

Controlling morphosyntactic competition through phonology

Utku Türk¹

University of Maryland, College Park

1. Introduction

This chapter discusses a case of suspended affixation in Turkish, i.e., the phenomenon in which a certain affix(es) is affixed to the periphery of the coordination but interpreted for all coordinates. The main data discussed in this chapter involves stem allomorphy with 1SG and 2SG pronouns. The 1SG pronoun ‘*ben*’ ‘I’ has a phonologically unexpected dative shape *ban-a* ‘I-DAT’ (instead of the expected **ben-e*). This chapter accounts for two unexpected patterns: (i) contra Guseva and Weisser (2018) and Erschler (2018), the suppletive form *ban-* that is a substring of *bana* is illicit under suspended affixation and (ii) the personal pronouns are only acceptable in the first conjunct only with vowel harmonic joiners like *ve* (and) unlike *ya=da* (or). I propose a modification to Lexicalisation Algorithm (Starke 2020) in order to rule out a lexicalisation as illicit on the grounds of phonotactic reasons. With the help of lexicalisation movements and the algorithm provided in the Lexicalisation Algorithm, we achieve the necessary identity matches for the ellipsis. The contribution of this chapter is to enrich the lexicalisation algorithm to enable phonology to have a say in the morphological computation.

2. Overview

This chapter aims to contribute to the discussion of how syntactic features are mapped to phonological realizations. Unlike the commonly employed Lexicalisation Algorithm, I argue that phonotactic factors, such as vowel harmony, can also influence which morphological form will be selected. To illustrate the interaction between phonological reranking of the morphological candidates, I will discuss suspended affixation data from Turkish. Consider examples (1) and (2) from Turkish and Digor Ossetic.²

(1) *Turkish* (Kabak 2007)

Gid-er, gör-ür ve al-ır-ız.

go-AOR see-AOR and buy-AOR-1PL

‘We go (there), see (it), and buy (it).’

Not Available: ‘S/he goes (there), s/he sees (it), and we buy (it).’

(2) *Ossetic* (Erschler 2012)

Alan ɐma Soslan-ɐj tarstɛn.

Alan[NOM] and Soslan-ABL be.afraid.PST.1SG

‘I was afraid of Alan and Soslan.’

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² The abbreviations used in this chapter: 1 = first person, 3 = third person, ABL = ablative, ACC = accusative, AOR = aorist, DAT = dative, EVID = evidential, IMP = imperative, NEG = negative, NOM = nominative, PASS = passive, PL = plural, POSS = possessive, PRS = present, PST = past, SG = singular, SPEC = specific.

Sentence (1) provides an example where verbs are conjoined via the conjoiner *ve*, meaning ‘and’. Only the final conjunct, *alırız*, carries the person marking *-ız*, yet all conjuncts are interpreted as if they were marked with the first-person plural marker. Even though both the first two conjuncts can be interpreted as 3rd person in the absence of overt agreement marking, as in ‘*S/he goes (there), s/he sees (it)*,’ this reading is not available even in a context that might technically enable this reading. Similarly, in the Ossetic example, a case marker that appears at the right periphery of a coordinated nominal phrase takes scope over both conjuncts; even though *Alan* surfaces in a bare form associated with the nominative case, it is interpreted as a ABL marked nominal.

This phenomenon has been observed in various languages including Turkish (Kornfilt 1996; 2012; Kabak 2007; Broadwell 2008; Akkuş 2016; Atmaca 2022), Mari (Guseva and Weisser 2018), Ossetic (Erschler 2012), Iron (Erschler 2012), Eastern Armenian (Erschler 2012), Dagur (Gong 2021), Japanese (Yoon and Lee 2005), Korean (Yoon and Lee 2005), Nivkh (Gruzdeva 1998), and Hungarian (Trommer 2008). Figure 1 shows two prominent analyses of this phenomenon. Many previous analyses have noted the similarity of suspended affixation with the right node raising phenomenon; these analyses interpret the suffixes in (1) and (2) as being attached to the coordination phrase (Kornfilt 2012; Broadwell 2008). A more recent post-syntactic deletion under recoverability analysis based on the case assignment in alternative questions was proposed by Erschler (2012; 2018) and Guseva and Weisser (2018), arguing that conjuncts are marked with the to-be-suspended affixes first, and coordinated later as in Figure 1B, as opposed to the right node raising analysis as in Figure 1A.³



Figure 1. A. RNR analysis B. Ellipsis Analysis

Although this analysis has remained unchallenged, certain details are a topic of ongoing debate in morphology. One of the issues that has occupied morphologists concerns the details of the remnant in the ellipsis analysis. While some of the previous analyses argue that the remnant must be a word that can stand alone, namely, a morphological word (Erschler 2012; Kabak 2007), there is also evidence from Mari and Turkish that shows that suspended affixation does not need to leave behind a string that can stand alone (Guseva and Weisser 2018; Atmaca 2022). Example (3) shows an example from Mari. Speakers of Mari can leave the suppletive form *memna* behind even though the word itself is only available when the first person plural personal pronoun *me* is in a syntactic position where the accusative case is assigned, and its suppletive form cannot be used alone anywhere. Similarly, the nominative form *me* is unacceptable in suspended affixation contexts even though it is a substring of the accusative marked pronoun (pace Erschler 2018).

(3) *Mari* (Guseva and Weisser 2018)

| | | | | | |
|----|----------|-----------|-----|----------|-------------|
| a. | Pörjeng | memna(-m) | da | nunem | už-eš. |
| | Man[NOM] | 1PL.ACC | and | them.ACC | see-3SG.PRS |

³ I leave the discussion of exactly why Ellipsis (deletion under identity) is preferred over the RNR analysis for another occasion since it goes beyond the scope of this paper. See Erschler (2018) and Gračanin-Yüksek (2016).

- b. * Pörjeng me da nunem už-eš.
 Man[NOM] 1PL.NOM and them.ACC see-3SG.PRS
 ‘The man sees us and them.’

Even though Turkish does not need a morphological word in certain contexts involving sentence-level suspended affixation (Atmaca 2022), it is not freed from other constraints that are usually associated with morphological wordhood. Unlike Mari, Turkish speakers cannot leave suppletive forms behind as in (4). Previous papers that mention similar Turkish data argue that this is generally due to personal pronouns being generally ungrammatical in suspended affixation contexts (Kabak 2007; Guseva and Weisser 2018; Kornfilt 2012).

(4) *Turkish*

- * Ben ve sana mektup gel-miş.
 1SG[NOM] and you.DAT letter arrive-EVID[3SG]
 ‘Apparently, a letter arrived for me and you.’

However, the examples they use consist of conjoined phrases where both conjuncts are pronouns and have suppletive forms. The ungrammaticality is resolved when only the first conjunct is a suppletion-prone pronoun (5b). Given what has been attested in Mari and Ossetic (to be discussed more thoroughly in section 3), one would expect the substring of the word *bana* to be grammatical in suspended affixation contexts, which is not the case in Turkish (5a).

(5) *Turkish*

- a. Ban*(-a) ve Olgun-a mektup gel-miş.
 1SG.DAT and Olgun-DAT letter arrive-EVID[3SG]
 b. Ben ve Olgun-a mektup gel-miş.
 1SG[NOM] and Olgun-DAT letter arrive-EVID[3SG]
 ‘Apparently, a letter arrived for me and Olgun.’

