Proceedings of SALT 29: 686–705, 2019

Neutralizing Free Choice Items via Maximal Domain Restriction: Farsi *-i* Indefinites*

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Abstract This paper identifies two types of free choice items (FCIs) in Farsi: *yek -i* DPs and *har -i* DPs. Their distribution and interpretation pose a puzzle: *yek -i* DPs pattern with other existential FCIs, and *har -i* DPs with other universal FCIs, but both items lose their prototypical FCI behavior when they combine with the accusative marker *-ro*. The paper shows that the loss of FCI behavior follows from an alternative-based analysis of FCIs (Chierchia 2013) under some assumptions about the semantic effect of *-ro*. The analysis parallels the explanation for the loss of FCI status of Spanish *algunos* presented in Alonso-Ovalle & Menéndez-Benito 2011 in that it also relies on the derivation of alternatives that are equivalent to the assertion, hence not excludable.

Keywords: free choice items, domain restriction, Farsi.

1 Introduction

FCIs, like German *irgendein* or English *any*, are quantificational DPs that seem to have existential force in downward entailing (DE) contexts. The sentences in (1) and (2), for instance, convey that no question was answered, just as their counterparts with an ordinary indefinite or a bare plural in (3) can do.

(1) Niemand hat irgendeine Frage beantwortet.
Nobody has irgend-one question answered
'Nobody answered a question.' (Aloni & Port 2015: 121)

(2) Nobody answered any questions.

(3) Nobody answered { a question. / questions. }

* Thanks to the conference reviewers for insightful questions and suggestions. Thanks also to the SALT 29 audience, especially Lucas Champollion and Diti Bhadra, whose questions helped us improve the paper. We are also grateful to Masoud Jasbi for corresponding with us about *har -i* DPs. The Social Sciences and Humanities Research Council of Canada provided financial support through Insight Grant *Modality across Categories: Modal Indefinites and the Projection of Possibilities* (435-2018-0524) (Alonso-Ovalle, Principal Investigator), which is gratefully acknowledged here. Our names are listed in alphabetical order.

Under the scope of a modal, FCIs yield interpretations stronger than those of ordinary indefinites. The sentences in (4a) and (5a) require *all* doctors to be permitted options—a requirement known as a 'free choice effect.' This contrasts with their counterparts with ordinary indefinites (*ein, a*) in (4b) and (5b), which don't require all doctors to be permitted options.

(4) a. Mary muss irgendeinen Arzt heiraten.
Mary has-to IRGENDEIN doctor marry
'Mary has to marry a doctor—any doctor.'
(Kratzer & Shimoyama 2002: 11)

b. Mary muss einen Arzt heiraten.
Mary has-to EIN doctor marry
'Mary has to marry a doctor.' (Kratzer & Shimoyama 2002: 11)

(5) a. Mary can marry any doctor.

b. Mary can marry a doctor.

Based on their distribution and interpretation, the literature has distinguished two types of FCIs: existential (EFCIs) and universal (UFCIs). German *irgendein*, Spanish *algún*, Italian *un NP qualsiasi* and *un qualche*, Romanian *vreun*, Sinhala *wh-də* and *wh-hari*, the Chinese *wh*-words, or the Czech's *-si* indefinites belong to the first class; English *any*, Spanish *cualquiera*, or Italian *qualsiasi* and *qualunque* to the second.

EFCIs and UFCIs contrast under the scope of necessity modals. We have seen in (4a) that EFCIs are licensed under necessity modals. UFCIs, in contrast, are degraded, unless they are modified, as shown in (6). Legrand (1975) dubbed this phenomenon 'subtrigging' (Dayal 1998, 2005, 2013).

(6) a. ?? Mary must read any book.

b. Mary must read any book on the reading list.
(based on Chierchia 2013: 309)

EFCIs and UFCIs also contrast when they are not embedded. Unembedded UFCIs are licensed only when modified ('subtrigged'), as in (7). In this case, they have universal force—(7) conveys that Mary answered *all* objections that her students raised—and support counterfactual inferences—if (7) is true, (8) must also be true.

(7) Mary confidently answered any objections that her students raised.
(based on Dayal 1998: 446)

(8) If Mary's students had objected to her handwriting, she would have answered that objection too.

Unembedded EFCIs are licensed even if they are not modified. In this case, they have existential force, as seen in (9), and convey modality—for instance, (9) conveys an 'epistemic effect': it signals that the speaker does not know which philosopher María is dating.

(9) María sale con algún filósofo.
María is dating with ALGÚN philosopher
'María is dating some philosopher or other—I don't know which one.'

Previous work has identified a case where inflectional morphology forces EFCIs to lose their FCI status: *algunos*, the plural of Spanish *algún*, conveys no epistemic effect (Alonso-Ovalle & Menéndez-Benito 2011). This is illustrated in (10) below: while *algún* does not tolerate *namely* continuations specifying who satisfies the existential claim, *algunos* does.

(10) a. María habló con algunos estudiantes ...
María talked to ALGUNOS students ...
b. en concreto con Pedro, Juan y Carlos.
namely with Pedro, Juan, and Carlos
(Alonso-Ovalle & Menéndez-Benito 2011)

To account for this contrast, Alonso-Ovalle & Menéndez-Benito (2011) endorse the view that the interpretation of FCIs is determined by the exclusion of the propositional alternatives that they invoke (Kratzer & Shimoyama 2002). They show that the plural morphology of *algunos* neutralizes the alternatives that *algún* DPs introduce because they are equivalent to the assertion and are then non-excludable. With no alternatives to exclude in the plural, the neutralization of the FCI status follows.

Do we find other cases where FCIs are neutralized? Does the pattern generalize across types of FCIs? And, if so, do we find a general explanation for the neutralization of FCI status? This paper answers all these questions in the affirmative. The paper makes three contributions. First, section 2.1 identifies two types of FCIs in Farsi (Indo-Iranian): *yek -i* DPs, which pattern with other EFCIs, and *har -i* DPs, which pattern with other UFCIs. Second, section 2.2 presents a puzzle: both *yek -i* and *har -i* DPs lose their FCI status when they combine with the accusative marker *-ro*. Third, section 3 shows that this behavior actually follows from current alternative-based analyses of FCIs (Chierchia 2013) under minimal assumptions about the semantics effect of *-ro*. The analysis that we present is parallel to the explanation for the loss of FCI status of *algunos* presented in Alonso-Ovalle & Menéndez-Benito 2011 in that it also relies on the derivation of alternatives that are equivalent to the assertion, hence not excludable. Section 4 concludes with a summary and a remark.

