Controlling morphosyntactic competition through phonology

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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. Turkish also exhibits a stem allomorphy in the 1SG and 2SG pronouns. For example, 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 the unexpected (pace Guseva and Weisser 2018) disappearance of the suppletive form '*ban-*' when the affix is deleted under suspended affixation by means of an updated nanosyntax algorithm (Starke 2020; Svenonius 2012), which allows for different candidates for exponence to be re-ranked.

2 Overview

This chapter aims to contribute to the discussion of how syntactic features are mapped to phonological realization. I argue that phonotactic factors can influence which morphological form will be selected. To illustrate the interaction between phonological re-ranking 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) *Digor Ossetic* (Erschler 2012)
Alan ɐma Soslan-ɐj tarstɐn.
Alan[NOM] and Soslan-ABL be.afraid.PST.1SG
"I was afraid of Alan and Soslan."

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 of the

[1] I would like to thank Furkan Atmaca, Pavel Caha, Furkan Dikmen, Allison Dods, David Erschler, Sebastián Mancha, Balkiz Öztürk, Malhaar Shah, and Juan Uriegereka for their comments and contributions in the early form of this work.

[2] I use Turkish orthography throughout the paper, some of which differs from standard IPA symbols. The following are their IPA counterparts. ü: [y], ö: [ø], ı: [ɨ], ç: [tʃ], c: [dʒ], ş: [ʃ]. The possibility of suspended affixation is shown via parentheses (-*α*), and the ungrammaticality of suspended affixation is shown via asterisk before the parentheses *(-*α*) where -*α* is a single or set of morphemes. Abbreviations used in linguistics examples follow Leipzig Glossing Conventions. The abbreviations used in this chapter: 1 = first person, 3 = third person, ABL = ablative, ACC = accusative, AOR = aorist, COP = copula, DAT = dative, EVID = evidential, IMP = imperative, IMPF = imperfect, NEG = negative, NMLZ = nominalizer, NOM = nominative, ORD = ordinal, PASS = passive, PC = predicate coordinator, PL = plural, POSS = possessive, PRES = present, PROS = prospective, PRS = present, PST = past, Q = question, SG = singular.

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 with a context that might technically enable this reading. Similarly, in the Digor 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), Digor 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 analysis based on ellipsis was proposed by Erschler (2012) and Guseva and Weisser (2018), arguing that conjuncts are marked with the to-be-suspended affixes first, and coordinated later, as opposed to the right node raising analysis. Erschler later demonstrates that ellipsis analysis, thanks to the correct ordering of <*affixation, coordination, deletion*>, makes the correct prediction for alternative questions (Erschler 2018).

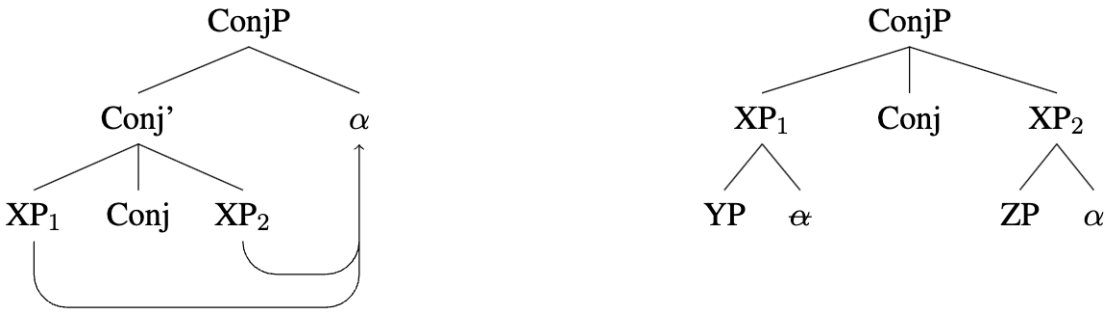


Figure 1. A. RNR analysis B. Ellipsis Analysis

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 has to 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 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 syntactic positions 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.PRES

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

Even though Turkish does not need a morphological word in this context (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	san-a	mektup	gel-miş.
	1SG[NOM]	and	you.DAT	letter	arrive-3SG.EVID
	"Apparently, a letter arrived for me and you."				

However, 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 Digor 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-3SG.EVID
b.	Ben	ve	Olgun-a	mektup	gel-miş.
	1SG[NOM]	and	Olgun-DAT	letter	arrive-3SG.EVID
	"Apparently, a letter arrived for me and Olgun."				

In this chapter, I resolve this paradox by proposing an analysis in which phonological processes are at play in the selection of allomorphy. I will argue that the ungrammaticality of (5a) is partially due to 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 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). This decomposition is only available when *ve* forces a backtrack operation to have *sen+A* decomposition proposed in Türk and Caha (2022). 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*. 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).

