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An Analysis of Phonological Assimilation Processes of High-Speed Speech of Students of Kogi State College of Education, Ankpa

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Abstract

This research work is principally designed to analyse the processes of phonological assimilation of swift speech of students of Kogi State College of Education, Ankpa. The probability method of sampling data was used to select respondents where simple random technique was used. Since the area under the study is densely populated and the entire population could not be covered on individual basis, cross sectional survey design was adopted. The instruments which were used to collect data included sound recorder, checklist and interview. Sound recorder was used to collect data from conversation between the researcher and the respondents. Checklist was used to gather data without derailing from the main point of things to be mentioned by the respondents, while interview was used to collect data from willing respondents. The data collected were processed and analysed, the results were presented in tables for qualitative results and charts for quantitative results. Optimality Theory was used as a theoretical framework for the study. The findings revealed that there is a high occurrence of progressive assimilation in swift speech of students of Kogi State College of Education, Ankpa. The findings also revealed that during high speed speech, students tend to articulate English phonemes with assimilated effects, where the assimilation process is dominant and notable.

Keywords: Assimilation, Instruments, Optimality Theory, Population, Respondents, Technique, Qualitative, Quantitative.

Introduction

Most native speakers of English modify complicated sequences in connected speech in order to simplify the articulation processes. The human language is characterized by a set of vocal sounds. These vocal sounds are produced by human organs of speech. These include lips,

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tongue, larynx, teeth and so on. Obviously, there are phonological rules that guide the formation of words and sentences produced by human beings through these speech organs.

Phonology is the branch of linguistics that studies the sound system of languages. It examines the distribution, pattern and organization of speech sounds in languages. Phonology investigates the physical properties of speech sounds, such as their articulation, acoustic characteristics, and auditory perception. It examines the rules that govern the combination and patterning of speech sounds in languages. It also investigates the processes that affect speech sounds, such as assimilation, deletion, and insertion.

Assimilation in phonology is a common concept where variables of pronunciation are different from the orthography of the word, allowing two supposed letters coalesce to form a phoneme during pronunciation, or connected speech event. Having considered phonology as a study of the system of contrastive relationship among the total speech sound system of a language, and the fundamental components of the language, which may include the orthography of the language, phonological assimilation forms the basis for the pronunciation of the combination of a number of letters, forming a new phoneme. In the same vein, the idea of assimilation in phonology can be further described using the following example, 'photosynthesis' transcribed as /fəutəusinθisis/ where the letters P+H are coalesced to form the phoneme /f/ as well as the letters T+H are coalesced to form the phoneme /θ/, allowing a type of assimilation considered as coalescent assimilation. It is important to consider that assimilation here is foregrounded by the idea of language orthography, when letters which are presumed to have their distinct attributed phonemes coalesce to form a new distinct phoneme in which the letters will not be able to produce in isolation.

Assimilation is the change of sound in which some phonemes, typically consonants and vowels, change to become more similar to other nearby sounds. For example, 'handbag' is transcribed as /hændbæg/. It is then pronounced as /hæmbæg/ in connected speech quick succession because /m/ and /b/ are both bilabial consonants and their places of articulation is similar. Assimilation is an everyday occurrence in every human language, and is particularly common for nasal sounds (Jolayemi, 2010). It is more likely to be found in rapid speech and less in slow speech. In some cases, it causes sound spoken to differ from the normal pronunciation in isolation, such as the prefix 'in-' of the English word 'input' produced with /m/ rather than /n/. In other cases, the change is accepted as canonical for that word or phrase, especially if it is recognized in standard spelling: implant pronounced with /m/, composed historically of 'in' +

'plant'. The word 'cupboard', although, it is historically a compound of 'cup' /kʌp/ and 'board' /bɔ:ɹd/, is always pronounced /kʌbərd/, and never /kʌbɔ:rd/, even in slow highly-articulated speech.

