

THE EFFECT OF -RA IN PERSIAN ON LICENSING SUPERIORITY VIOLATIONS IN MULTIPLE WH-QUESTIONS*

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1. INTRODUCTION

In this paper, I examine the syntax of wh-questions in Persian and show (a) different strategies that Persian affords in single and in multiple wh-questions, (b) that wh-fronting is subject to intervention in terms of locality in that the movement of the structurally lower wh-element over the higher one causes ‘superiority violation’ in the sense of Chomsky (1973) (subsumed under the Minimal Link Condition Chomsky (1995)), and (c) that superiority is a violation of Relativized Minimality (Starke 2001; Rizzi 2004) and that the d(iscourse)-linking feature morphologically realized by -RA marking licenses superiority elimination. Finally, I discuss the derivation of sentences in which superiority is eliminated and show how an AGREE relation is established in terms of Probe-Goal relation (Chomsky 2000).

This paper is structured as follows: in section 2, I discuss the various strategies that Persian utilizes for forming single and multiple wh-questions. In section 3, I show that Persian wh-fronting is subject to superiority, which is a violation in terms of Relativized Minimality. While the relevant data are introduced, previous literature is briefly reviewed when relevant. I also discuss the effect of the d-linking feature on licensing superiority elimination. In section 4, I examine sentences in which the superiority is eliminated due to the presence of the d-linking [+Top] feature and discuss how an AGREE relation is established in these sentences, resulting in a grammatical sentence.

2. WH-QUESTIONS IN PERSIAN

Persian has optional wh-fronting and exhibits several syntactic strategies for forming wh-questions in single and in multiple wh-questions. (1) exemplifies a single wh-question. In (1a), the wh-element *chi* ‘what’ remains in the canonical preverbal position (Persian is SOV). In (1b), the wh-element precedes the subject, targeting a position below the complementizer *ke*. (1c) is ungrammatical, indicating that the wh-element cannot occur above the complementizer *ke*. In (1d), the wh-element moves to the initial position.

- (1) a. fekr mikoni (ke) Hasan chi kharid?
think.2sg that Hasan what bought.3sg
‘What do you think that Hasan bought?’
b. fekr mikoni (ke) chi_i Hasan <_i> kharid?
think.2sg that what Hasan bought.3sg

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- c. * fekr mikoni chi_i (ke) Hasan <_i> kharid?
 think.2sg what that Hasan bought.3sg
- d. chi_i fekr mikoni (ke) Hasan <_i> kharid?
 what think.2sg that Hasan bought.3sg

Turning to multiple wh-questions, wh-elements appear in different positions as well.

- (2) a. fekr mikoni (ke) Hasan chi-RA be ki dad?
 think.2sg that Hasan what-OM to whom gave.3sg
 ‘What do you think that Hasan gave to whom?’
- b. fekr mikoni (ke) chi-RA_i Hasan <_i> be ki dad?
 think.2sg that what-OM Hasan to whom gave.3sg
- c. fekr mikoni (ke) chi-RA_i be ki_j Hasan <_i> <_j> dad?
 think.2sg that what-OM to whom Hasan gave.3sg
- d. chi-RA_i fekr mikoni (ke) Hasan <_i> be ki dad?
 what-OM think.2sg that Hasan to whom gave.3sg
- e. chi-RA_i fekr mikoni (ke) be ki_j Hasan <_i> <_j> dad?
 what-OM think.2sg that to whom Hasan gave.3sg
- f. chi-RA_i be ki_j fekr mikoni (ke) Hasan <_i> <_j> dad?
 what-OM to whom think.2sg that Hasan gave.3sg

In (2a), both wh-elements *chi-RA*¹ ‘what’ and *be ki* ‘to whom’ remain in the pre-verbal position; whereas in (2b), one of the wh-elements is fronted above the subject and one remains in-situ. Both wh-elements precede the subject and hence occur below the complementizer *ke* in (2c). In (2d), the first wh-element is fronted to the initial position while the second one stays in-situ. In (2e), the first wh-element is in the initial position while the second one occurs in the position above the subject and below the complementizer *ke*. Lastly, in (2f), both wh-elements move to the initial position.