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, as in (6). French determiners have three basic forms: [lə], [la], and [l], 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,

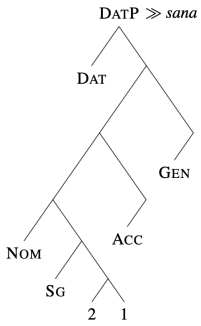
prepositions and determiners fuse when the noun starts with a consonant, resulting in [o] and [dy] for [alə] and [dələ], respectively.[3]

(6) *French* (Svenonius 2012)

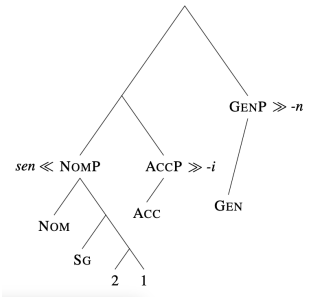
	Feminine Nouns		Masculine Nouns	
	V-initial	C-initial	V-initial	C-initial
	l'école	*la maison*	*l'hôpital*	*le parc*
	[lekɔl]	[lamɛzõ]	[lɔpital]	[ləpark]
à	*à l'école*	*à la maison*	*à l'hôpital*	*au parc*
	[alekɔl]	[alamɛzõ]	[alɔpital]	[opark]
de	*de l'école*	*de la maison*	*de l'hôpital*	*du parc*
	[dəlekɔl]	[dəlamɛzõ]	[dəlɔpital]	[dypark]

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 (7a) and (7b) (Caha 2009; Türk and Caha 2022; Starke 2017).[4]

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



b. Stored Lexical Unit for *sen*, *sen-i*, and *sen-i-n*



Note that (7a) is the usual dative case that is found with common nouns as proposed by Türk and Caha (2022), and (7b) is the result of phonological interference by the conjoiner *ve* as in (5b) and a backtracking process.

[3] Similar phonological conditioning of allomorphs can also be seen in Spanish. For example, even though the word for water, *agua,* is a feminine noun, its article surfaces as *el*, a masculine article, due to phonotactic constraints in hiatus formation between the feminine article *la* and *agua*. This allomorphy does not surface with the plural version of *agua*, as in *las aguas.* The feminine feature and relevant morphemes also surface in post-nominal adjectives like *el agua fresca* (Sebastián Mancha, p.c.).

[4] As of now, I am ignoring the person agreement on the genitive marking of personal pronouns.

3 Suspended affixation in Turkish

Turkish allows conjuncts in the context of suspended affixation to be in both nominal domains (8) and verbal domains (9), and suspended affixes to be both derivational (8, 9) and inflectional (10). Moreover, it also does not put any constraints on the complexity of the conjoined phrases as in (11) or the complexity of suspended affixes (8a-8b, 9a-9b), with a small set of exceptions (see Kabak 2007; and Akkuş 2016 for the relevant discussion).

(8) a. silgi(-ler) ve kalem-ler
eraser(-PL) and pencil-PL
"erasers and pencils"

b. silgi(-ler(-im)) ve kalem-ler-im
eraser(-PL(-POSS.1SG)) and pencil-PL-POSS.1SG
"my erasers and pencils"

(9) a. Zengin(-∅-di-m) ve sessiz-∅-di-m.
rich(-COP-PST-1SG) and silent-COP-PST-1SG
"I was rich and quiet."

b. Koş-uyor(-du) ve düş-üyor-du.
run-IMPF-PST.3SG and fall-IMPF-PST.3SG
"He was running and falling."

(10) Bir(-inci) ve beş-inci kısım-lar
one(-ORD) and five-ORD section-PL
"the first and fifth sections"

(11) Bugün okul-da çalış-ıp yarın ev-de otur-acak.
today school-LOC work-PC tomorrow home-LOC sit-PROS.3SG
"He will work today at school and sit at home tomorrow."

The acceptability of the suspended affixation is not affected by stem-conditioned allomorphy on the suspended affixes; that is, one can coordinate two elements that would require affixes with different vowel forms with respect to vowel harmony or epenthetic consonants, as in (12). Even though the form of the copula and following suffixes would be different in (12a) if there were no suspended affixation, this mismatch does not result in ungrammaticality. Likewise, the epenthetic consonant [s] on the second conjunct in (12b) does not create ungrammaticality.

(12) a. Zengin(-∅-di-m) ve ünlü-y-dü-m.
rich(-COP-PST-1SG) and famous-COP-PST-1SG
"I was rich and famous."

b. on-un kalem(-in-den) ve silgi-sin-den
3SG-GEN pencil(-POSS.3SG-ABL) and eraser-POSS.3SG-ABL
"his/her pencil$_{ABL}$ and eraser$_{ABL}$"

Similarly, a possible mismatch in the forms of the conjoined elements in the context of suspended affixation due to a suffix-conditioned phonological allomorphy or stress change is not problematic in Turkish (13). Stress in Turkish words is usually found on the final syllable of a word. There are certain suffixes that can override the default stress of words, such as the copula, as well as morphological negation (Inkelas and Orgun 2003). The negative marker *-m[A]* would assign stress on the immediately preceding syllable as in (13a). Yet, when the

negative marker and other suffixes are suspended, the stress assignment on the first conjunct is reset to its default position, and the stress mismatch between the conjuncts does not result in any ungrammaticality.