2 The Puzzle

We start with the puzzle. First, we identify two varieties of FCIs in Farsi: *yek* ('one') NP-*i* ('*yek* -*i* DPs') and *har* ('each') NP-*i* ('*har* -*i* DPs.') Section 2.1 shows that *yek* -*i* DPs are EFCIs and *har* -*i* DPs UFCIs. We then show in section 2.2 that when they combine with the accusative marker -*ro*, both *yek* -*i* and *har* -*i* DPs lose their characteristic FCI behavior.

2.1 *Yek* -*i* DPs *vs. har* -*i* DPs

Like other EFCIs, *yek* -*i* DPs show apparent existential force in DE contexts: (11), for instance, conveys that Ava will get a gift as long as she reads at least one book and (12) that the speaker doubts that Ava has watched a movie.

(11) age Ava ye ketab-i bexun-e, ye jaize migir-e.
if Ava one book-IND read-3.SG one gift take-3.SG
'If Ava reads a book, she gets a gift.' (Alonso-Ovalle & Moghiseh 2019)

(12) shak dar-am Ava ye film-i dide bash-e.
doubt have-1.SG Ava one film-IND seen be-3.SG
'I doubt that A. has watched any movie.' (Alonso-Ovalle & Moghiseh 2019)

Under both possibility and necessity modals, *yek* -*i* DPs, like other EFCIs, trigger a free choice effect. The sentence in (13), for instance, is false in the scenario in (14) because it conveys that Ava is allowed to buy any of the five books. The sentence in (15), with a *yek* -*i* DP under a necessity modal, is false in the scenario in (16) for the same reason. The counterparts of the sentences in (13) and (15) with standard indefinite DPs, in contrast, are true in their respective scenarios.

(13) Ava mitun-e ye ketab-i bexar-e.
Ava can-3.SG one book-IND buy-3.SG
'Ava can buy any book.'

(14) *Scenario:* There are only five books ($\{b_1, \ldots b_5\}$). Ava is not allowed to buy b_4 or b_5.

(15) Ava bayad ye ketab-i bexar-e.
Ava must one book-IND buy-3.SG
'Ava must buy a book–any book.'

(16) *Scenario:* There are only five books ($\{b_1, \ldots b_5\}$). Ava is required to buy a book, but he is not allowed to buy b_4 or b_5.

Like *yek -i* DPs, *har -i* DPs convey a free choice effect under possibility modals. For instance, the sentence in (17) is false in the scenario in (14) because, like (13), it conveys that Ava is allowed to read any of the five books in the scenario.

(17) Ava mitun-e har ketab-i bexun-e.
Ava can-3.SG each book-IND read-3.SG
'Ava can read any book.'

With necessity modals, the parallelism with *yek -i* DPs breaks down. Just like English *any*, *har -i* DPs are deviant in this context, unless modified. This is illustrated in (18) and (19).

(18) *Ava bayad har ketab-i bexun-e.
Ava must each book-IND read-3.SG
'Ava must read any book.'

(19) Ava bayad har ketab-i ke peyda mikon-e bexun-e.
Ava must each book-IND that find does-3.SG read-3.SG
'Ava must read any book that she finds.'

The same is true when *har -i* DPs are unembedded: the sentences in (20) and (21) show that in positive episodic sentences *har -i* DPs are also ungrammatical if they are not modified.

(20) *Ava har ketab-i xund.
Ava each book-IND read-3.SG
'Ava read any book .'

(21) Ava har ketab-i ke roo miz-esh boode bashe xund-e.
Ava each book-IND that on table-POSS.3SG was SUBJ read-PERF-3.SG
'Ava read any book that was on her desk.'

Sentences containing subtrigged *har -i* DPs display three characteristic properties that we will keep track of. First, they have universal force: if *The Stranger*, *Oblomov*, and *The Idiot* were on Ava's desk, then (21) conveys that Ava read *The Stranger*, *Oblomov*, and *The Idiot*. Second, these sentences license counterfactual inferences: if (21) is true, then (22) must also be true. Finally, like subtrigged *any* (Dayal 1995), subtrigged *har -i* DPs do not license discourse anaphora: the sentence in (21) cannot be continued with the sentence in (23).

(22) If *Ulysses* had been on her desk, Ava would have read it.

(23) #...Forood ham una ro xund-e.
...Forood too those ACC read-PERF-3.SG
'...and Forood has read them too.'

	◇	□	unembedded	subtrigging
yek -i DPs	FCE	FCE	✓	no
har -i DPs	FCE	*	*	✓

Table 1 Canonical FCI Behavior

In short, *yek -i* DPs show the typical behavior of EFCIs and *har -i* DPs the typical behavior of UFCIs. This is summarized in Table 1.

Har -i DPs also pattern with other UFCIs with respect to their behavior in DE contexts. Certain UFCIs, like Italian *qualunque* or *qualsiasi* (but unlike English *any*) are deviant in some DE contexts (Chierchia 2013). This is also the case for *har -i* DPs: the sentence in (24a), for instance, cannot convey that Ava didn't read any book and the sentence in (24b) that the speaker doubts that Ava has watched any movies. We will get back to the behavior of *har -i* DPs in section 3.

(24) a. * Ava har ketab-i na-xund.
Ava each book-IND NEG-read-3.SG

b. * shak dar-am Ava har ketab-i xunde bash-e.
doubt have-1.SG Ava each book-IND read be-3.SG

2.2 Losing FCI status: The effect of accusative marker *-ro*.

Both *yek -i* and *har -i* DPs lose their FCI status when they combine with the accusative marker *-ro*. We start by noting that, when combined with the accusative marker *-ro*, *har -i* DPs do not trigger a free choice effect with possibility modals: the sentence in (25) conveys that there is a certain group of books that Ava is allowed to read, not that she is allowed to read any book, as its counterpart without *-ro* in (17) does.