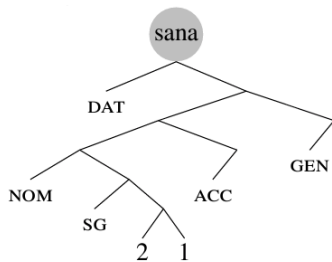
At first glance, Turkish facts seem to be a counter example to the post-syntactic deletion analysis. Yet, I will show that a closer look at Turkish data will point us to a syntactic mismatch between the remnant and the suffix in the substring *ban* case (5a). However, the crash will be avoided in certain environments. In this chapter, I propose an analysis in which phonological processes are at play in the selection of allomorphy and the avoidance of the crash. I will argue that the ungrammatical lexicalisation in (5a) will be reevaluated in the presence of the vowel harmonic restrictions imposed by the conjoiner *ve*, which ends up being in the same phonological word as the first-person pronoun. In addition, I will argue that pronouns like *sana* and *bana* have complex structures that do not allow the decomposition of *-a* at all, resulting in an identity mismatch which explains why it is impossible to have either as a second conjunct as in (4). Identity match between the first and the second conjuncts will only be available when *ve* forces a backtrack operation to have the decomposition of *sen+A* in the first conjunct, as proposed in Türk and Caha (2022). However, since there will be no phonotactic constraints imposed on the second conjunct, the only grammatical lexicalisations will be the ones where only the first conjuncts are pronouns. In other words, there is a mismatch between what needs

to be deleted to get from *bana* to *ben* and the decomposition of *san* and *-a*, but that is not the case with other non-suppletive nouns like *Olgun-a*.⁴

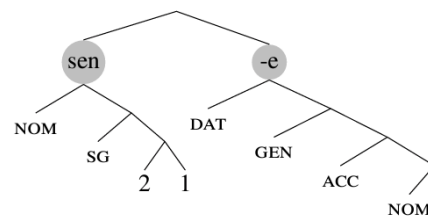
This proposal is far from a new idea. Svenonius (2012) and Bye and Svenonius (2012) proposed a similar model in which the lexical insertion is divided into two parts: (i) phonology-free syntax and (ii) syntax-free phonology. One of the main pieces of evidence they present is the French preposition-determiner fusion. French determiners have three basic forms: [lə], [la], and [li], for masculine, feminine, and vowel-initial words, respectively. In the context of certain prepositions like *à*, [a], we find [ala] and [al], but not the expected [alə]. Similarly, in the context of *de* [də], we find [dəla] and [dəl], but not the expected [dələ]. Instead, prepositions and determiners fuse when the noun starts with a consonant, resulting in [o] and [dy] for the expected [alə] and [dələ], respectively.

Similar to my stance in this chapter, they argue that to be able to solve this problem, syntax and phonology have to be interacting with each other. Following this enrichment from Svenonius (2012) and Bye and Svenonius (2012), I propose a similar explanation for Turkish suspended affixation data. In addition to previous work in Nanosyntax and case analysis of Turkish, I propose the following functional sequence and lexical items for the Turkish DAT case paradigm as in (6a) and (6b) (Caha 2009; Türk and Caha 2022; Starke 2017).

(6) a. Stored Lexical Unit for *sana*



b. Possible decomposed unit



Note that (6b) is the usual dative case that is found with common nouns as proposed by Türk and Caha (2022), and it is the result of a forced backtracking due to the phonological interference by the conjoiner *ve* as in (5b).

3. Suspended affixation in Turkish

Suspended affixation in Turkish can surface in many different environments, including nominals, verbs, derivational, and inflectional contexts (Göksel & Kerslake 2005; Akkuş 2016). The acceptability of the suspended affixation is not affected by any type of morphophonological process (Kabak 2007), or the syntactic complexity of the elements taking part in suspended affixation.

What seems to matter is the syntactic and feature identity of the elements omitted. Even though PL, POSS, and ACC can be suspended either by themselves or in various combinations with each other (7a, 7b, 7d), there is a limitation on the environments in which PL and POSS can be separated. POSS cannot be suspended alone when there is a PL marker as in (7c). Note that this is not due to simply not being able to have PL as a final suffix (7e) (Kabak 2007).

⁴ Even though a version of this was introduced in Kornfilt (2012), the model presented there was not equipped to handle both (4) and (5), for the model presented there only eliminated the ungrammatical forms but did not have the generative power to account for (5b).

(7) *Turkish (Kabak 2007)*

- a. kedi-ler-im-i ve köpek-ler-im-i
cat-PL-POSS.1SG-ACC and dog-PL-POSS.1SG-ACC
- b. kedi-ler-im ve köpek-ler-im-i
cat-PL-POSS.1SG and dog-PL-POSS.1SG-ACC
- c. * kedi-ler ve köpek-ler-im-i
cat-PL and dog-PL-POSS.1SG-ACC
- d. kedi ve köpek-ler-im-i
cat and dog-PL-POSS.1SG-ACC
'my cats_{ACC} and my dogs_{ACC}'
- e. kedi-ler ve köpek-ler-de
cat-PL and dog-PL-LOC
'cats_{LOC} and dogs_{LOC}'

However, the same pattern of inseparability is not observed with a certain set of nouns with a collective reading (8).

(8) *Turkish (Kabak 2007)*

- a. asker-ler ve komutan-lar-ımız-ı
soldier-PL and commander-PL-POSS.1PL-ACC
'our soldiers_{ACC} and our commanders_{ACC}'
- b. avukat-lar ve danışan-lar-ımız-ı
lawyer-PL and consultant-PL-POSS.2SG-ACC
'your lawyer_{ACC} and your consultants_{ACC}'

Even though there is no established analysis why (7c) is ungrammatical but (8a-8b) is not, I argue that the PL in (8) that attaches to possibly collective nouns and the PL in (7) that attaches to count nouns are different and have different bracketing as in (9).

- (9) a. Bracketing for (7): [NP [N_{count} cat] [PossP [PL] [POSS]]]
b. Bracketing for (8): [NP [NP [N_{collective} soldier] PL] POSS]

Another important data comes from the derivational morphology and optionality of the suspended reading. There are also cases in which conjoining a bare NP and an NP with a derivational morpheme results in sentences with ambiguous meanings (10).

(10) *Turkish (Bozşahin 2007)*

- tuz ve limon-luk
salt and lemon-container
- a. 'salt shaker and lemon squeezer' (SA)
- b. 'salt and lemon squeezer' (No SA)

Kornfilt (2012) notes that the ordering of the elements matters in certain elements like (10). When *tuz*, which can be used to refer to the item saltshaker by itself as in (11a), comes after *limon*, which cannot refer to the lemon squeezer as in (11b), the container suffix *-luk* does not create ambiguous readings as in (12).

- (11) a. Tuz-u uzat.
salt-ACC pass.IMP
'Pass the salt (shaker).'
- b. Kokteyl için limon-u kullan-ma.
cocktail for lemon-ACC use. IMP-NEG

‘Do not use the lemon for the cocktail.’

* ‘Do not use the lemon squeezer for the cocktail.’

(12) *Turkish* (Kornfilt 2012)

limon ve tuz-luk

lemon and salt-container

a. * ‘lemon squeezer and salt shaker’ (SA)

b. ‘lemon and salt shaker’ (No SA)

Akkuş (2016) demonstrated that this is due to the slightly different complex structure of the nominals. He provides a counter explanation to this asymmetry, arguing that the reason for not having both readings in (12) is because *lemon* is countable while *salt* is a mass noun, and two syntactically distinct elements. When both nouns are uncountable, e.g., replacing *lemon* with (*black*) *pepper*, the problem discussed in Kornfilt (2012) is avoided and ambiguity is available.