(13) a. [jy'ry-m-yjor-du ve 'dyʃ-m-yjor-du].
walk-NEG-IMPF-PST.3SG and fall-NEG-IMPF-PST.3sg

b. [jyry-'jyp 'dyʃ-m-yjor-du].
walk-PC fall-NEG-IMPF-PST.3SG
"S/he was not walking and falling."

Lastly, one of the most noted asymmetries in the phenomenon of Turkish suspended affixation is the accessibility of the ambiguous readings (Kornfilt 1996; 2012; Kabak 2007; Broadwell 2008; Akkuş 2016; Atmaca 2022). The verbal domain in Turkish never allows different scopes of the suspended suffix, thus the presence of a suspended affix cannot result in an ambiguous reading (14). One could possibly think of a situation where the passive morphology only scoped over the '*yok ed-*' verb; however, this is not the case, and the only possible reading is (14a). Example (14b) would be still ungrammatical even after the necessary context is provided as in (14c).

(14) *Turkish* (modified from Akkuş 2016)
Nice aile-ler yak-ıp yok ed-il-di.
score family-PL burn-PC destroy-PASS-PST.3SG
a. "Many families were burned and destroyed." (SA)
b. *"Many families burned (it) and were destroyed." (No SA)
c. Context for "No SA": *(from a fantastic novel)* There is a sacred piece of writing that is copied and distributed to all the houses in the kingdom. It was believed that if it is somehow destroyed or burned, the family will be cursed and destroyed.

On the other hand, the suspended affixation of nominal inflectional morphemes results in ambiguous readings (15). Both readings in (15a) and (15b) are available with enough context.

(15) Kalem-ler ve kitap-lar-ım gel-miş.
pencil-PL and book-PL-POSS.1SG arrive-EVD
a. My pencils and my books arrived. (SA)
b. The pencils and my books arrived. (No SA)
c. Context for "Not SA": I ordered some books, and my roommate ordered some pencils online. I have a friend who does not know my roommate, but is aware that some pencils were ordered.

However, the picture regarding derivational morphemes is not clear. There are certainly derivational suffixes that do not allow ambiguous readings of suspended affixation as in (16), i.e. the reading in which the first conjunct is not marked with the suspended suffix is not available (16b) even with appropriate context (16c).

(16) Bir ve beş-inci bölüm-ün-ü oku.
one and seven-ORD section-POSS.3SG-ACC read.IMP
a. Read the first and the fifth chapter of the book. (SA)
b. * Read the fifth chapter and another chapter from the book. (No SA)
c. Context for "No SA": A professor wants their students to write a paper on a book. The fifth chapter introduces all the important concepts. All the other chapters introduce specialized topics that students can choose from.

There are also cases in which conjoining a bare NP and an NP with a derivational morpheme results in sentences with ambiguous meanings (17).

(17) *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 ordering of the elements matters in certain elements like (17). When *tuz*, which can be used to refer to the item salt shaker by itself as in (18a), comes after *limon*, which cannot refer to the lemon squeezer as in (18b), the container suffix *-luk* does not create ambiguous readings as in (19).

(18) 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.”

(19) *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) provides a counter explanation to this antisymmetry, arguing that the reason for not having both readings in (19) is because *lemon* is countable while *salt* is a mass noun, and two syntactically distinct elements. When both of the nouns are uncountable, e.g. replacing *lemon* with *(black) pepper*, the problem discussed in Kornfilt (2012) is avoided and the ambiguity is available.

3.1 Motivation for the Ellipsis Analysis

As previously mentioned, there have been two major explanations provided for Turkish suspended affixation, the first of which was the right-node-raising analysis proposed by Kornfilt (2012). In her explanation, the morpheme that is suspended is attached to the conjunction, and the conjoiners share the morpheme, similar to the English example in (20). Her main argument is that suspended affixation in Turkish cannot look into “words” and can only target syntactic nodes. Recent morphological and syntactic analyses have blurred the definition of the concepts of 'word' and 'syntactic nodes’(Starke 2010; Halle and Marantz 1994). As the definition of a word and syntactic nodes are getting blurred, making the predictions of the main argument from Kornfilt (2012) unclear and hard to test. It also makes incorrect predictions for languages like Mari, due to the visible suppletive effect of the suffix even when it is suspended as in (3) (Guseva and Weisser 2018).

(20) I talked to without actually meeting everyone in the committee. (Wilder 1994)

On the other hand, the ellipsis analysis where both conjuncts are marked for the same suffixes and suspended affixation is basically elision of certain suffixes on the first conjunct, proposed

by Erschler (2012), Guseva and Weisser (2018), and Erschler (2018) makes clear and testable predictions. One interesting prediction comes from its interaction with the alternative question proposed by Erschler (2018). Alternative questions are usually analyzed as much larger units with ellipsis involved as in (21) (Han and Romero 2004). The analysis is also argued for Turkish (Gračanin-Yüksek 2016) and Digor Ossetic (Erschler 2018).

