



## Syntactic and Morphophonological Motivations for Compound Verb Formation in Nsukka Igbo within the OT Framework

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**Abstract:** This work critically appraises the roles of Optimality Theory (OT) in motivating morphophonological and syntactic elements in formation of compound verbs in Nsukka Igbo. OT addresses morpheme ordering through mappings between syntactic and morphological categories of languages. The OT phonological model has three levels: Input and GEN (generating candidates), CON (constraints set), and EVAL (evaluating optimality). GEN produces infinite candidates from any input, with no language-specific restrictions. The grammar (CONstraint ranking) determines the optimal candidate selected by EVAL. To analyze phonological outputs in Nsukka Igbo, the study focuses on Faithfulness, Markedness, and Alignment constraints. A native speaker (who relied on their intuitive knowledge) and a non-native collaborator drew data for the study. The OT methodology involves generating candidates, applying constraints, ranking them, and identifying optimal outputs. Constraints evaluate input-output similarity, dispreferred structures, and boundary correspondence, with tables showing candidate competition and violations. Compound verbs are analyzed using OT constraints like NoCoda, Dep-IO, NO HIATUS, and MAX-IO. The research discovers that OT can be used to analyse the syntactic structures of compound verbs in Nsukka Igbo. The findings of the research reveal that for a verb to qualify as a compound verb, the vowel of the added constituent must not obligatorily conform to the class of the vowels in the root verb.

**Keywords:** Optimality Theory (OT), Compound Verb, Morphophonology, Igbo Language, Nsukka.

### 1. Introduction

Nsukka dialect of the Igbo language is one of the Northern Group of Igbo Dialects. Speakers of the dialect cut across Opi, Ede-Oballa, Eha-alumona, Nru, etc. (Nwaozuzu, 2008). Compound verbs in Nsukka exhibit complex interaction of vowel harmony and morphophonological structure. This study analyses the morphophonological and syntactic motivations driving formation of compound verbs in Nsukka Igbo using Optimality Theory (OT) of Prince and Smolensky. Morphophonology is a blend of morphology and phonology. It connects the units and activities of these levels of language analyses (morphemes and phonemes) where there is ultimate fusion of sounds and meaning in language. Morphophonology centres on how sounds change when morphemes combine at lexical or syntactical level. In accounting for these structures, the discipline of linguistics has been divided into micro and macro linguistics. In the area of micro linguistics, three levels of analysis are predominant: the sound level which comprises phonetics and phonology; the form and structure level, which consists of morphology and syntax; and the meaning level, which comprises semantics.

According to Al-Hindawi and Abdulkareem (2021), optimality theory suggests that the observed forms of language arise from the optimal satisfaction of conflicting constraints. Constraints are classified into faithfulness and markedness constraints which operate between underlying forms, inputs, and surface representations, and outputs. Optimality theory differs from other approaches to phonology, like autosegmental phonology and linear phonology (SPE), which are typically rule-based approaches rather than constraints.



For the purpose of this study, which is a critical appraisal of the roles of OT in motivating morphophonological and syntactical elements in formation of compound verbs in Nsukka Igbo, attention will be paid to the structural level of linguistic analysis. Here, a look at the compound verbs in the Nsukka Igbo will be analysed using the optimality theory (OT). Adopting this theory will provide a holistic account of the compound verbs from a perspective that differs from previous studies. To the best of our knowledge, there is little or no work that has been carried out on the compound verbs of Nsukka Igbo with the optimality theory as the theoretical framework. This work will aid in adding to scholarship and as well to validate the assertion of Uzoagba (2016) that "any language can employ OT in the study of phonology, morphology, syntax, semantics, sociolinguistics, pragmatics and even historical linguistics."

