

## **Unintelligible phonetic recognition of English written words by Bengali EFL learners: Two theoretical explanations**

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### **Abstract**

*In this article I analyze, from two theoretical perspectives namely phonological encoding theory and schema theory, why many adult Bengali speaking learners of English as a foreign language (EFL) recognize English written words in ways which are different from the Received Pronunciation and which I term here 'unintelligible phonetic recognition'. These EFL learners' reading of words such as 'Holmes' and 'ghost' as respectively [holms] and [g<sup>h</sup>ɔst] includes two examples of such phonetic recognition. I claim that learners' conversion of the visual representation into a phonetic and their existing schema of English and Bengali phonology, and/or a lack thereof, have an influence on their unintelligible phonetic recognition. The theoretical insights suggest some implications for English language teachers in Bangladesh and similar contexts.*

**Key words:** *unintelligible phonetic recognition, grapheme-phoneme, phonological encoding, schema, cognitive processing, pedagogical implications*

## **1. Introduction**

Based on my experiences of teaching English to adult Bengali speaking learners in Bangladesh, I provide in this paper theoretical insights into why many of our Bengali speaking EFL students often expose unintelligible phonetic recognition when reading English written words. This unintelligibility occurs when their phonetic recognition distinguishes from the Received Pronunciation. I also focus on the implications that the theoretical explanations of the unintelligibility suggest for English language teachers. The discussion is divided into three parts. First, I describe some instances of unintelligible phonetic recognition that I have often noticed among my students. Secondly, I build on theoretical understanding of the unintelligibility. Finally, I briefly outline some pedagogical implications.

## **2. Instances of unintelligible phonetic recognition**

The learners I have taught so far include adult (18 to 40 years old) undergraduates, graduates and/or professionals with elementary or pre-intermediate level of English proficiency. As far as their English background is concerned, they have studied English in Bengali-medium schools and colleges as per national policy of Bangladesh. Despite their twelve years of compulsory study of English, their exposure to English phonetics and phonology has remained limited for several reasons. First, they have learned English only through alphabets, not phonics. However, they are familiar with metalinguistic terms such as syllable, letter and so on as they have studied these in schools. Secondly, they have studied in Bengali medium schools and colleges where for many of them English classes were also delivered in Bengali medium. Moreover, some of them study or have studied their university courses in Bengali medium. These reflect that they have had limited opportunities to develop their phonetic recognition of English.

When teaching English to these students, I often have noticed that when reading or discussing a written text, some of them recognize English written words in a way which sounds different from the Received Pronunciation and results in incomprehensibility on part of an audience or listener. For example, they pronounce 'Holmes', 'hymn', 'ghost', 'Jew' and 'heard' as respectively [holms], [haimn], [g<sup>h</sup>ɔst], [dʒiu] and [hiard] (Appendix 1). It appears that they tend to pronounce each letter of a word, face confusions with aspiration and take grapheme(s) for the phoneme(s) which does/do not correspond in that particular context. It is notable here that graphemes are "single letters or letter clusters" which represent a phoneme (Coltheart, 1978: 153); for example, 'c' represents /s/ and /k/ in 'city' and 'cat', while 'ch' represents /k/ and /tʃ/ in 'school' and 'chilly' respectively.

From two theoretical perspectives, I explain in the next section how cognition operates in the mind of these learners so that they do not drop phonemes and that they make confusions with aspiration and grapheme-phoneme relations of words.

### **3. Theoretical understanding of the unintelligible phonetic recognition**

The theories I draw on include "phonological encoding without lexical access" and schema theory which were developed by respectively Coltheart (1978:153) and Bartlett (1930) (cited in Carrell and Eisterhold, 1983). As the name suggests, the former theory focuses on the steps or processes that an individual follows for his/her phonetic recognition of written words. Schema theory, however, is concerned with individuals' processing of information in general. This information processing involves the application of previous knowledge, which is termed schema and which may range from individuals' linguistic knowledge to their knowledge of the world. With reference to the concepts and arguments of these two theories, I discuss in the following sections how a Bengali speaking EFL

learner's phonological encoding and schema may affect his/her phonetic recognition of English written words.

### 3.1 Phonological encoding without lexical access

According to this theory, phonetic recognition involves two steps: (i) analyzing written form of lexes and (ii) converting this into phonological representation. While the former step is concerned with visual representation, the latter is with verbal. Jay (2003:100) has described the process of visual-verbal conversion for phonetic recognition as an indirect route or process as it does not involve direct lexical access.