(21) Are you [afraid of snakes] or [~~afraid of~~ dogs]?

Erschler argues that if case assignment does not target disjoined elements separately, but targets the whole phrase as it would in right-node-raising accounts, alternative questions with suspended affixation should be ungrammatical under current analyses of alternative questions, since two conjuncts do not form a constituent that can be marked for case.

Alternative questions with similar constructions are available in Turkish, as in (22).

(22) Yılan ya da köpek-ten kork-ar=mı-sın?
snake or dog-ABL fear-AOR-Q-2SG
"Are you afraid of snakes or dogs?"

Given what we know about alternative questions, the only way to derive the sentence in (22) is to first delete the verb *korkar* from the first conjunct after it has assigned a case to *yılan*, and then to delete the case marking on the noun *yılan*.

Observations about the nature of suspended affixation, ambiguities, and alternative questions tell us that Turkish suspended affixation should be analyzed as backward ellipsis, rather than right node raising.

4 Ban on non-wordhood & root allomorphy

Even though the ellipsis analysis provides a uniform analysis for Mari, Turkish, and Digor 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) provides a rule ordering mechanism that differs from Mari to Turkish to be able to capture differences between languages.

One important difference between these languages that has been discussed frequently is the form-wise characteristics of the remnant of the suspended affixation, the first conjunct. Both Erschler (2018) and Kabak (2007) argue that the remnant has to 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. Consider the simplified version of Digor Ossetic case paradigm on the second person pronouns given in (23).

(23) *Digor Ossetic 2nd person singular pronouns*

Case	Form
NOM	*du*
ACC/GEN	*dɐw*
DAT	*dɐw-ɐn*
ABL	*dɐw-ɐj*

As noted by Erschler (2018), all the 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 *dɐw* as in (24).

(24) *Digor Ossetic (Erschler 2018)*

dɐw/*du	ɐma	Alan-ɐj	tɐrsun.
you.ACC/.*NOM	and	Alan-ABL	fear.PRS.1SG

"I am afraid of Alan and you."

However, *kɐrɐʤe*, meaning 'each other,' cannot be left alone in the context of suspended affixation as in (25), even though it is frequently used with case suffixes in Digor Ossetic, suggesting high decomposability. The main reason behind this mismatch is that *kɐrɐʤe* never occurs in a non-case marked form, so the word does not exist by itself even though it is easily decomposable.

(25) *Digor Ossetic (Erschler 2018)*

a. *

nɐ=duwɐ	tikiš-i	kɐrɐʤe	ɐmɐ	nɐ=kuj-ɐj
our=two	cat-ACC	each.other	and	our=dog-ABL
tɐrsuncɐ.				
fear.PRS.3PL				

b.

nɐ=duwɐ	tikiš-i	kɐrɐʤe-ɐj	ɐmɐ	nɐ=kuj-ɐj
our=two	cat-ACC	each.other-ABL	and	our=dog-ABL
tɐrsuncɐ.				
fear.PRS.3PL				

"Our two cats are afraid of each other and of our dog."

Erschler (2018) explains this behavior 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" conditions.

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 aforementioned constraints that Erschler (2018) proposed are not an issue for Meadow Mari. Guseva and Weisser (2018) shows that suppletive forms of words that do not surface by themselves in any other context can be legitimate candidates for remnants in the 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 *dɐw* in Digor Ossetic, it is grammatical for Mari speakers to leave it as a remnant in the suspended affixation contexts; example (26b) should be ungrammatical if Mari were to behave like Digor Ossetic, yet it is not.

(26) *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."

Turkish, on the other hand, provides a different story from both of these 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 Digor Ossetic than Mari in two important aspects. However, the analysis of Digor Ossetic cannot be directly applied to Turkish.

Firstly, unlike Mari and similar to Digor Ossetic, Turkish does not allow suspended affixation when both of the conjuncts are pronouns (Kabak 2007). The example in (27) is ungrammatical, even though there is no reason that is easily derivable from previously mentioned patterns in Turkish.

(27) * Ben ve sen-i gör-müş.
I and you-ACC see-EVD
Intended: "He saw 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 (28).

(28) * Merve ve sen-i gör-dü-m
Merve and you-ACC see-PST-1SG
Intended: "I saw Merve 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 (29):

(29) a. * Merve ve ben-i/biz-i/siz-i/on-u/onlar-ı gör-müş.
Merve ve I-ACC/we-ACC/you-ACC/(s)he-ACC/they-ACC see-EVD
Intended: "He saw Merve and me/us/you/him/her/them."

b. * Kedi ve ben-i/biz-i/siz-i/on-u/onlar-ı gör-müş.
cat ve I-ACC/we-ACC/you-ACC/(s)he-ACC/they-ACC see-EVD
Intended: "He saw a cat and me/us/you/him/her/them."