Below, I show various positions that wh-elements can occupy in a multiple wh-question with more than two wh-elements. Consider (3):

- (3) a. fekr mikoni ki chi-RA be ki dad?
 think.2sg who what-OM to whom gave.3sg
 ‘Who do you think gave what to whom?’
- b. ki_i fekr mikoni <_i> chi-RA be ki dad?
 who think.2sg what-OM to whom gave.3sg
- c. ki_i chi-RA_j fekr mikoni <_i> <_j> be ki dad?
 who what-OM think.2sg to whom gave.3sg
- d. ki_i chi-RA_j be ki_k fekr mikoni <_i> <_j> <_k> dad?
 who what-OM to whom think.2sg gave.3sg

In (3a), all the three wh-elements occur before the verb; whereas in (3b), only the wh-subject is fronted. In (3c), both the wh-subject and the direct object are fronted to the initial position and in (3d) the three wh-elements including the indirect object *be ki* ‘to whom’ occur clause initially.

In the next section, I show that wh-fronting in Persian is subject to the superiority constraint. I account for the superiority violation through a principled analysis of chain-formation in terms of Relativized Minimality (Starke 2001; Rizzi 2004). I also present cases

¹ Here, the direct object is marked with a differential object marker (the suffix -RA). Please read the rest of the paper where the relevant properties of the suffix -RA are introduced.

in which superiority is legitimately eliminated and discuss how Relativized Minimality accounts for the grammatical status of these sentences.

3. SUPERIORITY VIOLATIONS

3.1. Data

Lotfi (2003) provides the data in (4) and (5) to show that wh-fronting in Persian is subject to Chomsky's (1973) superiority constraint.

- (4) a. fekr mikoni ki chi kharid?
Think.2sg who what bought.3sg
'Who do you think bought what?'
- b. * fekr mikoni chi_i ki <_i> kharid?
Think.2sg what who bought.3sg
- (5) a. ki_i chi_j fekr mikoni <_i> <_j> kharid?
Who what think.2sg bought.3sg
- b. * chi_j ki_i fekr mikoni <_i> <_j> kharid?
What who think.2sg bought.3sg

The superiority constraint accounts for a preference for extracting the structurally higher wh-phrase when two or more elements are eligible for movement. Both in the low pre-verbal position (4b) and in the matrix position (5b), the movement of the wh-object chi 'what' over the intervening wh-subject ki ('who') violates the superiority constraint. The ungrammaticality holds if the lower wh-element chi 'what' occupies the matrix position and the wh-subject remains in the embedded clause. This is illustrated in (6).

- (6) * chi_i fekr mikoni ki <_i> kharid?
What think.2sg who bought.3sg

Turning to wh-adjuncts, these elements also manifest superiority violation. This is illustrated in the following examples.

- (7) a. fekr mikoni ki koja raft?
think.2sg who where went.3sg
'Who do you think went where?'
- b. * fekr mikoni koja_i ki <_i> raft?
- (8) a. ki_i koja_j fekr mikoni <_i> <_j> raft?
Who where think.2sg went.3sg
- b. * koja_j ki_i fekr mikoni <_i> <_j> raft?
Where who think.2sg went.3sg
- (9) a. fekr mikoni ki chetori raghsid?
Think.2sg who how danced.3sg
'Who do you think danced how?'
- b. * fekr mikoni chetori_i ki <_i> raghsid?
Think.2sg how who danced.3sg

- (10) a. ki_i chetori_j fekr mikoni $\langle i \rangle \langle j \rangle$ raghsid?
 Who How think.2sg danced.3sg
 b. * chetori_j ki_i fekr mikoni $\langle i \rangle \langle j \rangle$ raghsid?
 How who think.2sg danced.3sg

Consider the examples in (11) and (12), in which there are more than two wh-elements in the clause. The superiority constraint holds in these examples as well:

- (11) a. ki ba ki koja harf zad?
 who with whom where word hit.3sg
 ‘Who talked to whom where?’
 b. * koja_i ki ba ki $\langle i \rangle$ harf zad?
 Where who with whom word hit.3sg
 c. * ba ki_i ki $\langle i \rangle$ koja harf zad?
 with whom who where word hit.3sg
- (12) a. ki key koja raft?
 who when where went.3sg
 ‘Who went where when?’
 b. * keyi ki $\langle i \rangle$ koja raft?
 when who where went.3sg
 c. * kojai ki key $\langle i \rangle$ raft?
 where who when went.3sg

Surprising as it may look, it has been observed that the above superiority violation can be eliminated when the wh-object is marked with an object marker, that is the suffix -RA, (Lotfi 2003). Consider (13) below.

- (13) chi -RA_i ki $\langle i \rangle$ kharid?
 what-OM who bought.3sg
 ‘What did who buy’

The -RA marked objects are d-linked in the sense of Pesetsky (1987, 2000) and refer to contexts that are known in the discourse².

Indeed, similar ameliorating effect of d-linking was reported in English with lexically restricted wh-phrases. This is illustrated in (14):

- (14) Which book_i did which student buy $\langle i \rangle$?