This present research on compound verb formation in the Nsukka dialect of the Igbo language has concentrated on syntactic and morphophonological reasons within modern theoretical frameworks of Optimality Theory (OT). Compound verbs in Nsukka Igbo combine many verb roots or verb pieces to represent nuanced acts or events, and they are essential for reflecting the breadth of verbal expression in this dialect. Compound verbs in Nsukka Igbo have hierarchical structures in which verb roots and complements are combined to generate complex predicates guided by underlying syntactic rules. Studies such as Agbo (2015) emphasize the complimentary character of bound verb complements and the compositional semantics that regulate them. Morphophonologically, tonal interactions, tone sandhi, and epenthetic processes all have an impact on the creation and phonetic realization of compound verbs, demonstrating a dynamic relationship between phonology and morphology.

Optimality Theory is increasingly being used to study the interactions of opposing constraints that influence compound verb production. The OT framework of ranked violable constraints reflects the conflict between syntactic well-formedness, morphophonological harmony, and semantic coherence in Nsukka Igbo verb compounds. For example, constraint rankings control tone changes and segment insertions while keeping the verb root and its complement in compounds.

Recent contributions contextualize compound verb formation within OT to explain patterns of reduplication, tone assignment, and morphological productivity, going beyond basic work on syntactic categories and tone systems (Emenanjo, 2005; Agbo & Yuka, 2011). Because Igbo dialects differ from one another, this research highlights the significance of dialect-specific probing on compound verb formation within OT.

## 2. Igbo Compound Verbs

Many scholars (Nwachukwu 1984; Mbah, 1999) have defined Igbo language as a verb-based language. This implies that verb in the Igbo language is the centre of word formations. The verb can be inflected to produce new class of words but no other class of words will be inflected to arrive at a verb. To validate this assertion, Mbah and Mbah (2014:64) corroborate, "the verb is the only grammatical class, which accepts inflection, including the rV affix, in the language. This is why it is difficult to discuss inflection without mentioning the verb." This then means that verbs have provided a formidable platform for numerous words to be formed in the Igbo language. Verb roots are often monosyllabic, but as inflections occur, they become disyllabic or multi-syllabic.

Strumpf and Douglas (2023) assert that verbs are the life of language. They further claim that verbs make words take action and through the functions of verbs, humans are able to express who they are and how they feel. Without verbs, speech and writing would be reduced to trivial naming and static description. However, a verb is a word that tells or asserts something about a person or thing.

Verbs have structure. In describing the structure of Igbo verbs, Ogwueleka (1987) opines that the Igbo verb whether simple, complex or compound generally begins with a consonant. Its structure is CIV where C stands for the consonant, I for palatalisation while V stands for vowel. The physical structure of the verb is one reason that some scholars have analysed it in a particular way. The basic syllabic structure of the Igbo verb is summed up by Emenanjo (1978) as CTS where the C stands for the consonant; T represents the tone while S is a vowel but never a syllabic nasal.

However, the verb can take an additional head or suffix. This additional form may result in either a compound or complex verb form. Ogwueleka (1987) asserts that the test to differentiate between a compound and a complex verb form in Igbo is subjecting the added element to the rule of vowel harmony. If the added constituent obeys the rule, it means that the verb form is a complex verb form rather than a compound one. In other words, the added



element is not independent. On the other hand, if the added element maintains its original form, then it means that the new element is a compound rather than a complex verb form.

From his perspective, Mbah (1999) contends that the structure of the simple Igbo verb is CsaT. Here, the C stands for the consonant, sa for secondary articulation and T stands for the tone. Mbah (1999) observes that tone is indispensable in the verb structure because the tone cannot be without a vowel to bear it in any particular position. On the other hand, putting V in that particular position in line with Ogwueleka's postulation does not presuppose that it bears a tone but which in fact is a precondition. Mbah (1999) goes on to demonstrate that the Igbo verb hardly occurs in its simple syllabic structure without taking on some other element.