According to Coltheart (1978:153), there are three alternative procedures of phonological encoding: (i) grapheme to phoneme correspondence, (ii) syllable analysis, and (iii) phonological lexicon. The main procedure is the grapheme to phoneme correspondence (GPC), according to which a person follows two steps of visual-verbal conversion. First, the person parses lexis into graphemes and secondly, assigns phonemes to the graphemes; these phonemes are then synthesized to reach the phonetic recognition. The procedure can be illustrated in a visual as follows.

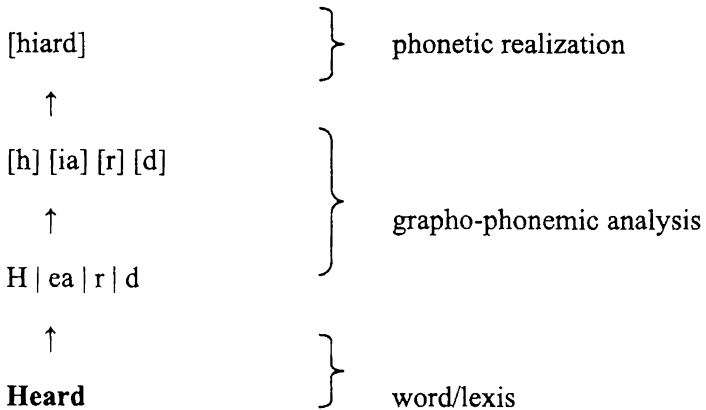


Fig. 1: GPC procedure of phonetic recognition

As the visual illustrates, an individual parses ‘heard’ into four graphemes each of which next is assigned four phonemes; these phonemes are finally synthesized so that “h-e-a-r-d” is realized as [h3:(r)d].

Between the two alternatives to GPC, namely syllable analysis and phonological lexicon, the syllable analysis involves a procedure which is similar to GPC because it also parses lexis into certain units. However, while lexes are parsed into a smaller unit of grapheme in the GPC, in the syllable analysis, lexes are parsed into a higher unit of syllable. For example, the word ‘hypothesis’ can be parsed into four syllable units such as hy-po-the-sis. In contrast to GPC and syllable analysis, the phonological lexicon, which is the third alternative, does not involve any parsing. Instead, an individual recalls his/her phonetic recognition from his/her mental phonological lexicon.

These three procedures of phonological encoding suggest that EFL learners’ unintelligible phonetic recognition might occur when a word is already stored unintelligibly in their mental lexicon and/or when a particular grapheme or syllable-unit is taken for the phonological unit(s) which is/are not appropriate for the context in question. For example, the recognition of ‘ew’ as [iu] applies to words such as ‘new’ and ‘few’, but not to ‘Jew’ or ‘chew’. This reflects that as far as lexis conforms to visual-verbal correspondence, an individual’s attempt of phonetic recognition is intelligible. According to Coltheart and Rastle (1994:1197), two lexical factors, namely irregularity and exception, make the visual-verbal relations incompatible for individuals. In a language such as English, where there are 44 phonemes against 26 alphabets, such unintelligibility is more likely to occur. For the grapheme-phoneme correspondence is often many-to-

one, a phonological situation which Saussure (1959:29) describes as “multiplicity of symbols that stand for the same sound”. For instance, the phoneme /s/ is represented by several graphemes such as ‘s’, ‘c’, ‘ss’ in respectively ‘sit’, ‘city’ and ‘class’.

This incompatibility of phonetic recognition implies that an individual’s visual-verbal recognition is affected by his/her previous knowledge which, according to the schema theory (discussed in further detail in the following section), can be explained as a principle of mapping input against existing schema (Carrell and Eisterhold, 1983:557). For example, an individual’s proper recognition of ‘ea’ in ‘hear’, ‘learn’ and ‘meal’ reflects that s/he has the schema stored in the phonological lexicon, whereas the identical recognition of ‘ea’ as [ia] in both ‘hear’ and ‘heard’ suggests that the person applies his/her schema of ‘hear’ to ‘heard’.

### **3.2 Schema theory and phonetic recognition**

The schema theory suggests that individuals’ schema has different levels or structures termed as schemata which are organized hierarchically and at the top of which is “most general” and at the bottom is “most specific” (Carrell and Eisterhold, 1983:557). The former is called top-level schemata which include world knowledge and experiences, while the latter is bottom-level schemata which include linguistic knowledge. In line with this perspective, schemata for phonetic recognition appear to be organized in similar hierarchical manner as follows which I term grapho-phonemic schemata (GPS), i.e. ‘grapho’ representing visual and ‘phonemic’ verbal.