However, this ungrammaticality is resolved when the second conjunct is not a pronoun as in (30). An example of the same behavior was also provided by Belyaev (2014) for Digor Ossetic, yet its grammaticality is unclear in Digor Ossetic since Erschler (2018) reports that similar sentences were considered ungrammatical by his consultants.

(30) Ben(-i) ve Melek-i gör-müş.
I(-ACC) and Melek-ACC see-EVD
"S/he saw me and Melek."

The patterns described above characterize the cases where suppletion arises as well. Root suppletion is rare in Turkish; two places it systematically arises are the 1st and 2nd personal pronouns when they are assigned the dative case. When the second conjunct is a pronoun, suspended affixation results in an ungrammatical sentence, as in (31a) and (31b).

(31) a. * İlk önce sen ve bana bak-tı.
first you and I.DAT look-PST.3SG
Intended: "S/he first looked at you and me."

b. * Ben ve sana gel-en paket-ler
I and you.DAT come-NMLZ package-PL
Intended: "the packages that came for me and you."

The ungrammaticality persists when we change only the first conjunct to something other than a pronoun, as in (32).

(32) * İlk önce Yade ve sana bak-tı.
first Yade and you.DAT look-PST.3SG
Intended: "S/he first looked at Yade and you."

I now turn to the question of whether we can have suppletive forms in the suspended affixation environment when the pronoun is the first conjunct. A simple PF-deletion story with a substring constraint, as in Erschler (2018), would deem sentences like (33) 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 Digor 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.

(33) a. * Ban ve Okan-a mektup gel-miş.
I.??? and Okan-DAT letter arrive-EVD

b. Bana ve Okan-a mektup gel-miş.
I.DAT and Okan-DAT letter arrive-EVD
"A letter for me and Okan has arrived."

However, unlike Digor Ossetic, Turkish can leave non-substrings behind. When the second conjunct is not a pronoun, the same sentences become grammatical, as in (34), even though the first conjunct *sen* would undergo a suppletive change ifs marked with a dative case, while this is not the case for the second conjunct *Arif*.

(34) a. İlk önce sen ve Arif-e bak-tı.
first you and Arif-DAT look-PST.3SG
Intended: "S/he first looked at you and Arif."

b. Ben ve Arif-e gel-en paket-ler
I and Arif-DAT come-NMLZ package-PL
Intended: "the packages that came for me and Arif."

The same sentences are still available when the second conjunct's vowel harmony requirements and the first one's requirements are different. The examples in (35) not only exemplify a different version of vowel harmonic dative case, but there is also an epenthetic consonant in the second conjunct *Büşra*.

(35) a. İlk önce sen ve Büşra-ya bak-tı.
first you and Büşra-DAT look-PST.3SG
Intended: "S/he first looked at you and Büşra."

b. Ben ve Büşra-ya gel-en paket-ler
I and Büşra-DAT come-NMLZ package-PL
Intended: "the packages that came for me and Büşra."

The last two observations are interesting because they show that, unlike Digor Ossetic, Turkish can leave a non-substring behind. The solution of this mismatch is not straightforward for Erschler's (2018) analysis for Digor Ossetic. Interactions like this one where suspended affixation either has phonological effects on the first conjunct or is limited for phonological reasons were the main reason for Guseva and Weisser (2018) to consider rule ordering between PF and morphology. The interactions here (*bana* → *ben* and *bana* → **ban*) specifically tell us that there is more to the suspended affixation than just the phonological deletion. This point that phonological deletion would not suffice by itself 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 ungrammaticality of the substring *Ban* challenge his property of Constraint D, in which he argues that remnants should be substrings of their respective full forms. It is also not clear how Guseva and Weisser's (2018) analysis can capture this asymmetry. In their paper, they only report 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 (31) ungrammatical. However, for their model to work, we have to speculate that suspended affixation precedes vowel harmony when the second conjunct is not a pronoun to cover the sentences in (35).

These facts show that Turkish suspended affixation cannot be simply a PF operation without any reference to the internal structure of the pronouns and other nouns. It cannot be also explained away with ordering rules between suspended affixation and vowel harmony. I propose an account using the Nanosyntax paradigm (Starke 2010), specifically because of its interweaved approach to the relationship between the exponence and the built structure.

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; Wyngaerd 2018). For convenience, I represent these features as 1, 2, and 3, respectively.

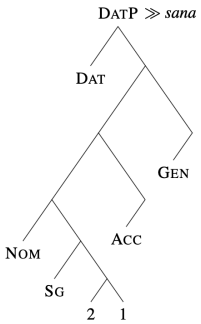
For the rest of the case system, I assume the proposal that was done in Türk and Caha (2022), following the case containment proposal by Caha (2009). Lastly, I am using a realizational morphology account in which only phrasal nodes are spelled out and spell-out happens at every merge, following the algorithm proposed in Starke (2018), which is repeated in (36).

