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A Phonology of Vowel Insertion to Malay Cluster Consonants by Native Speaker of Kashmir

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ABSTRACT

This study explores the phonetic intricacies of the Kashmiri sound system, characterised by a rich inventory of vowels and consonants, resembling other Indo-Aryan languages. Kashmiri syllables typically comprise a vowel accompanied by one or two optional consonants, contributing to the distinct melodic quality of Kashmiri speech. Notably, Kashmiri exhibits a variety of short and long vowels, where vowel length and nasalisation play pivotal roles in word meaning differentiation, enriching the phonetic landscape. This qualitative research focuses on vowel insertion processes into Malay consonant clusters by native Kashmiri speakers from graduate students of the National University of Malaysia, aiming to identify instances of epenthesis in Malay words with consonant clusters. Employing the Optimality Theory framework, the study analyses these processes and elucidates the hierarchy of constraints shaping Kashmiri speakers' Malay communication. Findings suggest prevalent vowel insertion in word /draf/ become [dəraf], /span/ become [səpan], etc. and phoneme substitution among native Kashmiri speakers, particularly in Malay words with consonant clusters. This study underscores the significance of phonological processes in interlinguistic communication among phonology-native Kashmiri speakers.

Keywords: Kashmiri phonetics, vowel insertion, Malay consonant clusters, Optimality Theory; interlinguistic communication

Introduction

The introductory part will explain a little about the Kashmiri language, which is the native language of the survey respondents. Respondents were asked to speak the data in Malay language to analyse differences in pronunciation, description of the phenomenon of vowel insertion (the main focus of the study), objectives, problems statements, as well as an inventory of vowels and consonants of the Kashmiri language.

Kashmiri Language Background

The development of phonology in Malaysia is greatly influenced by the development of phonology at the international level. This includes the development of science and theories used in other countries. The emergence of phonology as one of the subdisciplines of linguistics has also coloured the development of linguistics in this country by seeing its importance manifested in every aspect of the language studied. In writing this study, the researcher would like to observe the phenomenon of the process that occurs in the phonology of vowel insertion into consonant clusters of the Malay language by native Kashmiri speakers.

According to an article by Mohd Abd Nasir and Abdul Razak (2016), the Kashmiri language is the official and main language in the state of Jammu and Kashmir. The official language of India is Hindi, but English is the second language used in everyday speech. Kashmir is an area with mountainous terrain. Some Swiss tourists refer to Kashmir as the real virgin of Switzerland because of its beauty. Mohd Abd Nasir and Abdul Razak (2016) study also showed that the census in India found that there were more than 1,650 languages and dialects or accents. Kashmiri is the official language of the Indo-Aryan languages. Speakers of Indo-Aryan languages represent 76.86% of the population. In northern India, it is the language that is most often spoken. The majority of Kashmiris are Muslims, accounting for 85% of the country's eight million people, while Hindus live in Jammu, and Buddhists live in Ladakh.

Kashmiris are more interested in joining Pakistan than India because of their common background in population and religion. The Kashmir region is hotly contested due to its highly strategic geopolitical structure and the region's high commercial value. For India, the region is the closest place to its traditional foe Pakistan and has an attractive tourism sector. One of India's 22 official languages is Kashmiri in addition to Hindi and Urdu. Many Kashmiri speakers also speak Hindi or Punjabi as a second language. All local schools up to the secondary level have required this language, which has been spoken in Kashmir since 2008. The main language of Kashmir is Urdu while other languages spoken in the region are Kashmiri, Ladakhi and Dogri. The inventory system of Kashmiri versus Malay is slightly different.

The Kashmiri sound system is largely comparable to their Indo-Aryan languages' sound systems, all of which feature a vast array of vowels and consonants. Kashmiri syllables usually consist of a vowel preceded and followed by one or two optional consonants. Kashmiri has a large number of vowels that are either short or long. Some are long vowels (/i:/, / e:/, / ə:/, / u:/, / o:/), and some are short vowels (/e/, / o/, / ə/, /a/). Vowel length and nasalisation distinguish meanings in words. In Romanisation, nasal vowels are indicated with a sign (ã), while long vowels are typically indicated with a colon (a :). Kashmiri language does not have aspirated voiced stops like other Indian languages do. In the study of Bhaskararao et al. (2009), palatalisation of consonants in Kashmir is spread around the consonants in question, which has shown that the "palatalisation" of word-final consonants and consonant clusters is secondary to structure (SS), which consists of three parts, i.e. the beginning of the palatalisation, its nucleus, and its offsets.