(25) Ava mitun-e har ketab-i ro bexun-e.
Ava can-3.SG each book-IND ACC read-3.SG
'There is a particular group of books each of which Ava can read.'

Under the scope of a necessity modal, *har -i* DPs are acceptable when marked with accusative marker *-ro*, even if they are not modified, unlike *har -i* DPs without *-ro*. The sentence in (26), for instance, is not deviant. It conveys that there is a certain group of books each of which Ava must read—not that Ava must read a book and that any book is a permitted option for her.

(26) Ava bayad har ketab-i ro bexun-e.
Ava must each book-IND ACC read-3.SG
'There is a certain group of books each of which Ava must read.'

In combination with *-ro*, *har -i* DPs are licensed in unembedded sentences, again, in the absence of any modification: the sentence in (27) is not deviant and conveys that Ava read all books in a certain group of books. This contrasts, again, with what happens with *har -i* DPs not modified by *-ro*.

(27) Ava har ketab-i ro xund.
Ava each book-IND ACC read-3.SG
'Ava read each book (in a certain group of books).'

Unembedded sentences containing *ro*-marked *har -i* DPs, like (27), do not have the typical properties of subtrigged sentences, so they are not cases of covert subtrigging. Although they have universal force, like their subtrigged counterparts, the universal claim is restricted to a contextually determined group, and they do not license counterfactual inferences. Consider, for instance, the scenario in (28a). The sentence in (27), repeated below in (28b), is true in this scenario. The universal claim is naturally understood as being restricted to the set of books on Ava's desk, and (28b) does not convey any counterfactual inferences, like (29).

(28) a. *Scenario*: There were three books on Ava's desk: *The Stranger*, *Oblomov*, and *The Idiot*. Ava read them all. She wouldn't have read any other books.

b. Ava har ketab-i ro xund.
Ava each book-IND ACC read-3.SG
'Ava read each book (in a certain group of books).'

(29) If *Ulysses* had been on her desk, Ava would have read it.

Finally, the accusative marked *har -i* DP in (27) naturally licenses discourse anaphora, as the discourse in (30) shows.

(30) Ava har ketab-i ro xund, Forood ham una ro xund.
Ava each book-IND ACC read-3.SG, Forood too those ACC read-3.SG
'Ava read each book in a certain group of books, Forood has read them too.'

Table 2 summarizes the properties of *har -i* DPs and contrasts them with the properties of *har -i* DPs marked with *-ro*. As we can see, the FCI behavior of *har -i* DPs is lost when they are combined with *-ro*.

Yek -i DPs also lose their FCI status when combined with *-ro*. The sentence in (31), for instance, does not convey a free choice effect: it claims that there is a certain book that Ava is allowed to read, not that she is allowed to read any book. Likewise, the sentence in (32) conveys that Ava must read a certain book, not that she must read a book and that she is permitted to read any book.

	◊	□	unembedded
har -i DPs	FCE	*	*
har -i DPs + *-ro*	no FCE	✓	✓

Table 2 *har -i* DPs + *-ro*: No FCI behavior

(31) Ava mitun-e ye ketab-i ro bexun-e.
Ava can-3.SG one book-IND ACC read-3.SG
'Ava is allowed to read a certain book.'

(32) Ava bayad ye ketab-i ro bexun-e.
Ava must one book-IND ACC read-3.SG
'There is a certain book that Ava must read.'

We conclude, then, with a puzzle: What does *-ro* do to block the FCI-behavior of *yek -i* and *har -i* DPs? The next section addresses this question.

3 Proposal

We will start by providing in section 3.1 a review of the alternative-based theory of FCIs presented in Chierchia 2013. This theory is designed to cover the behavior of EFCIs and UFCIs, and, so, can be extended to cover *yek -i* and *har -i* DPs, as we will see in Section 3.2. We then show in section 3.3 that when existentials are combined with the accusative marker *-ro*, they trigger exceptional scope interpretations. We conclude by showing that the loss of FCI status follows from the alternative-based analysis of FCIs together with an analysis of exceptional scope based on maximal domain shrinking (Schwarzschild 2002).

3.1 An alternative-based theory of FCIs (Chierchia 2013)

According to the alternative-based theory of FCIs presented in Chierchia 2013, FCIs are existential quantifiers that end up introducing into the semantic derivation two types of propositional alternatives: scalar alternatives (ALT_σ), and ('pre-exhaustified') domain alternatives ($\text{ALT}_{\text{EXH-D}}$). These alternatives are used by corresponding exhaustification operators (O_σ for ALT_σ, and $O_{\text{EXH-D}}$ for $\text{ALT}_{\text{EXH-D}}$) that can strengthen the existential claim made by FCIs. An exhaustification operator applies to a propositional constituent ϕ and (possibly) strengthens the proposition that it denotes by excluding all alternatives to ϕ of the relevant type not entailed by ϕ. For our purposes, we will simply work with an exhaustivity operator, O_{ALT}, that excludes both scalar and pre-exhaustified domain alternatives, as in (33).

(33) $[\![O_{\text{ALT}}[\phi]]\!] = \lambda w.[\![\phi]\!](w) = 1 \wedge \forall p \in [\![\phi]\!]^{\text{ALT}}[p(w) = 1 \rightarrow [\![\phi]\!] \subseteq p]$

Like other FCIs, we will take both *har -i* DPs and *yek -i* DPs to activate both scalar and pre-exhaustified domain alternatives.

Har -i DPs are distributive. This contrast is illustrated in (34) and (35): *har -i* DPs are fine with distributive predicates like *read*, but deviant with collective predicates like *gather*.

(34) *Har pesar-i mitun-e too park jam sh-e.
each boy-IND can-3.SG in park group become-3.SG
'Any boy can gather in the park.'

(35) Har pesar-i mitun-e ye ketab bexun-e.
each boy-IND can-3.SG one book read-3.SG
'Any boy can read a book.'