(12) *Turkish* (Akkuş 2016)

biber ve tuz-luk

pepper and salt-container

a. ‘pepper mill and salt shaker’ (SA)

b. ‘pepper and salt shaker’ (No SA)

(13) *Turkish* (Akkuş 2016)

tuz ve biber-lik

salt and pepper-container

a. ‘salt shaker and pepper mill’ (SA)

b. ‘salt and pepper mill’ (No SA)’

Both observations involving PL and POSS or the derivational morpheme *-lik* suggest that the asymmetries found in Turkish suspended affixation are due to the minute structure of the nominals and the syntactic identity of deletion and the remnant matter.

4. Ban on non-wordhood & root allomorphy

Even though the ellipsis analysis provides a uniform analysis for Mari, Turkish, and Ossetic, it is far from a complete explanation for the facts of these specific languages. Erschler (2018) provides 7 additional descriptive properties that do not directly follow from the ellipsis analysis. Similarly, Guseva and Weisser (2018) provide a rule ordering mechanism that differs from Mari for Turkish to be able to capture differences between languages.

One important difference between these languages that has been discussed frequently is the formwise characteristics of the remnant of the suspended affixation, the first conjunct. Both Erschler (2018) and Kabak (2007) argue that the remnant must be an independent ‘stand-alone’ word, meaning that what is left behind should be such that it could be freely used in other contexts other than suspended affixation.

4.1. Ossetic and Mari

Consider the simplified version of Ossetic case paradigm with the second person pronouns given in (14).

(14) *Ossetic 2nd person singular pronouns*

| Case | Form |
|------|-----------|
| NOM | <i>du</i> |

| | |
|---------|---------------|
| ACC/GEN | <i>dɛw</i> |
| DAT | <i>dɛw-en</i> |
| ABL | <i>dɛw-ɛj</i> |

As noted by Erschler (2018), all non-nominative marked forms of the second singular pronouns are parasitic on the accusative/genitive case. The nominative case form does not surface in any of the cases, in any of the singular pronouns.

When the ablative marked 2nd person singular pronoun is uttered as the first conjunct in the environment of suspended affixation, the ablative marked pronoun does not surface as *du*, but instead surfaces as *dɛw* as in (15).

(15) *Ossetic (Erschler 2018)*

| | | | |
|--------------------------------|------------|----------------|----------------|
| <i>dɛw/*du</i> | <i>ɛma</i> | <i>Alan-ɛj</i> | <i>tɛrsun.</i> |
| you.ACC/*NOM | and | Alan-ABL | fear.PRS.1SG |
| 'I am afraid of Alan and you.' | | | |

However, *kɛrɛdʒe*, meaning 'each other' cannot be left alone in the context of suspended affixation as in (16), even though it is frequently used with case suffixes in Ossetic, suggesting high decomposability. The main reason behind this mismatch is that *kɛrɛdʒe* never occurs in a non-case marked form, so the word does not exist by itself even though it is easily decomposable.

(16) *Ossetic (Erschler 2018)*

| | | | | | |
|---|------------------|----------------|-------------------|------------|------------------|
| a. * | <i>nɛ=duwɛ</i> | <i>tikiʃ-i</i> | <i>kɛrɛdʒe</i> | <i>ɛmɛ</i> | <i>nɛ=kuj-ɛj</i> |
| | our=two | cat-ACC | each.other | and | our=dog-ABL |
| | <i>tɛrsuncɛ.</i> | | | | |
| | fear.PRS.3PL | | | | |
| b. | <i>nɛ=duwɛ</i> | <i>tikiʃ-i</i> | <i>kɛrɛdʒe-ɛj</i> | <i>ɛmɛ</i> | <i>nɛ=kuj-ɛj</i> |
| | our=two | cat-ACC | each.other-ABL | and | our=dog-ABL |
| | <i>tɛrsuncɛ.</i> | | | | |
| | fear.PRS.3PL | | | | |
| 'Our two cats are afraid of each other and of our dog.' | | | | | |

Erschler (2018) explains this behaviour in terms of constraints on the suspended affixation. Constraint (D) says that 'remnants [...] must be substrings of the respective full forms,' inhibiting the surface form *du*. Another important constraint is the Constraint (E), which is the 'stand-alone' condition, inhibiting the non-affixed *kɛrɛdʒe*.

These constraints, however, are not easily transferable to other suspended affixation languages. This arbitrariness raises the question of which part of the grammar these constraints reside in, and which modules they can speak to. For Erschler, suspended affixation is a process of phonological deletion and happens at the PF interface. Guseva and Weisser (2018) provide an even more explicit position. They argue that there are multiple places in PF that suspended affixation can occur in their attempt to generalize their analysis to Turkish suspended affixation.

The constraints that Erschler (2018) proposed are not an issue for Meadow Mari. Guseva and Weisser (2018) show that suppletive forms of words that do not surface by themselves in any other context can be legitimate candidates for remnant in suspended affixation contexts. For example, *memnam* (1PL.ACC) is a suppletive form of *me* (1PL.NOM), and its final sound *-m* is a shared ending with certain pronominal forms marked with the

accusative case, making a case for decomposability. However, *memna* by itself is not available in any context; it is only used if there is any marking or ending coming right after it. Unlike *dɛw* in Ossetic, it is grammatical for Mari speakers to leave it as a remnant in suspended affixation contexts; example (17b) should be ungrammatical if Mari were to behave like Ossetic, yet it is not.

(17) *Mari* (Guseva and Weisser 2018)

- | | | | | | |
|----|---------|--------|-----|----------|-------------|
| a. | Pörjeng | memnam | da | nunem | už-eš. |
| | Man.NOM | us.ACC | and | them.ACC | see-3SG-PRS |
| a. | Pörjeng | memna | da | nunem | už-eš. |
| | Man.NOM | us.??? | and | them.ACC | see-3SG-PRS |
- ‘The man sees us and them.’

4.2. Turkish

Turkish, on the other hand, provides a different story from both languages. The issue of suppletion in Turkish suspended affixation has not received any attention except for a single paragraph in previous papers. Its characteristics are more similar to Ossetic than Mari in two important aspects. However, the analysis of Ossetic cannot be directly applied to Turkish, nor the already existing analyses, two-level PF (Guseva and Weisser 2018) or Phonological Cohesion (Kabak 2007) cannot cover the entire data.

Firstly, unlike Mari and similar to Ossetic, Turkish sometimes does not allow suspended affixation when both conjuncts are pronouns (Kabak 2007; Guseva and Weisser 2018). The example in (18) is ungrammatical, even though there is no reason that is easily derivable from the previously mentioned patterns in the literature.

(18) *Turkish*

- * İlk önce sen ve bana bak-tı.
 first you and I.DAT look-PST[3SG]
 Intended: ‘S/he first looked at you and me.’

However, depicting this ungrammaticality as due to both conjuncts being pronouns would be a mistake. The ungrammaticality persists in sentences in which only the second conjunct is a pronoun. The problem, at least in Turkish, is not about having two pronouns as conjuncts, but having specifically the second conjunct as a pronoun as in (19).

(19) *Turkish*

- * İlk önce Olgun ve sana bak-tı.
 first Olgun and you.DAT look-PST[3SG]
 Intended: ‘S/he first looked at Olgun and you.’

The ungrammaticality is not due to the animacy hierarchy, since using any other pronoun or having NPs that denote lower elements in the animacy hierarchy in the first conjunct does not change the grammaticality of the sentence, as in (20):

(20) *Turkish*

- | | | | |
|------|--|---|---------------|
| a. * | Olgun ve | bana/biz-e/siz-e/on-a/onlar-a | bak-tı. |
| | Olgun ve | I.DAT/we-DAT/you-DAT/(s)he-DAT/they-DAT | look-PST[3SG] |
| | Intended: ‘He looked at Olgun and me/us/you/him/her/them.’ | | |
| b. * | Kedi ve | bana/biz-e/siz-e/on-a/onlar-a | bak-tı. |
| | cat ve | I.DAT/we-DAT/you-DAT/(s)he-DAT/they-DAT | look-PST[3SG] |

Intended: ‘He looked at the cat and me/us/you/him/her/them.

