongue & Hosali (1979). These studies form the basis of other presentations, notably Wells (1982) and Trudgill & Hannah (2002). Following Wells, we discuss four kinds of variation within accents: systemic, realizational, distributional, and lexical. Systemic differences between SESP and Indian English Standard Pronunciation (IESP) will be evident from the consonant and vowel charts; realizational and distributional differences will be discussed after the charts are

presented, but lexical differences will only be treated incidentally (many examples are supplied in the Bansal and Nihilani, Tongue & Hosali publications.)

Consonants

The 23 consonants of IESP are as follows:

	bilabial	labio-dental	dental	alveolar/ retroflex	post-alveolar	palatal	velar	glottal
Plosives	p b		t̪ d̪	t d			k g	
Affricates					tʃ dʒ			
Fricatives		f		s z	ʃ ʒ			h
Nasals	m			n			ŋ	
Lateral				l				
approximants		ʋ		ɹ		j		

Voiceless plosives tend to be unaspirated. Dental plosives correspond to SESP /θ, ð/ as Nihilani et al 1979: 230 recommend; the IESP plosive system tends to accommodate them by backing /t, d/ to retroflex positions, to create sufficient articulatory 'space'. These features of IESP plosives are matched in Tamil and reinforce expectations of TESP.

The post-alveolar affricates and fricatives tend to be articulated with lowered tongue tip (Bansal 1976: 18) and thus realized more like palatalized forms [tʲ, dʲ, ɕ, ʑ]. Wells (1982: 627) notes that some (IESP) speakers lack /ʒ/ and use /ʃ/ instead – thus *measure* becomes /mɛʃə/ ("mesher"); others lack both /ʒ/ and /ʃ/ and replace them with /z/ and /s/; while others do not distinguish between /dʒ/ and /z/. (Nihilani et al 1979: 230 recommend the replacement of /ʒ/ by /ʃ/.)

/l/ remains clear in all positions, as in Tamil. /ɹ/ is either [ɹ] or alveolar flap [ɾ] (Bansal 1976: 18); Tamil has the latter. The distribution of IESP /ɹ/ is wide, as for 'rhotic' accents; this has implications for the vowel system (see below). (It should be noted, however, that Trudgill & Hannah (2002: 130) dispute the rhoticity of IESP.)

IESP, like Tamil, has /ʋ/ for SESP / v / and / w /. Whereas Nihilani et al (1979: 211-2) recommend that /v/ and /w/ should be distinguished by speakers of IESP, Bansal (1976, 1983) and Wells (1982: 627) accept /ʋ/ as a feature of IESP, thus marking the

most significant consonantal systemic difference with SESP. This systemic difference may also take the form of replacing /v/ with /b/ as in *"V. for bictory"* (Mehrotra 1998: 94-5).

Bansal (1976: 19) and Nihilani (p. 230) both accept that word-final SESP /ŋ/ may well be articulated by many as /ŋg/ in IESP, in which case the velar nasal is reduced in status to an allophone of /n/.

Wells (1982: 628-630) notes a number of spelling pronunciations that affect the IESP consonant system in a marginal way: *ghost* with [gɦ], *which* with [ʊɦ] or [wɦ], combinations that are peculiar to Indian speakers of languages with voiced aspiration. Spelling pronunciation no doubt also accounts for the rhoticity of IESP.

Consonant clusters in general constitute particular difficulties. Bansal (1976: 20) indicates that either a consonant is omitted or a vowel is added, but he did not elaborate. Wells (1982: 630) and Khan (1991), however, do. Wells draws attention to initial clusters with /s/, whereby a prothetic vowel is added to facilitate /s/ + obstruent, eg *still* as [ɪˈstɪl] – see also Trudgill & Hannah's example (2002: 130), *speak* as [ɪˈspiːk] – and an epenthetic vowel to facilitate /s/ + sonorant, eg *slow* as [səˈlo]. He also draws attention to strategies with /s/ clusters in final position, usually deletion of the plosive, eg *desk* as [d̪ɛs], *works* as [ʊərs]. Khan investigated the articulation of other final clusters (see also Schreier 2005: 185-7). There was a high level of /t/ deletion after /s/ as in *fast, cost, just, mist,* although she noted that the level of /t/ deletion in *missed* was lower, as was /d/ deletion in *loved, amazed.* /d/ deletion was high after sonorants as in *attend, blend, cold, gold, sold, bold;* however, representing <-ed > in *called, rolled, opened, rained, happened,* /d/ was deleted at a lower level. Deletion of /t/ after a plosive happened less often (eg *act, fact, apt, sect);* representing <-ed >, /t, d/ deletion happened accordingly less often. This suggests that IESP speakers may often be conscious of the grammatical value of the plosive representing <-ed > in a way that many SESP speakers are not. See Khan 1991:292 for details. Khan also noted a tendency to delete voiceless plosives after sonorants, eg *scent, rent, belt, melt* lose /t/, *silk, milk* lose /k/ (see p. 291 for details.)

It seems that, in general, whereas many speakers of IESP may well experience some difficulty with initial clusters, TESP speakers will not; but that TESP speakers join all IESP speakers in experiencing difficulties with final clusters.

Vowels

iː		uː
ɪ		ʊ
eː	ə/ʌ	oː
ɛ		
æ aː		ɒ ɒː

ɪə		ʊə
eə		
		ɔɪ
aɪ	aʊ	

The distinctions between /iː - ɪ/ and /uː - ʊ/ are maintained in stressed syllables; [i] occurs in weak open syllables, eg *Daddy* [dædi] (Bansal 1976: 15) and /iː/ in weak closed syllables, eg *studied* [stədiːd].

/eː/ and /oː/ correspond to SESP /eɪ/ and /əʊ/; [e] occurs in weak syllables eg *cottage* [ˈkɒtedʒ]. /ɛ/ is noticeably opener than the latter, as in *bed* /bɛd/. This accords with Tamil. Note that Shackle (2002: 229) suggests that IESP /oː/ has a more open articulation [ɔː].

/aː/ is noticeably more front than SESP /ɑː/; /r/ is retained in words like *start* /staːrt/. The length contrast of /ɒ - ɒː/ accounts for *cot* and *caught*, but *shot* and *short* are distinguished solely by the presence of /r/ (Bansal 1983: 5). Nihilani et al (1979: 232) note that SESP /ɔː/ "gets realized as [ɒ], [ɒː] and [o] in Indian English". This range of variability roughly corresponds to the problems that a contrastive analysis with Tamil would suggest.

Wells (1982: 626-7) and Trudgill & Hannah (2002: 130) also draw attention to the influence of spelling pronunciations where SESP /ɒ/ and /ɔː/ correspond to <a>, eg *want, sausage, all, caught, saw,* where an alternation with /aː/ is common. Bansal (1976: 15) likewise notes IESP *warden, rewarding* as [wardən], [rɪˈʊardɪŋ].

The central IESP vowel /ə/ corresponds to both SESP /ʌ/ and /ɜː/, thus *bud* and *bird* as /bəd/ and /bərd/, as well as the weak vowel in *about.* Again, spelling influences

the pronunciation of SESP /ə/: *arrive* as [æˈraɪʊ], *comma* as [ˈkɒma], *bravest* as [breːʊɛst], *introduce* as [ˈɪntroˌdjuːs]; weak forms are treated as a corresponding strong vowel represented in the spelling: *a* as [e], *to* as [tʊ], *from* as [frɒm], *and* as [ænd], *that* as a conjunction as [d̪æt], *can* as [kæn], etc (Bansal 1976: 6; Wells 1982: 627).

Centring diphthongs match those of SESP, though /eə/ begins with a closer tongue position. /r/ is retained as in *near* /nɪər/, *square* /skweər/, *cure* /kjʊər/, although Wells (1982: 626) notes also [oər] and [ɔər] for the latter. The centring diphthongs do not occur, however, before an intervocalic /r/; thus *period* is [ˈpiːrɪəd], *area* is [ˈeːrɪa], *during* is [ˈdjuːrɪŋ] (Bansal 1976: 17).

As noted above, educated Tamil speakers of English are likely to conform to IESP /eː, oː/, and to the degree of indeterminacy surrounding the vowels corresponding to SESP /ɒ, ɔː/ and /ʌ, ɜː, ə/ and, quite possibly, to cases of spelling pronunciation. However, they are likely to differ from most IESP speakers over the pronunciation of /ɔɪ/ and the centring diphthongs; they may not distinguish /ɪ/ from /iː/ and /ʊ/ from /uː/ in quite the same way and are likely to add /j/ and /ʊ/ to initial front and back close vowels. Shackle's note on the Indian pronunciation of SESP /ɒɪ/ as [aːɪ] (Shackle 2002: 229) is appropriate for a Tamil speaker.

Stress

Bansal (1976: 20) noted that "A common fault among Indian speakers is the incorrect accentuation of English words, that is, accenting them differently from the usual native pattern". This remark was adjusted – surely, correctly – to "The patterns of accent ..... in Indian English are often different from those in native English" (Bansal 1983:8). Examples provided include *character* [kæˈrɛktər] (although this pattern was once true of RP – see Gimson (2001: 231), *educated* [edʒʊˈkeːtɛd], *necessary* [nɛˈsɛseri] (Bansal 1976: 20-1). IESP pronunciations like *develop* /ˈdɛvɛlɒp/ and *event* /ˈiːvɛnt/ seem to be permanent, despite all Nihilani et al's (1979: 213-219) advice to "refer to an English Pronouncing Dictionary to check the correct stress…"

The syllable timing of Indian languages clearly contributes to such differences, but in the case of Tamil, it is not only syllable timing but also the lack of any clear use of prominence in word phonology that would make the perception and production of SESP stress patterns difficult.