We will assume, as illustrated in (36), that the extension of NPs can include both atomic and non-atomic individuals, and that singular marking selects the atomic individuals from the extension of the NP (Sauerland 2003; Sauerland, Anderssen & Yatsushiro 2005). We will not assume, however, that the morphology directly reflects the semantics: both *har -i* and *yek -i* DPs require NPs with singular marking, but we will assume that in the case of *har -i* the singular marking is simply default, while in the case of *yek -i* DPs, it is interpreted in the semantics, as in (36b).[1]

(36) a. $[\![[_{\text{NP}}\ \text{book}]]\!]^w = \left\{ \begin{array}{c} b_1, b_2, b_3, \\ b_1 \oplus b_2, b_1 \oplus b_3, b_2 \oplus b_3, b_1 \oplus b_2 \oplus b_3 \end{array} \right\}$

b. $[\![\text{SG}\ [_{\text{NP}}\ \text{book}]]\!]^w = \{b_1, b_2, b_3\}$

The denotation of a *har* DP is given in (37): a *har* DP requires at least one plural individual in the extension of the NP to have the VP property.The denotation for a *yek* DP is given in (38): a *yek* ('one') DP requires at least one atomic individual to have the VP property.

(37) $[\![\text{har NP}]\!]^w =$
$\lambda g_{\langle s,et\rangle}.\lambda w'.\exists x[[\![\text{NP}]\!]^w(x) = 1 \wedge \text{PLURAL}(x) = 1 \wedge\ \forall y_{\text{atomic}} \sqsubseteq x[g_{w'}(y) = 1]]$

1 We make this assumption mainly for convenience. For our purposes, we could assume that singular marking is always interpreted in the semantics, and that *har -i* DPs quantify over the closure of the domain of atomic individuals under sum formation. We assume an interpretation function relativized to a world (omitted in (33) above to help with readibility). For easiness of exposition, we still want IPs containing *har* and *yek* DPs to denote propositions, hence we let these DPs combine with properties of type $\langle s, et\rangle$, whose world argument is abstracted over. We assume, with Kratzer & Heim 1998 that extensions can be shifted to intensions via a rule of Intensional Functional Application.

(38) $[\![\text{yek SG NP}]\!]^w = \lambda g_{\langle s,et\rangle}.\lambda w'.|\{x : [\![\text{SG NP}]\!]^w(x) = 1 \wedge g_{w'}(x) = 1\}| \geq 1$

The domain alternatives, in (39a) for *har -i* DPs and in (39b) for *yek -i* DPs, are determined by restricting the domain of quantification.

(39) a. $[\![\text{har NP}]\!]^{\text{D-ALT},w} =$
$\{\lambda g.\lambda w'.\exists x[x \in D \wedge \text{PLURAL}(x) = 1 \ \wedge \forall y_{\text{at}} \sqsubseteq x[g_{w'}(y) = 1]] : D \subseteq [\![\text{NP}]\!]^w\}$
b. $[\![\text{yek SG NP}]\!]^{\text{D-ALT},w} = \{\lambda g.\lambda w'.\exists x[x \in D \ \wedge \ g_{w'}(x) = 1] : D \subseteq [\![\text{SG NP}]\!]^w\}$

We will take the scalar alternatives for *har -i* DPs, in (40a), to be determined by replacing existential force with universal force. The scalar alternatives for *yek -i* DPs, in (40b), are determined by considering stronger cardinality claims.

(40) a. $[\![\text{har NP}]\!]^{\sigma\text{-ALT},w} =$
$\{\lambda g.\lambda w'.\forall x[[[\![\text{NP}]\!]^w(x) = 1 \wedge \text{PL}(x) = 1] \rightarrow \ \forall y_{\text{atomic}} \sqsubseteq x[g_{w'}(y) = 1]]\}$
b. $[\![\text{yek SG NP}]\!]^{\sigma\text{-ALT},w} =$
$\{\lambda g.\lambda w'.|\{x : [\![\text{SG NP}]\!]^w(x) = 1 \wedge g_{w'}(x) = 1\}| \geq n : n > 1\}$

Through pointwise functional application, the alternatives above end up being propositional at the IP level. For illustration, let us consider *har -i* DPs. We follow Deal & Farudi 2007 and Alonso-Ovalle & Moghiseh 2019 in assuming that *-i* marks the introduction of alternatives. The subscript [+σ,+D] in the LF in (41a) indicates that both scalar and ('pre-exhaustified') domain alternatives are active and need to be exhaustified. Assuming that the domain of quantification at the world of evaluation w is (41b), the IP in (41a) makes the existential claim in (41c): that Ava read a group of books.[2] The scalar alternative, in (41d), conveys that Ava read all books. The 'pre-exhaustified' domain alternatives, given in (41f), convey, for any group of books g, that Ava read each book in g and no other books. These alternatives result from exhaustifying each domain alternative in (41e) with respect to other domain alternatives that are innocently excludable.[3]

(41) a. $[_{\text{IP}}$ [har book -i]$_{[+\sigma,+D]}$ $\lambda 1$ Ava read $t_1]$
b. $[\![\text{book}]\!]^w =$ $\{b_1, b_2, b_3, b_1 \oplus b_2, b_1 \oplus b_3, b_2 \oplus b_3, b_1 \oplus b_2 \oplus b_3\}$
c. $[\![[_{\text{IP}} \ldots]]\!]^w =$ $(b_1 \wedge b_2) \vee (b_2 \wedge b_3) \vee (b_1 \wedge b_3) \vee (b_1 \wedge b_2 \wedge b_3)$
$\Leftrightarrow (b_1 \wedge b_2) \vee (b_2 \wedge b_3) \vee (b_1 \wedge b_3)$
d. $[\![[_{\text{IP}} \ldots]]\!]^{\sigma\text{-ALT},w} =$ $\{b_1 \wedge b_2 \wedge b_3\}$

2 Here and in what follows, 'b_n' stands for the proposition that Ava read book$_n$.

3 An alternative d' to d is innocently excludable if any way of strengthening d with as many alternatives to d as consistency allows for excludes d', see Fox 2007, Alonso-Ovalle 2008. For ease of exposition, we eliminate $b_1 \wedge b_2 \wedge b_3$ from the set of pre-exhaustified domain alternatives.