In supra-segmental level of phonology, assimilation is the changing of syllables in continuous speech to become similar to another syllable within a word boundary. That is, there is the possibility of assimilation within words, but of syllables in connected speech activity. In contrast to assimilation in phonological processes, assimilation is described through the changing of a unit of sound (phoneme) within words, but in high speed speech event. An example of assimilation in supra-segmental level of phonology is, the word, 'beret', transcribed as /bərei/. Assimilation in supra-segmental phonology according to Bauman (2009), includes deletion of stop consonants representing one kind of fluent speech alternation in connected speech event. For instance, the deletion of schwa in reduced syllables from the example above /bərei/, the vowel /ə/ is apparently deleted and assimilated in connected speech, producing an assimilated form /bei/. In this, we can consider the assimilation in supra-segmental phonology to be in continuous speech event, leading to the deletion of weaker syllables within a word boundary.

A lot of research on assimilation as an aspect of phonological processes have been carried out by many scholars, and have arrived at the conclusion that most users of English realize assimilation in its regressive form. However, little attention has been paid to the progressive and coalescence assimilation forms in which many users of English have noticed to realize.

Theoretical Framework

Optimality theory is a theoretical framework in linguistics that aims to explain how languages generate grammatical sentences. According to (Goldsmith, 2011), Optimality Theory posits that language is shaped by a set of conflicting constraints, which are resolved through an optimization process. It has the concept of constraints which are universal principles that govern linguistic structure, such as phonological, syntactic, and semantic constraints. This theory has been applied to the study of sound patterns, syllable structures, and phonological alternations.

Key Concepts of Assimilation

Phonological Process

According to (Goldsmith, 1995), phonological process otherwise known as phonological rules is defined as the mappings between two distinct levels of sound representation. Phonological process, according to (Hayes, 2009), is the generalization about the distinct ways in which a particular sound can be produced in a distinct environment. An environment in phonology simply means the neighboring phonemes. Phonological process thus deals with the alteration of sound in a syllable of a word or a phrase caused by the preceding or proceeding phoneme. In this study, out of the various types of the phonological processes, labialization, dentalization, and velarization, only assimilation is discussed.

Assimilation

Assimilation refers to the influence exercised by sound segment upon the articulation of another, so that the sounds become more alike, or identical (Crystal, 1991). It is a process in which the phoneme alters to produce another similar to or even the same as the neighboring sound (phoneme). For instance, "red bag" is not pronounced as /red bæg/ but rather pronounced as /reb bæg/. This shows that the dental phoneme /d/ has been articulated in quick succession, that is, in rapid speech to become /b/ due to the influence of the bilabial phoneme after it /b/. Assimilation can also be seen as the process whereby a phoneme changes from its normal pronunciation in isolation, or in a word to another phoneme that is close to it in manner or place of articulation in a connected speech, that is, in continuous utterance. (Frawley, 2003) identifies three main types of phonemes assimilation which include: progressive or preservative assimilation, regressive or anticipatory assimilation, and coalescent assimilation.

Anticipatory Assimilation

Anticipatory assimilation is otherwise known as regressive assimilation. According to (Frawley, 2003), anticipatory or regressive assimilation can be described as a situation in which features of one phoneme are articulated in the articulation of the preceding phoneme. In other words, it is the process where the succeeding phoneme constitutes the factor that causes the change in the previous phoneme. It is a situation where the phoneme at the right side influences the realization of the immediate left side phoneme. If the first segment changes to become like the second, it is said to be an anticipatory assimilation. For instance, "bad thing" is pronounced as /bæd ϴiŋ/. In this situation, /d/ is assimilated hence we will have /bæϴiŋ/.