To complete the picture with respect to the effect of the suffix -RA on licensing the superiority violation, consider the following sentence in (15). In this sentence, there are two -RA marked wh-objects:

² -RA has been analyzed as a specificity marker (Browne 1970; Karimi 1996), a marker conveying presuppositionality, familiarity, and aboutness (Ghomeshi 1997; Ganjavi 2007), and a differential object marker (Jasbi 2014). The semantics of -RA marked objects closely couples with the semantics of definiteness. In fact, -RA is obligatory with definite object NPs but optional with indefinite NPs. When an indefinite NP is -RA marked, it bears specific interpretation (Karimi 1996). Elements that refer to context sets previously mentioned in the discourse such as lexically restricted which-NP wh-phrases also obligatorily call for the presence of -RA.

- (15) * *chi-RA_i ostad ki-RA tashvigh kard <_i> bekhune*
 what-OM professor who-OM persuade.3sg to read
 ‘What did the professor persuade who to read?’

As (15) illustrates, if both wh-expressions in a multiple wh-question are suffixed with -RA and thus d-linked, the lower element cannot move over the higher one. (15) contrasts with (14) in English³.

Ungrammaticality holds in sentences in which there are two -RA marked lexically restricted wh-phrases. This is illustrated in (16).

- (16) * *kodum ketab-RA_i ostad kodum daneshju-RA tashvigh kard <_i> bekhune*
 Which book-OM professor which student-OM persuade.3sg to read
 ‘Which book did the professor persuade which student to read?’

What we can infer from these data discussed so far is that whereas the movement of a (d-linked) -RA marked wh-element over another (d-linked) -RA marked wh-element is not allowed (this is attested by (15) and (16) above); it is possible to move a lexically restricted wh-element over another lexically restricted wh-element in English, as in (14). In Persian, however, superiority violation is legitimately eliminated when the fronted wh-object is marked with -RA iff -RA is absent on the intervening wh-element as in (13).

In the next section, I account for the effect that d-linking has on superiority elimination and discuss the grammaticality of (13) and the ungrammaticality of (15) and (16) in Persian. The analysis will be expressed in terms of locality based on (featural) Relativized Minimality (Starke 2001; Rizzi 2004). I also discuss why it is not possible to move a (d-linked) -RA marked object over another (d-linked) -RA marked object in Persian while the movement of a which-NP over another which-NP is permitted in English.

3.2. Superiority is a violation of (featural) Relativized Minimality

It has been suggested that superiority violations can be accounted for by the locality principle that restricts the formation of chains across intervening elements in terms of Relativized Minimality (Rizzi 2017). According to Relativized Minimality, in a structure [X . . . Z . . . Y] a local relation is disrupted between X and Y when:

- (a) Z structurally intervenes between X and Y
 (b) Z matches the specification in morpho-syntactic features of X.

This concept of locality is similar to Chomsky’s (1995) Minimal Link Condition, stated in (17). According to Minimal Link Condition, an AGREE relation between a probing head and the target of movement is violated when there is an intervener which contains a featural makeup identical to that of the target.

³ Please note that in (15), if the higher wh-element *ki-RA* ‘who-OM’ stays in-situ or moves to the initial position the result are grammatical. These sentences are illustrated in (1) and (2) below respectively.

- (1) *Ostad ki-RA tashvigh kard chi-RA bekhune?*
 professor who-OM persuade.3sg what-OM to read
 ‘Who did the professor persuade to read what?’
 (2) *Ki-RA_i ostad <> tashvigh kard chi-RA bekhune?*
 who-OM professor persuade.3sg what-OM to read

- (17) *Minimal Link Condition:*
K attracts a only if there is no b, b closer to K than a, such that K attracts b.
 (Chomsky1995)

Both the Minimal Link Condition in terms of AGREE and Relativized Minimality can treat superiority as a violation of the locality condition on syntactic relations. While the former applies to a local relation between a probing head and a target of movement (or a ‘Goal’ which gets involved in an AGREE relation with a Probe in the sense of Chomsky’s Probe-Goal Model (2000)), the latter applies to members of a syntactic chain established by movement.

The AGREE relation in terms of the Minimal Link Condition is a derivational process, while Relativized Minimality is a condition on representations in terms of chain-formation. However, the crucial similarity between the two theories is that both establish non-local relations among features. Hence, a natural theoretical assumption would be to consider the two theories as facets of the same computational process.

Based on Relativized Minimality, the important idea is that the typology of positions responsible for intervention effects is determined by the relevant morphosyntactic features that trigger movement.

