International Journal of Linguistics and Translation Studies
Volume 7, Issue 2, 2026
Homepage: http://ijlts.org/index.php/ijlts/index
DOI: https://doi.org/10.36892/ijlts.v7i2.734

Constraints Interaction in English Comparative Morphology: An Optimality Theory Analysis

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DOI: https://doi.org/10.36892/ijlts.v7i2.735

How to cite:
Bouallaoui, M. & Bouhlal, A. (2026). Constraints Interaction in English Comparative Morphology; an Optimality Theory Analysis. *International Journal of Linguistics and Translation Studies*, *7*(2), 207–217. https://doi.org/10.36892/ijlts.v7i2.735

ARTICLE HISTORY
Received: *14/03/2026*
Accepted: 29/04/2026

Keywords:
Optimality Theory, comparative morphology, constraints interaction, synthetic comparatives, analytic comparatives, blocking, variation

Abstract

The prime objective of this paper is to provide a theoretical analysis of English comparative adjectives based on the Optimality Theory (OT). It concentrates on the functions of constraints interaction that the theory plays in the choice of surface forms of these types of adjectives. It is important to note that English is distinguished by two types of comparatives, synthetic and analytic. The synthetic adjectives are always formed by the addition of the suffix "-er", resulting in forms such as "short" to "shorter." The analytic ones are frequently formed by the juxtaposition of the free morpheme "more" word-initially, or "less"; e.g., "interesting" to "more interesting." Comparative morphology also displays irregular forms where the root adjective is completely changed to a new lexical item, e.g., "good" to "better" and "bad" to "worse." These manifestations are built on traditional theories limited to categorical distinctions like the number of syllables or the length of adjectives. However, traditional approaches remain deficient, as they cannot account for variations, gradient acceptability, and systematic blocking effects. Therefore, this study adopts the Optimality Theory as a framework that fits the current issue, claiming that English comparatives emerge from the interaction of constraints within the underlying grammar system. The most salient constraints governing these adjectives are markedness, faithfulness, and economy constraints. OT tableaux and analyses are provided to account for attested forms like "bigger," "hapier," and "more beautiful," as well as unattested forms like "more bigger" and "interester," along with irregular forms like "better" and "worse."

1. Introduction

The comparative morphology remains at the depth of investigations for most linguistic theories focusing on morphology, syntax, phonology, and semantics. In English, comparison is fundamentally formed by adjectives, as is the case with other universal languages. Studying comparatives of a particular language remains a good way to understand its grammar and

discover how it works at both the surface and the underlying levels. As is conventionally known, adjectives in English are formed in two ways: by adding the suffix "-er," as in "smarter," or by using the word "more," as in "more intelligent," along with some irregular forms. This manifestation seems simplistic at first glance, yet it appears intricate and more complicated when having a closer look at what happens underlyingly. Different forms and possibilities compete before the final surface emergence, and some are accepted or blocked in a hierarchy of choices (Prince & Smolensky, 2004).

Traditionally, comparatives were accounted for by clear rules where short adjectives were said to take "-er," while longer ones use the free morpheme "more" or "less" word-initially. However, these rules do not depict the whole image of what occurs at the underlying level. Since speakers sometimes accept more than one form in informal conversations, comparatives cannot be formed merely by following fixed rules. There are factors that determine which forms are favored and which ones are relegated or blocked. In this respect, the current paper resorts to the Optimality Theory (Prince & Smolensky, 1993), the framework adopted here to unfold constraints interactions that occur when forming comparatives. The winning form is the one that achieves satisfaction for a hierarchy of competing constraints, while some comparatives are naturally selected and others are systematically blocked. This approach displays an obvious account of comparative morphology compared with traditional models.

2. Research Problem

Many works have tackled the current issue of comparative morphology in languages in order to study the underlying structures of their grammars, but their approaches do not provide a reliable account for why comparative adjectives show variations and favor certain forms over others. Jespersen (1949) and Quirk et al. (1985) have accounted for the alternation of comparison, both synthetic and analytic forms. They posit that surface-level generalizations are conventionally based on syllable count, stress patterns, and adjective length, as the choice of the mode of comparison is mainly determined by these criteria.

