MEDVIX PUBLICATIONS

Journal of Medicine Care and Health Review
Research Article | Open Access | ISSN 3065-1719 | Volume 01 | Issue 05

Evidences of Functioning of Cognitive Phonology in Sound Pattern Processingof Uzbek Students - A Cognitive View

Shafeek T[1*]

[1]Centre Of Advanced Study in Linguistics Faculty of Indian Languages, Annamalai University, Tamil Nadu, India- 608 002.

Received date: 14 October 2024; **Accepted date:** 29 October 2024; **Published date:** 23 December 2024

Corresponding Author: Shafeek T, Centre of Advanced Study in Linguistics Faculty of Indian Languages, Annamalai University, Tamil Nadu, India- 608 002.

Citation: Shafeek T. Evidences of Functioning of Cognitive Phonology in Sound Pattern Processingof Uzbek Students - A Cognitive View. Journal of Medicine Care and Health Review 1(5). https://doi.org/10.61615/JMCCR/2024/DEC027141223

Abstract

With being learned, Uzbek language learners of English tend to deviate from acceptable orappropriate patterns, and form a „specific" pattern while articulating English words they know. This unrecognized and unconscious act is driven by the learners" knowledge of cognitive phonological awareness. The process of articulation in familiar words of the English language is questionable as it is being patterned and organized in such ways that speakers resort to their independent phonology. This has resulted in distorted patterns called phonological processes, vowelrounding in particular. This paper is an attempt to showcase evidence of cognitive phonology in Sound Pattern Processing (SPP) in English words when observing utterances of students of 8 - 11 grades of an x school. The complexity of the phonological patterns of participants is studied from the perspectives of the theory of RCVP -Radical CV Phonology (Hulst), autosegmental (Goldsmith, 1976), and lexical phonology (Monahan, 1982). The study concludes sound pattern processing can only be achieved with cognitive phonological aspects and the independent-working phonology of the participants has resulted in the exhibition of vowel rounding, a phonological process.

Keywords: Cognitive Phonology Sound Pattern Processing, Uzbek learners of English, Vowelrounding

Introduction

This study offers evidence of Cognitive Phonology (hereafter CP) and CP resulting in Sound Pattern Processing (SPP) in English word articulations of Uzbek students in natural settings. The study focuses on issues like why Uzbek learners of English as a second language deviate from instructed phonological patterns and make „specific patterns" while articulating English words. With being taught, observed participants hardly recognize that they have deviated from their actual phonological patterns. However, they do not have sound patterns based on „instructedphonological patterns", but with working phonology, they have independently developed. Speakers" realization of grapheme-phoneme correspondence in the contexts of learned English words is supported by cognitive phonology which is a matter of discussion. To sound patterns in English words, be it learned or unlearnt, independent working phonology is a pre-requisite. The study addresses only evidence of cognitive phonology in articulations of learned English words.

Cognitive Phonology (CP)

Every language has a system of featured phonology which is distinct and complex to define. The phonological knowledge and awareness underlie speech processing in a language. Bates and Snyder (1985), Sinclair-de Zwart (1973), Macnamara (1972), and Piaget (1954) argue thatlanguage is a subordinate part of cognitive development, dependent on the attainment of various concepts. Cognitive linguists explore these various concepts, providing increased research interest in cognitive phonology. These interests range from sub-disciplines of phonology to cognitive phonology, developmental phonology, etc. The significant distinction between Cognitive Linguistics (CL) and Cognitive Phonology (CP) can be as:-

CP	CL
Perceptual	Physical
Psychological	Biological
Implicit	Explicit
Abstract	Concrete
Independent	Dependent
Symbolic	Numeric
Internal	External

When a language has a system of selection and functions in the patterning of sound segments, it deals with its phonology. Here cognition has a

fundamental role in the process of patterning sound(s). The role of cognition in sound pattern processing is significantly more underlying than distributing sounds. The cognitive process is, in fact, abstract and functions implicitly in every domain. Every individual has this to have continuity in their language. That is the reason language is not static but dynamic. Languages continue to expand with only our sound system of the brain. It selects, analyzes, produces, and articulates only with knowledge of the mind. Like a tape recorder with many components, our mind has some properties and faculties. These properties and faculties play a crucial role in the sound system. Cognitive faculties play a significant role as they are quick enough to reflect on sound segments or phonemes.

Cognitive phonology appears autonomous and independent in processes of perceptionproduction. Cognitive phonologists view phonological categories as constructed of certain cognitive factors and other linguistic factors.