However, this ungrammaticality is resolved when the second conjunct is not a pronoun as in (21). These examples with a non-pronoun second conjunct that were not discussed before undermines Kabak’s (2007) proposal about phonological cohesion due to suppletion.

(21) *Turkish*

| | | | | |
|----------|-----|-----|-----------|---------------|
| İlk önce | sen | ve | Olgun-a | bak-tı. |
| first | you | and | Olgun-DAT | look-PST[3SG] |

Intended: ‘S/he first looked at Olgun and you.’

Moreover, a simple PF-deletion story with a substring constraint, as in Erschler (2018), would deem sentences like (22) grammatical. However, it is not the case. The substring *ban* is not an appropriate remnant in Turkish. This ungrammaticality alone is easy to explain with the Ossetic constraints, since *ban* is not a stand-alone word in Turkish, meaning that even though it is decomposable into *ban-* and *-a*, it does not occur in any other context without any suffixes.

(22) *Turkish*

| | | | | | | |
|----|---|-------|-----|----------|--------|-------------------|
| a. | * | Ban | ve | Okan-a | mektup | gel-miş. |
| | | I.??? | and | Okan-DAT | letter | arrive-EVID[3SG] |
| b. | | Bana | ve | Okan-a | mektup | gel-miş. |
| | | I.DAT | and | Okan-DAT | letter | arrive- EVID[3SG] |

‘A letter for me and Okan has arrived.’

However, unlike Ossetic, Turkish can leave non-substrings behind as in (21). However, this is also only available in the first conjunct. The solution of this mismatch is not straightforward for Erschler’s (2018) analysis for Ossetic. The interaction between conjunct order and the suppletion tells us that there is more to the suspended affixation than just the phonological deletion, which is also supported by independent arguments by Caha (2019).

Even though many examples here follow most of the tenets of Erschler’s (2018) analysis, the grammaticality of the non-substring *Ben* and the ungrammaticality of the substring *Ban* challenge his property of Constraint D. It is also not clear how Guseva and Weisser’s (2018) analysis can capture the asymmetry between the first and the second conjunct. In their paper, they only report on ungrammatical suspended affixations in which the second adjunct is a pronoun. This enables them to say that in Turkish, unlike Mari, vowel harmony and similar phonological processes precede the suspended affixation, making sentences like (19) ungrammatical. However, for their model to work, we must speculate that the vowel harmony with common nouns like *Okan* (23) and the one with pronouns (19) occurs in different PF levels.

What is more puzzling is that with other case-markings the use of pronouns, even in both conjuncts, is completely grammatical as in (24) and (25) reported by Kabak (2007).

(24) *Turkish*

| | | | |
|-----|-----|-----------|---------------|
| Sen | ve | Melek-i | gör-müş. |
| You | and | Melek-ACC | see-EVID[3SG] |

‘S/he apparently saw you and Melek’

(24) *Turkish (Kabak 2007)*

| | | | | |
|-----|-----|---------|--------|---------------|
| Ben | ve | sen-den | nefret | ed-iyor. |
| I | and | you-ABL | hate | AUX-PROG[3SG] |

‘S/he hates me and you.’

These facts show that Turkish suspended affixation cannot be simply a PF operation or rule ordering without any reference to the internal structure of the pronouns, case, and common nouns. Thus, I propose an account using the Nanosyntax paradigm (Starke 2009), specifically because of its ability to keep track of the algorithmic history, which will be important for us.

5. Analysis

Following Erschler (2018), I assume a deletion analysis, in which structures are built first, coordinated, and then suspended suffixes are omitted later via deletion. I also assume that the pronouns involve three features: [speaker], [participant], and [person], which stand in a containment relation (c.f. Béjar 2003; Starke 2013; Vanden Wyngaerd 2018). For convenience, I represent these features as 1, 2, and 3, respectively.

For the rest of the case system, I assume the proposal that was done in Türk and Caha (2022), following the case containment proposal by Caha (2009). Lastly, I am using a realisational morphology account in which only phrasal nodes are lexicalised and lexicalisation happens at every merge, following the algorithm proposed in Starke (2018).

In this section, I will first demonstrate what Türk and Caha (2022) proposed for the Turkish case system and will extend it for pronouns with suppletive morphology. Later, I will demonstrate the behaviour of pronouns in a conjunction and suspended affixation environments. Lastly, I will show how the derivational history will help us decompose a suppletive unit and how it will save sentences like (24) from a derivational crash, but not the ones like (19).

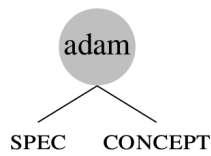
5.1. Turkish Case System

Türk and Caha (2022) proposed a Nanosyntactic analysis of Turkish case system with the lexical items in (25).

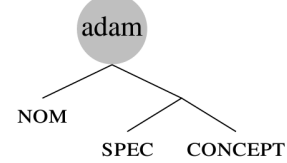
- (25) Lexical Items proposed by Türk and Caha (2022)
- | | | |
|------|---|--|
| adam | ⇔ | [NOM (K1) [SPEC [CONCEPT]]] |
| -1 | ⇔ | [ACC (K2)] |
| -n | ⇔ | [GEN (K3)] |
| -Ø | ⇔ | [GEN (K3) [ACC (K2) [NOM (K1)]]] |
| -a | ⇔ | [DAT (K4) [GEN (K3) [ACC (K2) [NOM (K1)]]]] |

Their main aim was to model the containment relation between accusative and genitive, as well as the zero-marking of ACC and GEN case in non-specific nouns. To this end, they specified nouns with SPEC and NOM features. When a noun is specific, up until the nominative case, everything will be lexicalized with the noun itself, and additional cases will be lexicalised by their own lexical items. When the noun is not specific, only CONCEPT will be lexicalised by the noun, and the cases up until DAT will be lexicalised by the zero morphology. For our purposes, we only need to look at the specific cases. Let's go over how DAT marked nouns are modelled with Nanosyntax. *Adam* is lexically specified for CONCEPT, NOM (K1), and SPEC and will lexicalise these features. The structures are assembled cyclically in (26). Just merging them will be enough for lexicalisation.

(26) a. Merge SPEC

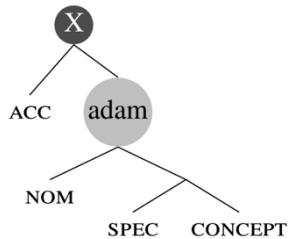


b. Merge NOM

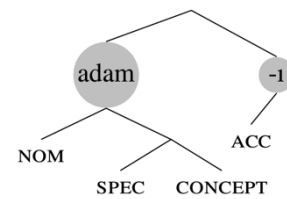


When we add the ACC (K2) feature, it will not be able to be lexicalised with a single lexical item. When a lexical match is not found, lexicalisation-related left branch movements will kick in as specified by the Lexicalisation Algorithm (Starke 2018). Since the structure in (27a) lacks a complex left branch, *move-sister* will occur, and ACC will be lexicalised in its own phrase.