We turn now to the experimental data.

Perception

Our phonological competence is both receptive and productive, that is, we have to recognize other people's phonological output when we hear them, and produce our own phonological output when we speak. Phonological competence is more than the recognition and production of the consonants and vowels of a language, but that is what we shall concentrate on in our report of the experiments. Phonological competence naturally embraces prosodic features too, but also the 'shape' of word phonology as alluded to earlier. (It also includes the recognition and production of the phonological processes at work when words come together in phrases (eg assimilation, elision, etc); it includes rhythmic features and intonation systems; it also includes recognition (if not production) of a range of accents, prosodic styles of genres (eg news-reading, jokes, prayer, etc), rhyme and other poetic features, paralanguage, and, where available, the relationship between pronunciation and orthography.)

Investigating phonological competence, or a particular person's phonological competence, has often been undertaken in terms of intelligibility. Intelligibility depends on all the factors that constitute a linguistic communication, not only pronunciation (or orthography), but also vocabulary, grammar and the whole range of discourse features. In this present study, we are confining ourselves to the role of consonants and vowels within word phonology, but wish, on the other hand, not to confine ourselves to the cause of intelligibility. Intelligibility is usually conceived of as how well a person produces language to enable themselves to be understood satisfactorily by an interlocutor. This would limit us to investigating productive phonological competence. However, it seems a reasonable hypothesis to consider our ability to *produce* sounds as partly a reflection of our ability to *perceive* them. If we

cannot perceive a distinction in sounds, it is most unlikely that we will be able to produce that distinction, except incidentally, or accidentally.

The discussion in the preceding two paragraphs does not necessarily presuppose a multi-lingual dimension; it is general enough to be valid for monolingual situations, eg one Tamil speaker communicating with another, or one native speaker of English communicating with another one. The discussion does, however, become more complicated in a situation where more than one language is involved, eg when a bilingual person is involved as an interlocutor; the discussion becomes progressively more complicated where both interlocutors are bilingual but the language of communication is not the mother tongue of either of them. These two situations are the common concern of linguists in India, where, for instance, a bilingual Indian speaker addresses a monolingual native speaker of English (British, American, Canadian, Australian, etc) or a Tamil speaker addresses a Gujarati speaker but in English. As mentioned earlier, it was also a common concern of the academic community in which the field work reported here took place. "Is my accent good enough?" Good enough for what? "Good enough if I want to visit Britain (or present a paper at a conference, etc)".

Successful interlocutory communication depends as much on skills in perception as well as skills involved in intelligibility. Bansal (1976) reports a significant study in intelligibility; Kenworthy (1987) discusses a number of ways of assessing intelligibility; and Tench (1996) presents a comprehensive methodology for analyzing intelligibility. But these studies offer little discussion on perception, and this is typical of many studies in 'interlanguage' phonology. Following Ahn (1997) Tench (2001, 2003) tied perception studies to production studies, by attempting to assess perception competence as part-explanation for the results of how well, or how poorly, second language learners managed to make their pronunciation intelligible to native speakers of that language. In this present study, we conducted a simple assessment of perception as a guide to the design of the assessment of production.

The perception experiment was a simple dictation of 25 unrelated words. The words were chosen as well as possible to focus attention on expected problems from a consideration of the differences between SESP and Tamil. Why words, and not a

simulation of 'natural' discourse? The advantage of a list of single, isolated words is that there is no possibility of contribution from any other source in the context, and the focus of attention can be purely on the consonants and vowels themselves. Each word is intended to represent a token of an expected phonological problem; thus item 1 *wrote* represents the contrast between /t/ and /d/ in word-final position.

Each word was read out as in a traditional dictation exercise, and the participants were given time to write them down. Each word was given twice with an interval of approximately five seconds. No clues were given, except in a general introduction informing them to expect words from any word class, plurals, past tenses, etc. They were also told that one word would be repeated, but not which one; this was intended to test their power of observation in distinguishing close minimal pairs. For instance, *rut* and *rot* were listed to see if they could distinguish SESP /ʌ/ and /ɒ/; but it was the word *card* that was repeated, as items 4 and 20. The list concludes with a demanding set of words which are distinguished solely by vowels in a /k_ d/ frame.

The participants were assured that it was not a spelling test! Thus, a mis-spelling such as **rought* was counted with *wrought.* There were, however, certain 'coinages' such as **rupt, *racte, *cood* which proved useful guides to the way a participant had interpreted what they had heard, but others had to be ignored as unhelpful, such as **thai, *roup, *culed.* (Did *roup,* for instance, represent /uː/, or /aʊ/, or /əʊ/? Since we cannot tell, it has to be ignored.) Homophones were, of course, accepted.

The word list was administered to 46 participants, but we shall only consider the results of the 30 Tamil speakers whose audio recordings in the second (production) experiment were subjected to native speaker judges. In some cases, a participant was unable to interpret an item; this is indicated by Ø in the table below. The list was also administered to a group of native speakers as a control; they all scored 100%.

The following words were chosen to test Tamil speakers' perception of SESP phonological features:

1 **wrote**: to test for the distinction between /t/ and /d/ in final position.

2 **bought**: to test for the distinction between /ɔː/ and /əʊ/.

3 **reach**: to test for the distinction between /iː/ and /ɪ/.

4 **card**: to test for the distinction between /k/ and /g/ in initial position.

5 **whale**: to test for the distinction between /eɪ/ and /ɛ/, and /w/ and /v/.

6 **rut**: to test for the distinction between /ʌ/ and a number of other vowels.

7 **said**: to test for the distinction between /ɛ/ and /æ/.

8 **vary**: to test for the distinction between /ɛə/ and /ɛ/.

9 **taught**: to test for the distinction between /t/ and /θ/ in initial position.

10 **pool**: to test for the distinction between /uː/ and /ʊ/.

11 **watch**: to test for the distinction between final /tʃ/ and /ʃ/

12 **rot**: to test for the distinction between /ɒ/ and a number of other vowels.

13 **rung**: to test for the distinction between /ʌ/ and /æ/, and /ŋ/ and /n/.

14 **full**: to test for the distinction between /ʊ/ and /uː/, and /f/ and /p/.

15 **surface**: to test for the distinction between /f/ and /v/ in medial position.

16 **measure**: to test for the distinction between /dʒ/ and /ʒ/ in medial position.

17 **author**: to test for the distinction between /θ/ and /f/, and /ɔː/ and /ɒ/.

18 **rope**: to test for the distinction between /p/ and /b/ in final position.

19 **jug**: to test for /ʌ/ itself, and for initial /dʒ/ and final /g/.

20 **card**: this and the following five words were chosen to test for the distinction between six vowels.

21 **curd**

22 **cord**

23 **code**

24 **cod**

25 **cad**

The results appear in the following table. It shows how 30 Tamil speakers who use English regularly in their professional activities interpreted the pronunciation of a native SESP speaker. Some participants were undecided between two interpretations, writing, eg *boat/bought* as two alternatives; each alternative was given 0.5.

	Word	*as SESP*	*not as SESP* (%)	*alternatives*
1.	WROTE	16	14 (46.7%)	root/route: 9; road: 5
2.	BOUGHT	4.5	25.5 (85%)	boat: 19.5; both: 3; board, 'bot', bolt
3.	REACH	15	15 (50%)	rich: 13; ridge, which

4.	CARD	28	2	(6.7%)	Cardiff, 'gaurd'
5.	WHALE	12.5	17.5	(58.3%)	where/ware/wear: 10; while: 3; wall: 2; well, wire, weird
6.	RUT	9	21	(70%)	wrought: 5; rocked: 3, rocket; Ø: 4 wrecked: 3, wreck; erupt/'rupt':2; rat, 'racte'
7.	SAID	20	10	(33.3%)	sad: 8; sat, sage
8.	VARY	11.5	18.5	(61.7%)	very: 15.5; weary: 2; where
9.	TAUGHT	21	9	(30%)	thought: 4; talked: 3; tough, 'thai..'
10.	POOL	27	3	(10%)	fool, pull; Ø
11.	WATCH	30	0		
12.	ROT	10	20	(66.7%)	rocked: 9, rock, locked; wrought:4, brought; wrath, laugh, 'wroked', rat, 'ract'
13.	RUNG	24	6	(20%)	run: 3; rang: 2; rage
14.	FULL	21	9	(30%)	phone: 2, fold: 2 folk; four: 2 fork; firm
15.	SURFACE	28	2	(6.7%)	suffix, shutters
16.	MEASURE	30	0		
17.	AUTHOR	14	16	(53.3)	offer: 5, often: 8; ocean, awesome, 'autor'
18.	ROPE	25.5	4.5	(15%)	loop: 3.5; 'roup'
19.	JUG	26	4	(13.3%)	jag: 2; junk; juke
20.	CARD	28	2	(6.7%)	carved, car
21.	CURD	27	3	(10%)	cure, curl, 'c bard'
22.	CORD	16	14	(46.7%)	cold: 3, code, coat; card: 2; core, called caught; cod, 'cood', 'gauge', crowd
23.	CODE	11	19	(63.3%)	crowd: 7; could: 3; cold: 6, crowed, 'cood', 'culed'
24.	COD	12	18	(60%)	card: 5 cart; cord/chord: 7, caught, called; cat, cot; Ø
25.	CAD	19	11	(36.7%)	cared: 3, care: 2; can, cat; 'cade', 'caud', card

The results produced some surprises!