e. $[\![[_{\text{IP}}\ldots]]\!]^{\text{D-ALT},w} = \left\{ \begin{array}{c} (b_1 \wedge b_2) \vee (b_2 \wedge b_3) \vee (b_1 \wedge b_3), \\ (b_1 \wedge b_2) \vee (b_2 \wedge b_3),\ (b_2 \wedge b_3) \vee (b_1 \wedge b_3), \\ (b_1 \wedge b_2) \vee (b_1 \wedge b_3), \\ b_1 \wedge b_2,\ b_2 \wedge b_3,\ b_1 \wedge b_3, b_1 \wedge b_2 \wedge b_3 \end{array} \right\}$

f. $[\![[_{\text{IP}}\ldots]]\!]^{\text{EXH-D},w} = \left\{ \begin{array}{c} (b_1 \wedge b_2 \wedge \neg b_3) \vee (b_2 \wedge b_3 \wedge \neg b_1) \vee (b_1 \wedge b_3 \wedge \neg b_2), \\ (b_1 \wedge b_2 \wedge \neg b_3) \vee (b_2 \wedge b_3 \wedge \neg b_1),\ (b_2 \wedge b_3 \wedge \neg b_1) \\ \vee (b_1 \wedge b_3 \wedge \neg b_2),\ (b_1 \wedge b_2 \wedge \neg b_3) \vee (b_1 \wedge b_3 \wedge \neg b_2), \\ b_1 \wedge b_2 \wedge \neg b_3,\ b_2 \wedge b_3 \wedge \neg b_1,\ b_1 \wedge b_2 \wedge \neg b_3 \end{array} \right\}$

These assumptions suffice to account for the behavior of *yek* -i and *har* -i DPs. We illustrate how the system works next, starting with *har -i* DPs.

3.2 *Yek -i* and *har -i* DPs as FCIs

Recall that *har -i* DPs are ungrammatical in positive episodic sentences, like other UFCIs. Exhaustification derives a pathological meaning in this case. Consider, for instance, the sentence in (20), repeated in (42) below, with the LF in (41a).

(42) *Ava har ketab-i xund.
Ava each book-IND read-3.SG
'Ava read any book .'

The scalar alternative, in (41d), and the pre-exhaustified domain alternatives, in (41f), are all stronger than the assertion in (41c). They therefore need to be excluded. The pre-exhaustified domain alternatives are related by entailment. The negation of the weakest pre-exhaustified domain alternatives conveys that if Ava read all books in a particular group, she read any other book, as shown in (43). The conjunction of the assertion with the propositions in (43) entails the scalar alternative. The assertion and the negation of the pre-exhaustified domain alternatives and the scalar alternative is then a contradiction.

(43) a. $\neg(b_1 \wedge b_2 \wedge \neg b_3) \Leftrightarrow \neg(b_1 \wedge b_2) \vee b_3 \Leftrightarrow (b_1 \wedge b_2) \rightarrow b_3$
b. $\neg(b_1 \wedge b_3 \wedge \neg b_2) \Leftrightarrow \neg(b_1 \wedge b_3) \vee b_2 \Leftrightarrow (b_1 \wedge b_3) \rightarrow b_2$
c. $\neg(b_2 \wedge b_3 \wedge \neg b_1) \Leftrightarrow \neg(b_2 \wedge b_3) \vee b_1 \Leftrightarrow (b_2 \wedge b_3) \rightarrow b_1$

We get the same pathological meaning in the case of unembedded *yek* -i DPs. To illustrate, consider the LF in (44a). Assuming, for easiness of exposition, a domain with two atomic books ($\{b_1, b_2\}$), the IP conveys the proposition in (44b). The scalar and pre-exhaustified domain alternatives are given in (44c) and (44d). The negation of the pre-exhaustified domain alternatives, together with the assertion, is equivalent

to the scalar alternative. The assertion, together with the exclusion of both scalar and pre-exhaustified domain alternatives, is then a contradiction.[4]

(44) a. O_{ALT} [$_{\text{IP}}$ [yek SG book -i]$_{[+\sigma,+D]}$ $\lambda 1$ Ava read t_1]
b. $[\![[_{\text{IP}}\ldots]]\!]^{w} = (b_1 \vee b_2)$
c. $[\![[_{\text{IP}}\ldots]]\!]^{\sigma\text{-ALT},w} = \{b_1 \wedge b_2\}$
d. $[\![[_{\text{IP}}\ldots]]\!]^{\text{EXH-D},w} = \{b_1 \wedge \neg b_2, b_2 \wedge \neg b_1\}$

The pathology is avoided when a modal intervenes between the exhaustifier and the FCI. Consider the LFs in (45) and (46) and their predicted interpretations. In both cases, the conjunction of the assertion (underlined) with the negation of the alternatives is a contingent proposition, one that conveys that Ava is allowed to read any book.

(45) a. O_{ALT} $\Diamond$ [$_{\text{IP}}$ [yek SG book -i]$_{[+\sigma,+D]}$ $\lambda 1$ Ava read t_1]
b. $[\![O_{\text{ALT}} \Diamond[_{\text{IP}}\ldots]]\!] =$ $\underline{\Diamond(b_1 \vee b_2)} \wedge \neg\Diamond(b_1 \wedge b_2) \wedge \Diamond b_1 \leftrightarrow \Diamond b_2$

(46) a. O_{ALT} $\Box$ [$_{\text{IP}}$ [yek SG book -i]$_{[+\sigma,+D]}$ $\lambda 1$ Ava read t_1]
b. $[\![O_{\text{ALT}} \Box [_{\text{IP}}\ldots]]\!] =$ $\underline{\Box(b_1 \vee b_2)} \wedge \neg\Box(b_1 \wedge b_2) \wedge \Box b_1 \leftrightarrow \Box b_2$

Modal intervention avoids the derivation of a contradiction whether the modal is a possibility or a necessity modal, but, as seen before, (unmodified) UFCIs are not licensed under necessity modals. Why? Chierchia (2013) assumes that UFCIs, in contrast to EFCIs, must scope over modals, thus always deriving a contradiction, in principle. This contradiction can nevertheless be avoided with possibility modals, and when UFCIs are modified. Let us see how.