Vowel Insertion Phenomenon

The idea that non-native speakers have a "foreign accent" is not new, but until recently, linguistics scholars paid little attention to the study of interlanguage phonology, or the phonological systems of non-native speakers (Alezetes, 2007). Interlanguage phonology began to receive more attention with studies such as Tarone (1978) article "the Phonology of Interlanguage," and Eckman's (1977) article "Markedness and the Contrastive Analysis Hypothesis," in which Eckman argued that aspects of interlanguage phonology may be due to significant structural markedness rather than a displacement of the language system from L1. One of the main questions addressed in many language phonology studies is whether L2 speakers' "errors" in pronouncing words in the target language are caused by negative transfer or whether L1 speakers' strategies and features are directly transferred into their L2. Interlingual phonology is still a significant area of research. Other possible explanations for the pronunciation errors of L2 speakers are factors such as viscosity or similarities with the very subtle differences between L1 and L2. Indeed, the role of sound system transfer from the speaker's native language to the target

language has been and continues to be one of the most important questions in the study of Second Language Acquisition (SLA).

The phenomenon of insertion was extensively studied in previous linguistic studies (Auger, 2001). It has been demonstrated that principled analysis may be used for complex patterns, and cross-linguistic variation patterns have received much attention. Vowel insertion is an important phonological feature in loanword conformation (Uffmann, 2006). Languages characterised by strict constraints on syllabic structure often resort to vowel insertion to meet these constraints when borrowing words from languages that are easier to match the syllabic structure of native speakers. The following examples give an idea of the phenomenon of vowel insertion:

(a) Yoruba	kˊɪlaˊaˋsi	*'class'*	(Prince & Smolensky, 1993)
(b) Kikuyu	ngirathi	*'glass'*	(Mwihaki, 2001)
(c) Japanese	sutoraiku	*'strike'*	(Park, 1987)
(d) Samoan	sikauti	*'scout'*	(Cain, 1986)
(e) Fijian	sipiiniji	*'spinach'*	(Kenstowicz, 2003)

(Uffmann, 2006)

All the loanwords in the above examples are similar in that vowel insertion occurs in two positions. Vowels are first inserted to prevent cluster consonant sequences. This is where clusters like [kl, sp] start. Vowels are added to prevent word-final consonants found in etymons and are typically examined as a syllabic coda. Vowel insertion thus satisfies constraints on the structure of the native syllable, especially the Prohibition of Coda and complex onset.

Objectives of the Study

This study was conducted based on three main objectives in looking at the phenomenon of the process that occurs in the phonology of vowel insertion into consonant clusters of the Malay language by native speakers of Kashmir. The first objective is to identify Malay words that undergo vowel insertion (epenthesis), which occurs when Malay words are mentioned with consonant clusters. The second objective is to analyse the processes identified using the Optimality theory framework (OT), and the third objective is to explain the hierarchical order of constraints that Kashmiri speakers have generated when speaking the Malay language. The Optimality theory framework (Prince & Smolensky, 1993) is believed to be able to explain the phonological process that occurs at the stage of insertion of vowels into consonant clusters of the Malay language by Native Kashmiri speakers.

Problem Statement

Based on the differences between the two languages, Malay and Kashmiri, the researchers found that previous studies on second-language acquisition had yet to be carried out, and they only listed processes without looking specifically at one process or applying any related linguistic theories. The Malay language has many words consisting of consonant clusters. However, it is seen that when Kashmiri speakers speak words with consonant clusters, a process occurs where they insert vowels between the consonants of the clusters.

This study was also conducted to support previous studies, which stated that the Kashmiri language had undergone a vowel insertion process. For example, the study by Mir et al. (2018) listed a few phonological processes that occur in the Kashmiri language, whether for foreign language pronunciation, foreign language borrowing, or phonological processes that occur in the language itself. One of the processes mentioned is the process of vowel insertion, where the researcher states the language of the occurrence of the process of vowel insertion in the middle of a word, between clusters of consonant clusters, as well as vowel insertion at the end of a word (will be described further in the results and discussion section). Thus, the study that is currently underway can prove and expand on the study of Mir et al. (2018) by focusing on vowel insertion, as well as carrying out a more robust linguistic

analysis, namely by testing the theoretical framework of optimality (Prince & Smolensky, 1993) and removing several constraints involved, and arranging these constraints according to the hierarchy of constraints corresponding to the pronunciation of the language spoken by Native Kashmiri speakers in speaking Malay words with consonant insertion (e.g. in consonant clusters).

Indeed, knowledge of the strategies used by foreign language speakers (in the context of the study, Kashmiri speakers) when speaking Malay with cluster consonant clusters has advantages in the everyday speech of non-native Malay speakers. If the Malay language instructor realises that foreign students will have difficulty with the syllabic structure of the Malay language. In that case, they can concentrate on helping their students improve and focus on the pronunciation of the cluster consonant clusters of the Malay language. Moreover, this study aims to show how non-native speakers of L2 Malay have broken up the consonant clusters of Malay due to the universal marking of complex syllabic margins rather than simply migrating from their L1. The implication is that speakers of other languages, even languages that allow complex syllabic margins, could benefit from instruction on Malay consonant clusters.