1 **wrote**: 5 Tamil speakers (16.6%) perceived final /t/ as /d/ and interpreted the word as *road.* But, surprisingly, 9 (30%) interpreted SESP /əʊ/ as /uː/, clearly focussing on the close ending of the diphthong.

2 **bought**: Only 4 unhesitatingly interpreted this word as intended. 81.6% interpreted SESP /ɔː/ as /əʊ/, if we include **bot*; this accords with IESP. Only 1 interpreted final /t/ as /d/, but 3 interpreted it as if SESP /θ/, and possibly the **bot* indicates that too.

3 **reach**: exactly half of the participants interpreted the vowel as SESP /iː/; the other half as /ɪ/, suggesting the non-observation of quality and quantity differences between the two SESP vowel articulations. One interpreted final /tʃ/ as /dʒ/, and another the initial SESP alveolar approximant [ɹ] as another approximant, /w/.

4 **card**: no real problem. 1 participant probably interpreted the release of final /d/ as an extra syllable. Only 1 interpreted initial /k/ as /g/.

5 **whale**: 12 (40%) misinterpreted the final 'dark' lateral, leading 10 (33.3%) to interpret /eɪ/ as /ɛə/ (*where*, etc). 4 perceived /eɪ/ as /aɪ/, suggesting that the initial tongue position was more open than they are used to hearing. No one interpreted /w/ as /v/.

6 **rut**: only 36.6% interpreted the vowel as SESP /ʌ/; others interpreted it as /ɔː/, /ɒ/, /ɛ/ and /æ/. Interestingly, 4 could not decide. When we reviewed the experiment, all participants knew the word. See below for the notes on lexical anticipation for the imagined /k/.

7 **said**: two-thirds interpreted this as SESP; but 30% interpreted the vowel as /æ/, suggesting they heard a more open tongue position than they are used to. 1 interpreted it as /seɪdʒ/; maybe the release of final /d/ misled this person, who was thus induced to interpret the word quite differently.

8 **vary**: half interpreted the vowel as /ɛ/, presumably not noticing the relevance of quantity in the SESP articulation; one as either *very* or *vary*. 3 treated the initial consonant as /w/, possibly inducing them to re-interpret the whole word.

9 **taught**: there seemed to be no problem with the vowel, no doubt as *tote* and *tot* were not considered likely. 5 interpreted initial SESP /t/ as /θ/. *Tough* (SESP /tʌf/) probably indicates indecision between *taught* and *thought* (note the <ough>). Another case of imagined /k/.

10 **pool**: little problem, but the two alternatives are understandable from a Tamil point of view.

11 **watch**: no problem with /tʃ/.

12 **rot**: 22 interpreted /ɒ/ as in SESP (including *rock, rocked, locked* and *wrath*); 5 as /ɔː/, again not noticing the effect of vowel quantity. Many cases of an imagined /k/. Final /t/ interpreted once as SESP /θ/.

13 **rung**: vast majority (90%) interpreted the vowel as /ʌ/; only 2 as its most obvious minimal pair, **rang**. 3 did not recognize /ŋ/ from /n/. Difficult to account for *rage.*

14 **full**: no problem with 70%. No-one interpreted the vowel as /uː/, as in *fool.* Rather, the alternatives show an interpretation as an opener vowel; five as

SESP /əʊ/, 3 as /ɔː/; 1 as /ɜː/. Note again imagined /k/ and final nasal.

15 **surface**: no real problem, but still an imagined /k/ in <x>. 1 interpreted initial /s/ as SESP /ʃ/ and re-interpreted the word they heard.

16 **measure**: no problem with /ʒ/.

17 **author**: 50% interpreted this as SESP if we include **autor*. But 13 (43.3%) interpreted medial /θ/ as /f/, and 2 as a voiceless sibilant, which led those 15 to re-interpret the word they heard, with initial /ɔː/ as SESP /ɒ/ - although an older RP form must be borne in mind, with /ɔː/. The differences in quality and quantity in the SESP articulations again did not seem to register with the participants.

18 **rope**: slight tendency to hear the vowel as SESP /ɯː/; see **wrote** above. SESP [ɹ] produced an interpretation as /l/ at 12.5%.

19 **jug**: 100% interpreted initial /ʤ/ correctly. 90% interpreted the vowel as SESP /ʌ/, although 2 as SESP /æ/ and 1 as /uː/. 28 (93.3%) interpreted final /g/ correctly; the remaining 2 as its voiceless equivalent.

20 **card**: score exactly as item 4, but now there was an imagined /ʏ/, and 1 interpreted the word without the final /d/.

21 **curd**: generally no problem, despite the potential problem over SESP /ɜː/. Final /d/ missed by 2. **c bard* is presumably a mis-spelling of *cupboard*.

22 **cord**: 19 (63.3%) interpreted the vowel as SESP /ɔː/ (could *gauge* /geɪʤ/ possibly be a mis-spelling for *gorge* /gɔːʤ/ or *gauze* /gɔːz/ ?); 5 as SESP /əʊ/; see **bought** above. 2 interpreted final /d/ as /t/.

23 **code**: 18 (60%) interpreted the vowel as SESP /əʊ/; see **bought** and **cord** above. 7 surprisingly interpreted the word as *crowd* /aʊ/; a check on local pronunciation indicated that *crowd* is pronounced locally with /aʊ/. It seems that the aspiration with initial /k/ was interpreted by these 7 participants as an additional consonant, a devoiced [ɻ̥], with consequent lexical re-interpretation (see below). Presumably, this very same aspiration in the other items, 20, 21, 22, 24 and 25, was discounted as there is no corresponding word with /r/.

24 **cod**: 13 (43.3%) interpreted the vowel as SESP /ɒ/; 9 as /ɔː/; 6 as /ɑː/ and 1 as /æ/, see **rot** above. 4 interpreted final /d/ as /t/.

25 **cad**: 21 (70%) interpreted the vowel as SESP /æ/; 5 as /ɛə/ as in *care(d)*.

Before a summary is drawn up, we need to comment on 'perceptions' of sounds that were not produced, the so-called 'imagined' sounds. Most of the participants identified most of the SESP sounds correctly. Where there are mismatches, most of them can be explained by reference to features of the Tamil phonological system, such as misinterpretation of final SESP /t/ and /d/ as the other, of initial /w/ and /v/ as the other, of /əʊ/ and /ɔː/ as the other, etc.

But a person listening to words in their second language may well employ a number of strategies to identify such context-less words. One such strategy is *over-correction*. A person may know that they have to monitor their own articulation if they are required to distinguish two sounds in the second language that 'correspond' to only one in their mother tongue, such as SESP /θ/ from /t/, and /ɔː/ from /əʊ/. Upon hearing /t/, they have to decide whether to interpret it as SESP /t/ or /θ/; the strategy of over-correction is to 'correct' their interpretation when it is not required. Thus initial /t/ in **taught** was over-corrected as if *thought*, **bought** as *both*, **rot** as *wrath*. This will happen, obviously, only where the alternative sound would be valid; thus this over-correction did not occur with **wrote** or **rut.**

A second strategy is *lexical re-interpretation*. If a person fails to hear, for example, the word-final SESP 'dark' /l/ as in **full**, and knows there is no word like SESP /fʊ/, then they may well re-interpret what they heard, in terms of a similar sounding word that they know does exist. Similarly, there is no **ɾoop* in English; a lexical re-interpretation of the stimulus (**rope**) may lead them to re-assess the initial consonant as /l/; it certainly was not the Tamil-like [ɾ]. This also seems to produce a reasonable explanation for **code** [k^həʊd] being 're-interpreted' as *crowd*, as above.

It is a similar strategy that presumably is employed in cases like *rocked* for **rut** and **rot**. This strategy might be called *lexical anticipation*, as when a person hears a stimulus but expects a more familiar word than the one they actually heard. In this particular case, having heard two past tense forms of verbs, they may have anticipated another instance, and this led to imagining an additional consonant that was certainly not articulated. It also helps to explain the imagined /p/ in *erupt*/**rupt* for **rut.**

A fourth strategy is *guessing* – conceding an awareness of their own limitations in the second language lexicon. There are English words *erupt* and *rupture*; might there be an independent 'base' form **rupt* ? In this case, the guesswork was misguided. Could this explain false 'backformations' like **ract*, **roup*, **cand*, etc?

These strategies (see Tench 2003: 163-4) help us to understand how people use lexis and grammar in seeking to interpret a phonological stimulus that they cannot immediately interpret in a satisfactory way.

The results of this perception experiment show instances of both confident and indeterminate interpretation. For instance, TESP speakers interpret most SESP plosives and affricates confidently, although there is a certain degree of indeterminacy about final /t/ and /d/, and, to a lesser extent, about the release of final /d/. The presence of relatively heavy aspiration with voiceless plosives also led to a certain degree of indeterminacy as evidenced in the responses to **code**. (I often could not get a cup of tea unless I dispensed with aspiration following /t/; my articulation may well have been perceived as *tree*!)