Preservative Assimilation

This is otherwise known as progressive assimilation. According to (Frawley, 2003), preservative or progressive assimilation is an assimilation process where one phoneme influences the following phoneme. In other words, it is a situation that is obtained when the pronunciation of the phoneme is conditioned by the following phoneme, which is the phoneme by its immediate right. By this, we mean that if the second segment changes to become like the first, it is said to be a preservative assimilation. For example, /gʊd/ + /s/ will be pronounced as /gʊdz/. Here, it is the second segment, that is, the /s/ sound that has become assimilated. Since /d/ is a voiced phoneme, it uses its state to influence the next phoneme to it. The next phoneme to it was initially a voiceless sound /s/, therefore, "good" /gʊd/ 's'/s/ becomes /gʊdz/, thereby making both sounds to become voiced.

Phonetics and Phonology

Phonetics and Phonology are two closely related fields of study in linguistics that examine the sound patterns of languages. Phonetics is the study of the physical properties of speech sounds, including:

Articulation: how sounds are produced by the vocal tract, tongue, lips, and teeth.

Acoustics: The physical characteristics of speech sounds, such as frequency, amplitude, and duration.

Auditory Perception: How listeners perceive and interpret speech sounds.

Phonetics is concerned with the concrete, physical aspects of speech sounds, and it provides a detailed description of the sounds of a language (Hayes, 2009).

Phonology, on the other hand, is the study of the sound system of a language, including:

Phonemes: The distinct units of sound in a language that distinguish one word from another.

Allophones: The variant forms of phonemes that occur in specific contexts.

Phonological Rules: The patterns and rules that govern the combination and distribution of speech sound in a language.

Phonology is concerned with the abstract, linguistic aspects of speech sounds, and it examines how sounds function within the language to convey meaning (Fatusin, 2007). According to this scholar, phonology is divided into two branches, Segmental phonology and Supra-segmental

phonology. Segmental phonology is the segmentation of language that analyses speech into separate segments such as vowels and consonants into various distinctive speech sounds. For example, the word "cat" consists of three segments, represented as /k/, / æ/ and /t/. Supra-segmental phonology, also known as prosody, on the other hand, has the features of tone, stress, rhythm and intonation.

Methodology

This study will employ a qualitative approach where an in-depth knowledge of the phonological assimilation of students is the focus. A descriptive and correlational design is used in this study, focusing on the test of the speech variables of the students and examining the assimilation to understand the effect and the realization of assimilation in the spoken English of the students. The descriptive and correlational research designs are employed because they will be suitable for testing and examining the target variables of the English based on the assimilation of students as well as describing the characteristics and trends in the target variables while comparing it to another variable. The design will enable us to understand assimilation of the rapid speech of students. These designs are favourable in this particular study, considering the issue of limited resources like time and students' unwillingness to cooperate and be responsive in the data collection procedure.

The main target groups of the population of the study are students of Kogi State College of Education, Ankpa, an array of people based on departments, Department of English and Department of History, NCE 2 and NCE 3. Purposive sampling technique was also employed to obtain the desirable conditions of the speakers. Based on the course of study, language competence and level of education, data collection of twenty-five students will be required. This is made up of 15 students from the Department of English and 10 students from the Department of History. The study was conducted in Ankpa metropolis. This location is mostly dominated by indigenes as well as non-indigenes of Ankpa. However, out of 25 students interviewed, 10 students are indigenes of Ankpa and 15 students are non-indigenes.

In this study, voice recorder, third party audio preview software and interview checklist were used. The study majorly involves the use of sound recorders with both open, close up and call recordings. Self-administered questionnaire was used whereby the respondent was required to read and answer the questions given. The second instrument used in this study is an interview checklist. Interview can be described as a dialogue between an interviewer and the interviewee. It is also considered as a conversation between two people, the interviewer and the interviewee.

In any interview, questions are posed by an interviewer to obtain answers and invaluable information and data from the interviewee. The objective of these questions is to get more information concerning the particular study. In this study, an interview guide was developed to capture information obtained from respondents.