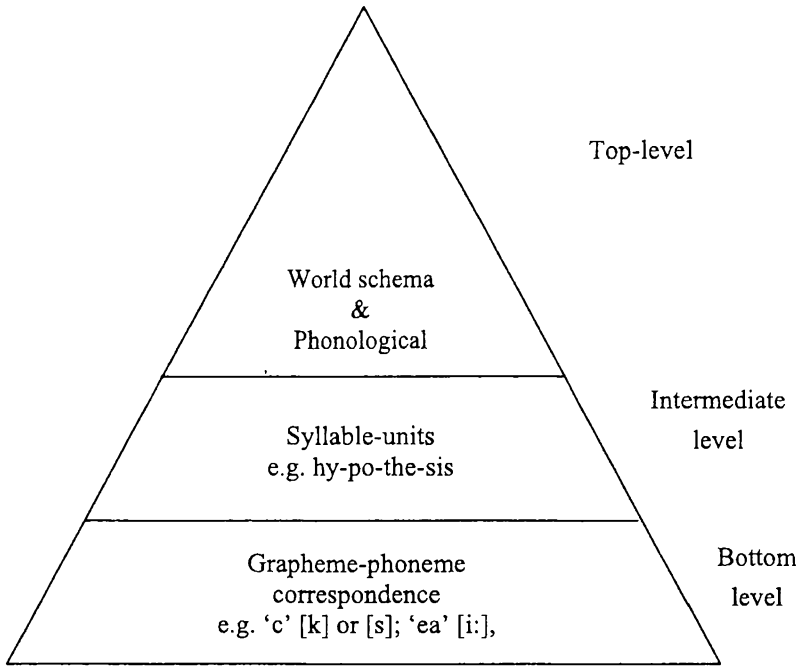


Fig. 2: Grapho-phonemic schemata (GPS)

As the diagram illustrates, the three alternative procedures of phonetic recognition suggested by Coltheart (1978:153) are involved with using different levels of schemata. GPC is involved with bottom-level schemata while the syllable and the phonological lexicon are concerned with intermediate level and top-level schemata respectively. According to the schema theory, these schemata are processed through two cognitive processes: top-down and bottom-up (Carrell and Eisterhold, 1983:557). The former involves downward processing of drawing on higher-level schemata while the latter involves upward processing of parsing lexis into segments (e.g. graphemes) and converting these into sounds. GPC and syllable procedures, therefore, relate to bottom-up processing while the

procedure of phonological lexicon relates to top-down. The relationships between these cognitive processes can be illustrated in a diagram as follows.