Inventory of Vowels and Consonants of Kashmiri Languages

The Kashmiri language contains twenty-eight consonant sounds and sixteen vowel sounds in its phonemic system. Vowels signify a phonemic process called nasalisation, which alters the meaning of the word (Kak, 2002; Mir et al., 2018).

Vowels

Vowels in Kashmiri are oral and nasal sounds. The vowel system of the Kashmiri language contains four vowel sounds that are different from each other, which are uniquely found in Kashmiri compared to other Indo-Aryan languages. These are the middle vowels / ɨ /, / ɨ / and / ə/, / ə: /. However, / ɨ / are / ɨ: / is found mainly in Kashmiri, but / ə / and / ə: / are also found in other Indo-Aryan languages.

Changes in the position, height, and rounding of the lips of the tongue are used to pronounce oral vowels. In total, 16 spoken vowel phonemes in Kashmiri are displayed as in Table 1 below.

Table 1

Oral Vowels in Kashmiri Language

	Front Unrounded		Central Unrounded		Back Rounded	
High		iː		ɨː		uː
Lower High	i		ɨ		u	
Mid	e	eː	ə	əː	o	oː
Lower Mid			ɑ		ɔ	ɔː
Lower			ɑː			

(Mir et al., 2018)

Consonants

The language of Kashmir contains thirty-one consonants. The process of palatalisation in Kashmiri is phonemic rather than phonetic. It is possible to palatalise all consonants other than palatal consonants. In Kashmiri, palatalisation is phonemic, as opposed to phonetic. The Indian languages of Hindi, Urdu, and many others do not have the dental affricates /ts/ and /tsh/. The table for consonant inventory is shown in Table 2 below.

Table 2

Consonants of Kashmiri Language

	Bilabial	Labio-dental	Alveolar-dental	Retroflex	Palatal	Velar	Glottal
Stops	p		t	ṭ		k	
	ph		th	ṭh		kh	
	b		d	ḍ		g	
Affricates				ts	č		
				tsʰ	čʰ		
					ɟ		
Nasals	m		n			ŋ	
Fricatives		V	s		š		h
			z				
Lateral			l				
Trill			r		ṛ		
Flap			ɽ				
Approximants	w				j		

(Mir et al., 2018)

Literature Review

The study of the Kashmiri language has long attracted the attention of past researchers. Among them is Sobial Jahane Gazzalie's (2019) study entitled "Mother Tongue Influence and its Impact on Spoken English of Kashmiri Speakers". In this study, the researchers focused on the influence of the Kashmiri native language on English by studying the MTI (Mother Tongue Influence) at the phonological level. The study also identified the effects of differences and similarities between structures in the first language, i.e. Kashmiri, and the Second Language, English, on the target language. This study discusses the influence of native language in the process of English proficiency and how a teacher can help overcome some of the problems faced by English learners in Kashmir and improve their proficiency level. Relevance concerns a person who tends to transfer pronunciation from a native language to a second language system. This is known as Linguistic Interference. There are many consonants mentioned in Kashmiri but eliminated in English. In Kashmiri, there are two sounds / f / as fricatives and / ph / as stops. However, in English / f / is a fricative. Many Kashmiri speakers use / ph / instead of / f /. Most are often confused when using certain vowels. They cannot distinguish because of the influence of their native language. The use of the half-long vowel / ei / replaces English / ae /, and the use of / e / replaces / ə /.

SJ Gazzalie's (2018) study Varieties of Kashmiri English deals with Indian English, a phrase that refers to various forms of English used in different states of India. The term "variety" is used to refer to any variant of a language that can be sufficiently delimited from other variants. This study discusses one of the varieties of Indian English called "Kashmiri English." This study also gives the role of English in Kashmir and a number of Kashmiri language sub-variations used by speakers in Kashmir. In fact, the phonetic and phonological structure of the Kashmiri language itself has influenced the English language in Kashmiri English speaker's inventory.

Other studies that show the behaviour of the vocal insertion process are by Hamid and Aman (2014) with Abdul Salam and Jaafar (2019), who studied the dialect of Hulu Sik, Kedah. In Malay, there are two phonological phenomena involving vowel segments: the elongation process and the vowel insertion process. The process of vowel lengthening is given more attention in the writing of Hamid and Aman (2014), a study of the Hulu Sik Kedah dialect (DHSK) in which data was collected to see the phenomenon of vowel lengthening that occurs in the dialect. In the study of consonant phonological behaviour at the end of words in the Sik peasant dialect, Salam and Jaafar (2019) describes the phonological behaviour of consonants at the end of words in the Sik peasant dialect spoken in the Sik area, Kedah. This study describes several phonological phenomena that occur at the end of words in the Petani Sik dialect due to restrictions on the presence of certain consonants in position in this dialect. The data were obtained through pilot studies, questionnaires and field studies involving observation and recording. The analysis of this study indicates that consonants / r /, / l /, / s /, / m / and / h / are not allowed to be present at the end of words in the dialect of Sik farmers. The presence of these consonants has been dealt with in phonological processes such as Fusion, replacement, insertion and abort. The inclusion of [j] in the output of the Sik peasant dialect is particularly interesting in sounds such as [ç]. Both studies on the phonological process of the Sik peasant dialect have implications and added value to the study of the Kashmiri language because the issue of the vowel insertion process is included in the study results.