(27) a. Merge ACC

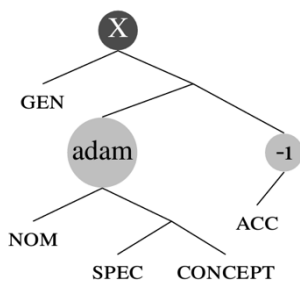


b. Move-sister

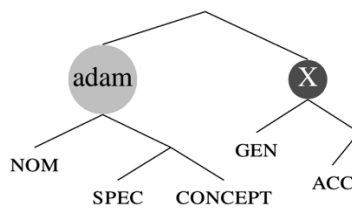


Upon merging, GEN (K3) will attempt to lexicalise as a single lexical item and will fail again due to the specifications of lexical items in (25). First *move-specifier* will be employed as in (28b). When *move-specifier* fails, *move-sister* will apply and give us the structure and lexicalisation in (28c).

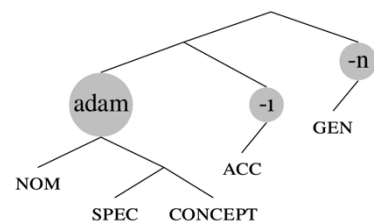
(28) a. Merge GEN



b. *move-specifier*

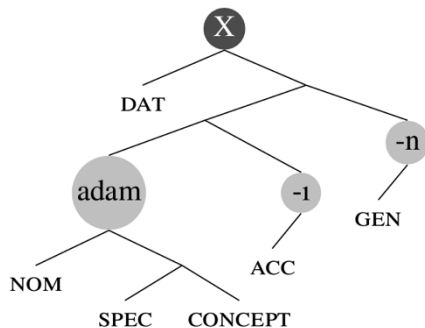


c. *move-sister*

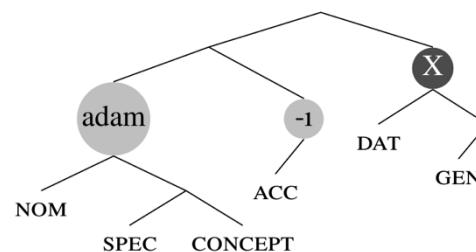


Finally, when DAT is merged, none of the lexicalisation driven movements will give us any licit lexicalisations as in (29).

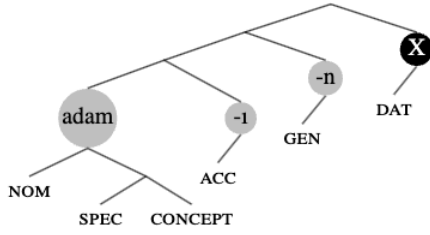
(29) a. Merge DAT



b. *move-specifier*

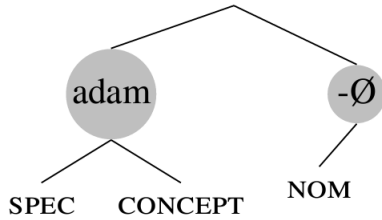


c. *move-sister*



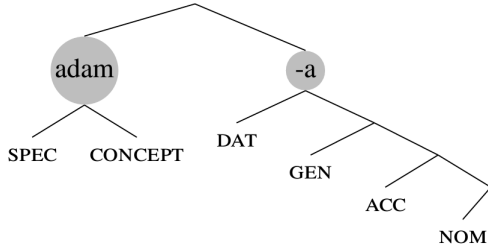
Thus, we will need to backtrack. Backtracking is an operation where we undo everything until the most recent successful lexicalisation and do the next option in the hopes of lexicalising our current merged node, in this case it is DAT. In the lexicalisation of both ACC and GEN, we have used the last step before backtracking as well. Therefore, we go back to the lexicalisation of NOM and instead of staying within the root node as in (26b), we apply *move-sister* and match the NOM phrase with the nonspecific ending as in (30).

(30) Move-sister for NOM



From this point forward, we will merge features and repeatedly try to lexicalise the structure. At every merge, it will fail, but the left-branch *move-specifier* movement will rescue the structure, eventually resulting in the structure in (31).

(31) Backtracked DAT



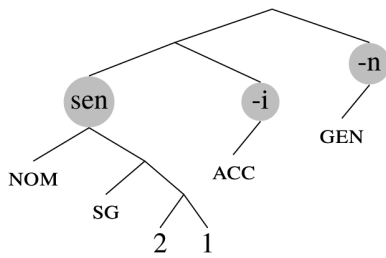
5.2. Extending Türk and Caha (2022) to pronouns

I propose the following lexical items in (32) for Turkish pronouns that exhibit suppletive morphology.

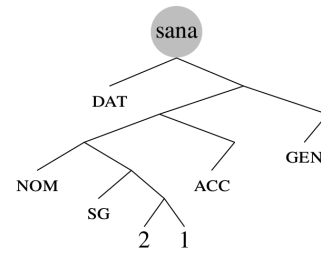
- (32) sen ⇔ [NOM (K1) [SG [2 [1]]]]
 ben ⇔ [NOM (K1) [SG [1]]]
 benim ⇔ [GEN (K3) [[NOM (K1) [SG [1]]] [ACC (K2)]]]
 sana ⇔ [DAT (K4) [[[NOM (K1) [SG [2 [1]]]] [ACC (K2)]] [GEN (K3)]]]
 bana ⇔ [DAT (K4) [GEN (K3) [[NOM (K1) [SG [1]]] [ACC (K2)]]]]

With the lexical items in (32) and (25), the structure will closely follow the ones in section 5.1 for the second-person pronoun *sen* until merging the DAT node as in (33a). When the DAT is merged, instead of triggering a *backtrack*, there will be a lexical match with *sana* as in (33b)

(33) a. Lexicalisation until DAT

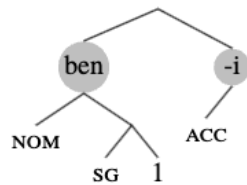


b. Merge DAT and match

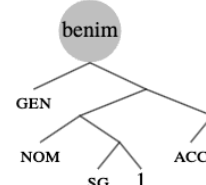


The process will be slightly different for the first-person pronoun *ben*, which exhibits a different exponence when marked with GEN *benim*, instead of the expected *ben-i-n*. While the structure will follow the Türk and Caha (2022) until the merge of GEN as in (34a), GEN will not trigger *move-specifier* or *move-sister* components of the algorithm. Instead, we will have a lexical match overwriting the previous lexicalisations (34b). Upon the merge of DAT, the same thing will happen (34c) given our lexical items in (32).

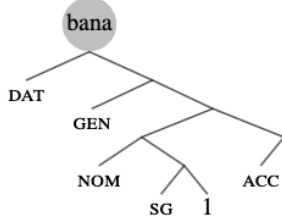
(34) a. Lexicalisation until GEN



b. Merge GEN and match



c. Merge DAT and match

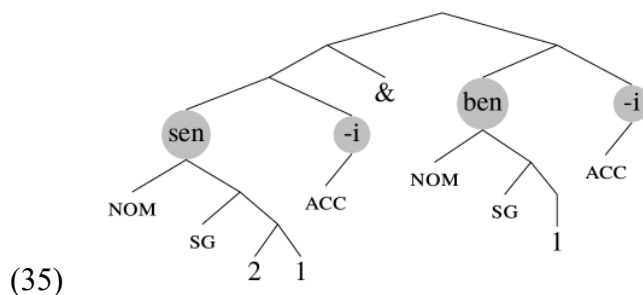


5.3. Suspended affixation and Identity Match

Given the lexical items and the syntactic complexity of pronouns and nominals, let us see how they behave in a suspended affixation context. Remember that for suspended affixation, we assume that it is an ellipsis-like process that requires an identity match between deleted nodes.