Consider (47a), where the *har -i* DP scopes over the modal. Assuming the domain in (41b), the IP in (47a) denotes the proposition that Ava is allowed to read each book in a group of books (underlined in (47b)). The domain implicature, together with the assertion, conveys that she is allowed to read each book in the whole domain, contradicting the scalar implicature. Chierchia (2013) avoids this contradiction by assuming a principle ('Modal Containment') which requires the modal domain for the scalar implicature to be a proper subset of the modal domain for the domain implicature. This principle would be satisfied in case there is at least one permitted world where Ava does not read all books. It will be satisfied, for instance, if Ava is permitted to read only one book, but can read any. In that case, the scalar implicature is satisfied when the modal ranges over a singleton set containing one of the permitted worlds, and the domain implicature is satisfied if the modal ranges over the whole domain of permitted worlds.

4 Since the domain contains only two individuals, the set of scalar alternatives also contains a contradiction, when the cardinality claim makes reference to values higher than 2. The exclusion of that contradiction is harmless, since its negation is a tautology.

(47) a. O_{ALT} [$_{\text{IP}}$ [har book -i]$_{[+\sigma,+D]}$ $\lambda 1$ $\Diamond$ [$_{\text{IP}}$ Ava read t_1]]

b. $[\![(47a)]\!]^w = \underbrace{(\Diamond b_1 \wedge \Diamond b_2) \vee (\Diamond b_2 \wedge \Diamond b_3) \vee (\Diamond b_1 \wedge \Diamond b_3)}_{\text{scalar implicature}} \wedge \underbrace{\neg(\Diamond b_1 \wedge \Diamond b_2 \wedge \Diamond b_3) \wedge [(\Diamond b_1 \wedge \Diamond b_2) \leftrightarrow (\Diamond b_2 \wedge \Diamond b_3) \leftrightarrow (\Diamond b_1 \wedge \Diamond b_3)]}_{\text{domain implicature}}$

Modal Containment cannot rescue the contradiction with necessity modals, however. To see that, consider (48a). This time, the assertion, together with the domain implicature conveys that Ava reads all books in *all* permitted worlds. The scalar implicature requires that Ava does not read all books in all permitted worlds. Given the assertion and the domain implicature, the scalar implicature will be false with respect to any subdomain of permitted worlds, and, therefore, Modal Containment necessarily fails.

(48) a. O_{ALT} [$_{\text{IP}}$ [har book -i]$_{[+\sigma,+D]}$ $\lambda 1$ $\Box$ [$_{\text{IP}}$ Ava read t_1]]

b. $\Box b_1 \wedge \Box b_2 \wedge \Box b_3$ (assertion + domain implicature)

c. $\neg(\Box b_1 \wedge \Box b_2 \wedge \Box b_3)$ (scalar implicature)

Modal Containment also helps with subtrigging. Like in Romance, in Farsi we get subjunctive mood in relative clauses modifying a *har -i* DP, as seen in (49).

(49) Ava har ketab-i ke roo miz-esh boode bashe xund-e.
Ava each book-IND that on table-POSS.3SG was SUBJ read-PERF-3.SG
'Ava read any book that was on her desk.'

For Chierchia, this signals the presence of a covert necessity modal within the relative clause, as in the LF in (50a). The assertion, together with the predicted domain implicature, conveys, as in (50b), that Ava talked to all students who show up in all worlds in the domain of the modal (call it D_1). The scalar implicature, in (50c) conveys that Ava didn't talked to all students who showed in all worlds in the domain of the modal (call it D_2). When D_2 is a proper subset of D_1, the second conjunct in the set description in (50b) asymmetrically entails the second conjunct in the set description in (50c), which means that the set in (50b) will be a subset of the set in (50c). This, on its turn, means that (50c) will asymmetrically entail (50b), and that, therefore, the conjunction of (50b) and (50c) will not be a contradiction.

(50) a. O_{ALT} [har student that $\Box$ showed up-i]$_{[+\sigma,+D]}$ $\lambda 1$ [$_{\text{IP}}$ A. talked to t_1]

b. $\lambda w.\forall x \in \{y | \text{STUDENT}_w(y) \wedge \Box_{w'} \text{SHOWED}_{w'}(y)\}[\text{TALKED}_w(j,x)]$

c. $\lambda w.\neg\forall x \in \{y | \text{STUDENT}_w(y) \wedge \Box_{w'} \text{SHOWED}_{w'}(y)\}[\text{TALKED}_w(j,x)]]$

To sum up, UFCIs yield, by design, a contradiction. The derivation of a contradiction can be avoided by exploiting the context dependency of modals, and

requiring their domain to shift when evaluating the scalar implicature. We contend that the effect of accusative marker *-ro* illustrates another way in which the derivation of the implicature clash can be avoided.

3.3 The effect of *-ro*

With a particular proposal for *har -i* and *yek -i* DPs on the table, we turn next to the effect of accusative marker *-ro* on their interpretation. We will zoom in here on cases where *yek -i* DPs marked with *-ro* are within an island: the antecedent of a conditional, in (51), and a relative clause, in (52).[5]

(51) Age Ava ye ketab-i ro bexun-e, jaize migire.
if Ava one book-IND ACC read-3.SG gift take-3.SG
'Ava will get a prize if she reads a certain book.'

(52) Ava in shayea ro ke Forood ye atiqe-i ro qachaq karde
Ava this rumor ACC that Forood one antique-IND ACC smuggle did
takzib kard.
denial did
'Ava denied the rumor that Forood has smuggled a certain antique.'

While the counterparts of the examples in (51) and (52) without *-ro* allow for interpretations where the existential scopes within the minimal clause containing it, as (53) and (54) illustrate, *-ro* enforces exceptional scope interpretations, as the translations of the examples convey.

(53) Age Ava ye ketab-i bexun-e, jaize migir-e.
if Ava one book-IND read-3.SG gift take-3.SG
'Ava will get a prize if she reads a book.'

(54) Ava in shayea ro ke Forood ye atiqe-i qachaq karde takzib
Ava this rumor ACC that Forood one antique-IND smuggle did denial
kard.
did
'Ava denied the rumor that Forood has smuggled an antique.'

To capture this, we will endorse the view, defended in Schwarzschild 2002, that exceptional scope interpretations come about through maximal domain restriction.

5 We cannot make justice to the intricacies of *-ro* marking here. We refer the reader to Hosseini Fatemi 2013 and Jasbi 2017, 2019 for more involved discussions of the effect of *-ro* marking.