There were many studies on the Kashmiri language in the past, but these studies only explain about the problems that occur when Kashmiri speakers speak other languages, such as English. A research study conducted by Gazzalie (2019) studied the influence of the Kashmiri native language on English by looking at the aspect of MTI (mother tongue influence) at the phonological level. Similarly, a study conducted by Gazzalie (2018) looked at the phonological processes that occur when Kashmiri speakers speak English. As such, past studies on second-language acquisition have not been carried out, and they simply list processes without looking specifically at a single process or applying any linguistic theory. Based on all the previous studies that examined pronunciation errors only in general. The study of pronunciation problems in the speech of foreign speakers speaking the Malay language should examine changes in pronunciation that may involve specific segments of the word. Analysis can theoretically show the change of pronunciation that occurs through internal representations to surface representations. Past studies have mostly examined all aspects of consonants and vowels in general statements only, i.e. only expressing changes in pronunciation.

A study by Mir et al. (2018) showed a sketch of the phonological processes that occur in the Kashmiri language. Vowels and consonants are elaborated to provide a general understanding of the language's phonological system. In the Kashmiri language, nasalisation occurs phonemically. This study aims to characterise and illustrate every phonological feature of the language, particularly those that are specific to this language. Furthermore, an attempt has been made to explain and elucidate the several phonological processes that take place in the Kashmiri language system, including elision, nasalisation and palatalisation. Researchers who speak Kashmiri as their first language employ lexemes and sounds as the primary data source for all such processes, which are discussed along with appropriate examples. This study explains the insertion of vowels but does not apply any linguistic theory specifically to look at the phenomenon that occurs in this language. This study is certainly helpful in clarifying and reinforcing that Kashmiri speakers insert language at the mention of a foreign language (English). The examples given in this study will be explained in relation to the present study in the data analysis section.

Vowel clusters have been the subject of previous research, such as Ahmad et al. (2011) study of vowel clusters at the end of words in dialects utilising OT. Additionally, OT is being used in a study to support Tamil loanwords in Malay (Jaafar & Krishnasamy, 2018). This study shows that there is still less intensity in the insertion of vowel letters into consonants. Actually, a novel and distinctive study in Malay is the pronunciation of Kashmiri speakers.

Malay does have many words that consist of consonant clusters, but researchers have observed that when native Kashmiri speakers speak words with consonant clusters, there is a process by which they insert vowels between the consonant clusters. In order to understand how the process works, the theory of optimality was applied in this study. This study will focus on parsing and discussing the phonological

aspects of the Kashmiri language based on grammatical constraints. According to Ahmad (2014), the phonological system of a language consists of a set of constraints that are universal and elevated in a hierarchy of constraints. Constraints at a high level should be adhered to, while constraints at a low level can be minimally disregarded.

Methods

This study is a field study, involving survey and observation methods aimed at identifying the phenomenon of the process that occurs in the phonology of vowel insertion against consonant clusters of the Malay language by native speakers of Kashmir. Simple random sampling has been used in this study. The data in this study were obtained from non-native speakers of the Malay language, namely native speakers (Kashmiri) who were graduate students of the National University of Malaysia and produced pronunciation in Malay. Respondents were asked to speak in Malay and the conversation was recorded. The differences in pronunciation identified will be transcribed in the analysis section of the study. The results of the word list were based on analysing the identified errors. The researcher recorded the pronunciation of the sample involved and transcribed each word asked so that the input obtained was original. There was no error in transcribing the primary data in this study. Along with recording sample pronunciations from each respondent, the researcher used phonetic symbols based on the IPA chart to transcribe the pronunciations. This allowed the researcher to observe the various aspects of Malay words as well as the inherent challenges and mistakes that Kashmiri speakers had made when speaking the language during the field study. The structural form of this data output differs between word features in Kashmiri. Thus, the researcher has identified and categorised according to the changes that occur between the structures of the word. The syllabic structure of the Kashmiri language was analysed using a constraint-level approach in the analysis section.