However, Mbah and Mbah (2014:64) summarize thus:

The syllabic structure has both syntactic and semantic implications. The added elements may have meanings in the sense of extensional suffixes proposed by Emenanjo (1978) but others may have meanings, which hardly relate to the verb root hosting them. These differences in the semantic properties of the added elements have their syntactic reflexes which are better seen when the argument structure of the verbal complex is shown. In other words, the verbal complex is an end product of syntactic transformation

Therefore, we will adopt the distinction of Ogwueleka that if the added constituent obeys the rule of vowel harmony, it means that the verb form is a complex verb form rather than a compound one. In other words, the added element is not independent. On the other hand, if the added element maintains its original form, then it means that the new element is a compound rather than a complex verb form. This distinction is similar with the one of Lord (1975) which states:

In Igbo, a Kwa language spoken in Southeastern Nigeria, monosyllabic CV verb stems are usually fairly simple semantically. The polysyllabic verb stems generally more complex semantically, are usually relatable to a series of simple CV verbs, or verbs plus CV suffixes. For example, the polysyllabic verb, tɔfu 'throw away, discard, lose' can be considered a compound made up of the component verbs tɔ 'throw' and fu 'be lost'.

From the above excerpt, it can be discovered that the word 'tɔfu' is a disyllabic compound verb. It is compound because the affix 'fu' did not conform to the vowel in the root verb. However, Lord further avers that the compound verb refers to an event; the first component indicates an action, and the second component can be just about any action verb, as a suffix. Continuing, other than this, the only restriction on verbs eligible for compound formation seems to be the pragmatic one of limiting compounds to representing events conceivable in terms of action and result, given the speaker's intellectual and cultural experience. It is this distinction that we will adopt as we discuss the compound verbs in Nsukka dialect of Igbo. In subsequent section, a review of optimality theory which will be used to analyse the compound verbs of Nsukka dialect will be taken into consideration.

### 3.An Overview of Optimality Theory (Ot)

Aldaihani, Al-Houti and Alenezi (2022) described OT as "a phonological formalism in which the pronounced form of an utterance (the output) is chosen from among other possible candidates that are all simultaneously evaluated and directly compared to the lexical representation (the input) by a ranked set of violable and universal constraints." OT is a theory which was formulated by Prince and Smolensky (1993) and modified by McCarthy and Prince (1993). It is a theoretical framework that deals with the interaction of violable constraint. At its inception, it was specially made for phonological analysis but as time proceeds, Wunderlich (2004) applied it in morphology while Kager (1999) applied it in syntax while Zeevat (2000) applied it in syntax and semantics. These various applications of OT made Uzoagba (2016) to assert that any language can employ OT in the study of phonology, morphology, syntax, semantics, sociolinguistics, pragmatics, and even historical linguistics.

Belkhadir (2022) carried out an applied linguistic study to compare the status of schwa in Moroccan Arabic as a mother tongue of a large number of Moroccans and English as a foreign language in the Moroccan context using OT. His study reveals that "a constraint a La OT which bans schwa open syllables ranks high in Moroccan Arabic, and, thus, does not permit the occurrence of schwa open syllables; while the same constraint ranks low in the constraint hierarchy in English, and hence schwa open syllables are so frequent in the language." Though it was employed in Moroccan Arabic and English, but schwa open syllables and other constraints encountered in the work



are phonemes which are the units of phonology. This reveals that OT can be employed to discuss segmental and supra-segmental features in different levels of language analyses.

Negash, Zewdu, and Kassahun (2019) aver that in Amharic language, OT has successfully addressed some phonological challenges which the linear theory of representation was unable to properly account for. Linear theory was quite successful in explaining a number of facts about sound systems but lacks the capacity to account for spirantization and assimilation which can be shown and represented in Optimality Theory and Feature Geometry more clearly than in linear phonology. Their work suggest that any language can employ OT in phonology or phonological related research work. Al-Hindawi and Abdulkareem (2021) posit that scholars associate OT with six problems which include “the ambiguity of generating process, not paying attention to the lexicon, the uselessness of creativity of mind, wrong ranking, diversity of the same sound in different languages, and focus on parallelism rather than serialism.” However, they believe that Optimality Theory (and Feature Geometry) has opened up new lines of operation on familiar problems, revealed unasked questions earlier neglected by generative phonology. OT revived traditional insights and widened phonological research through critical analyses of problematized issues previously considered solved, and brought significant body of results which move learnability, computation, and formal analysis to limelight.