These works provided the basis for the distributions of such grammatical forms, yet they gave room for limited insights regarding the deep structures of adjectives. Respectively, generative and rule-based frameworks claim that the formation of these adjectives is made by categorical rules — that is, monosyllabic adjectives result in synthetic forms. Consider the following examples:

"big → bigger"
"small → smaller"

This implies a complete generalization that all monosyllabic adjectives can take the "-er" suffix to surface in a synthetic form. On the other hand, analytic forms occur with adjectives made up of more than one syllable:

"beautiful → more beautiful"

According to these approaches, all monosyllabic adjectives can take the suffix "-er," while the free morpheme "more" occurs elsewhere (Chomsky & Halle, 1968; Kiparsky, 1982). However, these approaches find it hard to account for overlapping distributions like:

clever → cleverer / more clever

Considering the example above, we can hold that the generalizations mentioned before are violated with some forms. This brings into view the discussion that these are exceptional distributions that need deep analyses and accounts. Additionally, traditional approaches fail to account for irregular forms like “better” and “worse.” Other works claim that the choice between synthetic and analytic adjectives is determined by many factors, including phonology, morphology, and lexical effects (Hay, 2003; Plag, 2006).

For these reasons, a framework favoring competition and constraints interaction would gain the ground to account for such an issue. The Optimality Theory (OT), developed by Prince and Smolensky (1993/2004), provides a model where grammar emerges out of constraints interactions instead of fixed rules. Aronoff and Cho (2001) and Kiparsky (2005) have accounted for the applicability of OT to morphology. Regardless of these accounts, few studies have tackled the interaction of constraints in English comparative morphology. The current paper therefore tries to approach these issues by employing the OT framework, claiming that the adjectives of comparison emerge out of a system of competing constraints, each struggling to be an optimal surface manifestation.

3. Objectives

The central concern of this work is to account for the adjectives of comparison in English. The study deals with the formation and the morphological changes that comparative adjectives undergo, basically the synthetic and analytic patterns. By deploying a diagnostic study about these types of adjectives, this research project characterizes the morphology of English comparative adjectives and how they are derived from the perspectives of Optimality Theory, identifying the constraints interactions that take place when forming these two forms of comparison. The study identifies the effects that block certain forms and favor others, and accounts for the dominant constraints in the hierarchy of the Optimality Theory to show procedures that govern the emergence of comparative adjectives. Specifically, the current paper offers an OT analysis through:

- Providing a comprehensive description of English comparative adjectives
- Developing an Optimality Theoretic analysis based on constraints interaction
- Showing the limitations of rule-based approaches in accounting for morphological changes

4. Research Questions

A number of questions this paper manages to answer in fulfillment of the required study. The study of comparative adjectives requires a mass of investigations to meet the following inquiries:

1. How are comparative adjectives morphologically constructed?
2. What constraints govern the choice between synthetic and analytic adjectives?
3. What blocking effects interfere in the selection of the optimal forms, and what explains the variation of comparative markers?

5. Review of Literature

The English morphology offers a rich ground for constraint-based theories due to the existing competition between synthetic and analytic forms. Traditional frameworks attribute the

selection of each form to certain phonological, syntactic, and semantic criteria (Bresnan, 1973; Pinker, 1991). They claim that syllable count, morphological structures, and meaning determine the selection of the right form. However, these works fail to explain variations and why some forms are blocked while others are not.

Previous research on English comparative OT demonstrates two basic types of constraints that interfere and interact in the formation of adjectives of comparison: markedness constraints and faithfulness constraints. The former eliminates some morphological patterns, while the latter manages to preserve the same input (McCarthy & Prince, 1993; Alber, 2015). The form "beautifuler," for instance, is blocked because high-ranked markedness constraints disfavor suffixation. See Table 1 below for illustration:

Table 1. Input: beautiful + COMP

Input: beautiful + COMP	*SUFF-LONG	FAITH-COMP	DEP-MORE
a. beautiful-er	*!		
b. more beautiful			*

As shown in Table 1, candidate (a) violates *SUFF-LONG, which is ranked higher, resulting in a fatal violation indicated by (*!). Candidate (b) violates only DEP-MORE, the lower-ranked constraint. Therefore, "more beautiful" is favored as the winner candidate, as it violates only the least-ranked constraint. The structure in this case favors the analytic pattern over the synthetic one.

Most notably, recent works concentrated more on variation. Boersma and Hayes (2001) account for cases that accept both forms, e.g., "politer / more polite." Yet, there was not enough focus on direct rules and interactions that govern these variations.