There was confident interpretation of nasals, but for a 10% level of indeterminacy over final /n - ŋ/.

There is a certain level of indeterminacy in distinguishing SESP /t/ from /θ/ in initial and final positions, and of distinguishing SESP /θ/ from /f/ and other voiceless fricatives in medial position. There were no problems with /f/ in initial and medial positions; none with /s/ in initial and final positions, nor with /ʒ/ in medial position. /v/ was well perceived in initial position, although 3 (10%) perceived it as /w/. On the other hand, there appears to be no problem in identifying SESP /w/ in initial position.

There is little difficulty in interpreting SESP [ɹ] in initial position; no one interpreted **rot** as *lot*, or **rung** as *lung*, although a small number of participants did interpret [ɹ] as /l/ in **rope**.

There is, however, a much higher level of difficulty in recognizing final dark [ɬ], as in **whale** and **full**, typically as final /ə/ ('orthographic' <r>).

Amongst the vowels, the participants were particularly confident in perceiving /ɑː, uː, ɜː/. Half the participants were not proficient in distinguishing /iː/ from /ɪ/, but, interestingly, there was no parallel indeterminacy between /uː/ and /ʊ/. However, SESP /ʊ/ was readily interpreted as an opener vowel, and /uː/ was mistaken for /əʊ/.

Less than half the participants interpreted SESP /-eɪl/ satisfactorily; no doubt, the presence of final dark [ɬ] contributed to this indeterminacy.

There was also considerable indeterminacy over SESP /ɔː/ and /əʊ/; but this is recognized in IESP. SESP /ʌ/ poses a considerable problem too, as expected, in any case, in IESP. Similarly, SESP /ɒ/. TESP speakers readily mistook it for /ɔː/, /ɑː/ and occasionally, for /æ/; see **rot**, **cod**. However, where there is no potential clash, as in **watch**, there is no problem. There was also a high level of indeterminacy over SESP /ɛə/ and /ɛ/ before /r/.

There was a low level of indeterminacy over SESP /ɛ/ and /æ/. Likewise over SESP /æ/ and /ɛə/; see **cad**.

In general terms, it seems that the articulatory distinctions in SESP vowel quantity are ignored by Tamil speakers. Some SESP vowel qualities are clearly open to different interpretation by a majority of Tamil speakers: /iː - ɪ/, /əʊ - ɔː/, /ɛə - ɛ/, /ʌ/ and /ɒ/; also /-eɪl/. Others by a minority: /ɛ - æ/, /æ - ɛə/, /əʊ - uː/, /ʊ - əʊ - ɔː/. The latter suggest that SESP might generally have a slightly opener tongue position than TESP equivalents of /ɛ, ɛə, ʊ, uː/; this could also explain the 4 impressions of /eɪ/ as /aɪ/, see **whale**. It might also explain the indeterminacy over /iː - ɪ/; if TESP /ɪ/ is articulated more closely than in SESP, as Tamil short /i/, and if SESP vowel quantity differences are ignored because they do not match those of Tamil, then it is not surprising that TESP would be uncertain in interpreting SESP /i/.

Most participants recognized **card** as the repeated item, but it is also interesting to see what others considered to be the repeated item. One treated **card**, **cord** and **cod** as identical, another **card**, **cod** and **cad**, another **card** and **cord**, and yet another **cord** and **cod**. In the same area of difficulty, two participants treated **cord** and **code** as identical, with one spelling both as **cood* and the other as *cold* (these cases suggesting once again an opener articulation than TESP equivalents – see above).

It is also of interest to note that others considered **rut** and **rot** as the repeated item. Two perceived them both as *wrought*, but three imagined the additional /k/ and perceived them both as *rocked*, and yet another as 'invented' **ract*.

If this summarizes how TESP speakers hear SESP; but how well do SESP speakers hear TESP? How successful are TESP speakers in their phonological output to make themselves intelligible to SESP speakers? We turn now to the more extensive experiment in productive phonology.

Production

Bansal (1976) is the most widely acclaimed study of the intelligibility of English as spoken by citizens of India. He used a 'battery' of different strategies: spontaneous dialogue (5 minutes of "connected speech", during which each subject talked about themselves and their work and interests); a set passage for reading; a list of 40 "short, everyday" sentences; a list of 60 common words; and a list of 40 words selected for their value in distinguishing minimal pairs. The spontaneous monologue was intended to replicate normal informal conversation, the most common form of spoken language; the set passage provided some control on the material spoken; the 40 sentences were also selected to represent informal conversation, but with key words: 20 words that contained 20 (SESP) vowels, 10 that contained problematical consonants, 5 with word stress problems and weak forms, and 5 with certain patterns of intonation. The 60 common words consisted of 30 monosyllabic words with all the (SESP) vowels in various positions, 20 monosyllabic words with problematic consonants and consonant clusters, and 10 polysyllabic words for stress patterns. The final list of 40 words consisted of words from close minimal pairs; the listener had to choose from alternatives, on the basis of what they heard. The comprehensiveness of this material is most impressive.

The subjects were 24 men aged 19 to 40. Ten were Hindi speakers (4 each from Uttar Pradesh and Bihar, 1 from Delhi and 1 from Rajasthan); 3 Telegu speakers, 3 Urdu speakers, and one each who spoke Bengali, Tamil, Gujarati, Malayalam and Assamese. Four speakers of 'Educated Southern British (RP)' (ie SESP) constituted the control group.

A total of 178 listeners took part in the 234 listening sessions, including British and American native speakers of English, Commonwealth speakers who use English as a second language, and also a number of others who spoke English as a foreign language, eg Germans.

Kenworthy (1987) recommended spontaneous speech from a group of individuals on a similar topic as the main basis for assessing intelligibility from a given language background. Reading aloud was only recommended for providing information on potential spelling interference problems. Ideal judges are "listeners who have not had an abnormal amount of exposure to non-native speech or any previous contact with the speakers assessed." (Kenworthy 1987: 20).

Tench (1996) outlines what a full scale research project might consist of. He suggested 10 steps:

> First, study a contrastive statement of the two pronunciation systems, to determine what is potentially problematic – vowels, consonants, consonant-clusters, word accent, etc.
>
> Second, think of a number of minimal pairs involving the potential problems; you will need quite a number to be able to give different subjects different lists.
>
> Third, record several subjects reading a list of words that contain the potential problem. The best words are monosyllables or disyllables, because longer words like *hospital* will be recognizable even if the subject manages to get two or even three sounds wrong.
>
> Fourth, play the recordings to native speakers without letting them know what the words are supposed to be; they must write down what they think was intended. This is why minimal pairs were used previously, because they are more likely to be mistaken.

> Fifth, analyse the native speakers' judgements. This will give you a preliminary result of how intelligible the subjects' pronunciation has been.
>
> Sixth, record the subjects reading a passage of English that is easily within their grammatical, lexical and discoursal competence. (This is important, so as to eliminate their effect on the reading.)
>
> Seventh, play the recordings to native speakers of English without telling them what the passage is. They have to assess how much they understand of it.
>
> Eighth and ninth, repeat steps six and seven, but with a short, unprepared, conversation.
>
> Finally, analyse the native speakers' judgements and attempt to trace their difficulties back to what was discovered at step five.
>
> (Tench: 1996: 255-6)

In the present case, the first five steps have been followed, although, as stated earlier, no particular attention has been given to word stress. A 'full-scale' project would obviously include stress, and matters of rhythm and intonation which steps 6 to 9 are intended to capture.

The equivalent of step 1 appeared earlier in this paper. Step 2 includes reference to different lists. Each participant would read only one list (step 3), but to guard against judges' anticipation of the words in a list, five comparable lists were drawn up. With a single list, a judge would begin to become familiar with the words and such familiarity would lead a judge to begin to anticipate words. In the present case, 5 lists were drawn up with the intention to check Tamil speakers' production of the following sounds:

1.	/ɪ/	slip	bid	hill	dim	(to) live
2.	/eɪ-ɛ/	date	age	lace	major	sale
3.	/æ-ɛ/	pat	lag	sad	jam	cattle
4.	/æ-ɑː/	hat	ham	batch	had	ban
5.	/ʌ/	cup	bun	hut	luck	nut
6.	/ɒ/	spot	shone	stock	fond	bronze
7.	/ʊə/	poor	sure	tour	cure	pure
8.	/ɪə/	fears	ear	idea	spear	beard
9.	/b-p/	robe	cub	staple	kerb	verb
10.	/d#/	heard	heed	send	mend	cold
11.	/g#/	league	bag	lag	log	bug
12.	/v#/	strive	starve	curve	serve	save
13.	/z#/	buzz	eyes	plays	rise	joys

14.	/ð/	breathe	though	theirs	southern	worthy
15.	/dʒ/	age	ridge	major	ledger	lunge
16.	/ɔː/	warm	caught	hall	portion	walk
17.	/əʊ/	whole	tone	lone	coat	oval
18.	/ʊ/	pull	full	look	wool	wood
19.	/aɪ/	pirate	pilot	height	five	sty
20.	/aʊ/	out	cows	loud	crowd	brown
21.	/ɔɪ/	voice	toys	oil	coin	void
22.	/ɜː/	stir	first	were	curd	her
23.	/ɛə/	pair	wear	scarce	there	share
24.	C-*ed*#	walked	helped	asked	rubbed	lodged
25.	C-*es*#	loves	breathes	laughs	months	clothes

There were 15 judges, all British native speakers of English, fitting Kenworthy's description of 'ideal judges'. Each participant's recording was listened to by 5 different judges, amounting to 150 listening sessions, which were distributed among the 15 judges. This meant that, on average each judge would listen to each of the 5 lists twice, but they were not told this, so that they could not anticipate that their 6th listening session might match their first, etc. Judges were supplied with forms, numbered 1 to 25 for the 25 words and space at the head of each column to record a participant's identity.