Phonological Process Analysis

The phonological process analysis is a linguistic approach to speech evaluation in which similar phonological error patterns are grouped into categories. In this study, the category that forms the basis for analysis here is assimilation. Considering qualitative analysis, assimilation of students of Kogi State College of Education, Ankpa, is examined based on the following: assimilation in their speech, words assimilated, alternation of rendered speech sounds, time stamp of assimilation, transcription of assimilation, and how many people assimilated certain words.

Below is a table exploring the concept of phonological process analysis, focusing majorly on assimilated words. Here, the features include the words assimilated, time stamp of assimilation and transcription of assimilated words.

Phonological Process Analysis

Sentence	Words	Transcription (Not assimilated)	Alternation	Transcription(Assimilated)	Types of assimilation	Speech timing
This boy can play.	Can play	/kæn ‘pɪei/	/n/ into /m/	/kæmpɪei/	Anticipatory	00:00:01.02
This is the stubborn boy	Stubborn boy	/stʌben ɓɔ:i/	/n/ into /m/	/stʌbem ɓɔ:i/	Anticipatory	00:00:01.02
I still don’t believe you.	Don’t believe	/dəunt ɓiii:v/	/n/ and /t/ into /m/	/dəʊm ɓiii:v/	Anticipatory	00:00:01.17

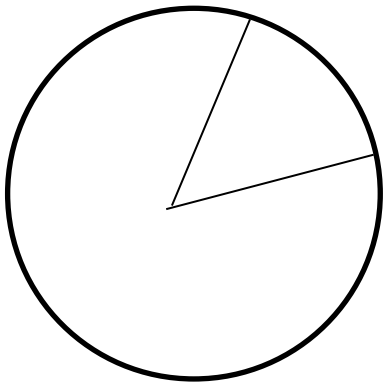
That was just quite close	Quite close	/Kwɑit cɪəuz/	/t/ into /k/	/KwɑiKIəuz/	Anticipatory	00:00:0.1.00
That can't be possible.	Can't be	/Kɑ:nt ɓi:/	/n/ and /t/ into /m/	/Kɑ:m ɓi:/	Anticipatory	00:00:01.05
It can possibly happen.	Can possibly	/Kæn pɒsəɓəIi/	/n/ into /m/	/Kæm pɑsəɓəIi/	Anticipatory	00:00:01.03
Pick up that compass	That compass	/dæt KʌmpəS/	/t/ into /k/	/dæk KʌmpəS/	Anticipatory	00:00:01.11
The movie is titled Fountain boy.	Fountain boy	/fɑuɲtiɲ ɓƆi/	/n/ and /m/	/fɑuɲtim ɓƆi/	Anticipatory	00:00:01.31
The Asians said they invented gun powder	Gun powder	/gʌɲ pɑudər/	/n/ and /m/	/gʌm pɑudər/	Anticipatory	00:00:01.85

She wanted you to beat me.	Beat me	/bi:t mi:/	/t/ and /m/	/bi:m mi:/	Anticipatory	00:00:01.20

Here, assimilation is presented considering the following attributes of the collected data samples, that is, the sentence, the words, transcription of both the assimilated and non-assimilated words and speech timing (how long it took to render the sentence). The first instance is 'can play', presenting an anticipatory assimilation of the phoneme /n/ to be articulated as /m/. Suggestively, this progressive assimilation, in rapid speech, resulted in the rendering of /kæm 'pIei/ instead of /kæn pIei/. Furthermore, out of 25 people who rendered this sentence, a mass of 21 out of 25 (84%) rendered the sentence with assimilation and 4 out of 25 (16%) rendered the sentence without assimilation.