On the other hand, Nwankwegu (2008) views OT as a linguistic expression of the practical life situation where man is faced with lots of competing demands being hindered with certain constraints which may be financial, religious or social. He cannot achieve anything, without violating these constraints. However, OT is an approach to linguistic analysis that involves constraints which must be violated to achieve a desired goal.

More so, it is worthy of note here that OT was propounded to take care of the shortcomings of the rule-based framework which was widely in use before the last ten years of the 20<sup>th</sup> century. Prior to this, past theories have focused on generating rules to account for sounds. The publication of Chomsky and Halle (1968) known as the *Sound Patterns of English* provided a lot of phonological rules for analysing sound segments. Contrarily, rather than being derivational, where an underlying representation passes through several stages of change en route the final stage, OT is described as comparative in which output constraints evaluate multiple surface forms simultaneously. Uzoagba (2016) remarks that though OT is structured based on the manner of Universal Grammar (UG), that OT explains both language specific observations and differences between speaking styles, dialects and different languages.

Furthermore, “there are basic components of the theory: (i) GEN takes an input, and generates the list of possible outputs, or candidates, (ii) CON provides the criteria, in the form of strictly ordered violable constraints, used to decide between candidates, and (iii) EVAL chooses the optimal candidate based on the constraints, and this candidate is the output” (Agbedo 2015). Optimality theory assumes that these components are universal. OT is equally regarded as a model for solving phonological problems and for explaining variation across languages of the world. Instead of making new rules each time for languages based on a loose set of observations of purported phonological rules, universal tendencies are formalized as abstract principles. These tendencies are called constraints, and they conflict with each other such that they cannot be true all the time. In Optimality theory, languages differ not in the constraints they have, but in the relative importance or ranking of constraints in relation to other ones. This ranking is used for a particular language to grade possible pronunciations (or outputs) of some input. The winning or optimal outputs (candidates) will hopefully be the pronunciations we observe in the language. Candidates are contestants in the competition. For example, the hierarchy of constraints is used to evaluate each potential pronunciation (candidate). Certain candidates perform better than others based on what is most important (the ranking), just as in a competition. The “winner” is not abstract; rather, it corresponds to the actual pronunciation that people employ, therefore there is an observable reality. OT becomes predictive as a result and clarifies why specific forms appear in actual languages. Candidates compete, one emerges victorious, and that person’s speech is what we actually hear.

In OT, three basic constraints are recognized: (i) Faithfulness, (ii) Markedness, (iii) Alignment. Faithfulness constraints judge outputs on how similar they are to the input, i.e., how easy it is for the listener to reconstruct the string from the pronunciation. The detailed components of faithfulness constraints include:

- (i) Ident-IO(F): Segments have identical values of feature F in the input and output. The value of F from the input is the same in the output.



- (ii) Ident-BR(F): Segments have identical values of feature F in the base and the reduplicant. The value of F from the base is the same in the reduplicant.
- (iii) Max = MAXIO(C/V): All segments in the input are also present in the output. Every segment in the input has an output correspondence. Do not delete anything.
- (iv) DEP = DepIO(C/V): All segments in the output are also present in the input. Every segment in the output has an input correspondence. Do not add anything.

The detailed components of "Markedness constraints" which judge outputs on how easy they are to say include:

- (i) NoCoda: There are no syllable codas. All syllables are open. All consonants get syllabified in the onset. Simply put, consonants do not end a word.

(ii) Onset: All syllables have an onset. Every vowel has a consonant before it.