This study involved a total of 3 respondents who were selected, namely 2 adult men and one adult woman. The selection of informants for this study was based on the characteristics found in the background of the study, namely that the researcher wanted to find native speakers of the Kashmiri language. In this study, the selection of informants who are native speakers of Kashmir will guarantee the authenticity of the language in relation to the phonological phenomena that occur. The selection of older informants in this study may reflect a more classical style of language. In selecting the designated area for informants, the researcher took informants from students living and still studying at National University of Malaysia to obtain primary data.

This study is based on Optimality Theory (OT). OT, which uses a constraint-level approach, was first introduced by Prince and Smolensky (1993). According to Ahmad (2014), the main idea is that grammar consists of a set of form perfection constraints, that is "a set of wellformedness constraints" which are universal, arranged in a lower order and can be minimally disregarded to comply with the constraints that are at a higher order. It shows that the task of seeing something that is quite significant is in explaining a linguistic generalisation. In addition, the formalisation process is no longer based on the formula rewrite of the input but has changed to the constraints of the perfection of the output form. This change indirectly shows that the relationship between the input, i.e. the internal form and the output, i.e. the surface form, in the phonological representation also changes. In this constraint-based approach, the actual surface shape of an interior shape is chosen from a number of existing output shapes. Therefore, in the results of the discussion, the researcher will explain some of the internal shapes and surface shapes that exist to see the differences.

Findings and Discussions

A phonological process called anaptyxis involves incorporating vowel sounds into words. It is a component of the process of implantation as well (Crowley, 1997). This is one of the common features of Kashmiri languages, where vowels are inserted between two consonant clusters. Often, vowel insertion occurs in clusters of cluster consonants. This phenomenon manifests itself in borrowed words where / ɨ / is generally inserted between two consonant clusters at the beginning of a word (Mir et al., 2018). For example:

(a) / sku:l / / sɨku:l / (school)

(b) / plan / / pɨlɑn / (plan)

(c) / stɔ:l / / sɨtɔ:l / (stall)

(Mir et al., 2018)

Interestingly, if the insertion of /ɨ/ is replaced by /ə/ in the example above, it will give rise to a diaglossic variation called /pəhɑ: ʈikosur/

(a) / sku:l / / səku:l / (school)

(b) / plan / / pəlɑn / (plan)

(c) / stɔ:l / / sətɔ:l / (stall)

(Mir et al., 2018).

In Kashmiri, vowel sounds are inserted in word-final and word-initial consonant positions but not in word-medial position. Another epenthetic process known as paragoge is created when a vowel is added or inserted at the end of a word.

Because of the insertion phenomenon, paragoge is manifested as a phonological shift at the end of a word. It is also part of the vocal insertion process. This process can be identified in Tamil and Kashmiri languages (Mir et al., 2018). In Tamil, / u / is appended to the word-final position and for Kashmiri, / ɨ / is appended to the word-final position. The insertion of /ɨ/ in final position words in Kashmiri can be seen in a number of examples of words given in past studies:

(a) / bətɨ / (cooked rice)

(b) / patɨ / (after that)

(c) / ɡotsɨ / (silkworm shell)

(c) / dostɨ / (friend)

(d) / ə:ji:nɨ / (mirror)

(Mir et al., 2018).

However, in this study, researchers found that vowel insertion can also occur at the beginning of words. As a result, the study's data revealed that consonant clusters are broken up by two distinct events. Vowel insertion can occasionally happen between two consonants in a cluster of consonants. Vowel insertion takes place between obstruent and resonant in Malay words, as may be observed. An example can be seen in the following list of data in Table 3:

Table 3

Vowel Insertion Data between Two Consonant Groups

BMS	Kashmir
Draf	/ dəraf /
Gred	/ ɡərəd /
Brek	/ bərək /
Span	/ səpan /
Krim	/ kərim /

| Klip | / kəlip / |
| Ekstrem | / eksətərim / |

In some cases, the process of vowel insertion also occurs before the initial consonant cluster. It is frequently observed when a word starts with an obstruent [s] and ends with a consonant stop, which is why adding a vowel to the word's beginning is necessary. For example:

Table 4

Data Insertion of Vowels in the Initial Position of the Word

BMS	Kashmir
Stesyen / steɪʃən /	/ ɪsteɪʃən /
Skuter /skute/	/ ɪskute/

Theoretical Framework of Optimality

An outline of OT is given in this section, along with a discussion of some of the pertinent concepts. Various study restrictions are then utilised to explain the concept of OT's application. Researchers have employed OT to characterise various linguistic and phonological processes in several prior investigations. This hypothesis was initially developed by Prince and Smolensky (1993) to explain the syllabic structure of languages. However, because of its widespread use in linguistics, it quickly expanded to other fields of research. Gussenhoven and Jacobs, 2025:

> "Optimality theory phonology is thought of as a universal set of constraints which are hierarchically ranked on a language-specific basis. The relationship between input and output is accounted for by respectively generating for each input all possible outputs and evaluating these outputs so as to select the optimal one."