Roles of Cognitive Phonology in SPP

a) Connect the mental images of phoneme to its phonetic sequences.

b) Connect phonetic sequences to corresponding mental images.

Cognitive phonology is internally structured to observe a phonetic object and select, decide, and distribute the appropriate sound segments. The primary function of cognitive phonology is tohave these elements connected with the cognitive faculties of the human brain. Our human mind is embedded with mental structures needed for processing and patterning sounds in language. Cognitive phonology thus relates mental images or symbolic units to phonetic sequences andvice versa.

Underlying aspects of CP in the English language

If you are reading this passage is because of the „lingua-franca.“ Cambridge Advanced Dictionary (3rd edition) defines „Lingua-Franca“ as a language that is used for communication between groups of people who speak different languages but which is not used between membersof the same group. What makes a human being unique in the social animal world is his use of lingua franca. English is undoubtedly a major lingua franca. There is no point in discussing the history of English; the advancement of English in many fields including technology over the last fivedecades; the role of English in our day-to-day life; or why learning English as a second language [ESL] or English as a Foreign Language [EFL] is a matter of the highest priority to many etc., as too many works pertinent to English language are available. This paper deals with the sound pattern processing of Uzbek learners of English in their natural setting. The following note on Vowel phonemes and syllable structures of English are pre-requisite for the in-depth understanding ofdiscussions that follow in the “result” sections

Cognitive Phonological Sketch of English Vowels

Table 1. Diagram of tongue position of English vowel

Height	Front		Central		Back	
	Short	**Long**	**Short**	**Long**	**Short**	**Long**
High	I	i:			ʊ	u:
High-Mid	e	ɛ	ə	ɜ:	ɔ	o:
Low	æ		ʌ	ɑ:		

Cognitive CV Structures of English Words

Syllable structures of English words can be cognitively intuited with any of the followingConsonant Vowel patterns in our brain.

a) V e.g., *‘I’* / ai /

b) CV e.g., „*he*“ / hi: /

c) VC e.g., *‘ill’* / il /

d) VCC e.g., „*apt*“ / æpt /

e) CCV e.g., *‘flea’* / fli: /

f) CVC e.g., *‘feet’* / fi:t /

g) CVCC e.g., „*risk’* / risk /

h) CCVC e.g., *‘please’* / pli:z /

i) CCCV e.g. *‘spray’* / sprei /

j) CVCCC e.g., *‘text’* / tekst /

k) CVCCCC e.g. *‘texts’* / teksts /

Methodology

Citation: Shafeek T. Evidences of Functioning of Cognitive Phonology in Sound Pattern Processingof Uzbek Students - A Cognitive View. Journal of Medicine Care and Health Review 1(5).
https://doi.org/10.61615/JMCCR/2024/DEC027141223

The present study is based on a month -of observation in English word-utterances of Uzbekstudents of known English words. The term „known words‟ is considered in the sense the selected words have been taught to speaker or they are familiar with or heard their teacher say in their English language teaching-learning process. Participants involved in the study were observed while reading texts of English words. Word utterances were instantly phonemically transcribed. Recordings were systematically examined and interpreted phonetically to generate “qualitative data”. The following words shown in **Table 2** have been the basis for a month's observations of Uzbek learners of English studying in grades 8- 11 of an X school in Tashkent. The settings and contexts are natural and authentic.

Table 2. List of English words in which articulations of the participants are observed

Sl	Unknown Words	Phonemic Script	Syllabification
1	up	[ʌp]	VC
2	study	[ˈstʌd.i]	CCV.CV
3	supper	[ˈsʌp.ə]	CVCV
4	sculpture	[ˈskʌlp.tʃə]	CCVCC.CV
5	currently	[kʌr. ənt.li]	CVC. VCC.CV

Results

The above words shown in **Table 1** were often found articulating in different ways, deviating from the instructed and implicit phonology. See derived processes that have been observed in Uzbek learners of English as L2

Vowel Alternation in Up

Derived Processes	σ Structure	Segmental Change	Phon. Process
[ʊp]	VC	ʊ - .	Vowel rounding
[ʌp]	VC	- - .	unaffected

Notice that a ‘-’ stands for segment. A ‘.’ indicates syllable boundary.

Two types of phonological processes were observed due to Sound Pattern Processing inthe word *up* (4.1) utterances; phonological process-free **(4.1(b))**, and alternation of the initial vowel segment /ʌ/ as shown in **4.1(b)**. Alternations of vowels during sound pattern processing have been recurrent in languages like Arabic which is the abjad writing system. Abjad is a type of writing system where readers have to infer vowels resulting in vowel deviation. The vowel segment of / ʌp /, which is an unrounded vowel / ʌ / has been substituted as /ʊ / resulting in vowel roundingas well as vowel backing. Hence the initial segment of t h e English word-*up* has been altered. See the following contexts where a segmental change to a vowel is apparent.