\*Complex: There are no consonant clusters (sequences of two or more constraints in a syllable).

One of the tenets of OT is that the two constraints, faithfulness and markedness, are inherently in conflict. For instance, if faithfulness were all there, speakers might try to put an infinite amount of distinctiveness in every sound, and they would never actually get to pronouncing everything. Also, if markedness were all there, the speaker would just reduce all syllables to the least marked segments.

After CON has finished its work, EVAL judges the candidates and declares the winner. Given two candidates, A and B, A is better than B on a constraint if A incurs fewer violations than B. Candidate A is better than B on the entire constraint hierarchy if A incurs fewer violations of the highest-ranked constraint distinguishing A and B. This comparison is often illustrated with a table. In this table, some symbols are used.

☞ the pointing finger identifies the winning or optimal candidate at the output level.

'!' denotes a fatal violation by the candidate (so the winning candidate should not have '!' in its violation profile)

\* the asterisk indicates violation.

We shall apply the tenets while using OT as a framework in analysing the compound verbs in Nsukka dialect of Igbo.

#### 4.Theoretical Framework: Optimality Theory

Optimality theory, according to Udemmadu (2017), has been influential mainly in phonology; it has been a reliable model for morphological analysis where it provides a way of dealing with morpheme ordering and with mappings between syntactic and morphological categories of languages. The central idea of OT is that surface forms of language of study reflect resolutions of conflicts between competing constraints. Constraints are conditions that linguistic forms must satisfy. Such constraints are universal but are ranked differently according to their language-specific hierarchical priorities shaping language specific patterns (Al-Hindawi & Abdulkareem, 2021).

Four basic tenets of OT identified by Eme and Chikeluba (2012) include violability, ranking, inclusiveness and parallelism. Violability in OT is a principle which maintains that constraints are minimally violable. Ranking is based on language specific basis while inclusiveness demands that all analyses of every candidate (possible outputs generated by GEN) as based on constraint hierarchy are admitted by general consideration of well-formedness of structures applicable to the language. The principle of parallelism holds that the best satisfaction of constraint hierarchy is computed over the entire set of candidates and the whole items on the hierarchy.

The systems of OT include GENERator (GEN), CONstraint (CON) and EVALuator (EVAL). Oyinloye and Anyanwu (2021) state that these systems operate in a systemic way and named according to their functions. The GEN component, for instance, takes an input made available by the lexicon and generates countless number of possible output forms on the basis of the given input; the CON function provides sets of constraints and ranks them



according to hierarchy; while the EVAL system is responsible for the assessment of output forms in a parallel fashion with respect to the constraint hierarchy.

Having discussed OT to a great extent, we shall apply the tenets in analysing the compound verbs in Nsukka dialect of Igbo.

## 5. Methodology

This study adopts a qualitative and analytical research design grounded in the theoretical framework of Optimality Theory (OT). The investigation is directed toward understanding how the three basic constraints—Faithfulness, Markedness, and Alignment—interact to determine optimal phonological outputs in the Nsukka dialect of Igbo. Rather than relying on rule-based accounts, the study employs a constraint-based evaluation model that emphasizes universality and variation through ranking. One of the researchers, a native speaker of Nsukka Igbo, relied on their intuitive knowledge of the dialect, while the other, a non-native speaker with understanding of the dialect, collaborated to draw data for the study.

The analytical procedure follows the standard OT methodology. First, candidate sets are generated for each input. Second, the three constraints are applied: Faithfulness constraints assess the similarity between input and output, Markedness constraints identify dispreferred structures, and Alignment constraints evaluate the correspondence between prosodic or morphological boundaries and phonological structures. Third, constraint rankings are established by examining which constraints dominate others in producing the observed outputs. Finally, tables are constructed to visually represent the competition among candidates, marking violations and determining the optimal output.