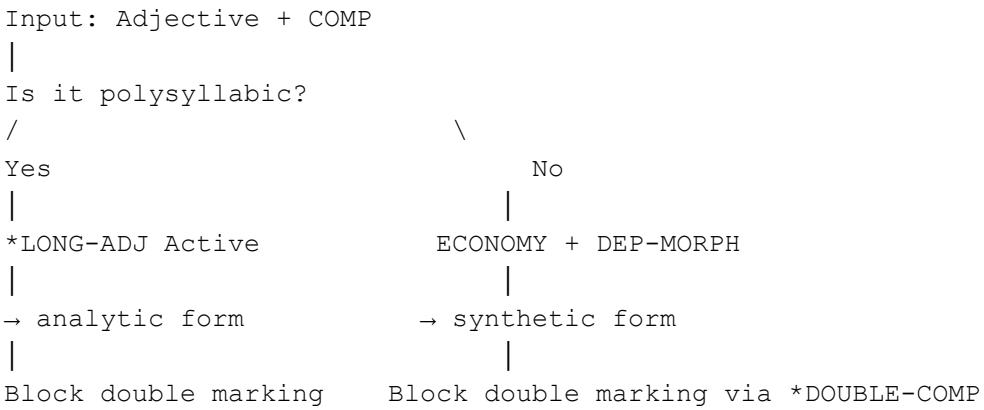
Overall, English comparatives depict how constraints interaction can create competitions and blockings at the underlying structure. That is, the grammar of this language permits some strategies and prohibits others within the same system. Based on the previous literature, the current paper deploys a clear description and OT analysis of English comparative adjectives (see also Bermúdez-Otero, 2018).

6. Constraints for English Comparative Morphology

According to the OT framework, English comparatives are regulated by a number of ranked constraints that control the selection of synthetic and analytic patterns. The constraint *LONG-ADJ prohibits suffixation when forming adjectives that consist of more than one syllable (polysyllabic adjectives). The constraint ECONOMY opts for simpler and shorter structures, favoring synthetic forms if neither blocking nor competition is taking place. DEP-MORPH prohibits the insertion of extra morphemes, considering analytical forms as violations. MAX-ADJ stipulates preservation of the original form, requiring the output to keep the input form without any deletion or addition. Finally, *DOUBLE-COMP suspends unattested forms like "more smaller" or "more beautifuler."

These constraints manage the observed distribution of adjectives of comparison in English. They support the claim that synthetic comparatives emerge with short adjectives due to ECONOMY and DEP-MORPH constraints, while the analytic ones are chosen for long

adjectives due to *LONG-ADJ. The *DOUBLE-COMP constraint eliminates adjectives that take double markers simultaneously. The following diagram illustrates the constraints of English comparative morphology:



Source: Adapted from Mondorf (2009)

7. Analysis

There are two ways of formulating comparison in English comparative morphology: the synthetic pattern, which requires suffixation, and the analytic one, which inclines toward the free morpheme "more" or "less." The selection of each way is governed by certain procedures and interactions. Table 2 illustrates the distinctions:

Table 2. Synthetic vs. Analytic Comparative

Candidate	*DOUBLE-COMP	ECONOMY	DEP-MORPH
smaller			*
more small	*!	*	

The comparison between the two candidates "smaller" and "more small" triggers an explicit ranking argument as Table 2 depicts. The losing candidate satisfies DEP-MORPH by relegating suffixation, yet it violates *DOUBLE-COMP. The opposite is true for the winner candidate. Any reversal of this ranking would result in "more smaller" being optimal — an unattested item. The winner form meets an optimal outcome for the higher-ranked constraint, *DOUBLE-COMP. The following scheme summarizes the ranking argument:

DOUBLE-COMP ≫DEP-MORPH

7.1 Synthetic Comparatives

As mentioned earlier, synthetic adjectives are formed by adding the "-er" suffix. Short adjectives are favored when forming these patterns. As shown in Table 2, the ECONOMY constraint favors the synthetic form "smaller" and disfavors the analytic one "more small." This results in the emergence of "smaller" instead of "more small," which is fatally blocked (indicated by *!). Accordingly, DEP-MORPH constraint allows the insertion of the bound morpheme "-er." Thus, whenever the adjective is short, the latter marker is present, except with short irregular adjectives like "good" and "bad."