Chart 1

QUANTITATIVE REPRESENTATION CHART OF "CAN PLAY" PERCENTAGE OF ASSIMILATION



NOT ASSIMILATED 16%

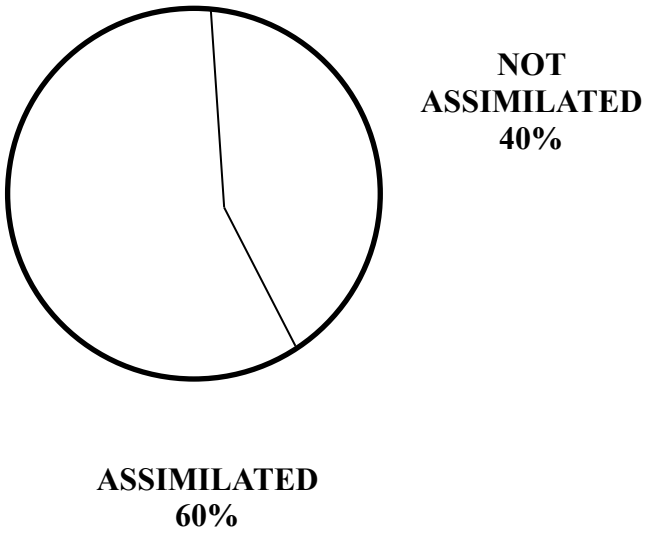
ASSIMILATED 84%

The second instance, "stubborn boy", also presents an anticipatory assimilation of the phoneme /m/ in place of /n/. That is, an alveolar sound /n/ is then articulated as a bilabial sound /m/. Again, this resulted in the rendering of /stʌbən bɔ:i/. Out of 25 people who rendered the

sentence, an average of 15 out of 25 (60%) rendered the sentence with assimilation, while 10 people out of 25 (40%) did not render the sentence with assimilation.

Chart 2

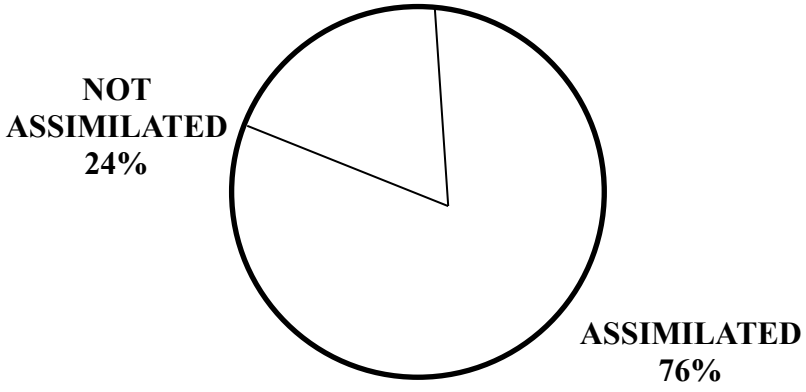
QUANTITATIVE REPRESENTATION OF "STUBBORN BOY" PERCENTAGE OF ASSIMILATION



Another instance is that of "don't believe", the rendition, 'I still don't believe you'. This instance is quite more interesting as two phonemes are replaced by a single phoneme; the nasal alveolar /n/ and stop alveolar /t/ are replaced by a nasal bilabial sound /m/ during connected speech quick succession rendering. Numerically, 19 people (76%) out of the 25 people who rendered this sentence in rapid speech rendered it with assimilation, while the other 6 people (24%) did not render the same sentence with assimilation.