Constraints used in the study are arranged in the order as follows: NoCoda>>DEP-IO>> NO HIATUS>> MAX-IO>>. The expected outcome of this methodology is to demonstrate that Faithfulness, Markedness, and Alignment constraints are indeed universal, but their relative rankings differ across languages. This variation explains why certain phonological forms surface in one language but not in another. Ultimately, the study aims to show that the metaphor of candidates as contestants is not merely illustrative but reflects the competitive nature of constraint interaction in OT, with the winning candidate corresponding to the observed pronunciation thereby assessing OT in motivating morphophonological and syntactical elements in formation of compound verbs in Nsukka Igbo.

## 6. Application of OT to Compound Verbs in Nsukka Igbo

Compound verbs exist in Nsukka Igbo. Application of OT to the compound verbs require OT analytical skills. Aldaihani, Al-Houti and Alenezi (2022) describe OT as “an analytical framework that allows the exploration of both the formal properties of grammar and its developmental and cross-linguistic variations.” Some of the Nsukka Igbo compound verbs will be analysed using the following constraints:

NoCoda: No words end in consonant since Igbo is a CVCV language which does not have consonants at word final positions.

Dep-IO: Every segment in the output must have a corresponding segment in the input. On no account should there be insertion.

NO HIATUS: Adjacent vowels must have the same features

MAX-IO: Every element in the input must have a corresponding output. No deletion.

Let us consider these examples:

### 6.1 *tɥ* ‘throw’ + *hue* ‘be lost’ = *tɥhùé* ‘throw away’

The verb *tɥhùé* ‘throw away’ in Nsukka Igbo is a compound verb formed from *tɥ* meaning ‘throw’ and *hue* which means ‘be lost’, as shown in table 1. In the standard Igbo, it appears as *tɥ* ‘throw’ + *fuo* ‘be lost’. Since the added constituent does not obey the rule of vowel harmony, it means that the verb form is a compound one. Vowel harmony is one of the most striking phonological processes in the Igbo language that helps to shape the way words



are formed and pronounced. At its core, vowel harmony ensures that vowels within a word belong to the same phonological set, creating a sense of internal consistency and ease of articulation. This phenomenon is not unique to Igbo, but it plays a particularly important role in Igbo morphology and word formation.

**Table 1.** *tụ* 'throw' + *hue* 'be lost' = *túhùé* 'throw away'

	Input	NoCoda	DEP-IO	NO HIATUS	MAX-IO
A	tùhwùu			*	*
B	tùhue			*	
C	tùhwu		*	*	
D	tùhw	!			*

In Igbo phonology, vowels are systematically classified into two distinct groups according to the feature of Advanced Tongue Root (ATR). The [+ATR] category comprises vowels such as /i, e, o, u/, while the [-ATR] category includes /ɪ, a, ɔ, ʊ/. The principle of vowel harmony requires that vowels drawn from these two sets do not co-occur within a single lexical item. Consequently, a root containing [+ATR] vowels will obligatorily select affixes that also exhibit [+ATR] qualities, whereas a root composed of [-ATR] vowels will combine only with affixes from the [-ATR] set. This mechanism ensures phonological consistency and uniformity across morphemes, thereby maintaining structural coherence within the language.

The order of constraints will be NoCoda>>DEP-IO>> NO HIATUS>> MAX-IO>>. From this, it can be deduced that the optimal candidate is 'Input B' because it secured the number of less violations in the competition. As a result, the mark '̣' was appended to it to show that it is the rightful constructed compound verbs in the Nsukka Igbo. NoCoda for candidate 'D' is a fatal violation since a consonant cannot end a word in Igbo, being a CVCV language, and same is obtainable in its Nsukka variety.