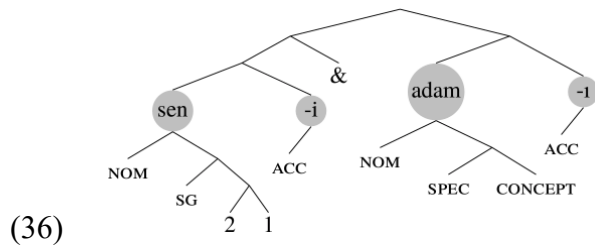
5.3.1. ACC

As we have shown before and reported in Kabak (2007), suspended affixation with two pronouns marked with ACC is acceptable. The structure is shown in (35). One can easily target the node that dominates ACC.



(35)

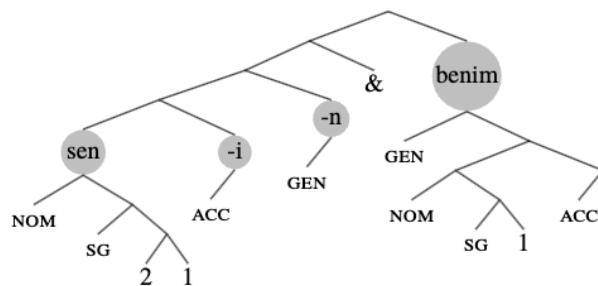
Since the structure of common nouns are very similar to that of pronouns when they are ACC-marked, suspended affixation is licit as both conjuncts have suffixal nodes that match in identity as in (36).



5.3.2. GEN

Due to the different complexity of GEN marked first and second person pronouns (37a), we cannot delete the nodes *-i* and *-n*. This prediction is borne out given that sentences like (37b) are ungrammatical.

(37) a. GEN-marked pronouns



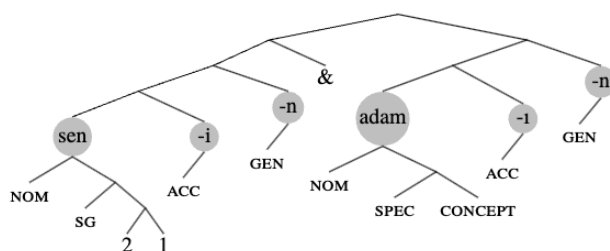
- b. Sen*(-in) ve benim araba sat-ıl-mış.
 You-GEN and I-GEN.1SG car sell-PASS-EVID[3SG]
 ‘Apparently, your and my car got sold.’

What this structure predicts is that the GEN marking on the second-person pronoun should be suspended with a second conjunct common noun (38a); however, this should not be possible with the first-person pronoun (38b). These predictions as well are borne out, and the structures are provided in (39).

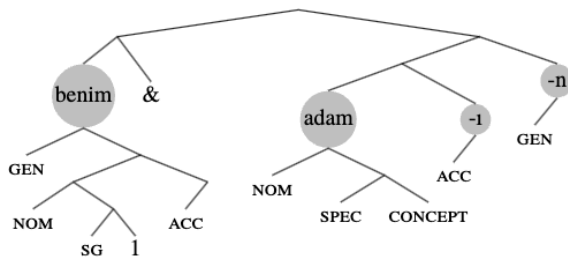
(38) *Turkish*

- a. Sen(-in) ve adam-ın araba-sı sat-ıl-mış.
 You-GEN and man-GEN car-POSS sell-PASS-EVID[3SG]
 ‘Apparently, your and the man’s car got sold.’
 b. Ben*(-im) ve adam-ın araba-sı sat-ıl-mış.
 I-GEN.1SG and man-GEN car-POSS sell-PASS-EVID[3SG]
 ‘Apparently, my and the man’s car got sold.’

(39) a. Structure for (38a)



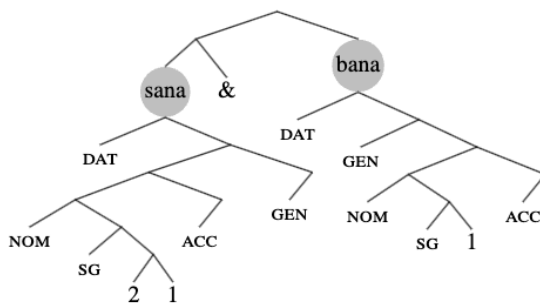
b. Structure for (38b)



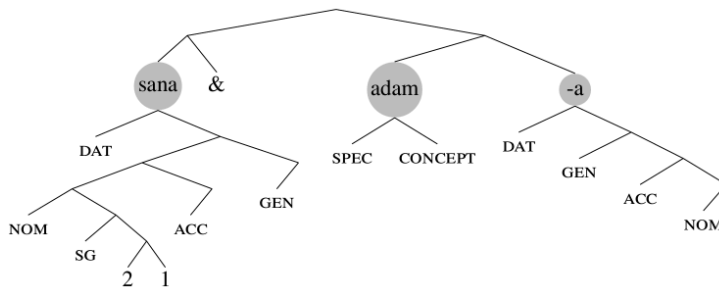
5.3.3. DAT

Lastly, due to same reasons with GEN, suspended affixation with two DAT-marked pronouns will be ungrammatical as in (18). The structure is presented in (40). Note that there is no single node that can be targeted since both *sana* and *bana* are single lexical items.

(40) DAT-marked pronouns



Given our lexical items above and the conjunction structure in (41) where we cannot target a single DAT node between two conjuncts, we should expect the same ungrammaticality with pairs of pronouns and common nouns. However, this is not the case as previously shown in (21).

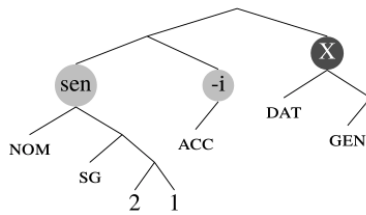


(41)

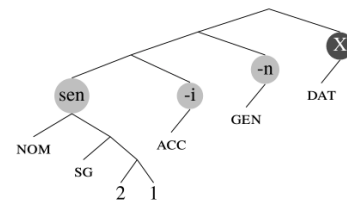
What is interesting about (21) is that, I propose, the attempt of deletion applied to the string, and not the structure, will create a phonological world between the conjoiner *ve* and the first conjunct, which in turn triggers a repair mechanism. This initiation of the repair mechanism is the phonology's contribution to morphosyntactic computation. It will force the *sana* part of the structure to seem like it failed to lexicalise.

Remember, in our lexicalisation process, after we merge DAT with the second person pronouns, we immediately found a lexical match. However, now due to phonological reasons, that match will be ruled out as illicit, and we will apply *move-specifier* and *move-sister* steps, neither of which will give rise to a successful lexicalisation as in (42a) and (42b).

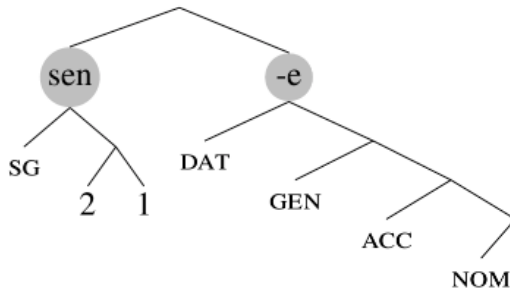
(42) a. *move-specifier*



b. *move-sister*

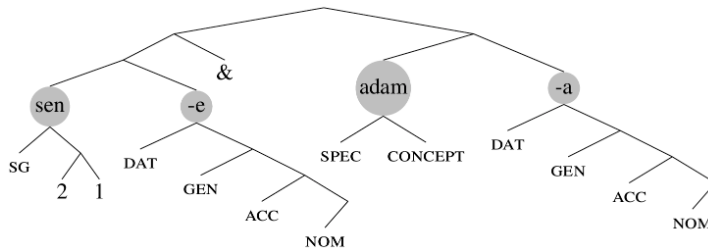


This will force us to apply the *backtrack* step to lexicalize DAT as we did with common nouns in (31). The resulting structure will look like the one in (43).