7.2 Irregular Adjectives

Although most adjectives form their comparative degree through the analytic or synthetic strategies, some exceptions exhibit irregular forms that differ from what grammar rules evoke. The short adjectives "good" and "bad" are a case in point. Conventionally, these adjectives are transformed to a completely different lexical item:

good → better
bad → worse

These types of adjectives do not take the previously mentioned strategies of forming analytic comparison. Forms like "gooder" and "bader" are conventionally regarded as wrong transformations. These irregular adjectives are regarded as cases of suppletion, where the root adjective is not modified but rather replaced by another lexical form. Suppletion in morphology refers to cases where certain forms are lexically stored and not generated (Kiparsky, 1982; Booij, 2012). Kiparsky (1982) defines suppletion as the morphological phenomenon where forms of the same lexical items are realized by unrelated root features, arising when morphological relations are not determined by rule-based operations but by lexically specified representations.

The Optimality Theory manages to provide a salient account for these irregular forms through a constraint known as USE-LISTED-FORM (ULF), defined as the preference for retrieving stored lexical items instead of generating forms through productive morphological processes. Prince and Smolensky (1993/2004) argued that ULF posits that when a listed form is available in the lexicon, it is automatically favored over a rule-based alternative. This explains why some exceptionalities and irregular forms emerge in the grammar of any language. Consider Table 3:

Table 3. Irregular Adjectives

Input	Candidate	USE-LISTED-FORM	ECONOMY	DEP-MORPH
good	better		*	*
	gooder	*!		
bad	worse		*	*
	bader	*!		

Table 3 displays OT constraints interaction in the formation of irregular forms in English comparative morphology. The winning candidate satisfies the high-ranked constraint, USE-LISTED-FORM, which inclines towards lexically stored comparative forms. The regular forms "gooder" and "bader" show a fatal violation towards it, allowing the lexically stored form to emerge. These forms are blocked even if they perform well on lower-ranked constraints. The following scheme represents the ranking argument:

USE-LISTED-FORM ≫ECONOMY, DEP-MORPH

Any alternation of this ranking would result in regular forms like "gooder" / "bader."

7.3 Analytic Comparatives

Long adjectives do not take suffixation, as the *LONG-ADJ constraint advocates. Consider Table 4 for more illustration:

Table 4. Analytic Comparatives

Candidate	*LONG-ADJ	*DOUBLE-COMP	ECONOMY	DEP-MORPH
fantasticer	*!			*
more fantastic			*	*

As demonstrated in Table 4, *LONG-ADJ causes a fatal violation where the form "fantasticer" is deemed ungrammatical. The form "more fantastic" violates ECONOMY and DEP-MORPH, but is tolerated because they are ranked lower in the hierarchy. Consequently, the emergence of an analytic form with long adjectives is justified due to the interaction within the underlying structure. The ranking argument is:

LONG-ADJ ≫ECONOMY

Since *LONG-ADJ is placed at the top of the hierarchy of constraints, any disfavor of this ranking would result in unattested forms like "more fantasticer."

7.4 Blocking

It is consensually agreed that each type of adjective has its distinguishing marker: analytic adjectives take the free morpheme "more" or "less" word-initially, while synthetic ones take the bound morpheme "-er" at the word boundary. However, taking both markers simultaneously is ungrammatical and therefore blocked after salient competition among constraints. The *DOUBLE-COMP constraint prohibits such possibilities. Consider Table 5:

Table 5. Blocking of Double Marking

Candidate	*DOUBLE-COMP	ECONOMY	DEP-MORPH
smaller			*
more smaller	*!	*	**

Table 5 shows that the candidate "more smaller" triggers a fatal violation of *DOUBLE-COMP, indicating that redundancy is disfavored by the current grammar. Since *DOUBLE-COMP is highly ranked, its violation is considered fatal and the form taking double markers is declined and eliminated. However, this is not always the case with all forms; there are exceptions where variation is allowed by the grammar and is not regarded as a performance error.

7.5 Variation

Variation as a process occurs when two candidates violate the same lower-ranked constraints. The grammar then allows two possibilities as long as no candidate is relegated by the high-ranked constraint. In these situations, the selection of forms is variable based on speakers and dialects. The MaxEnt OT is a model developed by Goldwater and Johnson (2003) that regards variation as a probabilistic outcome, with probabilities based on the extent to which they violate the constraints (Hayes & Wilson, 2008). In English, variation occurs with adjectives that are simple but polysyllabic:

clever → cleverer / more clever

polite → politer / more polite

Table 6. Variation in Comparative Formation

Candidate	ECONOMY	*LONG-ADJ	DEP-MORPH
cleverer		*	*
more clever	*!		*

Based on Table 6, the emergence of the optimal form is conditioned by a strict hierarchical interaction of constraints, mainly ECONOMY, *LONG-ADJ, and DEP-MORPH. The candidate "cleverer" appears as the winning output since it satisfies the highest-ranked constraint, ECONOMY. The form "more clever" presents a fatal violation for the higher-ranked constraint as it favors the free morpheme "more" instead of the bound morpheme "-er." In this regard, the loser candidate satisfies the lower-ranked constraint yet does not override the higher one's force. Thus, the grammar system selects a single optimal candidate rather than modeling probabilistic variation. However, MaxEnt OT is a theoretical framework that can provide a formal treatment and accounts for possible variations, which is beyond the scope of the current paper, as our focus here is on the frequent forms rather than variations.