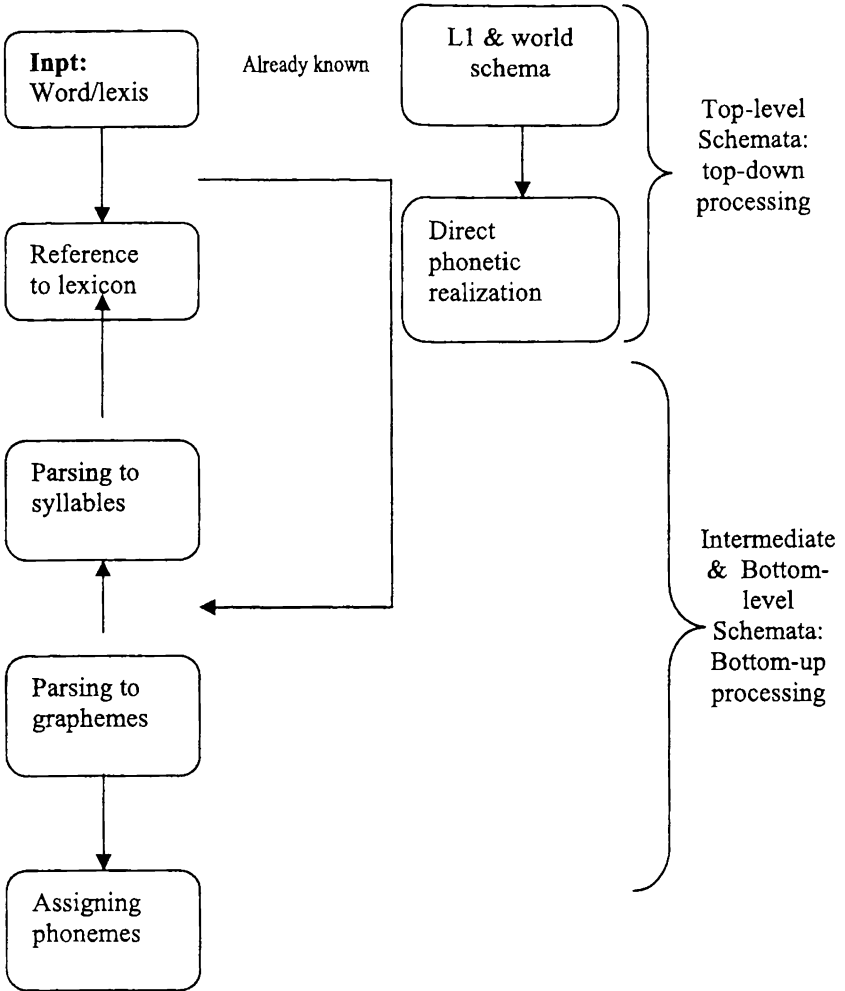


Fig. 3: Interactive cognitive processing of phonetic recognition



According to the diagram, an individual tries to recall the visual of a word from his/her mental lexicon, and a visual match (i.e. frequent and familiar words) helps him/her take a quick decision. But when the letter strings are partially or wholly unfamiliar (e.g. 'hymn', 'Holmes', 'Jew'), s/he uses bottom-level and/or intermediate-level schemata by processing through bottom-up. This means that cognitive procedures are interactive rather than "alternatives" (Rumelhart, 1980 in Carrell and Eisterhold, 1983:557) because individuals break lexis into any segments of graphemes or syllable-units depending on the previous knowledge already stored in their memory. For example, in order to process 'Jew', three letters in the spelling are analyzed and next similar letter strings such as 'new' and 'few' are recalled from the mental phonological lexicon. These top-level schemata would make a person generalize that 'ew' in 'Jew' might be [iu] following other similar letter strings; thus, the person recognizes 'Jew' as [dʒiu].

Moreover, as the diagram illustrates, phonetic recognition, according to Jay (2003:83), also involves using the first language (L1) information and world/contextual concepts. For example, a Bengali speaker can recognize 'Holmes' properly by drawing from the reading of Bengali translated works of Conan (which is orthographic information) or watching of English movies (which is acoustic information) in both of which [l] is dropped respectively in the Bengali spelling of 'Holmes' (e.g. হোমস [homs]) and in the addressing of Holmes by others. Therefore, an individual's unintelligibility reflects his/her lack of relevant knowledge and/or the influence of Bengali because Bengali phonology assigns phonetic symbols to each grapheme in a spelling. This appears the same in the recognition of 'hymn' as [haimn] where [n] sound is not dropped and 'hy' is visually matched with other linguistic contexts of English, for example, 'hypothesis' where 'hy' is pronounced as [hai]. This reflects that individuals' phonetic recognition is affected by the different sources of their schema.

The influence of Bengali phonology is also evident in examples such as 'ghost' which many students recognize as [g<sup>h</sup>ɔst] by perceiving 'gh' grapheme corresponding to the aspirated form of /g/. While aspiration in English is redundant, in Bengali it is distinctive because its presence and absence differentiate lexical meaning (Ferguson and Chowdhury, 1960:45). For example, [t] and [t<sup>h</sup>] are the allophones of /t/ in English whereas these are two phonemes in Bengali. Therefore, when Bengali aspirated sounds are transcribed and spelt in English, an 'h' is added to the unaspirated sound (e.g. ঢাকা [d<sup>h</sup>aka] 'Dhaka'). Bengali learners, therefore, seeing 'h' after 'g' in 'ghost' take them after Bengali aspirated sound গ/g<sup>h</sup>/ and pronounce them accordingly. This reflects that on one hand the learners do not have related second language (L2, i.e. English) schema and on the other hand they are influenced by their Bengali schema. In the literature (e.g. Krashen, 1988:64), this is described as a first language (L1) interference or negative transfer because L1 schema does not apply to the particular second language (L2) context(s).

In summary, the theoretical discussions reflect that an individual's phonetic recognition involves making connections between the visual and the verbal representations where s/he tries to deduce rules from how words are spelt and apply schemata accordingly. In this sense, the more consistent the orthography of a language is, the more intelligibility the individual can show. In this respect, many of our EFL students face challenges with unintelligible pronunciations because their generalizations about letter strings often do not work in other similar contexts. Moreover, since they have studied English alphabets and metalinguistic components, it appears that they depend more on a bottom-up processing, recalling their bottom-level and intermediate-level schemata so that they face difficulties with the inconsistency of English phonetics and phonology. Furthermore, they are largely influenced by L1 (Bengali) interference provided that they

are native speakers of Bengali which is essentially phonologically different from English.