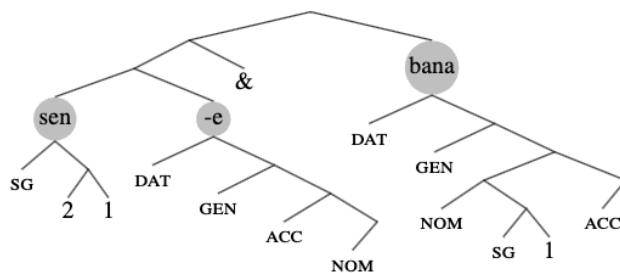
(43)

This structure, in the context of suspended affixation (44), will enable us to suspend DAT when the pronoun is the first conjunct.



(44)

Even if the same mechanism were triggered for the two pronouns cases (45), we would still not be able to suspend DAT. This is because the *bana* part of the conjunction will not be able to lexicalise as *ben-e* due to no phonological constraint on the second conjunct.



(45)

6. Ungrammatical non-harmonic conjainers

One issue I have not discussed yet is the behaviour of conjainers like *ya da*, meaning ‘or’, that are not harmonic with remnants like *ben* or *sen*. One possibility is that since these conjainers are not problematic with the substrings *ban* or *san* in terms of vowel harmony, which would make (46) grammatical. However, this is not the case, as these sentences are not unacceptable and the presence of a conjoiner with a vowel that has a [+back] vowel as its initial vowel is not enough to make the non-stand-alone word *ban* appear as a remnant.

- (46) * Ban/San ya da Olgun-a mektup gel-miş.
 I.???/you.??? or Olgun-DAT letter arrive-EVID
 Intended: ‘A letter for me/you and Olgun has arrived.’

Another possibility is that suspended affixation is not possible with non-harmonic conjoiners. The sentence in (47) confirms this prediction. When the first conjunct and the conjoiner have mismatching vowel qualities, the conjoiner cannot initiate a *backtrack* operation since the other candidate *ban* is ungrammatical due to other reasons, namely the ban on non-words.

- (47) * Ben/Sen ya da Olgun-a mektup gel-miş.
 I/you or Olgun-DAT letter arrive-EVID
 Intended: ‘A letter for me/you or Olgun has arrived.’

To test the possibility of personal variance, I conducted a speeded acceptability judgment task with sentences like (47) and their non-suspended versions. I hypothesized that if phonological processes influence the morphological constituency, non-harmonizing conjoiners will significantly decrease the acceptability of sentences like (47), compared to harmonizing conjoiners.

6.1. Participants

All participants (N=170) were native Turkish speakers (age range:18-59, M = 21). The experiment was carried out following the Declaration of Helsinki and ethics at Boğaziçi University. All participants provided informed consent before their participation and their identities were completely anonymized.

6.2. Materials

Participants were asked to judge 40 experimental sentences as in (48) featuring manipulations of suspended affixation and conjoiner. All experimental items started with a personal pronoun that is susceptible to root allomorphy (*ben* or *sen*) in either its bare or marked form. Pronouns were followed by a conjoiner that is either harmonic with the bare form of the pronoun (*ve*) or not (*ya da*). The distance between the case marked elements and the case assigner verb phrase was kept minimal, only intervened by a pseudo-incorporated subject or object. Experimental sentences were distributed among four different lists according to a Latin-square design. In addition to experimental items, participants saw 80 filler items, half of which were ungrammatical.

- (48) a. * Non-Harmonic - Suspended Affixation
 Ben ya da Olgun-a mektup gel-miş.
 I or Olgun-DAT letter arrive-EVID
 Intended: ‘A letter for me or Olgun has arrived.’
 b. Harmonic - Suspended Affixation
 Ben ve Olgun-a mektup gel-miş.
 I and Olgun-DAT letter arrive-EVID
 ‘A letter for me and Olgun has arrived.’
 c. Non-Harmonic - No Suspended Affixation
 Bana ya da Olgun-a mektup gel-miş.
 I or Olgun-DAT letter arrive-EVID
 ‘A letter for me or Olgun has arrived.’

- d. Harmonic - No Suspended Affixation
 Bana ve Olgun-a mektup gel-miş.
 I and Olgun-DAT letter arrive-EVID
 ‘A letter for me and Olgun has arrived.’

6.3. Procedure

The experiment was run online, using the web-based platform IbexFarm (Drummond 2013). Each experimental session took approximately 40 minutes. Participants gave informed consent to participate in the experiment. They then proceeded to read the instructions and were given nine practice trials.

Each trial began with a blank screen for 600 ms, followed by a word-by-word RSVP, and then an acceptability question. Sentences were presented in the centre of the screen in 30 pt size, at a rate of 400 ms per word. Participants saw a blank screen for 100 ms between each word. Participants were asked to press the P key to indicate that a sentence is acceptable and Q to indicate unacceptability. They were instructed to provide judgments as quickly as possible. A warning message in red font appeared if they did not respond within 10 seconds.

6.4. Analysis

Statistical analysis was carried out by fitting a Bayesian hierarchical Bernoulli(‘logit) model to *yes* responses to experimental items with Stan (Stan Development Team 2020) using the brms package in R (Bürkner 2017), with weakly informative priors, maximal random effects, and sum-coded predictors. The model-fitting specifications used in brms are reported in Table 1. The contrasts of factors are reported in Table 2.

| | | | |
|------------------------|---|---------------------------|---------------------|
| Intercept prior | <i>Normal</i> (0,1) | SD priors | <i>Normal</i> (0,1) |
| Slope priors | <i>Normal</i> (0,1) | Correlation priors | <i>LKJ</i> (2) |
| Formula | yes_responses ~ SA*conjoiner + (SA*conjoiner subject) + (SA*conjoiner item) | | |

Table 1. Bayesian Model specifications.

| | | |
|-----------------------------|----------------------------------|---------------------------|
| | +0.5 | -0.5 |
| Suspended Affixation | Present | Absent |
| Conjoiner Type | Non-Harmonizing (<i>ya da</i>) | Harmonizing (<i>ve</i>) |

Table 2. Contrasts used in the Bayesian model.

The data for our study, along with the analysis scripts and items, can be found at https://github.com/utkuturk/SA_NanoChapter.

6.5. Results

Figure 2 shows the average proportions of ‘yes’ responses in each of the four conditions. The x-axis shows the presence of suspended affixation; the line-type shows the conjoiner used. The gray area shows the uncertainty zone. It was calculated by adding the error rate of the grammatical condition to the rate of 50% (chance). The graph shows that sentences with harmonizing conjoiners were rated as acceptable as sentences with non-harmonizing conjoiners when the sentences do not have suspended affixation ($M = 0.93$ and 0.93 , $CI = 0.02$ and 0.02 , for vowel matching and mismatching respectively). However, within suspended affixation sentences, participants rated harmonizing conjoiners more acceptable ($M = 0.75$, $CI = 0.03$) than the non-harmonizing conjoiners ($M = 0.67$, $CI = 0.03$). More importantly, the acceptability of sentences with suspended affixation and non-harmonizing conjoiners falls into the uncertainty zone. This is expected and verifies the previous hypothesis that vowel quality mismatch will result in a significant acceptability difference in a suspended affixation context.