Chart 3

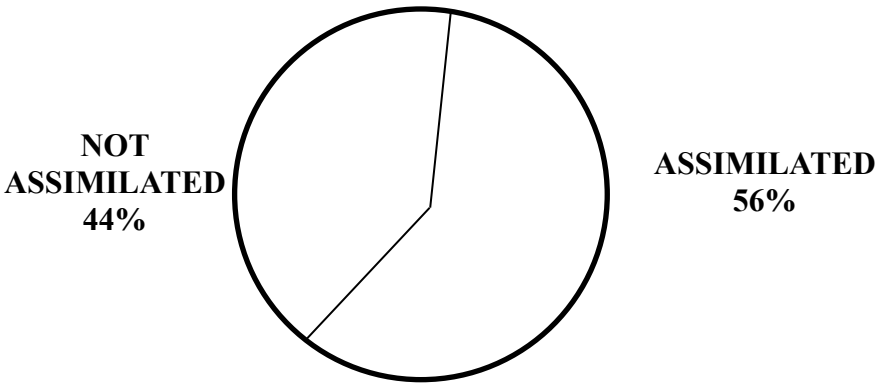
QUANTITATIVE REPRESENTATION OF "DON'T BELIEVE" PERCENTAGE OF ASSIMILATION



Furthermore, in the instance of "quite close" in the rendition of the sentence' that was quite close', show cases the alternation of the phoneme /t/ being replaced by /k/, which resulted in the rendering of 'quite close' as /kwɑik kIəʊz/ instead of /kwɑit kIəʊz/. Based on numerical representation, 14 people (56%) of the 25 people who rendered this sentence in high speed speech rendered with assimilation, while the other 9 people (44%) did not render the same sentence with assimilation.

Chart 4

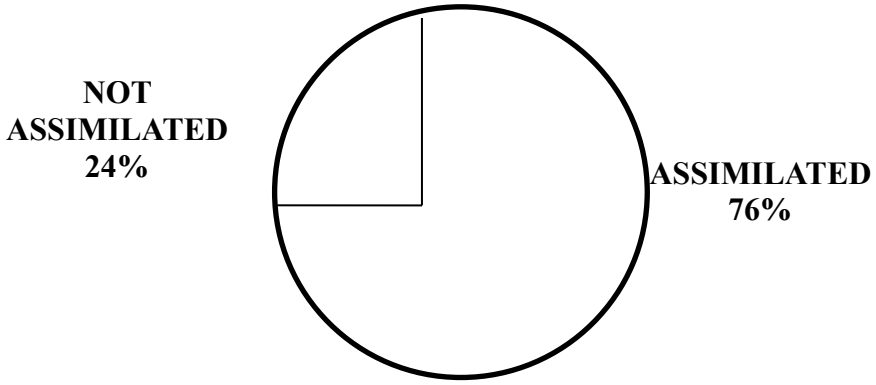
QUANTITATIVE REPRESENTATION OF "QUITE CLOSE" PERCENTAGE OF ASSIMILATION



The next instance of assimilation is observed in the rendition of "can't be" in the sentence 'that can't be possible'. It is also presenting a situation where two phonemes are replaced and alternated for a single phoneme. The nasal alveolar /n/ and stop alveolar /t/ are replaced by a nasal bilabial sound /m/ during rapid speech rendering, causing the rendering of /kɑ:m ɓi:/ instead of /kɑ:nt ɓi:/. In numbers, this progressive assimilation is dominant with about 19 people (76%) of the 25 people who rendered this sentence in rapid speech, while the other 6 people (24%) did not render the same sentence with assimilation.

Chart 5

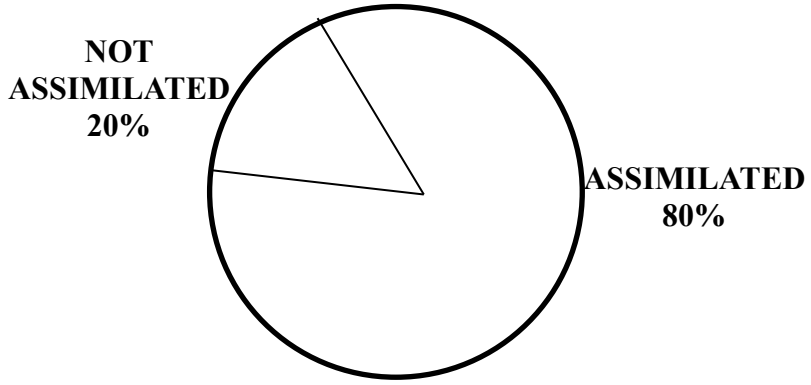
QUANTITATVE REPRESENTATION OF "CAN'T BE" PERCENTAGE OF ASSIMILATION



Again, progressive assimilation is present in the rendering of "can possibly", especially rendering in high speed speech a sentence such as 'It can possibly happen'. The phoneme, nasal alveolar /n/ is replaced with another phoneme which is a nasal bilabial /m/ in this speech rendering during swift speech. Numerically, about 80% of 25 people who rendered this sentence rendered "can possibly" with assimilation, while 20% did not render the same sentence with assimilation.