Segmental Rounding in di Syllabic Word Study

Derived Processes	σ Structure	Segment Change	Phone. Process
(a) [ˈstʌd.i]	CCV.CV	- - - . - - .	unaffected
(b) [ˈst ʊ d.i]	CCV.CV	- - ʊ . - - .	Vowel rounding

Notice that a ‘-’ stands for segment. A ‘.’ indicates syllable boundary.

It was observed Uzbek learners of English studying in higher grades (9-11) of an X school tend to deviate from the low central vowel / ʌ / to t h e high low back vowel / ʊ /. This process is called vowel backing, in particular, more generally it is a process of Vowel alternations. A few speakers have made an SPP accurately as shown (4.2(a)) while utterances of many participants in the *study* have resulted in vowel backing as shown in 4.2(b). Significantly, vowel rounding / ʌ /□ / ʊ /, which was unprecedented, is considered a result of the cognitive phonological aspect.

Alternation and Vowel Lengthening in Supper

Derived Process	σ Structure	Segmental Change	Phon. Process
a. [ˈsuː.pə]	CVC.V	- u: -. - .	Vowel lengthening
b. [.ˈsʌp.ə]	CVC.V	- - -. - .	unaffected

It is noticed that no changes were made to the first, that is / s / and final two segments, namely /p ə / during articulations of *supper*. Vowel alternation in the initial syllable as shown in 4.3 (a) is evident. As discussed earlier, vowel rounding is a recurrent phonological pattern substantiated by the derived output (4.3.a). See the SPP in the poly-syllabic word contexts which supports the evidence of participants‟ resort to the independently developed phonological aspects.

Vowel Rounding in Poly-Syllabic Word Sculpture

Derived Process	σ Structure	Segmental	Change	Phon.Process
a. [ˈskʌlp.tʃə]	CCVCC.CV	- - ʊ - - .	- - .	V- rounding
b. [ˈskʌlp.tʃə]	CCVCC.CV	- - - - - .	- - .	unaffected

Notice that a '-' stands for segment. A '.' indicates syllable boundary

The third segment of the word in *sculpture* is a low–central unrounded vowel which was processed as / ʊ /, the low short back rounded vowel resulting in a phonological process called Vowel rounding. The process of Vowel rounding is primarily characterized by the speaker"s implicit or cognitive phonology which is available in the stream of sound pattern processing. Internal phonological evidence includes data from alternation (Mohanan, 1986).

The phonological Process of Vowel Deviation Currently

Derived Process	σ Structure	Segmental Change	Phon.Process
a.[kʊ r.ənt.li]	CVC. VCC. CV	- ʊ -. - - -. - - .	V-deviation
b.[kʌr. ənt.li]	CVC. VCC. CV	- - -. - - -. - - .	unaffected

Notice that a '-' stands for segment. A '.' indicates syllable boundary.

A number of observed participants have shown traits of alternation to the second segment / ʌ / as shown in 4.5. a resulting in a phonological process called vowel deviation. Vowel deviations consist of alternations to a vowel which can be centering, rounding, lengthening, or shorting. The observed phonological process is V- rounding as shown in 4.5 a.A few participants have phonological process free articulation in the *current* word articulation as indicated *unaffected* in 4.5.b Unlike the other four English words; *up, study, supper,* and *sculpture,* the word *currently* has eight segments of which the first segment is the voiceless-velar-plosive / k /. Even in the articulation of unlearnt words that have similar segments and phonological patterns, learners of Englishtend to conform to the rules of phonological aspects. Contrary to this, the participants in the *current* word articulations have shown nonconformity to the second segment, / ʌ /. It must be taken into account that speakers have been familiar with the word *currently* and appropriate phonological patterns are always available to them.

Discussion Impacts of Cognitive Phonology

Word utterances are caused by the adjustment of the phoneme in a stream which often resultsin segmental changes in certain contexts or segments remain unaffected in some contexts. The following are segmental processes due to resorting to cognitive phonology during utterances.