The judges' instructions were as follows:

> You will hear a number of people reading a list of 25 words. Please listen carefully and write in the chart the words as you hear them. Please note that some of the words in the different lists are very similar, and so it means that you may have to distinguish between, say, *called* and *cold*, or *save* and *safe*, or *curb, curve* and *curved*.
>
> Be as accurate as you can; don't interpret a word as a more familiar word when the pronunciation does not warrant it. For example, if a word sounds like *Baz*, don't be tempted to re-interpret it as a more "likely" word like *bars*.
>
> If you can't decide between two (or three) possibilities, write them all down, eg *hut/hat*.
> If you have no idea at all, write ?
> If you can only guess, write the word and add ?, eg *bus*?
> If you think the word is a name, write it as such, eg *Paul, Opel*
> If you don't recognize a word, but could conceivably spell it – either orthographically, with " ", or phonetically, [ ], eg "*chur*", or [tʃɜː]
> If the word has two spellings, like *doe/dough*, you need only write one of them, **but please try and distinguish between** *pour/poor; shore/sure, tore/tour; more/moor*, etc.

The 5 sets of data for each participant were collected and scored. The participant had been required to pronounce a word, say **slip**, and this had been audio recorded. 5 judges had listened to their recording and had written down the word they thought the participant had said – without, of course, knowing in advance which word had been intended. The scores represent the degree to which the judges' impressions match the participant's intention. If all 5 judges had written *slip*, then the match is 100%, and we can say that the participant's effort in producing /ɪ/ has been successful and can therefore be rated, in this particular respect, as 100% intelligible. If all 5 judges had written *sleep*, then the match is 0%; the participant's ability to distinguish /ɪ/ from /iː/ leads to a rating of 0% intelligibility. (Remember, we are seeking to assess *phonological* competence only; in particular contexts, *sleep* may well be interpreted as *slip*, but the participant's phonological system would exclude /ɪ/.)

However, judges did not always agree, and typically one or two judges would disagree with the others, producing results like 3 impressions as *sleep* and only 2 as *slip*. In this case, the intelligibility was calculated as 40%. In other cases, a judge might have misinterpreted the word as *flip* or *slit*; these were deemed as 'matching' as the target item was the vowel, not the whole word. Such instances are, actually, most helpful as incidental data, especially if /f/ or /p/ are focussed upon elsewhere.

The intelligibility rating for each participant for each particular target was then averaged to provide general information about Tamil speakers' general success. The average intelligibility rating for each targeted item appears below.

1.	/ɪ/	82
2.	eɪ-ɛ/	96.3
3.	/æ-ɛ/	89
4.	/æ-ɑː/	84.6
5.	/ʌ/	79
6.	/ɒ/	36
7.	/ɔː/	68.6
8.	/əʊ/	57.3
9.	/ʊ/	85.3
10.	/aɪ/	83.3
11.	/aʊ/	69
12.	/ɔɪ/	73
13.	/ɜː/	70.3
14.	/ɛə/	54.6

15.	/ʊə/	64.6
16.	/ɪə/	58.6
17.	/b-p/	54
18.	/d#/	40
19.	/g#/	56.6
20.	/v#/	28
21.	/z#/	34
22.	/ð/	44.6
23.	/dʒ/	67.3
24.	C-*ed*#	41.6
25.	C-*es*#	26.6

Average intelligibility rating as % for each targeted item

The degrees of intelligibility can be ranked as follows:

A	80-100%	4 or 5 judges regularly agree that their perceptions match the Tamil speakers' intention, i.e. no problem in intelligibility
B	60-79%	3 or 4 judges regularly agree that their perceptions match the Tamil speakers' intention, i.e. a moderate degree of unintelligibility
C	40-59%	2 or 3 judges regularly agree that their perceptions match the Tamil speakers' intention, i.e. a considerable degree of unintelligibility
D	20-39%	1 or 2 judges regularly agree that their perceptions match the Tamil speakers' intention, i.e. a very considerable degree of unintelligibility
E	0-19%	None, or only 1 judge regularly agrees that their perceptions match the Tamil speakers' intention, i.e. no degree of intelligibility

The vowels /iː, uː, ɑː, ɛ/ were not tested, as a contrastive analysis of Tamil and SESP, and of IESP and SESP, suggested that they would not prove to be a problem. (Interestingly, these 4 vowels are the commonest vowels in the vowel systems of the world; see Crothers 1978: Appendix 1).

80% and above indicates that 4 or 5 judges agreed with each other and that their impression matched the intended item. In practical terms, this means that TESP competence matches SESP competence. The scores in the experimental data indicate that /ɪ/, /eɪ/, /æ[a]/, /ʊ/ and /aɪ/ do not, as a rule, constitute any problem in intelligibility. That is, for instance, the Tamil speakers were able to articulate /ɪ/ in

slip, **bid**, **hill**, **dim** and (to) **live** sufficiently well that 4 or 5 British native speakers clearly heard them as distinct from *sleep*, *bead*, *heal/heel*, *deem* and *leave.* And similarly for /eɪ/ in contrast to /ɛ/, /æ/ in contrast to /ɛ/ and /ɑː/, /ʊ/ in contrast to /uː/, and /aɪ/ in contrast to /æ/ and /ɑː/.

The participants' production of /ʌ, ɔː, aʊ, ɔɪ, ɜː, ʊə/ fell into Category B. The detailed record of mismatches is presented case by case, with a general discussion. In each case, the 'average intelligibility rating' is given, followed by the words from the 5 lists that were used to 'target' the vowel. The first figure indicates the number of judgements that matched the intended word, followed by the number of judgements for the alternatives.

ʌ *average intelligibility rating*: 79%

cup 29: cap 1
bun 25: burn 3, bone1, born 1
hut 11: heart 4, hurt 3, hat 12
luck 29: work 1
nut 23: net 1, not 2, mat 3, writ 1

Tamil speakers articulated /ʌ/ very successfully in the cases of **cup**, **luck**, slightly less so for **bun** and **nut**, but fairly disastrously for *hut* (11/30; 36.6%). The biggest problem is, noticeably, in articulating /ʌ/ sufficiently clearly from /æ/: more British judges perceived their attempts at **hut** as *hat*, rather than as *hut*.

ɔː *average intelligibility rating*: 68.6%

warm 25: worm 1, mum 1, van 1, 'wown' 1, long 1
caught 8: cart 5, cot 16, putt 1
hall 24: Hull1, hard 4, hole 1
portion 20: potion 9, passion 1
walk 23: work 3, wok 3, 'wuck' 1

They were less successful with /ɔː/, convincing British judges only about two-thirds of the time. The biggest problems were distinguishing **caught** from *cot*, and **portion** from *potion*. This suggests that their articulation of the vowel in **caught** was more open than SESP, possibly [ɒː], but their articulation of the vowel in **portion** was more close, possibly [oː]. The difference may well lie in syllable structure: [ɒ, ɒː] in closed syllables, [o, oː] in open syllables; this would make sense of Nihilani et al's rather

perplexing statement of the wide range of vowel quality corresponding to SESP /ɔː/, which "gets realized as [ɒ], [ɒː] and [o] in Indian English" (1979:232).

aʊ *average intelligibility rating*: 69%

out 24: art , hot 2, Ø 3
cows 26: ghost, go 3
loud 16: low 11, lull, love, new
crowd 21: crow 7, crawl, call
brown 27: long, 'bur', brawn

The main problem with /aʊ/ was distinguishing it from /əʊ/. For instance, **loud** was heard by many as *low* – but this might be a case of the judges' re-interpretation through not hearing a final /d/ (see below), and similarly some judges heard **crowd** as *crow*. It should also be borne in mind how many TESP speakers interpreted SESP **code** as *crowd.* It does suggest that TESP /au/ has a closer beginning element, close enough to the mid central beginning of SESP /əʊ/. (**Cows** was heard with /əʊ/ as *ghost* or *go*, in four instances.)

ɔɪ *average intelligibility rating*: 73%

voice 21: wise 9
toys 23: ties 5, tall, power
oil 25: pirate, all, high, pile 2
coin 30
void 16: wide 11, why, Ø 2

The main problem with /ɔɪ/ was distinguishing it from /aɪ/. For instance, **void** was interpreted by many as *wide*, **voice** as *wise*, **toys** as *ties*.