Chart 6

QUANTITATVE REPRESENTATION OF "CAN POSSIBLY" PERCENTAGE OF ASSIMILATION

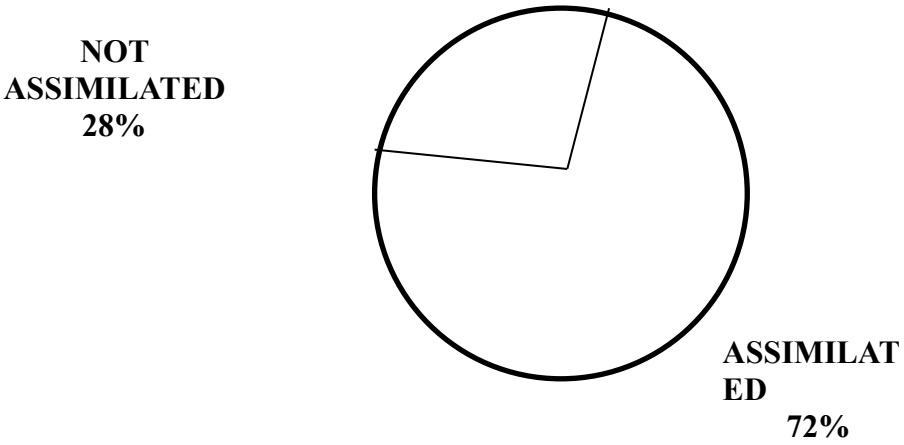


Another instance in the series is the rendering of the sentence, 'pick up that compass', focusing on the phrase "that compass", which portrays a progressive assimilation. Here, an alveolar stop phoneme /t/ is replaced with a velar stop phoneme /k/ causing the rendering of /dæk kʌmpəs/ instead of /dæt kʌmpəs/ in rapid speech event. In numbers, about 18 people (72%) of the 25

people who rendered this sentence rendered with active assimilation, while the other 7 people (28%) did not render with assimilation.

Chart 7

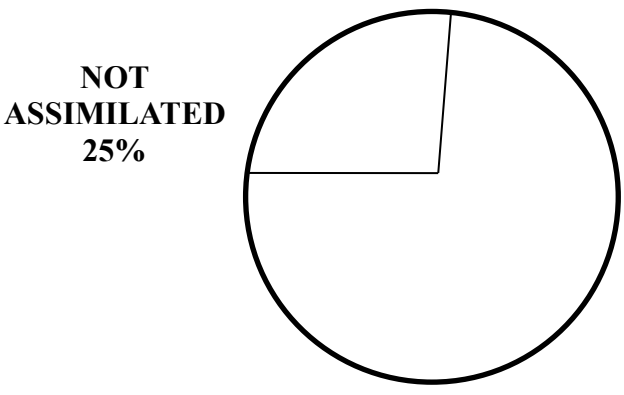
QUANTITATIVE REPRESENTATION OF "THAT COMPASS" PERCENTAGE OF ASSIMILATION



In this instance is the phrase, "fountain boy" in the sentence, 'The movie is titled fountain boy', which is rendered in rapid speech event. This presents an anticipatory assimilation where the alveolar nasal phoneme /n/ is replaced with the alveolar bilabial phoneme /m/, resulting in the rendering of /fəʊntim bɔi/ instead of /fəʊnti bɔi/. Considerably, 19 people (75%) of the total of 25 people rendered with assimilation, while the other 6 people (25%) did not render with assimilation.