(36) a. Merge: Externally merge feature F, and try to lexicalize the resulting tree.
b. Cyclic: If (a) fails and if the tree has a complex specifier, merge the specifier node of the complement of F internally.
c. Rollup: If (a) & (b) fail, internally merge the whole complement of F.
d. Backtrack: If (a) & (b) & (c) fail, undo the previous lexicalization and try the other possible next-steps from previous lexicalizations.

e. Workspace: If all steps fail, create a new syntactic sequence that can be lexicalized by itself, and externally merge it.

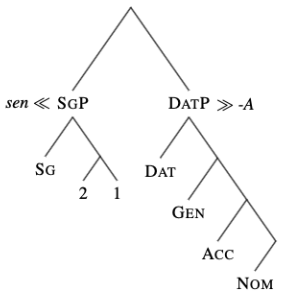
What I will argue is that most of the derivation follows the derivation from Türk and Caha (2022); however, when the DAT case is merged, instead of immediate failure of structure, it matches with the lexical item proposed in (7a), repeated here as (37).

(37) Stored Lexical Unit for *sana*



However, when the conjoiner *ve* is introduced and suspended affixation is attempted, it will create a phonological word with the remnant of the first conjunct and force the derivation to crash. Only after this failure of spell-out, the backtracking option will be introduced, which will result in the structure in (38) following Türk and Caha (2022).

(38) Result of a phonology-forced backtracking



Assuming an identity requirement for deletion, the structure in (37) explains why Turkish does not allow suspended affixation, when the second conjunct is a pronoun. The morphosyntactic identity of what is deleted, DatP in usual cases (similar to the derivation in 38), does not match the identity of the second conjunct pronoun.

The derivation in (38), on the other hand, allows us to transform the complex pronominal into a decomposable, thus ellipsis-prone, structure only when *ve* forces us to do so.

5.1 Enriching the algorithm

To be able to make the analysis work, we have to make it more precise ¡how lexicalization processes work in Nanosyntax, more specifically what it means for lexicalisation to fail. Previous work in nanosyntax argues for a lexicalization process as in (36). What I am offering here along with Svenonius (2012) and Bye and Svenonius (2012) shows that any successful lexicalization algorithm has to make reference to the special part of the phonology that can still access the morphological features and constituency. Vowel harmony, consonant versus vowel difference, and hiatus situation were previously thought to be mechanical aspects of the phonological output. The data I presented earlier in this paper from Turkish, French, and Spanish show that this cannot be the whole story. However, it is also clear that the interaction between phonological properties and allomorphic selection is quite limited compared to other

interface phenomena. Thus, I argue that this interaction mainly surfaces as a repair method in order to save the PF output. This is different from Erschler (2018) and Guseva and Weisser (2018), in the sense that they argue suspended affixation is a PF-only process. However, blindness to the morphological feature would leave Turkish facts unexplained.

6 Non-harmonic conjoiners

One issue I have not discussed yet is the behavior of conjoiners like *ya da*, meaning 'or', that are not harmonic with the remnants like *ben* or *sen*. One possibility is that since these conjoiners are vowel-harmonically not problematic with the substrings *ban* or *san*, sentences like (39) would be grammatical. However, this is not the case, as these sentences are not unacceptable and the presence of a conjoiner with a vowel that has [+back] vowel as its initial vowel is not enough to make the non-stand alone word *ban* appear as a remnant.

(39) * Ban/San ya da Olgun-a mektup gel-miş.
I.???/you.??? or Olgun-DAT letter arrive-EVD
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 (40) confirms this prediction. When the first conjunct and the conjoiner have mismatching vowel qualities, the conjoiner cannot re-rank the morphological candidates since the other candidate is ungrammatical due to other reasons, namely the ban on non-words.

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

However, these sentences are marginally acceptable for some Turkish speakers. To test the possibility of personal variance, I conducted a speeded acceptability judgment task with sentences like (40) and their non-suspended versions.

6.1 Experiment

The present study tested the predictions of the phonological re-ranking hypothesis using a speeded-acceptability judgment task. I hypothesized that if phonological processes like vowel harmony have an effect on the morphological constituency, non-harmonizing conjoiners would significantly decrease the acceptability of sentences like (40), compared to harmonizing conjoiners with *ve* instead of *ya da*.

6.1.1 Participants

170 undergraduate students were recruited to participate in the experiment in exchange for course credit. All participants were native Turkish speakers, with an average age of 21 (range:18-59). The experiment was carried out following the principles of the Declaration of Helsinki and the regulations concerning research ethics at Boğaziçi University. All participants provided informed consent before their participation and their identities were completely anonymized.

6.1.2 Materials

Participants were asked to judge 40 experimental sentences as in (41) featuring manipulations of (i) the presence of suspended affixation and (ii) the type of 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 (ben_{bare} or $bana_{dat}$), thus the manipulation of the presence of suspended affixation. Pronouns were followed by a conjoiner that is either harmonic with the bare form of the pronoun (*ve*) or not (*ya da*). To reduce the effects related to memory, 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. Since the root allomorphy only surfaced in the context of a dative case marker, all of the conjuncts in the experimental items were marked with a dative case. The differences between the aspect, tense, and evidentiality were also kept minimal, following the exemplary set of sentences in (41), and were only changed due to plausibility related reasons.