ɜː *average intelligibility rating*: 70.3%

stir 20: still 5, stood 2, stoop, step, 'stup'
first 24: bust/fussed 6
were 11: where 10, van, vast, ran, rat, war 2, Ø, when, wire
curd 26: caught, cord 2, could
her 20: hair 8, hut, ham

Attempts at /ɜː/ produced a variety of interpretations, either as /ɛə/ where there is a potential minimal pair such as **were** and *where*, **her** as *hair*; or as /ʌ/ where there is a different potential for a minimal pair, eg **first** and *fussed*. But **stir** did not produce interpretations as *stare/stair*, and neither did **curd** as *cud* (or even *cared*).

Nevertheless, interpretations seem to vary according to syllable pattern, open syllables tending towards a perception as /ɛə/, and closed syllables to /ʌ/.

ʊə *average intelligibility rating*: 64.6%

poor 19: 'poover' 2, pour 3, Paul, were, Ø 3 , puːwɑː
sure 10: shore 5, tʃɪɔː, ʃɜː, shir(t) 4, 'shur' 2, share, Ø, sheer 3, shop 2
tour 10: chore 9, tʃur, tool 5, toe, too 3, tore
cure 21: cue 7, kiːɑː, tʃaɪə
pure 21: your 6, 'piva' 2, Ø

The case of /ʊə/ is interesting, because of the increasing divergence between British and American pronunciations of words such as **poor**, **sure**, **tour**, **cure** and **pure**. In UK, including younger generations of SESP speakers, the vowel /ʊə/ has given way to /ɔː/, producing homophones *poor/paw*, *sure/shore/Shaw* and *tour/tore/tor*; this has not happened in USA, where /ʊr/ has been retained. The (British) judges were alerted to the issue and asked to try and distinguish between such homophones. It seems that most Tamil speakers produced /ʊə/ in some fashion in **poor**, **cure** and **pure**, but half of them used a long monophthong in **sure** and **tour**.

There are three items in Category C: /əʊ, ɛə, ɪə/, that is only 2 or 3 judges matched impressions with intentions.

əʊ *average intelligibility rating*: 57.3%

whole 22: hall 6, pull 2
tone 12: torn 15, done, 'tonn', turn
lone 23: lawn 4, loom 2, wool
coat 23: caught 4, cord, girl , 'goo-er'
oval 15: Orwell 5, Ø 1, oven 2, all 2, war, warn, owl, oil, 'ol'

The main problem for the British judges was to hear /əʊ/ distinct from /ɔː/, eg **tone** was perceived as *torn* in 50% of cases, and an interpretation with /ɔː/ was relatively frequent for **whole**, **lone**, **coat**, **oval.**

ɛə *average intelligibility rating*: 54.6%

pair 11: par(t) 8, pad 4, bath, bird, purr 2, pert, her, Ø
wear 8: view(er) 3, 'bior' 2, we're 5, wet 2, rat 2, red, glad, rag, near 4, Ø
scarce 13: scars 13, skirt, scarf, scat 2
there 14: day 7, they, dead, deer, bar 5, bad
share 26: shed 2, shower 2

We noted above that participants appeared to tend to produce /ɜː/ as /ɛə/ in open syllables; on the other hand, /ɛə/ was rarely perceived as /ɜː/, although **pair** was occasionally perceived as *bird, purr, put, her*. However, **pair** was perceived much more frequently with /ɑː/, as *par, part, bath.* Similarly, **scarce** was perceived as *scars* and *scarf*. But **wear** was perceived as /ɪə/, as *we're, near* (and **bior*?), and **there** with /eɪ/, as in *they, day*. This may well be due to a tendency to pronounce as spelt. If /ɛə/ is spelt with a leading <a>, the tendency seems to be towards an articulation approaching [ɑː]; if it is spelt <-ear>, an articulation approaching [ɪə], and if <-ere>, then [eː].

ɪə *average intelligibility rating*: 58.6%

fears 21: yours, fuse, Ø 3, pure, p/bill, dɛːs, 'ers'
ear 13: your 7, year 6, 'yur', yell 2, girl
idea 22: tea 5, radio 2, Ø
spear 26: spill, 'spure', spɔːl, spoor
beard 8:bird 2, heard 5, Ø 3, bread 4, 'bure' 4, bear 2, boar, bjɜːd

In the case of /ɪə/, a possible pattern emerges: in open syllables, the /i/ or /j/ element is strong, but in the one monomorphemic closed syllable, **beard**, an interpretation as /ɜː/ dominates. **Spear** was understood best; one judge interpreted it as *spill*, and three with some kind of back vowel, but no one interpreted it as either *spare* (/ɛə/) or *spur* (/ɜː/). **Idea** was also understood quite well (22/30): five judges heard a single syllable, *tea* (not even *dear/deer*) and two heard a polysyllabic word, *radio*; fears slightly less so (19/30) but again no one interpreted it with /ɛə/ (*fares/fairs*) or /ɜː/ (*furs/firs*). With **ear**, the most interesting factor was the initial /j/ that most British judges heard, as discussed above.

The most serious item among the vowels in terms of intelligibility is the single case of Category D. No more than 2 judges could regularly match their impressions with the participants' intentions.

ɒ *average intelligibility rating*: 36%

spot 13: sport 15, spark 2
shone 0: shown 12, shorn 17, shun
stock 8: stork 19, star 3

fond 10: fawn 9, phone 6, farm 2, found 3
bronze 24: branch/ds 2, burns , braise , browns 2

The main problem with /ɒ/ was to distinguish it from /ɔ:/. Half the British judges heard **spot** as *sport*, and more than half heard **shone** as *shorn*, and **stock** as *stork*. **Fond** was interpreted by many as *fawn*, and by some as *phone*. The 12 perceptions of shone as *shown* do suggest a TESP articulation between SESP /ɔ:/ and /əʊ/. **Bronze** did not offer the same level of minimal pair potential.

The SESP weak vowels /ə, i, u/, appear not to be a problem in either perception or production, as evidenced in **surface** and **measure** in the first experiment, and by **southern**, **ledger** and **worthy** in the second. A major difference between SESP and TESP will be so called 'spelling pronunciations', where TESP will have a 'strong' vowel representing a vowel letter, while SESP will have a 'weak' vowel.

The plosive consonants were mainly tested in word-final position, on the assumption that modern educated Tamil distinguishes voice contrasts, although they might be vulnerable in word-final position. And indeed, they proved to be so, falling into Category C, where only 2 or 3 judges could regularly recognize them.

b/p *average intelligibility rating*: 54%

robe 10: row 8, rope 10, Ø 2
cub 11: cup 16, cupboard/'cubble' 3
kerb 21: curve, cur 2, corn, girl 3, Ø 2
verb 15: were, 'ver' 3, burr 2, the, work 2, world, word, Ø 2, vote 2
staple 25: stable 5

In the case of final /b/, it was often heard as /p/, eg *rope* for **robe**, *cup* for **cub**. Some participants failed to pronounce it convincingly at all, with 8 impressions of *row* for **robe**, and a variety of /b/-less words for **verb**. One participant over-compensated in the release of /b/ in **cub**, leading to an impression of an additional syllable; this suggests an awareness of final /b/ as a potential problem. Medial /p/ was heard as /b/ as *stable* for **staple** in 5 impressions out of 30.

d# *average intelligibility rating*: 40%

heard 8: hurt 5, cure 5, here 4, skirt, cut, pull, oil, Ø 3, far
heed 15: he 8, heath, heel, heat, hear, full, keep 2
send 12: sit/fit 5, 'sen', sin 4, 'sim', same, sink, cill/silk, sun, sung, fence, sword

mend 14: men 12, main, meant 3
cold 8: coal/hole 17, call 5

In the case of final /d/, it was often not heard at all, eg **heed** heard as *he*, **mend** as *men* or *main*, **cold** as *coal* or *call*; similarly with **heard** and **send**, but with greater variety. See also **fond,** and **loud** discussed above. Occasionally, final /d/ was heard as /t/.

g# *average intelligibility rating*: 56.6%

league 4: lee/leap 16, leek 6, 'lub', may, lay, lean
bag 29: Baz
lag 12: log 2, love, law, nor, lad 4, lack/black 3
log 13: love 2, lɔːv, law/or/more 9, luck, lark, laugh, lock, lob
bug 16: bus, bird, buck 7, but 2, bud, 'dup', bank

Final /g/ follows the pattern of final /b/, rather than final /d/, with voiceless consonants heard with **league**, **lag** and **bug. Bag** was interpreted well, with none of the expected evidence for *back*; but **log** fared less well, with 9 impressions without a final consonant.

dʒ *average intelligibility rating*: 67.3%

age 24: edge, aid 3, eh, Ø
ridge 9: rich 13, great 2, grit 2, fit, beat, height/hate, red
major 28: measure 2
ledger 30
lunge 4: lung 7, 'lun', lunch 12, land, laʊ, low, Ø, 'luge', large

Similarly, the affricate consonants were only tested in the form of final /dʒ/. Impressions of **ridge** and **lunge** included a high proportion of voicelessness as *rich*, *lunch*, but not **age** (as if *h*). In the latter case, /dʒ/ was interpreted as /d/ in 10% of cases, as if the fricative element was too weak.