The particular proposal that we would like to make is that *-ro* introduces a contextually determined singleton subset selection function, a function that returns a singleton subset of any set that it applies to, as in (55).[6]

(55) $[\![\text{-ro}_{i_{\langle et,et\rangle}}]\!]^{w,g} = \lambda f_{\langle e,t\rangle} : \text{SINGLETON}(\mathbf{i}).\mathbf{i}(f)$
$(\text{SINGLETON}(\mathbf{i}) \Leftrightarrow \forall h[\mathbf{i}(h) \subseteq h \wedge |\mathbf{i}(h)| = 1])$

Under this proposal, *yek -i* and *har -i* DPs are expected to lose their FCI behavior when combined with accusative marker *-ro*. This is so because the predicted implicature clash that determines the distribution and interpretation of FCIs disappears. As we will see next, once the domain of the existentials is restricted to a singleton, in the case of *har -i* DPs, the domain implicatures and the scalar implicature collapse: they are equivalent to each other. Furthermore, the domain and scalar alternative are equivalent to the assertion. Since O_{ALT} only excludes alternatives that are stronger than the assertion (hence not equivalent to it), neither the domain nor the scalar alternatives are excluded. In the case of *yek -i* DPs, the domain alternatives are equivalent to the assertion and the scalar alternatives are contradictions. The domain alternatives are then not excluded, and the exclusion of the contradictions is vacuous, since their negation is a tautology.

To illustrate, let's consider an unmodified *har -i* DP, as in the LF in (56a), where we assume that *-ro* takes scope over the NP only.

(56) a. LF: har [ro$_i$ [book -i]] $\lambda 1$ [Ava read t$_1$]
b. $[\![\text{book}]\!]^w = \{b_1, b_2, b_3, b_1 \oplus b_2, b_1 \oplus b_3, b_2 \oplus b_3, b_1 \oplus b_2 \oplus b_3\}$

What proposition (56a) denotes depends on what the value of the singleton domain selection function is. Some possible values for the singleton domain selection function (those selecting a subset containing an atomic individual) will yield a contradiction (since no atomic individual is a plurality.) We will assume that these values are not entertained. Since there are four singleton subsets of the domain containing a plural individual in (56b), there are four possible singleton selection functions picking out a singleton of (56b) containing a plural individual, and, therefore, four possible contingent propositions that (56a) can denote. These are listed below:

(57) a. $\lambda w.\exists x \in \{b_1 \oplus b_2\} \forall y_{\text{at}} \sqsubseteq x[\text{READ}_w(A, y)]$
b. $\lambda w.\exists x \in \{b_1 \oplus b_3\} \forall y_{\text{at}} \sqsubseteq x[\text{READ}_w(A, y)]$
c. $\lambda w.\exists x \in \{b_2 \oplus b_3\} \forall y_{\text{at}} \sqsubseteq x[\text{READ}_w(A, y)]$
d. $\lambda w.\exists x \in \{b_1 \oplus b_2 \oplus b_3\} \forall y_{\text{at}} \sqsubseteq x[\text{READ}_w(A, y)]$

6 See López 2012 for the claim that *-ro* and other differential object markers introduce a free variable ranging over choice functions. In (55), $i_{\langle et,et\rangle}$ is a free variable that *ro* takes as argument. We use boldface type to represent the value of variables.

Because the domains are already singleton sets, for each of these possible assertions, the only possible subdomains to consider are improper subdomains, and, therefore, the domain alternatives must be equivalent to the assertion. Furthermore, since we only have one domain alternative, the pre-exhaustified domain alternatives are equivalent to the domain alternatives. For each proposition in (57a-d), the singleton containing its (pre-exhaustified) domain alternative is listed in (58a-d) below:

(58) a. $\{\lambda w.\exists x \in \{b_1 \oplus b_2\} \forall y_{\text{at}} \sqsubseteq x[\text{READ}_w(A,y)]\}$
b. $\{\lambda w.\exists x \in \{b_1 \oplus b_3\} \forall y_{\text{at}} \sqsubseteq x[\text{READ}_w(A,y)]\}$
c. $\{\lambda w.\exists x \in \{b_2 \oplus b_3\} \forall y_{\text{at}} \sqsubseteq x[\text{READ}_w(A,y)]\}$
d. $\{\lambda w.\exists x \in \{b_1 \oplus b_2 \oplus b_3\} \forall y_{\text{at}} \sqsubseteq x[\text{READ}_w(A,y)]\}$

For each possible assertion in (57a-d), its (pre-exhaustified) domain alternative is also equivalent to its scalar alternative. When there is only one plurality in the domain, if Ava read (each book in) that plurality, she must have read (each book) in every plurality in the domain (and viceversa), as captured in (59b).

(59) a. $\{b_1 \oplus b_2, b_1 \oplus b_3, b_2 \oplus b_3, b_1 \oplus b_2 \oplus b_3\}$
b. $\forall x \in$ (59*a*)
$[\lambda w.\exists y \in \{x\} \forall z_{\text{at}} \sqsubseteq y[\text{READ}_w(A,z)] \Leftrightarrow \lambda w.\forall y \in \{x\} \forall z_{\text{at}} \sqsubseteq y[\text{READ}_w(A,z)]$

For each possible assertion, then, the only available alternative is equivalent to the assertion itself. That means that in (60), exhaustification is vacuous: it simply returns the argument of O_{ALT}. Depending on the value of the singleton subset selection function introduced by *-ro*, the argument of O_{ALT} will be one of the propositions in (57) (assuming we are excluding possible values for the singleton subset selection function that will yield a contradiction). The LF in (60) will then convey that Ava read each book in a certain group of books. We then capture the attested contextually restricted universal force of *har -i* DPs modified by *-ro* and the lack of counterfactual inferences. *Har -i* DPs modified by *-ro* are simply specific plural distributive indefinites. We then also expect them to license discourse anaphora, as attested.

(60) LF: O_{ALT} har [ro$_i$ [book -i]] λ1 [Ava read t$_1$]

Let us know consider the case of *yek -i* DPs by discussing the predicted interpretation of the LF in (61) below.