**6.2 *dọ* 'pull' + *tu* 'brag' = *dótù* 'pull down'**

**Table 2.** *dọ* 'pull' + *tu* 'brag' = *dótù* 'pull down'

	Input	NoCoda	DEP-IO	NO HIATUS	MAX-IO
A	dọu			*	*
B	dọtụ		*	*	
C	Dotuu		*		*
D	dọtụ			*	

The combination of the verb roots *dọ* 'pull' and *tu* 'brag' creates a compound *dótù* 'pull down', as listed in table 2. The root verbs and the realised compound have the same form in the Nsukka dialect and the Standard Igbo. *Dótù* is classified as a compound verb because the added constituent does not obey the rule of vowel harmony.

From the above, the order of constraints is: NoCoda>>DEP-IO>>MAX-IO>>NO HIATUS. In table 2, candidate 'A' has two violations, candidate 'B' has two; candidate 'C' has two; while candidate 'D' had one violation. Sequel to this, candidate 'D' is the optimal candidate having secured the lesser number of violations. Thus, it is the only candidate that scaled through in the constraints. This then implies that the correct compound word in the Nsukka Igbo is *dọtụ* and not any other form among the candidates.

**6.3 *wụ* 'jump' + *he* 'cross' = *wúhè* 'jump across'**

The verb *wúhè* 'jump across' in Nsukka daialect of Igbo is a compound verb formed from *wụ* meaning 'jump' and *hè* which means 'cross', as listed in table 3. *Wúhè* is *máfè* 'jump across' in Standard Igbo; it is also formed from two verb roots: *má* and *fè* which means 'jump' and 'cross' respectively. The verb form is a compound word in both the Igbo language and the Nsukka dialect since the added constituent does not obey the rule of vowel harmony.

The phenomenon of vowel harmony in Igbo is most clearly manifested in verb morphology. When suffixes are attached to verb roots, the vowels of the suffix adjust to correspond with those of the root. In this way, vowel harmony operates as a grammatical principle that governs morpheme selection and sustains phonological



consistency. It further facilitates comprehension, since harmonized vowels enable listeners to more readily reconstruct the intended lexical form.

**Table 3.** *wu`jump` + he`cross` = wúhè`jump across`*

	Input	NoCoda	DEP-IO	NO HIATUS	MAX-IO
A	Wuhe			*	*
B	wùhẹ		*	*	
C	☞wùhe			*	
D	wùheh	*	*	*	

The order of constraint is NoCoda>>MAX-IO>>DEP-IO>>NO HIATUS. From table 3, the optimal candidate is candidate 'C' because it secured the least number of violations. This yet, validates that in Nsukka dialect, the vowels in the compound verbs do not conform to the rule of vowel harmony.

### 6.4 *gba`run` + je`go` = gbàjé`run to`*

**Table 4.** *gba`run` + je`go` = gbàjé`run to`*

	Input	NoCoda	DEP-IO	NO HIATUS	MAX-IO
A	☞gbaje			*	
B	Gbajee		*		*
C	Gbajeh	*	*	*	*
D	Gbajea		*	*	*

The verb *gbàjé`run to`* in Nsukka Igbo is a compound verb formed from *gba`run`* and *je`go`*, as listed in table 4. In the standard Igbo, it is replicated as *gbaga`run to`*. It is a compound verb formed from *gba`run` + ga`go`*. While *gba* contains –ATR vowel, the added constituent *je* of Nsukka variety carries +ATR vowel. And since it does not obey the rule of vowel harmony, it means that the verb form is a compound one. However, *gbàgá* of the Standard Igbo variety is also a compound verb since the harmony of vowels in the compound was not created as a sense of internal consistency and ease of articulation but from two verb roots that maintained their natural –ATR vowel forms. It is worthy to note that the tone pattern of the compound verbs in Nsukka and the Igbo language is the same.

The order of constraint will be NoCoda>>NO HIATUS>>DEP-IO>>MAX-IO. In the above table, the optimal candidate is the first because it has the lowest number of violations. This is why it has been given the optimal candidate mark. Therefore, it is the form that is spoken in Nsukka dialect of Igbo.