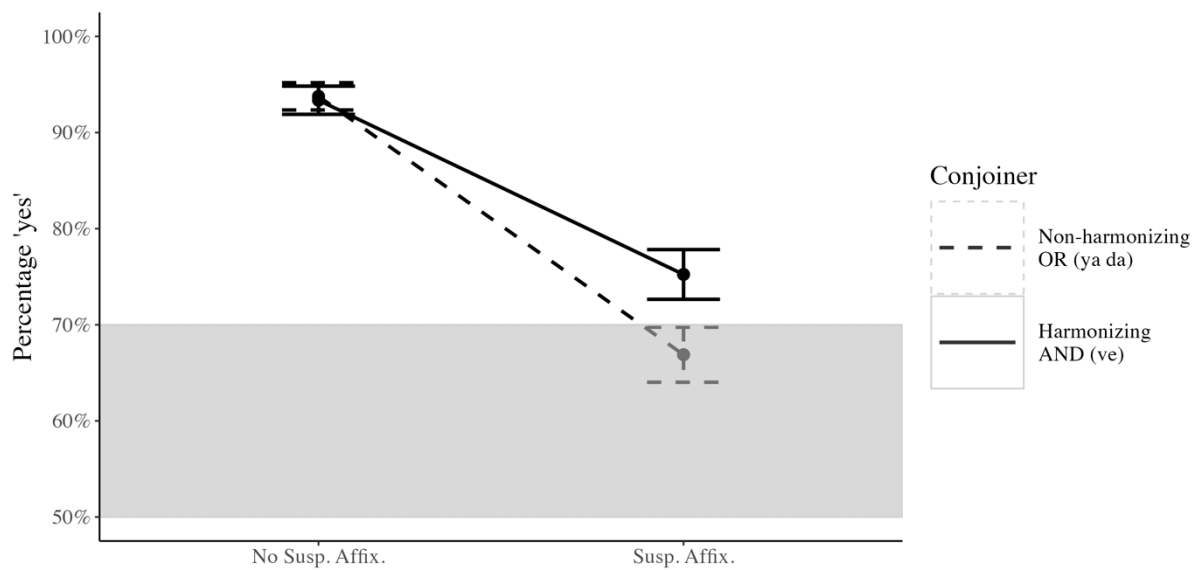


Figure 2. The average percentage of acceptable/yes responses according to the experimental conditions in this study. Error bars signal standard errors calculated following Morey (2008).

In Figure 3, we see the posterior probabilities for the Bayesian GLM model with a logit link. The negative main effect of conjoiner type ($\beta = -0.29$; $CI = [-0.54; -0.04]$; $P(\beta < 0) > .99$) indicates that, on average, participants gave fewer ‘yes’ responses when the sentence had *ya da* instead of *ve*, as predicted by Schwarz, Clifton Jr, and Frazier (2007). Additionally, the negative main effect of the presence of suspended affixation ($\beta = -2.03$; $CI = [-2.54; -1.53]$; $P(\beta < 0) > .999$) is also significant; that is, participants gave fewer ‘yes’ responses when the first dative marker was dropped, and the form was changed back to the bare form. More important is the presence of a negative interaction between the conjoiners type and suspended affixation ($\beta = -0.82$; $CI = [-1.32; -0.32]$; $P(\beta < 0) > .999$), meaning that we have strong evidence showing that participants gave less ‘yes’ responses to sentences with mismatching conjoiners specifically in the context of suspended affixation.

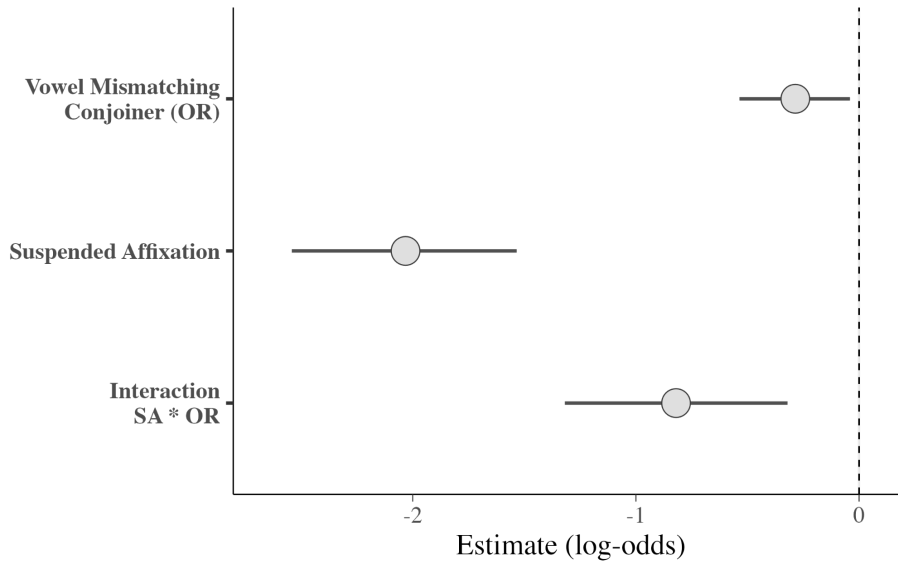


Figure 3. Estimates and 89% credible intervals for the logit regression coefficients for the model of responses to experimental trials in the experiment.

Table 3 shows the mean estimated likelihood and evidence ratio for more than 70% acceptance for each condition retrieved from the Bayesian GLM. The important bit of information is that every condition except for the non-harmonizing suspended affixation one has over 99% evidence ratio, meaning almost all estimates for every possible sample is over 70% likelihood of acceptance. However, this is not the case for non-harmonizing cases in the context of suspended affixation, as expected.

| Condition | Estimated Likelihood | Evidence Ratio |
|-------------------------------|----------------------|----------------|
| Suspension + Harmonizing | 95% | >99% |
| NoSuspension + Harmonizing | 76% | >99% |
| Suspension + NonHarmonizing | 94% | >99% |
| NoSuspension + NonHarmonizing | 61% | 46% |

Table 3. Estimated likelihood and Evidence Ratio of over 70%.

6.6. Discussion

The experiment showed that there was a significant acceptability difference between *ben=ve* and *ben=ya=da*. Turkish speakers found the presence of a non-vowel-harmonic conjoiner less acceptable in a systematic way. However, the results also show more than chance grammaticality for these items. This increased acceptability might be due to two factors: speaker variability and lack of clearly ungrammatical conditions, biasing people towards saying more ‘yes’ responses (Macmillan and Creelman 2005). Nevertheless, when the general tendency to not accept suspended affixation is accounted for, we see that *ben=ya=da* cases fall into the uncertainty zone.

7. Conclusion

In this chapter, I have examined the distribution of personal pronouns in the context of suspended affixation and the behaviour of suppletion via the lens of experimental and crosslinguistic data, as well as an original piece of Turkish data. For the analysis of internal structure, distribution of illegitimate suspensions, and suppletion, I have adopted a modified Nanosyntactic model of lexicalisation following the proposals of Starke (2020), Svenonius (2012), and Bye and Svenonius (2012).

I propose that suppletive pronouns like *sana* (you.DAT) and *bana* (I.DAT) are not decomposable despite the attractive possibility of *san+a*, which explains their ungrammaticality as a second conjunct under the identity assumption. More importantly, in the context of a conjoiner *ve*, these complex structures are forced to look for an additional lexicalisation route, which ends up being the already proposed backtracking procedure for the DAT cases with common nouns in Türk and Caha (2022), which makes them ellipsis-prone syntactic constructions due to having the same DAT structure.

The main contribution of this chapter is that phonological processes may rerank the different candidates for exponence by forcing a reanalysis of a lexicalized structure.

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