(41) a. * Non-Harmonic - Suspended Affixation Condition
Ben ya da Olgun-a mektup gel-miş.
I or Olgun-DAT letter arrive-EVD
Intended: "A letter for me or Olgun has arrived."

b. Harmonic - Suspended Affixation Condition
Ben ve Olgun-a mektup gel-miş.
I and Olgun-DAT letter arrive-EVD
Intended: "A letter for me and Olgun has arrived."

c. Non-Harmonic - No Suspended Affixation Condition
Bana ya da Olgun-a mektup gel-miş.
I or Olgun-DAT letter arrive-EVD
Intended: "A letter for me or Olgun has arrived."

d. Harmonic - No Suspended Affixation Condition
Bana ve Olgun-a mektup gel-miş.
I and Olgun-DAT letter arrive-EVD
Intended: "A letter for me and Olgun has arrived."

This experiment was conducted within another experiment that was on erroneous agreement marking, the results of which can be found in Türk (2022). Fillers included grammatical and ungrammatical sentences both from the phenomenon of agreement attraction and other manipulations within suspended affixation that resulted in participants seeing 40 ungrammatical sentences and 40 grammatical sentences within fillers.

6.1.3 Procedure

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

Each trial began with a blank screen for 600 ms, followed by a word-by-word rapid serial visual presentation of the sentence in the center of the screen, followed by a prompt to indicate their acceptability judgment. Sentences were presented word-by-word in the center of the screen in 30 pt font 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 that the sentence is unacceptable. They were instructed to provide judgments as quickly as possible. During the experiment, a warning message in red font appeared if they did not respond within 10 seconds.

Participants saw 40 experimental and 80 filler sentences. Experimental sentences were distributed among four different lists according to a Latin-square design. The rest of the fillers were also conditioned experiments, and they were also presented in a Latin-square design with respect to their own conditions. Every participant saw one version of the experiment with a specific list and one item per condition.

6.1.4 Analysis

Statistical analysis was carried out by fitting a Bayesian hierarchical Bernoulli model to *yes* responses 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. The parameters that are not reported received their default value from the statistical package. Only the experimental items were used in the data analysis.

Family	bernoulli("logit")	**Inits**	0
Intercept prior	*Normal*(0,1)	**Chains**	6
Slope priors	*Normal*(0,1)	**Iterations**	8000 (2000 warmup)
SD priors	*Normal*(0,1)	**Correlation priors**	*LKJ*(2)
Formula	yes_responses ~ SA*conjoiner + (SA*conjoiner | subject) + (SA*conjoiner | item)		

Table 1. Bayesian Model specifications.

	+0.5	**-0.5**
Presence of Suspended Affixation	Present	Absent
Conjoiner Type	Harmonizing	Non-harmonizing

Table 2. Contrasts used in the Bayesian model.

In the descriptive statistics, mean values and confidence interval values for the data were visualized using the ggplot2 package (Wickham 2016). When reading the summary plots, the most important part for our purposes is whether confidence intervals between conditions overlap. Of course, there are cases where the distribution of the answers and outliers are extremely informative. However, these nuances would be available in Bayesian models. Our confidence intervals were computed following (Morey 2008). The reason for using these

computed CIs instead of just standard errors is to include uncertainty due to sampling between different groups observed.

In Bayesian posterior plots, the mean of the posterior distribution and 89% credibility intervals were included. Given our data, model, and priors, we judged that we have decisive evidence for a predictor's contribution in decreasing or increasing the number of 'acceptable' responses if 95% credible interval does not include 0, following Nicenboim and Vasishth (2016). The data for our study, along with our analysis scripts, can be found at https://github.com/utkuturk/SA_NanoChapter.

6.1.5 Results

Figure 2 shows the average proportions of 'yes' responses in each of the four conditions. While the x-axis shows the categorical grouping of the presence of suspended affixation, the line color shows the type of conjoiner used. 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. However, within suspended affixation sentences, participants rated harmonizing conjoiners more acceptable than the non-harmonizing conjoiners.