### 6.5 *gba`run` + lie`rise` = gbàlìé`move away`*

**Table 5.** *gba`run` + lie`rise` = gbàlìé`move away`*

	Input	NoCoda	DEP-IO	NO HIATUS	MAX-IO
A	Gbalih	*	*	*	*
B	Gbalia		*	*	*
C	☞gbalie			*	
D	Gbali			*	*

The compound verb *gbàlìé`move away`* is formed from combination of two verb roots *gba`run`* and *lie`rise`*, as listed in table 5. While the former has –ATR vowel the latter contains +ATR vowel. However, the Standard Igbo variety of the compound verb *gbàlìé* are *kùlìé* and *bìlìé*. *Kùlìé* and *bìlìé* are synonyms and the verb roots (*kù* and *bì*) employed in the formation of both compound verbs in the standard variety contain +ATR vowels while the *lìé* root suffixed to the former is also +ATR. These verb roots are also compound verbs since the harmony of vowels in the compound were not created from a sense of internal consistency and ease of articulation (as it occurs in complex verbs) but from two verb roots that maintained their natural +ATR vowel forms.



The order of constraint is NoCoda>>DEP-IO>>MAX-IO>>NO HIATUS. The first candidate got violations in all the constraints, the second got three, the third got one, while the last got two. Having secured the least number of violations, the candidate 'C' is the optimal candidate and therefore will be adopted in the day-to-day conversation.

## 6.6 *Gba* 'run' + *hue* 'loss' = *gbáhùé* 'run away'

**Table 6.** *Gba* 'run' + *hue* 'loss' = *gbáhùé* 'run away'

	Input	NoCoda	DEP-IO	NO HIATUS	MAX-IO
A	gbahuer	*	*	*	
B	Gbahu			*	*
C	gbahwue		*	*	*
D	gbahue			*	

The combination of the verb roots *gba* 'run' and *hue* 'loss' creates a compound *gbáhùé* 'run away', as listed in table 6. The first root verb *gba* 'run' is same with its Standard Igbo variety but while Nsukka has *hue* 'loss' the Standard Igbo has *fuó*. Hence, *gbáhùé* 'run away' in Nsukka is same as *gbáfúó* 'run away' in the Standard Igbo variety. They share the same patterns of tone. *Gbáhùé/ gbáfúó* is classified as a compound verb because the added constituent does not obey the rule of vowel harmony.

From a theoretical standpoint, vowel harmony in Igbo can be accounted for within the framework of Optimality Theory. Under this model, Faithfulness constraints preserve the similarity between the input and its output, while Markedness constraints prohibit the occurrence of disharmonic vowel combinations. In addition, Alignment constraints govern the relationship between morphological boundaries and phonological structure, ensuring that harmony extends across affixed elements. The evaluation of competing candidate forms ultimately leads to the selection of the most optimal output, which surfaces as the harmonized pronunciation found in natural speech.

The order of constraint will be NoCoda>>DEP-IO>>MAX-IO>>NO HIATUS. The optimal candidate is the candidate 'D' because it secured the less number of violations. However, it is the one EVAL will use and adopt for language use.

## 7. Conclusion

This work has taken a look at compound verbs in Nsukka Igbo from the optimality theory perspective. It was discovered that compound verbs in Nsukka Igbo combine many verb roots or verb pieces to represent a given semantic entity/action. And they have hierarchical structures in which verb roots and complements are combined to generate complex predicates guided by underlying syntactic rules. This corpus of work shows how morphosyntactic and phonological systems jointly motivate compound verb formation in Nsukka Igbo, affirming OT as a robust model to unify these components in a language where tone and vowel harmony play significant roles. The research affirms that the vowel of the added constituent of a compound verb (unlike its complex counterparts) do not obligatorily conform to the class of the vowels in the root verb. Therefore, this paper recommends that scholars and researchers should endeavour to analyse the Igbo dialects using the theoretical framework of the theory.

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