It is important to note that the current article adopts a categorical framework of OT which focuses on a strict hierarchy of constraints (Prince & Smolensky, 2004). Variation then remains governed by the context within the grammar system rather than random choices; all competing forms must meet the higher-ranked constraint in order to be realized at the surface level as a final optimal manifestation.

8. Implications

Based on the previous analysis, this paper claims that English comparative morphology is determined by the interaction of a set of constraints within the underlying structure. The formation of comparative adjectives takes into consideration syllable count, stress patterns, and variations. The OT analysis demonstrated that constraints interaction controls the selection of pattern — synthetic or analytic. More precisely, ECONOMY constraint is violated by long adjectives and favored by short adjectives, while *LONG-ADJ does the opposite. The grammar system presents blocking effects where some forms are deemed unattested and blocked due to their fatal violations of high-ranked constraints.

The analysis section implies that, when forming comparison, two forms can overlap and occur interchangeably depending on speakers' style, register, and meaning. Comparatives can emerge as both analytic and synthetic simultaneously without being regarded as a performance error. However, the lexical approach interferes to determine the comparative forms of some irregular cases like "good" and "bad," where lexical items are stored to emerge unlike other synthetic forms. This is attributed to the optimality of the markedness constraint as instantiated through the USE-LISTED-FORM paradigm. The comparative forms of irregular adjectives are therefore not faithful to the original input, as they violate faithfulness constraints to allow for the emergence of new exceptions.

9. Findings

The implications and analysis explicitly reveal a number of findings that the current paper manages to achieve:

1. Monosyllabic adjectives favor suffixation ("-er").

2. Polysyllabic and complex adjectives do not permit suffixation but incline towards free morphemes ("more" / "less").

3. Some forms can take double markers (e.g., "friendlier / more friendly"). This is attributed to the notion of style and register where variation takes place depending on speakers' styles and tendencies.

4. It is the interaction of a set of constraints that determines the formation of comparatives. ECONOMY is preferred by short adjectives but violated by long ones, while *LONG-ADJ is satisfied by long adjectives. The grammar system presents blocking effects where some forms are considered unattested owing to fatal violations of high-ranked constraints.

5. Irregular adjectives "good" and "bad" are stored items within the lexicon. The constraint USE-LISTED-FORM is placed at the top of the hierarchy, where ready items emerge to satisfy its paradigm.

10. Conclusion

The current paper attempted to investigate the formation of English comparative morphology in light of the Optimality Theory framework, focusing on how synthetic and analytic forms are formulated and regulated through constraints interactions. The core part of this paper demonstrates that English comparative morphology is not governed by simple rules but rather by a set of competing constraints that either permit or block forms as the Optimality Theory calls for. The findings denote that monosyllabic adjectives favor suffixation. The comparative morphology also demonstrates a set of irregular forms that go beyond suffixation to word replacement, as demonstrated through the following scheme:

Adj → *Adj–er*
Irregular Adj → *better / worse*

Polysyllabic and complex adjectives do not allow suffixation but opt for the free morpheme, resulting in:

Adj → *more* + *Adj*

It is of paramount importance to state that this strategy is governed by the high-ranked constraint. For instance, *LONG-ADJ requires comparatives to have recourse to the free morpheme "more" in order to be considered a winning candidate. The analysis showed that there are forms which take double markers like "more smaller," a possibility systematically eliminated by blocking effects since it violates *DOUBLE-COMP. In other words, the current grammar tends to avoid redundancy by keeping only one marker. However, the occurrence of two interchangeable forms is attributed to the notion of variation: two competing candidates satisfy the high-ranked constraint yet violate only the low-ranked one. Therefore, the Optimality Theory appears as a solid ground to further investigate comparative morphologies of other languages and language varieties to justify certain forms, variations, and blockings within their underlying structures.

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