Accordingly, one of the relevant features is [+Wh], which triggers the movement of wh-elements to the left-periphery to check the interrogative force. With Rizzi (2011), I assume that another relevant feature is [+Top], expressing the properties of d-linking often realized in terms of lexical restriction in languages such as English. Since d-linked direct objects obligatorily co-occur with morphological -RA marking, I consider -RA to be the morpho-syntactic instantiation of the [+Top] feature.

Following Starke (2001) and Rizzi (2004), I propose that whereas feature Identity is ungrammatical, when the morpho-syntactic features of the intervener are a proper subset of the features of the moved element chain-formation is indeed possible. Whereas the former is a configuration where the intervener bears features identical to those of the target, the latter is a case of Inclusion configuration in which the moved element contains an additional feature (absent from the intervening element).

Of special relevance for our discussion is the case of Inclusion configuration which, based on Relativized Minimality, should account for the grammaticality of sentences in which superiority is eliminated – which I take to be due to the presence of an additional d-linking feature (namely [+Top]) on the extracted wh-element.

In (18), I schematically represent the configurations of ‘feature Identity’ and ‘feature Inclusion’. X is the moved/fronted element, Y is the unpronounced copy of X in the base position, Z is the intervening element. +F1 and +F2 are the relevant morphosyntactic features that participate in the computation of Relativized Minimality.

- (18) a. Feature Identity (Ungrammatical)
 *X [+F1] ... Z [+F1] ... Y [+F1]
 b. Feature Inclusion (Grammatical)
 X [+F1 +F2] ... Z [+F1] ... Y [+F1 +F2]

Let us now go back to the superiority-violating sentences exemplified above and see how the ungrammaticality of these sentences can be accounted for in terms of Relativized Minimality. We should also consider how the proposed analysis carries over to sentences in which superiority is eliminated.

Consider the grammaticality of (13) and the ungrammaticality of (15), (16), as well as the ungrammaticality of (6) in Persian. I am repeating these sentences below for convenience.

- (6) * chi_i *ferk mikoni* ki $\langle_i \rangle$ *kharid?*
 What think.2sg who bought.3sg
- (13) chi-RA_i *ki* $\langle_i \rangle$ *kharid?*
 what-OM who bought.3sg
 ‘What did who buy’
- (15) * chi-RA_i *ostad* ki-RA *tashvigh kard* $\langle_i \rangle$ *bekhune*
 what-OM professor who-OM persuade.3sg to read
 ‘What did the professor persuade who to read?’
- (16) * kodum ketab-RA_i *ostad* kodum daneshju-RA *tashvigh kard* $\langle_i \rangle$ *bekhune*
 Which book-OM professor which student-OM persuade.3sg to read
 ‘Which book did the professor persuade which student to read?’

Based on RM, (6), (15), and (16) are ungrammatical as the feature specification of the fronted wh-elements is identical to the feature specification of the intervening ones (please note that the feature specifications of the wh-elements in (15) and (16) are larger than the one in (6)). Now let us consider (13). The grammaticality of this sentence can be accounted for as the feature specification of the fronted wh-object, namely [+Wh +Top] is richer than the feature specification of the intervening wh-subject [+Wh], instantiating an Inclusion configuration.

In (19), I represent the feature specification of the fronted wh-elements as well as the feature specification of the intervening ones attested by the examples in (6), (13), (15), and (16) respectively:

- (19) a. Feature Identity (Ungrammatical)
 * $\text{Chi} [+Wh] \dots \text{Ki} [+Wh] \dots \langle \text{Chi} [+Wh] \rangle = (6)$
- b. Feature Inclusion (Grammatical)
 $\text{Chi-RA} [+Wh +Top] \dots \text{Ki} [+Wh] \dots \langle \text{Chi-RA} [+Wh +Top] \rangle = (13)$
- c. Feature Identity (Ungrammatical)
 * $\text{Chi-RA} [+Wh +Top] \dots \text{Ki-RA} [+Wh +Top] \dots \langle \text{Chi-RA} [+Wh +Top] \rangle = (15)$
- d. Feature Identity (Ungrammatical)
 * $\text{Kodum ketab-RA} [+Wh +Top] \dots \text{Kodum daneshju-RA} [+Wh +Top] \dots \langle \text{Kodum ketab-RA} [+Wh +Top] \rangle = (16)^4$

How about (14) in English, repeated below? Can Relativized Minimality account for the grammatical status of this sentence?

- (14) Which book_i did which student buy $\langle_i \rangle$?

In (14), both wh-elements are lexically restricted and thus d-linked. In fact, if the feature specification of both wh-elements is identical, containing [+Wh +Top] features, the sentence should be ungrammatical, contrary to the facts.