(61) LF: yek [ro$_i$ [SG book -i]] λ1 [Ava read t$_1$]

Assuming the domain in (62), there are three possible values for the singleton domain selection function, and, therefore, three possible propositions that (61) can express. Those are listed in (63) below.

(62) $[\![\text{SG book}]\!]^w = \{b_1, b_2, b_3\}$

(63) a. $\lambda w.|\{x : x \in \{b_1\} \wedge \text{READ}_w(\text{A}, x)| \geq 1 (\Leftrightarrow \lambda w.\text{READ}_w(\text{A}, b_1))$

b. $\lambda w.|\{x : x \in \{b_2\} \wedge \text{READ}_w(\text{A}, x)| \geq 1 (\Leftrightarrow \lambda w.\text{READ}_w(\text{A}, b_2))$

c. $\lambda w.|\{x : x \in \{b_3\} \wedge \text{READ}_w(\text{A}, x)| \geq 1 (\Leftrightarrow \lambda w.\text{READ}_w(\text{A}, b_3))$

Once again, each proposition is equivalent to the proposition expressed by the domain alternative (and, since there is only one alternative, by the exhaustified domain alternative.) This time the scalar alternatives express a contradiction, as we can see by considering the cases below: for these propositions to map a world to true, it will have to be the case that the set of books in a singleton that Ava read has cardinality two or more. Since any of the possible assertions is not a contradiction, they will not entail their scalar alternatives, and they are all negated. This is harmless, since the negation of a proposition is a tautology and conjoining the assertion with a tautology is equivalent to the assertion itself. *Yek -i* DPs modified by *-ro* are simply singular specific indefinites.

(64) a. $\lambda w.|\{x : x \in \{b_1\} \wedge \text{READ}_w(\text{A}, x)| \geq 2$

b. $\lambda w.|\{x : x \in \{b_2\} \wedge \text{READ}_w(\text{A}, x)| \geq 2$

c. $\lambda w.|\{x : x \in \{b_3\} \wedge \text{READ}_w(\text{A}, x)| \geq 2$

To sum up: by assuming that *-ro* enforces maximal domain restriction, we explain the lack of FCI behavior of *har -i* and *yek -i* DPs modified by *-ro*

4 Conclusion

We will conclude with a brief summary and one consequence of the analysis.

Under the alternative-based approach to FCIs presented in Chierchia 2013, FCIs in non DE contexts derive a pathological meaning, a contradiction, which results from negating the scalar and pre-exhaustified alternatives that these items introduce into the semantic derivation. This contradiction is avoided when a modal intervenes between the exhaustifier and the FCI, and, in the case of UFCIs, which are assumed to outscope modals, by resorting to a stipulation that requires the modal domain of the modal component in the scalar alternative to be contained within the modal domain of the modal component in the domain alternatives. Avoiding the derivation of a pathological meaning determines then the distribution and interpretation of FCIs. If our analysis is on the right track, the combination of the accusative marker

-ro with Farsi FCIs illustrates a third possibility: the pathological meaning can be avoided by neutralizing the alternatives. In the case of Farsi FCIs marked with *-ro*, a certain morphological configuration can conspire to neutralize FCI status by delivering alternatives equivalent to the assertion (which O_{ALT} ignores) or express a contradiction (and can therefore be excluded without consequences). The situation is similar to that discussed in Alonso-Ovalle & Menéndez-Benito 2011 for Spanish *algún*, where plurality also delivers alternatives equivalent to the assertion.

We conclude with a note about *har -i* DPs in DE contexts. We have seen in section 2.1 that *har -i* DPs are deviant in DE contexts (like other UFCIS are). Chierchia (2013) blocks certain UFCIs from DE contexts by assuming that they select for a version of the exhaustifier operator(s) (O^{PS}) that requires proper strengthening (it requires its output to be stronger than its input), a requirement that cannot be satisfied in DE contexts. To illustrate, consider the LF in (65). The input of the exhaustifier is the proposition in (66a), which conveys that no group of books is such that Ava read each of its members. The scalar alternative of the argument of O^{PS}, in (66b), is entailed by the assertion, and the pre-exhaustified domain alternatives, in (66c), are entailed or incompatible with the assertion. Assuming that the incompatible ones are false does not strengthen the assertion. Proper strengthening is then violated.

(65) O^{PS} [$_{\text{IP}}$ NEG har book-i λ 1 Ava read t_1]

(66) a. $\neg[(b_1 \wedge b_2) \vee (b_2 \wedge b_3) \vee (b_1 \wedge b_3)]$

b. $\neg[(b_1 \wedge b_2) \wedge (b_2 \wedge b_3) \wedge (b_1 \wedge b_3)]$

c. $\left\{ \begin{array}{c} \neg(b_1 \wedge b_2) \wedge \neg(b_2 \wedge b_3) \wedge \neg(b_1 \wedge b_3), \\ \neg(b_1 \wedge b_2) \wedge \neg(b_2 \wedge b_3) \wedge (b_1 \wedge b_3) \\ \neg(b_1 \wedge b_2) \wedge (b_2 \wedge b_3) \wedge \neg(b_1 \wedge b_3), (b_1 \wedge b_2) \wedge \neg b_3, \\ (b_2 \wedge b_3) \wedge \neg b_1, (b_1 \wedge b_3) \wedge \neg b_2 \end{array} \right\}$

In the case of *har -i* DPs marked with *-ro*, exhaustification was vacuous. Our explanation for the loss of FCI status of *har- i* marked with *-ro* eliminates the possibility of resorting to proper strengthening to capture its behavior in DE contexts, since exhaustification is vacuous both in DE contexts and with *har -i* DPs marked with *-ro*. Like Chierchia (2013) does for other FCIs, we need to assume that *har -i* requires a certain type of exhaustifier. We need the argument of the exhaustifier that *har -i* and *yek -i* DPs depend on not to include alternatives weaker than the assertion. That would take care of the deviance in DE contexts without posing problems for our analysis of *har -i* DPs marked with *-ro*, since, in those cases, the alternatives are either equivalent to the assertion or contradictory, and, therefore, not weaker than the assertion. The explanation for the lack of NPI readings is shifted from the output of *O* ('proper strengthening') to its possible alternative inputs. We will leave the exploration of this possibility to further research.

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