Therefore, the data obtained in this study will be analysed using the framework of the theory of optimality constraints involved in obtaining the optimal candidate, and then all the constraints involved will be arranged according to the resulting order to obtain the optimal candidate.

OT is a development of the theory of "Generative Grammar" first proposed by Prince and Smolensky in 1993. According to Prince and Smolensky, universal grammar consists of "constraints" rather than rules, and the grammar of any language is based on the correct level of these constraints. OT differs from the previous theory. First, it does not offer a grammar for describing rules like the others but instead generates "genes" (generators) that perform candidate analysis to generate many forms. According to McCarthy (2002), "genes are universal", meaning that all candidates generated by genes for a given input are the same in all languages. These candidates vary. This right of genes is what he calls inclusivity or freedom of analysis.

Unlike other theorists, OT theorists believe in universal constraints i.e., not specific to one language, but hierarchical constraints that make grammar specific to different languages. For an OT analysis of the entirety of a single language's data on any linguistic feature, there needs to be a constraint restriction on that feature that includes all relevant generalisations and processes of the phenomenon. There is also space for generating new constraints or/and modification of some constraints in OT analysis if the set of constraints does not include linguistic processes related to the language being analysed. Therefore, the given list of constraints should be able to account for all possible patterns in the language data discussed in the study.

In OT, the phonological structure of the delayed constraint is arranged according to the degree of stratification and the occurrence of constraint violations (Prince & Smolensky, 1993). Surface forms

that possess the ability to emerge as the best candidates minimally breach constraints, and the optimal candidate selection procedure will reward candidates who breach the bounds of constraints and are ranked lowest among the disciplines. The degree of importance of the violation depends on the hierarchy of constraints, and a high-level violation of the constraints is the most serious violation, where a candidate who violates the high-level constraints has the potential to lose the election. Within the scope of optimality theory, there are two different kinds of constraints: fidelity constraints and permanence constraints (Prince & Smolensky, 1993). Punctuation restrictions forbid consonant clusters and other difficult-to-produce or comprehend structures in favour of "well-formedness" in candidate selection (Prince & Smolensky, 1993). These constraints usually impose restrictions on the formation of certain structures.McCarthy (2002) summarises the basic construction of OT as follows:

Input > Generator > Candidate > Evaluator > Output

Among the examples of processes that are emphasised in the constraints of punctuation are that syllables cannot have a coda (NOCODA); syllables are required to have an onset (ONSET); and obstruents cannot be voiced (Kar, 2009). Faithfulness constraints, on the other hand, concern the same structure between input and output. For example, all morphosyntactic features in an input must correspond to the output (Kar, 2009). Some examples of faithfulness constraints are: (a) the output must correspond to all segments present in the input (DEP-IO); (b) the element adjacent to the input must be adjacent to the output (CONTIGUITY); and (c) the input segment must have its segment which is also in the output (MAX-IO) (Kar, 2009).

The data presented in Table (1) and (2) illustrate that there is a restriction that occurs in Word-initial consonant clusters, and there is a distinct vowel insertion process that occurs for cluster obstruents [s]. The restrictions that apply in this mention can be displayed in the OT. The chosen constraint is *CCONS, which confers violation marks on candidates with cluster consonants (Kager, 1999). For example, outputs such as *'stesyen'* or *'skuter'* will not be allowed. Therefore, there must be a candidate who can handle this issue, where the candidate must have a feature that breaks the cluster consonant at the beginning of the word. For example: / ɪsteɪʃən /, which is the optimal candidate seen, is the pronunciation that native Kashmiri speakers have been taught in the pronunciation of words in the Malay language. The same goes for breaking a consonant cluster between two consonant clusters, for example, / kərim /, / dəraf /, and other examples of data displayed in Table 1. This process can only occur if the fidelity constraint is violated, that is, the DEP-IO constraint, which does not allow the vowel insertion process to occur in the word segment.

The MAX-IO faithfulness constraint assigns a violation mark to the word by which the segment is eliminated (Kager, 1999). Therefore, an output such as [teɪʃən] with one obstruent removed would violate the MAX-IO faithfulness constraint. The constraints involved so far are *CCONS, DEP-IO and MAX-IO.

When comparing the types of consonants involved in consonant clusters that can be broken up by initial vowel dispersal to those that can be broken up by the insertion of a vowel in the middle of a word, there is an intriguing difference. The first type of vowel insertion in the middle of a word involves the sonorant and obstruent segments, while the second type of vowel insertion at the beginning of a word involves the obstruent, specifically the [s] followed by the stop consonant. The different epenthesis process for the cluster [s] -stops can be elaborated by Gouskova's (2004) explanation that sonority sequence constraints such as Syllable Contact treat cluster [s] -stops differently than sonorant and obstruent clusters. The pattern of vowel insertion can be properly explained if it is considered an effect of Syllable Contact, where the selection of sonorant is between syllable boundaries, as proposed by Murray and Vennemann (1983). Vowel insertion occurs before the cluster whenever the first consonant has a higher sonority than the second consonant (e.g., steɪʃən -> ɪsteɪʃən).