Furthermore, whereas two lexically restricted wh-phrases are grammatical in English, the movement of a d-linked -RA marked object over another d-linked -RA marked object

⁴ Here I assume that the feature specification of the bare wh-elements (15) and the lexically restricted -RA marked wh-phrases as in (16) are the same even though that the specification of the lexically restricted wh-phrases seems to be larger, presumably containing an additional [+N] feature, specifying the set that the wh-phrase refers to in a given discourse.

violates the superiority constraint and renders the sentences ungrammatical. Another question that we should address is how to account for the difference between English and Persian.

With Rizzi (2011), I propose that lexically restricted wh-phrases only optionally carry a [+Top] feature. In fact, in the right contextual conditions, bare wh-elements can also be d-linked (Pesetsky 1987). In Persian, on the other hand, bare wh-objects may be marked with -RA or not. The choice depends on their interpretation as being d-linked or not. Lexically restricted wh objects, however, obligatorily co-occur with -RA and hence are d-linked.

Therefore, if we assume that lexically restricted wh-phrases only optionally carry a [+Top] feature, the grammaticality of (14) can be accounted for on the grounds that the moved wh-object contains a [+Top] feature and that this feature is absent on the intervening wh-subject. Hence, this sentence creates an inclusion configuration whose grammaticality is correctly predicted by Relativized Minimality.

It follows that the crucial difference between English and Persian is that in Persian there is a morpho-syntactic feature encoding [+Top] realized by -RA marking. This suffix obligatorily encodes the [+Top] feature on the moved wh-object. However, the presence of lexical restriction as in English does not guarantee that the wh-element bears [+Top] feature.

In the following table, I present the profile of grammaticality that the Persian examples demonstrate.

ki ... chi who ... what	NO SUPERIORITY VIOLATION	NO INTERVENTION
*chi ... ki ... <chi> what ... who ... <what>	SUPERIORITY VIOLATION	FEATURE IDENTITY
chi-RA ... ki ... <chi-RA> what-OM ... who ... <what-OM>	SUPERIORITY ELIMINATION	FEATURE INCLUSION
*chi-RA ... ki-RA ... <chi-RA> what-OM ... ki-OM ... <what-OM>	SUPERIORITY VIOLATION	FEATURE IDENTITY
*kodum ketab-RA ... kodum daneshju-RA ... <kodum ketab-RA> which book-OM ... which student-OM ... <which book-OM>	SUPERIORITY VIOLATION	FEATURE IDENTITY

In the next section, I discuss the derivation of the superiority-eliminating sentences in terms of an AGREE relation based on Chomsky's (2000) Probe-Goal model. I explain how the grammatical status of these sentences can be accounted for even though the wh-object moves over the intervening wh-subject and that the wh-subject is the hierarchically closer candidate for the probe in the syntactic structure.

4. DERIVATION OF SUPERIORITY-ELIMINATING SENTENCES

In Chomsky's (2000) Probe-Goal Model, the AGREE relation is established through some formal mechanism in which *uninterpretability* plays a crucial role – the probe with uninterpretable features searches for an appropriate goal with matching feature(s) and it attracts the goal to delete its uninterpretable feature(s).

In this system, locality is defined hierarchically in terms of c-command. Consider a situation in which there is more than one candidate in the c-commanding domain of the probing head and that each candidate is equally endowed with the matching features required by the probe to establish the AGREE relation. In this situation, the probe is constrained to attract the hierarchically closest candidate in the syntactic structure. In Chomsky (1995), this concept of locality was phrased in terms of 'attract closest' as an economy principle required to establish an AGREE relation in syntactic dependencies.

In light of our discussion, consider the sentences in (13) and (14) that I repeat below for convenience. In both sentences, the wh-object moves over the wh-subject, occurring in the initial position.

5. CONCLUSIONS

In this work, I argue that superiority is a violation of Relativized Minimality and show that, whereas feature ‘Identity’ gives rise to ungrammaticality, feature ‘Inclusion’ is felicitous. The distinction between Persian and English is that in the former d-linking is realized by a morpho-syntactic marker, the suffix -RA. In Persian, in fact, d-linking is inevitable when the wh-object is marked with -RA, but optional when it is lexically restricted as in English. I further argue that the grammaticality of a -RA marked wh-object moving over the intervening wh-subject is accounted for on the assumption that the -RA marked object is endowed with [+Wh +Top] features, thus making it the only eligible candidate to establish an AGREE relation with the complex probing-head bearing matching [+Wh +Top] features.

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