The testing of fricatives included /v/ and /z/ in final position, and /ð/ in all positions. /f, s, h/ feature in modern educated Tamil. It is regretted that not enough attention was given to /θ/ and /ʃ, ʒ/ in the production test; the status of /θ/ can, however, be deduced from /ð/ and from the perception test, but that of /ʃ, ʒ/ not so easily.

v# *average intelligibility rating*: 28%

strive 7: strau 2, ‘strile’, strewn, stripe 10, ‘striyo’, strife 3, ‘stri/stry’ 2, ‘straul’, strain, stare
starve 3: store 3, stall, stalk, star 10, stow 2, ‘starl’ 2, staʊ, staff, straw 2, strew, stir, stroke, style
curve 1: cur 6, coal 5, curl 2, curb 2, claw/club, cure/core, co 3, go 3, coke, cow, girl 3, purr
serve 6: so/sew 9, saw 2, sir 5, soap 2, pearl, surf, say, soil, Ø 2
save 15: sail 4, say 2, same, shave 5, safe, Ø 2

Final /v/ has Category D rating and received the lowest rating in the whole of the production experiment, apart from final clusters with <-es>. Although there were occasional impressions of /f/ as *strife* for **strive**, *staff* for **starve**, *surf* for **serve** and *safe* for **save**, and of /p/ as *stripe* for **strive**, the overwhelming impression was that it was not heard at all. If /v/ in initial position is articulated as a ‘weakened’ [ʊ], then it appears to ‘weaken’ further in final position. **Voice** was indeed perceived as *wise* (9 impressions out of 30) and **void** as *wide/why* (13); medially, as in **oval**, /v/ was perceived as /w/ or not perceived at all (12 impressions).

z# *average intelligibility rating*: 34%

buzz 0: bus 29, but/Bert
eyes 19: ice 10, ace
plays 13: place 8, play 5, Ø, leave, beer, close
rise 7: rice 21, rape, wait
joys 8: joy 6, Joyce 13, choice, jars, ‘jice’

Final /z/ also has Category D rating; it was regularly treated as a final /s/, as *bus* for **buzz,** *ice/ace* for **eyes**, *place* for **plays,** *rice* for **rise**, and *Joyce/choice/‘jice’* for **joys**.

ð *average intelligibility rating*: 44.6%

breathe 9: breed 9, reap 2, rip, brie 2, break, breath 2, read, reap 2, Ø
though 7: doe 13, door 2, Ø, row/raw, pot 2, pour, power, tall, do
theirs 11: dares 4, ‘dars’, Daz, there 3, bears, dare, does, dire, ‘dar’, days 4, those
southern 12: sudden 14, seven, sadden, saddle, sad
worthy 21: warts, Virpi, ‘watty’, ‘werty’ 2, worth, wagon, ‘vulchi’, wordy

/ð/ achieved a Category C rating in intelligibility. It was perceived as /d/ regularly in initial position: **though** as *doe, door, do* (16 out of 30 impressions; as /ð/ in only 7 impressions); **theirs** as *dares, days* etc (14 out of 30 impressions). It was also perceived as /d/ regularly in medial position: **southern** as *sudden, sadden,* etc (17 impressions out of 30); in the case of **worthy**, a /d/ impression varied with /t/. In final position, /ð/ was perceived as /d/, as *breed* for **breathe**, or another plosive consonant;

only 9 impressions out of 30 involved /ð/, although the 2 impressions as *breath*, could conceivably represent a mis-spelling for **breathe**; even so, the rate would only be 36.6%. The evidence of **taught**, **bought**, **rot** in the perception experiment (as *thought, both, wrath*) suggests that the pattern for /θ/ would have paralleled the pattern of /ð/.

The incidental evidence for a high intelligibility rating for /f/ is strong in initial position as in **fears**, **full**, **fond** and **five**, but weak in final position, as in **laughs**. The incidental evidence for /ʃ/ as in **shone** and **portion** was extremely strong, and for /h/ likewise, as in **hat, heard**, **ham**, **heed**, **helped**, **hill**, **hut**, **hall**, **height**, **had** and **her**.

The nasals were not targeted, but incidental evidence shows a very high rate of intelligibility for /m/ and /n/ in both initial and final positions. Regrettably, there is precious little data for /ŋ/, but the high rate of perception of /ŋ/ in **rung** (86.6%) suggests there might not be a significant problem.

/l/ was not targeted either, but incidental evidence shows a very high rate of intelligibility for /l/ in all positions: initially, as in **league**, **loves**, **lag**, **lace**, **lore**, **look**, **loud**, **laughs**, **luck**, **log**, **ledger**, **live**, **lunge**; in initial clusters, as in **slip**, **plays**, **clothes**; medially, as in **pilot**; finally, as in **whole**, **pull**, **full**, **hill**, **hall**, **oil**, **wool**, **sale**, **oval**; in final clusters, as in **helped**, **cold**; and as a syllabic lateral, as in **staple**, **cattle**.

/r/ was not targeted, and again incidental evidence shows a very high rate of intelligibility for /r/ in all (relevant) positions; initially, as in **robe**, **ridge**, **rise**, **rubbed**; in initial clusters, as in **strive**, **breathe**, **bronze**, **brown**; and medially, as in **pirate**.

Incidental evidence for /w/ and /j/ show also a high rate of intelligibility. There were occasional impressions of /v/ for /w/, but the vast majority showed that British judges heard **wall(ed)**, **wear**, **warm**, **were**, **worthy** with /w/. Whereas the Tamil participants' efforts at initial /v/ often suggested /w/ to British ears, the reverse was not the case. We have precious little evidence for /j/ beyond the 16 impressions of

<y> preceding **ears**, but that suggests that there would be no problem! (The problem is separating year from *ear* with both being pronounced with /j/!)

Finally, consonant clusters. The incidental evidence for initial clusters with /l/ and /r/ suggest a high rate of intelligibility, as indicated above. A sample of final clusters were targeted, as being more vulnerable, as proved to be the case. Five words with <-ed> following one consonant (**walked**, **rubbed**, **lodged**) or two (**helped**, **asked**), and five words with <-es> following one consonant (**loves**, **breathes**, **laughs**, **clothes**) or two (**months**) were chosen.

C+t/d# *average intelligibility rating*: 41.6%

walked 8: war, walk 15, work 3, word, now, Ø
helped 6: held 2, help 15, helper 3, alpha, helpful, 'helt', hilt
asked 7: ask 14, ours, art 2, 'uns', oz, house 2, ass 2
rubbed 15: row, drum, rum, Ø 2, red, rub 3, rub(r), draft, 'rab', raft, 'rowt', 'rud'
lodged 25: lodge 2, latched, lunches, 'lor'

Only 8 impressions of **walked** matched the intended word; in most cases, the final /t/ was not heard. Only 6 impressions of **helped** matched, and only 7 of **asked**. With **rubbed**, there were 15 impressions matching the intended word, and with **lodged**, 24. This suggests that when <-ed> is realized as /t/, it is hardly heard, but when it is realized as /d/, the rate of intelligibility is relatively good. This might be surprising in view of the general disappearance of /d/ in **send** and **mend**, reported above, but it does conform with Khan's report of superior scores for suffixal /d/ over non-suffixal clusters in IESP (Khan 1991: 292), as presented earlier.

C+s/z# *average intelligibility rating*: 26.6%

loves 6: louse/mouse 15, love 3, glaʊ, loud 2, lout 2, loved
breathes 0: bridge 3, breeds 9, breed 2, reads 2, breech, breathe 2, greets, great, greet, briefs, 'breet' 2, 'breets', brids 3, braids
laughs 6: love 4, loves, loss 3, lost, louse 2, laugh 4, gloves/clothes, last 3, lots 2, 'lats', loud, mouse
months 19: 'mans' 2, 'munce', month 5, 'mants' 2, 'manz'
clothes 21: lots 2, lodge, close, 'clode', clothed, clot 2, cloth/clothe

In the case of final <-es>, an interesting distinction appears. When it represented plurality it was quite well perceived: only 9 misperceptions out of 30 for **clothes**, and only 11 for **months**. However, when it represented present tense third person singular, it was very poorly received; no matching perceptions for **breathes**, and only

6 each for **loves** and **laughs**. It seems not to follow the pattern of voicing as in <-ed> clusters; in fact, conceivably the most difficult cluster, in **months**, a cluster of two voiceless fricatives with /s/ representing plurality, was well perceived, but /-fs/ in **laughs** was poorly perceived, with /s/ representing a verbal suffix. The same difference is noticed with /-z/ clusters.

The data bears out the general observation that final clusters are a particular problem for Tamil speakers of English, but more data would need to be collected to account for the details.

Tentative sketch of Tamil English Standard Pronunciation

We are now in a position to suggest the main characteristic features of a standard Tamil English accent. There are necessarily individual variations: some, for instance, distinguish the vowels of **boat/bought**, but others do not; some distinguish between /t/ and /θ/, and others do not; many do not distinguish between /s/ and /z/ in final position, but do elsewhere; many produce a long monophthong /eː/ for SESP diphthong /eɪ/; some interpret the spelling <-air> as /ɑː/, rather than as SESP /ɛə/. Nevertheless, we can suggest the broad outline of TESP, and compare it with SESP.

Differences between accents are usually classified in the following manner, following Wells (1982): *systemic*, *distributional*, and *realizational* differences relate respectively to differences in the number of items in the vowel and consonant phonemic inventory, to differences in the phonological environment in which a given phoneme occurs, and to differences in the phonetic quality of a given phoneme; *lexical* differences relate to the selection of one phoneme rather than another in a particular word or class of words, but not to every instance of that phoneme. In the case of TESP and IESP, lexical differences often involve 'spelling pronunciations' and different word stress patterns.