Chart 8

QUANTITATIVE REPRESENTATION OF "FOUNTAIN BOY" PERCENTAGE OF ASSIMILATION

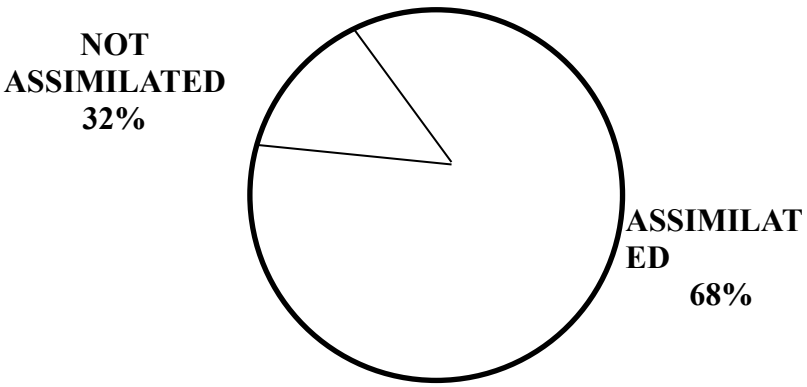


ASSIMILATED
75%

Another instance is the rendering of the speech of "the Asians said they invented gun powder". Here, the alternation is the alveolar nasal phoneme /n/ which is replaced with the alveolar bilabial phoneme /m/. This alternation caused the rendering of /gʌm pɑʊdə/ instead of /gʌn pɑʊdə/. This alternation is caused by the presence of the voiceless bilabial stop /p/ preceeding it. Numerically, about 17 people (68%) out of the 25 people who rendered this speech rendered this phrase with assimilation, while the other 4 people (32%) did not render it with assimilation.

Chart 9

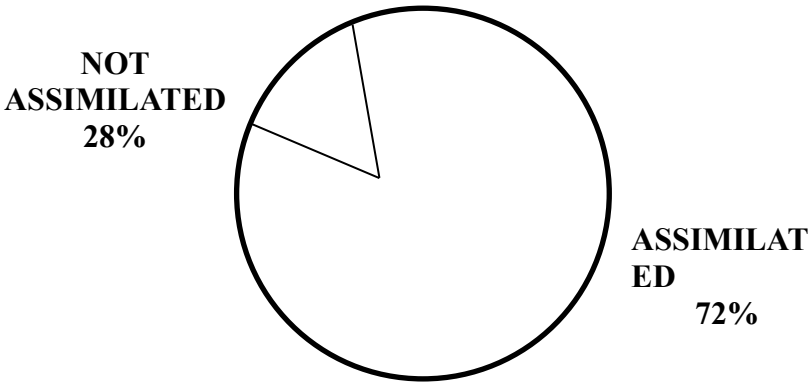
QUANTITATIVE REPRESENTATION OF "GUN POWDER" PERCENTAGE OF ASSIMILATION



The final instance is the rendered speech, "She wanted you to beat me" focusing on the phrase "beat me". Basically, the alternation of the voiceless alveolar stop /t/ by the alveolar bilabial /m/ resulted in the rendering of /bi:m mi:/ instead of /bi:t mi:/. Meanwhile, amongst the 25 people who rendered this speech, 18 people (72%) rendered this speech with corresponding assimilation, while 7 people (28%) did not.

Chart 10

QUANTITATIVE REPRESENTATION OF "BEAT ME" PERCENTAGE OF ASSIMILATION



Findings

In this study, the findings revealed that the profile of assimilation commonly applied by the students is profiled to be a progressive type of assimilation. This implied that dominantly, there is a high occurrence of progressive assimilation in the rapid speech of students. The findings also revealed that during high speed speech event, students tend to articulate English phonemes with assimilated effects, where the assimilation process is dominant and notable. From the findings, high speed speech event is associated with being too much in a hurry.

Conclusion

In conclusion, it is apparent that many students of Kogi State College of Education, Ankpa, especially from the Department of English and that of the Department of History, produce assimilated phoneme during high-speed speech event.

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