A constraint that prefers insertion before a cluster is CONTIGUITY-IO (Kager, 1999). This constraint ensures the insertion of vowels before consonants in [s]-obstruent clusters when Syllable Contact is not at stake.

Definition of Constraints

The following is a list of constraints involved in the analysis of this study.

*CConset

(Does not allow cluster consonants at the onset position)

This constraint does not allow the output to have a cluster consonant at the initial position of the syllable. This constraint needs to be at the top level, as when Kashmiri native speakers respond to a word containing a cluster consonant, they will insert a vowel to break up the cluster consonant cluster.

Table 5

Tableau of Constraints *CConset

/ krim /	*CConset
a. ☞kərim	
b. krim	*!

Syllable Contact (Gouskova, 2004)

(Does not allow sonority to occur between syllable boundaries)

This constraint is seen as important in determining the optimal candidate in the form of a quarter so that the form/cream/, for example, does not win in selecting the optimal candidate.

Table 6

Tableau of Syllable Contact Constraint

/ krim /	*CConset	*Syllable Contact*
a. ☞kərim		
b. krim	*!	
c. əkrim		*!

MAX-IO

(Input must have output correspondence - does not allow segment deletion)

When MAX-IO is at a high level, the analysed language does not allow the deletion of segments from the input in the output. As there is no language data in this study indicating deletion, MAX-IO must be at a high level for the Malay spoken by Kashmiri speakers, as illustrated below:

Table 7

Tableau of MAX-IO Constraint

/ krim /	MAX-IO
a. Ləkrim	
b. kim	*!
c. ☞ kərim	

CONTIGUITY-IO

(Does not allow intermediate insertion or deletion of segments)

CONTIGUITY is a constraint that requires all input segments to appear in the output with the same shape. In a sense, any insertion or deletion will automatically be a violation, since a different element is adjacent to the output than it is in the input. These constraints are at a relatively low level compared to the constraints previously discussed.

Table 8

Tableau of CONTIGUITY-IO Constraint

/ steɪʃən /	*CConset	MAX-IO	CONTIGUITY-IO
a. sɪteɪʃən			*!
b. steɪʃən	*!		
c. teɪʃən		*!	
d. ☞ ɪsteɪʃən			

DEP-IO

(Does not allow vowel insertion)

The constraint stipulates that the segment insertion phenomenon that should not occur in the input should also not occur in the output. When DEP-IO can be violated, as in the phenomenon of language mentioned in studies, this does not mean that the DEP-IO constraint is not present in the hierarchy, but instead, this constraint is at a lower level in the constraint selection hierarchy.

Table 9

Tableau for DEP-IO Constraint

/ krim /	MAX-IO	DEP-IO
a. Ləkrim		*
b. kim	*!	

c. ☞ kərim	*

In optimal candidate selection, candidate © still wins despite violating DEP-IO because, unlike the other two candidates, it does not violate the first-level constraint, which is MAX-IO. Both DEP-IO and MAX-IO are faithfulness constraints; both are intended to make the output as 'faithful' as possible based on the input.

* OO

(Does not allow two adjacent obstruents in one syllable)

This study also included constraints *OO to represent an alternative analysis, in addition to the use of other constraints described earlier. This constraint does not allow two adjacent obstruents in one syllable. For example, the negation of this constraint is shown in the tableau below.

Table 10

*Tableu of *OO Constraint*

/ steɪʃən /	CONTIGUITY-IO	*OO
a. sɪteɪʃən	*!	
d. ☞ɪsteɪʃən		*

Analysis of the Stratification of Constraints for the Selection of Optimal Candidates (1)

In the first stage, the constraints *Cconset and CONTIGUTY-IO are given to enable / kərim / to win to select the optimal candidate ahead of the *Bahasa Melayu standard* (BMS) /krim/ candidate.

* Coset: does not allow cluster consonants at the onset position.

CONTIGUITY-IO: does not allow intermediate epenthesis or segment deletion.

Table 11

Hierarchy constraint for /krim/

/ krim /	*Cconset	CONTIGUITY-IO
a. ☞ kərim		*
b. krim	*!	

Next, the output / kim / that has been through the deletion process is also removed to select a constraint that requires the same output correspondence as the input. Therefore, the Max-IO faithfulness constraint has been selected to be at the second level to enable candidates to win in selecting optimal candidates.

MAX-IO: Input must have corresponding output (no segment deletion).

Table 12

Hierarchy constraint for /krim/

/ krim /	*CConset	MAX-IO	CONTIGUITY-IO

a. ☞ kərim				*	
b. krim		*!			
c. kim			*!		