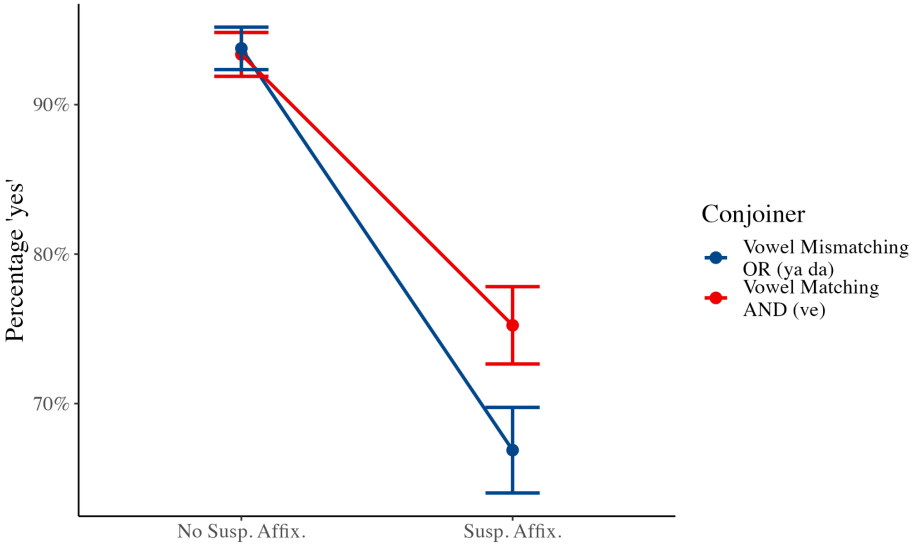


Figure 2. The average percentage of acceptable/yes responses according to the experimental conditions in this study. Error bars signal standard errors calculated following (Morey 2008).

Figure 2 shows that there is no clear difference between the type of conjoiner when there is no suspended affixation (M = 0.93 and 0.93, CI = 0.015 and 0.014, for vowel matching and mismatching respectively). On average, participants gave more 'yes' responses in SA conditions with vowel matching conjoiners (M = 0.75, CI = 0.026) rather than vowel mismatching conjoiners (M = 0.67, CI = 0.029). This is expected and verifies the previous hypothesis that vowel quality mismatch will result in significant acceptability difference in a suspended affixation context. One may also think 67% acceptability to be grammatical, but given that it is barely above chance and there are clearly ungrammatical sentences that rated around 50% acceptable in Türk (2022), mismatching conditions can, for practical purposes, be taken to mean that it is ungrammatical.

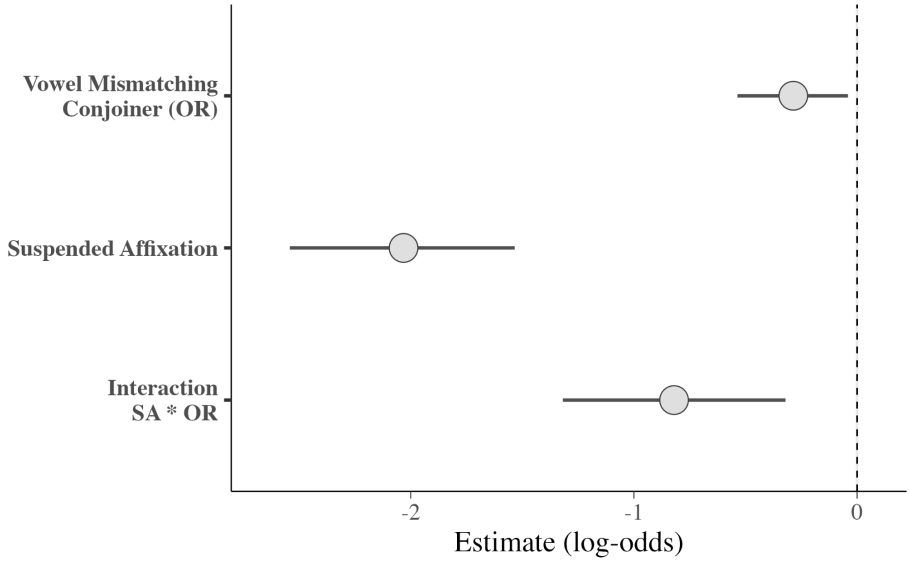


Figure 3. Estimates and 89% credible intervals for the logit regression coefficients for the model of responses to experimental trials in the experiment.

In Figure 3, we see the posterior probabilities for the Bayesian GLM model with a logit link. The negative main effect of conjoiner type (β = -0.29; CI = [-0.54;-0.04]; P(β < 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 the suspended affixation (β = -2.03; CI = [-2.54;-1.53]; P(β < 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 the suspended affixation (β = -0.82; CI = [-1.32;-0.32]; P(β < 0) > .999), meaning that there is a significant acceptability difference between vowel matching and mismatching conjoiners specifically in the context of suspended affixation.

6.1.6 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, 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). The effect of suspended affixation follows from Atmaca's (2022) experiments: that is, speakers have more difficulty in the context of suspended affixation in general.

However, these findings do not provide definitive support for the phonological re-ranking hypothesis, for there is a confound with respect to conjoiner type, and possible memory load of disjunctions (Schwarz, Clifton Jr, and Frazier 2007). A better comparison would be between two disjunctions (*ya da* vs. *veya*) that differ in the quality of the first vowel, but not in meaning.

7 Conclusion

In this chapter, I have examined the distribution of personal pronouns in the context of suspended affixation and the behavior 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 lexicalization 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 lexicalization root, 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 re-rank the different candidates for exponence by forcing a reanalysis of a lexicalized structure.

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