Tamil English vowels

i iː		u uː
eː		oː
e	ɜː	

iə		uə
ɛə		

	ʌ	ɔ
	a aː	

	au	ɔi
ai		

The main systemic difference among vowels for most TESP speakers compared to SESP is the fusion of SESP /əʊ - ɔː/, as in IESP. TESP has a vowel of Tamil **/oː/** quality, ie mid (neither mid-close nor mid-open) that is typically interpreted by SESP speakers as /əʊ/ in open syllables, and as /ɔː/ in closed syllables. TESP speakers tend to interpret SESP /əʊ/ as either /uː/ because of the close ending of the diphthong, or as /aʊ/ because it sounds similar to TESP /aʊ/ with its mid central beginning. Furthermore, TESP and SESP speakers tend to interpret each others' /ɔː/ as /ɔː/ in closed syllables.

Realizational differences are noticeable in the rest of the TESP vowel system.

TESP

/iː/ has the phonetic quality of the equivalent Tamil vowel, without the propensity to diphthongization found in SESP.

/i/ has the phonetic quality of the equivalent Tamil vowel, and is much closer than its SESP counterpart /ɪ/. Many TESP speakers interpreted the SESP reduced /iː/ vowel before a voiceless consonant as equivalent to their Tamil /i/, and thus interpreted SESP **reach** as TESP *rich*. This clearly suggests a difference in the interpretation of vowel quantity in SESP and Tamil (and TESP).

/eː/ has the phonetic quality of the equivalent Tamil vowel, a long monophthong with no diphthongization, but operates in the system as the counterpart to SESP /eɪ/.

/e/ has the phonetic quality of the equivalent Tamil vowel, and is very similar to the rather more open SESP /ɛ/ characteristic of the younger generation.

/uː/ has the phonetic quality of the equivalent Tamil vowel, without the propensity to diphthongization found in SESP.

/u/ has the phonetic quality of the equivalent Tamil vowel, and is much closer than its SESP counterpart /ʊ/. This led some TESP speakers to interpret SESP /ʊ/ as the more open TESP vowel /oː/, as discussed above.

/ɔ/ has the phonetic quality of the equivalent Tamil vowel, and is somewhat closer than its SESP counterpart /ɒ/, to such an extent that some British listeners tend to interpret it as /ɔː/, and TESP speakers tend to interpret the opener SESP /ɒ/ as either /ɑː/ on account of its phonetic quality, or as /ɔː/ on account of its quantity.

/a/ has the phonetic quality of the equivalent Tamil vowel, more central and open than SESP /æ/, which led some TESP speakers to interpret the latter as /ɛə/.

/aː/ has the phonetic quality of the equivalent Tamil vowel, which is more central than conservative SESP /ɑː/.

/ɜː/ has no equivalent in Tamil, but seems to be articulated somewhat more forward and open than SESP /ɜː/, leading some British listeners to interpret it as /ɛə/ in open syllables, and as /ʌ/ in closed syllables.

/ʌ/ has no equivalent in Tamil. Perception data indicates that TESP speakers interpret SESP /ʌ/ very disparately, suggesting a wide variety of articulations on their part, but the production data seems to suggest that individual speakers of TESP produce it in general a little more open than the SESP counterpart, leading some British listeners to interpret it as /æ/.

/ai/ has more or less the same phonetic quality as the equivalent Tamil vowel, ending more closely than the equivalent SESP vowel.

/au/ has the phonetic quality of the equivalent Tamil vowel, which seems to have a closer, more central beginning than SESP /aʊ/. This led some British listeners to interpret TESP /aʊ/ as /əʊ/. It also ends closer than the equivalent SESP vowel.

/ɔi/ has no equivalent in Tamil. Some British listeners interpreted it as /aɪ/, which suggests a more forward beginning of the diphthong. Note again a closer ending than the equivalent SESP vowel.

/iə/ has no equivalent in Tamil. The tendency to add /j/ in word initial position suggests a closer beginning than SESP /ɪə/, and a more prominent second element is suggested by the British listeners' tendency to hear /ɜː/ in closed syllables.

/ɛə/ has no equivalent in Tamil. Some British listeners interpreted it as /ɑː/ when the spelling has a leading <a>, as /ɪə/ when spelt with <-ear>, and as /eː/ when spelt as <-ere>. Nevertheless, just over half the judgements recognized it as /ɛə/, so its phonemic status is just about assured.

/uə/ has no equivalent in Tamil. The tendency to add /ʊ/ in word initial position suggests a closer beginning than SESP /ʊə/. But it is clear that some TESP speakers do not include this vowel in their system and substitute /ɔː/ as is now common in UK.

Tamil English consonant chart

	bilabial	labio-dental	dental	alveolar/ retroflex	post-alveolar	palatal	velar	glottal
Plosives	p b			t d			k g	
Affricate					tʃ dʒ			
Nasal	m		n				ŋ	
Fricative		f (v)	(θ) (ð)	s z	ʃ ʒ			h
Tap			ɾ					
Lateral			l					
approximant		ʋ				j		

( ) = additional phonemes with some speakers

The main systemic difference among consonants for most TESP speakers compared to SESP is the lack of /v, θ, ð/; hence the bracketing in the chart above. Attempts by TESP speakers to articulate SESP /v/ were frequently interpreted as /w/ in word-initial position and were scarcely noticed in final position. Attempts by TESP speakers at SESP /ð/ were typically interpreted as /d/ in all positions. The evidence for a parallel treatment of SESP /θ/ is found in the perception test, where TESP speakers often interpreted SESP /t/ as /θ/. It is to be noted that none of these three consonants feature in Tamil or in IESP.

Just occasionally, a TESP speaker used /p/ where SESP has /f/, but this was not common enough to deny the claim that TESP has **/f/**.

The main distributional difference concerns the frequent lack of voiced obstruents in final position. Besides /v, ð/(see above), **/b, d, g, dʒ, z/** appear only sporadically in the data; there can be no doubt that **/ʒ/** would be just as unlikely in final position.

Final /b/ was occasionally pronounced so strongly – no doubt, in an effort to overcome an awareness of its problematic status in TESP speech – with a fully articulated [ə] release, that some British listeners interpreted it as an additional syllable.

A second distributional difference with SESP concerns the pronunciation of the suffixes *–ed* and *–es*. **/t/** frequently did not occur (22.2%) as the suffix *–ed* after a consonant, but /d/ did (66.7%), although it frequently (38.3%) was missing after a consonant in a monomorphemic word (see the discussion above on Khan's (1991) description of IESP). Similarly, **/s, z/** often did not occur as the suffix *–es* after a consonant, and if it did, it was at the expense of the other consonant.

It was also noted in the perception experiments that TESP speakers often imagined additional consonants like /k/ and /p/ in word-final position. This could well represent an awareness that they do in fact tend to reduce final clusters and realize that when they hear, for example, /rɒt/, it could well be either the word *rot* or *rocked*.

The third distributional difference concerns the presence of **/j/** and **/w/** as onsets to relevant close vowels in word-initial position, as noted above.

There are four main realizational differences: the first concerns the general lack of aspiration of the voiceless plosives **/p, t, k/** as a support for the contrast with their voiced counterparts. This is an important phonetic feature in SESP, but this is clearly not the case in TESP. SESP aspiration was, in fact, occasionally interpreted as an additional consonant by TESP speakers, as noted above.

Secondly, TESP **/l/** appears to be 'clear' in all positions. This evidently does not produce any problem for British listeners to TESP, but there is evidence that SESP final 'dark' /l/ can be a problem for TESP speakers, since 10 TESP speakers failed to hear it in **whale**, and 7 in **full**. In most cases of misperception, the SESP 'dark' /l/ was interpreted as if it represented final orthographic <r>, pronounced as /ə/.

Thirdly, TESP **/r/** is a flapped consonant [ɾ], rather than the SESP approximant [ɹ].

Fourthly, Asher (1982: 212-6) noted how Tamil borrowed English words with /t, d, l/ but converted them into retroflex articulations, eg *tea* becomes Tamil /ʈiː/, *tin* /ʈin/, *doctor* /ɖaːktar/. Although *lorry* becomes /laːri/, SESP /l/ becomes Tamil /ɭ/ in initial clusters, eg *glass* /gɭaːs/, and in final position, eg *apple* /aːppiɭ/, *cycle* /saikkiɭ/. This suggests that TESP may well also have retroflex variations for **/t, d, l/.**

The other consonants **/m**, **n, ŋ, ʃ, tʃ, h/** do not show any appreciable realizational differences.

These notes represent a *tentative* sketch of the consonant and vowel inventories of TESP. It is conceded that a sample of 30 subjects would not justify a more robust claim than this, and that the flaws in the gathering of data on a couple of items would undermine a claim to be comprehensive. Nevertheless, the data is substantial enough to act as a pilot study and form a base for a more extensive study, that should also embrace the prosodics of TESP word phonology. It is also substantial enough to justify the potential designation of an accent of English as *Tamil English Standard Pronunciation*; this, in itself, is of enormous consequence as the population of TESP speakers may well equal, or even exceed, the population of SESP(RP) speakers in the world.

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