Next, the question is why the insertion of a vowel at the beginning of a word does not occur when Kashmiri speakers speak Malay, / əkrim /? Therefore, it is necessary to include a constraint that allows candidates / kərim / to precede candidates / əkrim /. The constraint that has been chosen and is considered the most feasible is the Syllable Contact constraint. This constraint does not allow sonority to occur between syllable boundaries. DEP-IO is also included, and this constraint does not allow the occurrence of ephentesis processes.

Table 13

Hierarchy constraint for /krim/

/ krim /	*CConset	SYLLABLE CONTACT	MAX-IO	CONTIGUITY-IO	DEP-IO
a. ☞kərim				*	*
b. krim	*!				
c. kim			*!		
d. əkrim		*!			*

With the listing of all the tiers involved to enable the optimal candidate to win in the election, the following are the levels of constraints that have been compiled:

* CConset >> SYLLABLE CONTACT >> MAX-IO >> CONTIGUITY-IO >> DEP-IO

It is seen that the same constraint can be applied to the insertion of vowels at the beginning of a word, for example, the word *stesyen* / steɪʃən /.

Table 14

Hierarchy Constraint for / steɪʃən /

/ steɪʃən /	* CConset	SYLLABLE CONTACT	MAX-IO	CONTIGUITY-IO	DEP-IO
a. sɪteɪʃən				*!	*
b. steɪʃən	*!				
c. teɪʃən			*!		
d. ☞ɪsteɪʃən					*

Analysis of The Stratification of Constraints for The Selection of Optimal Candidates (2)

In addition to the above analysis, two other constraints *OO can also be included to explain vowel insertion in Kashmiri. The *OO constraint does not allow for two adjacent obstruents in a word, for

example, /steɪʃən/ would not be allowed given that / s / is a fricative and / t / is a stop consonant. It should be noted that CONTIGUITY-IO will also be accounted for in the different vowel insertion processes, as this constraint favours an insertion before consonant clusters (that is [s] obstruent clusters) (Gouskova, 2004). A constraint position will ensure that the optimal candidate wins. The constraints used in the alternative analysis are displayed as follows:

* OO: does not allow two adjacent obstruents in one word.

CONTIG-IO: does not allow intermediate epenthesis or segment deletion.

* CCONS: does not allow cluster consonants at the onset position.

MAX-IO: Input must have corresponding output (no deletion).

DEP-IO: does not allow insertion.

Table 15

Hierarchy constraint for / steɪʃən /

/ steɪʃən /	*CConset	MAX-IO	CONTIGUITY-IO	*OO	DEP-IO
a. sɪteɪʃən			*!		*
b. steɪʃən	*!			*	
c. teɪʃən		*!			
d. ☞ ɪsteɪʃən				*	*

In Tableau 9, candidate (d) [ɪsteɪʃən] is the winning candidate because it satisfies the high-level constraint despite violating the two low-level constraints *OO and *DEP-IO. Candidate (a) [sɪteɪʃRihn] violates CONTIGUITY-IO and DEP-IO and is excluded for violating contiguity-IO high-level limitations. Candidate (b) [steɪʃən] violates the low-level constraint *OO and the highest-level constraint *CConset and will thus be excluded. The last candidate (c) [teɪʃən] violates only one constraint, but it is the MAX-IO high-level constraint, and thus, it is excluded in the selection of the optimal candidate.

Thus, with the listing of all the tiers involved to enable the optimal candidate to win in the election, the following are the levels of constraints that have been compiled:

* CCONSET >> MAX-IO > > CONTIGUITY-IO > > * OO >> DEP-IO

Conclusion

Based on the results, it is possible to conclude that when native speakers of Kashmir communicate in Malay, they frequently insert vowels at the beginning and middle of words between clusters of consonants. They tended to carry out the process of vowel insertion and phoneme replacement in most of the original words mentioned during the field studies.

 A list of constraints involved was created through analysis and discussion of a number of study data collected. A hierarchical arrangement of OT analysis constraints was also provided in order to choose the best word pronunciation options. The constraints involved are: * CConset, Syllable Contact, MAX-IO, DEP-IO, CONTIGUITY-IO. * YES, * CCONS. After the constraint test was conducted for the selection of optimal candidates, two hierarchical levels of constraints were generated, namely:

(1) *CConset > > SYLLABLE CONTACT > > MAX-IO >> CONTIGUITY-IO >> DEP-IO

(2) * CCONSET >> MAX-IO >> CONTIGUITY-IO > > * OO >> DEP-IO

Therefore, the overall analysis of the findings of this study is expected to contribute to linguistics, especially in the field of phonology and the field of theory used, namely the theory of optimality. The findings of this study can also serve as a vocabulary reference for future researchers who are pioneers in scientific research, helping to preserve and document the grammatical system.

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