1) Apheresis- Deletion of the initial segment(s)
2) Syncope - Deletion of the internal segment(s)
3) Apocope – Deletion of final segment(s)
4) Assimilation- Segment influence on segment SPP-affected
5) Epenthesis – Insertion of segment
6) Metathesis – Transposition of segments
7) V- alternation – Vowel deviations
8) Substitution– Consonant phoneme replacement
9) Unaffected - free from any phonological process

Conclusion

According to Kohla learners advance through a number of stages before adult-likeproductions. Sound Pattern Processing of Uzbek high school learners of English as L2 in words shown in **Table 1** has been an act of subconscious knowledge of phonological awareness. This unconscious-driven act is featured by the cognitively wired phonology they have independently developed. An important observation is that even in known English words, where participants probably have an established knowledge for appropriate pattern processing, observed participants have shown deviation of vowel namely vowel rounding. This is one of the phonological processes. It is assumed though external or instructed phonological awareness was available in known English words, inappropriateness, and inaccuracy were observed. On theother hand, self-developed and generated knowledge of pattern processing of speakers have played significant roles, eventually resulting in higher appropriate SPP error patterns Speakers have some subconscious knowledge of phonetic patterns that make up phonological systems (Katamba, Dobrovolsky, and Higgins). Uzbek learners of English as L2, have shown vowel-deviated sound pattern processes in taught English words which signifies that they have certain independent -phonological knowledge. This working phonology appeared to be functioning for appropriate pattern processing in any context. With the workings of implicit phonology of speakers" second language, the participants did not resort to the „explicit phonology." It is assumed that abstract cognitive phonology determines how sound should pattern and process in any specific word(s). Thus speakers" subconscious phonological knowledge overlaps conscious knowledge of phonological patterns processing.

References

1. Auddy, Ranjan Kumar. (2020). In Search of Indian English. London: Routledge.
2. Bates, Elizabeth, Inge Bretherton and Lynn r Snyde. (1990). "From first'words to grammar: individual differences and dissociable mechanisms." Journal of Child Language. 17(2): 495-501.
3. Cambridge. (2003). University Press. Cambridge Advanced Learner's Dictionary (3rd ed.). Cambridge: Cambridge University Press.
4. Collin, Beverley and Inger M Mees. (2013). Practical

Phonetics and Phonology. London:Routedge.

5. Collins, Beverley and Inger M Mees. (2013). Practical Phonetics and Phonology. London:Routledge.

6. Crystal, David. (2004). The Stories of English. London: Overlook TP.

7. Goldsmith, John A. (1990). Autosegmental and Metrical Phonology. Oxford: Basil Blackwell.

8. Hulst, Harry van der. (2020). Principles of Radical CV Phonology. Edinburgh: EdinburghUniversity Press.

9. K.Ohala, Diane. (2008). "Phonological acquisition in a first language." Edwards, Jette.G Hansen and Mary L Zampini. Phonology and Second Language Acqisition. Amsterdam: John Benjamins Publishing Company. 19-40.

10. Katamba, Francis, Michael Dobrovolsky and Ewa Czaykowska Higgins. (2011). "Phonology: The Function and Patterning of Sounds." O'Grady, William, John Archibald and Francis Katamba. Contemporary Linguistics- An Introduction. New Delhi: Pearson Education Limited. 59-105.

11. Lalitharaja, R. (2021). Syntactic Development of Tamil Mother Tongue Children in Learning English. Bangalore: Selfiepage Developers.

12. Lyons, John. (1981). Language and Linguistics. Cambridge: Cambridge University Press.

13. Mohanan, Karuvannur Puthanveettil. (1986). The Theory of Lexical Phonology. Dordrecht: D.Reidel Publishing Company.

14. Moore, Timothy E. (1973). Cognitive Development and Acquisition of Language. New York:Elsevier Inc, Academic Press.

15. Nathan, Geoffrey S. Phonology. (2008). A cognitive grammar introduction. Amsterdam: John Benjamins Publishing Company.

16. Nesset, Tore. (2008). Abstract Phonology in a Concrete Model:Cognitive Linguistics and the Morphology - Phonology interface. Berlin: Mouton de Gruyter.

17. O' Grady, William, John Archibald and Francis Katamba. (1997). Contemperory Linguistics: An introduction- First Language Acquisiton. Harlow: Pearson Education Limited.

18. Ota, Mitsuhiko. (2003). The Development of Prosodic Structure in Early Words. Amsterdam: John Benjamins Publishing Company.

19. Trudgill, Peter and Jean Hannah. (2017). International English. London: Routledge.

Citation: Shafeek T. Evidences of Functioning of Cognitive Phonology in Sound Pattern Processingof Uzbek Students - A Cognitive View. Journal of Medicine Care and Health Review 1(5).

https://doi.org/10.61615/JMCCR/2024/DEC027141223