#### **4. Pedagogical implications**

First of all, it appears important for English teachers in Bangladesh and similar contexts to recognize that the learners try to hypothesize rules by applying their schemata for their phonetic recognition and that an inconsistency of L2 (English) orthography, absence of relevant schema and influence of L1 make their attempts incompatible. Hedge (2000:15), for example, considers errors as reflections of “construction process”. The implication is to acknowledge the learners’ attempts as constructive rather than treating their unintelligibility as mispronunciation.

Secondly, teachers can devise tasks for practice in order to develop these learners’ phonetic recognition. For listening and speaking skills, the teachers can arrange top-down and bottom-up activities for encouraging learners to practice their top-down and bottom-up schemata. For example, the teacher can record himself/herself with both intelligible and unintelligible pronunciations of a similar discourse sample and play these recordings in the class. The learners can be provided with a list of the words and asked to decide which of the words represent unintelligibility and why. Vygotskian (1978:86) perspective of collaborative learning in groups and pairs appears useful in this respect. My own teaching experiences suggest that every student in a class does not have unintelligibility in their phonetic recognition and hence, by working in groups/pairs the learners with problems can discuss and learn from each other about the pronunciations.

Moreover, since L1 interference is evident, it appears essential to draw learners’ attention through contrastive analysis by illustrating relevant phonetic and phonological differences between Bengali and

English. The purpose is to raise their awareness about transferring L1 schema. I follow here Schmidt's (1990:140) argument that learners might continue with their problems if their attention is not drawn to the problems. Following Nassaji and Swain's (2000:34) argument for corrective feedback, I also find that feedback can be a means of raising learner awareness about the gaps in their phonetic recognition. However, since a few of the students face the challenge, feedback in front of the class, as Hedge (2000:290) observes, might make them embarrassed and anxious. Therefore, teachers can arrange individual and/or group tutorials to make them feel comfortable. I agree with Hedge (2000:15) on the point that adult learners such as they are in our Bangladeshi context, might be enthusiastic to utilize the feedback effectively and raise their awareness of over generalizations and negative transfer for their phonetic recognition.

## **5. Conclusion**

In this paper, I have discussed from phonological encoding theory (Coltheart, 1978:153) and schema theory (Bartlett, 1930 in Carrell and Eisterhold, 1983:556) the reasons of unintelligible phonetic recognition of English written words by Bengali speaking learners in Bangladesh. The unintelligibility includes, for example, the articulation of all phonemes in a word and the aspiration of certain phonemes such as /g/ when these are not needed. The theories suggest four possible explanations of the unintelligibility: (i) assigning phonemes to each graphemes and syllable units of a word by applying bottom level schemata for the recognition of totally or partially new words, (ii) inconsistency between the orthography and the phonology of English, (iii) in Saussure's (1959:29) words "multiplicity of symbols" representing the same sound in English, and (iv) lack of relevant English phonological and world/contextual schemata and negative transfer of Bengali schema.

The theoretical explanations offer four main pedagogical implications for English language teachers in Bangladesh and similar other contexts. First, it is important that teachers show positive attitudes towards students' unintelligible phonetic recognition and consider their unintelligibility as a reflection of their learning process through trial and error. Secondly, teacher feedback is crucial for EFL learners so that they do not become fossilized. It may happen that learners are not aware of their mistakes or problems. But if their attention is drawn through both constructive and corrective feedback, they become aware of their problems and feel encouraged to practice and self-correct. Thirdly, collaborative practice on intelligible and unintelligible word recognition is essential. Using samples of intelligible and unintelligible phonetic recognition can be helpful in this respect. Finally, a contrastive analysis of Bengali and English phonology also helps to raise our Bengali EFL learners' awareness of the negative transfer of their L1 schema.

### Appendix 1

A sample list of Bengali EFL learners' unintelligible phonetic recognition

<b>Lexes</b>	<b>Recognized by learners</b>	<b>Received Pronunciation</b>
Heard	[hiard]	[h3:d] or [h3:rd]
Jew	[d3iu]	[d3u:]
Oh	[oh]	[əʊ]
Ghost	[ghost]	[gəʊst]
Hymn	[haimn]	[him]
Holmes	[holms]	[həʊmz]

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