Farsi *Hame -i* DPs and Intensional Transitive Verbs*

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Abstract

Adverbial modification suggests that some, but not all, Intensional Transitive Verbs (ITVs) take clausal complements [11]. Evidence from Farsi, coming from the interpretation of *hame -i* DPs, confirms the split. *Hame -i* DPs are existential quantifiers that acquire universal force via exhaustification [6]. We provide new data showing that *hame -i* DPs can have free choice interpretations, but only under certain conditions. The pattern is new. Free choice interpretations of *hame -i* DPs are found with ITVs, but only those that do not seem to take clausal complements. ITVs that seem to take clausal complements pattern with modal auxiliaries, which don't allow for free choice readings. If free choice readings are derived when a modal expression intervenes between an exhaustivity operator, EXH, and the DP, this means that not all modal expressions can intervene between EXH and *hame -i* DPs. To account for the restricted availability of free choice interpretations, we propose that EXH and *hame -i* DPs need to be within the same minimal clause.

1 Introduction

Hame -i DPs are Farsi DPs that range over types of individuals. As we will see in Section 2, these DPs can have existential or universal force. In [6] we analyze *hame -i* DPs as existential quantifiers and derive their universal force through exhaustification. The main goal of this paper is to document, in Sections 3 and 4, that *hame -i* DPs can have free choice interpretations, but only with modal expressions that do not take clausal complements. We tentatively propose in Section 5 that this behavior follows from a locality constraint requiring the exhaustification operator and *hame -i* DPs to be within the same minimal clause.

2 *Hame -i* DPs: from existentials to universals

In Farsi, existential quantification can be expressed with bare NPs, as shown in (1), or with NPs marked with enclitic *-i*, as seen in (2).

(1) Forood too chale oftad.
Forood in hole fell.3SG
'Forood fell in a hole/holes.'

(2) Forood too chale-i oftad.
Forood in hole-IND fell.3SG
'Forood fell in a hole.'

A number of determiners combine with bare NPs or with NPs marked with *-i* to form DPs that still convey existential quantification. The existential DPs in (3) and (4), for instance, feature numeral *ye* ('one').

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(3) Forood too ye chale oftad.
Forood in one hole fell.3SG
'Forood fell in a hole.'

(4) Forood too ye chale-i oftad.
Forood in one hole-IND fell.3SG
'Forood fell in a hole.'

Other determiners can combine with NPs marked with *-i* [4, 5]. In positive episodic sentences with non-volitional verbs, adding *hame* to an NP marked with *-i* conveys universal quantification over *types* of entities: (5), for instance, conveys that for *each* (contextually relevant) type of (contextually relevant) hole P, Forood fell in a hole of type P.[1]

(5) Forood too hame chale-i oftad.
Forood in hame hole-IND fell.3SG
'Forood fell in all types of holes.'

The universal force of *hame -i* DPs can turn to existential in a downward entailing (DE) environment: (6), for instance, conveys that few students fell in some type of hole or other [6].

(6) Tedad-e kam-i danshjoo too hame chale-i oftad-and.
number-EZ little-IND student in hame hole-IND fell-3PL
'Few students fell in any type of hole.'

In [6] we propose to capture the shift in quantificational force between positive episodic and DE environments by assuming that *hame -i* DPs have existential force that can be strengthened to universal via exhaustification, in line with the analysis of the Hebrew determiner *kol* presented in [8]. We take *hame -i* DPs to be existentials that quantify over cells of a partition, as in (7-a) (where $\mathbb{C}$ retrieves a contextually relevant set of properties that partitions (a contextually relevant) set of holes) and assume that *hame -i* DPs introduce into the semantic derivation domain but not scalar alternatives.[2] The domain alternatives that *hame -i* DPs introduce are determined by considering subsets of the original partition of the relevant domain of entities in the extension of the NP, as in (7-b).

(7) a. $[\![\text{hame}_{\mathbb{C}}\ \text{hole-i}_C]\!]^{\text{o}} = \lambda Q.\exists P \in \mathbb{C}([\![\text{hole}_C]\!])\exists x[[\![\text{hole}_C]\!](x) \wedge P(x) \wedge Q(x)]$
b. $[\![\text{hame}_{\mathbb{C}}\ \text{hole-i}_C]\!]^{\text{ALT}} = \{\lambda Q_{et}.\exists P \in D \exists x[[\![\text{hole}_C]\!](x) \wedge P(x) \wedge Q(x)] : D \subset \mathbb{C}([\![\text{hole}_C]\!])\}$

As is standard, we assume that these alternatives grow propositional and are accessed by an exhaustification operator at propositional sites. To illustrate, consider the LF for (5) in (8). Assuming that the contextually restricted extension of the NP consists of four holes, of two different colours, red and green, and that $\mathbb{C}$ retrieves the property of being red and the property of being green, as in (9), the sister of EXH in (8) (its 'prejacent') denotes the disjunction in (10) at the ordinary semantic level and the set in (11) at the alternative level.[3]

[1] We restrict our attention to cases with non-volitional verbs in positive episodic environments because with volitional verbs *hame -i* DPs *can* (but don't have to) convey a 'random choice' interpretation [2]. The sentence in (i), for instance, can convey that Forood bought *a* book of *some* type and that he chose the type randomly. These cases may involve covert modality [9], and, so, we leave them aside for now. Note, however, that if these cases involved covert modality and the covert modal did not take a clausal complement, they would also fall under the proposal presented in the last section of the paper.

(i) Forood hame book-i xarid.
Forood hame book-IND bought.3SG

[2] The types that *hame -i* DPs range over are not necessarily stable, hence our choice is to resort to quantification over properties rather than subkinds. We nevertheless leave open for now the possibility that *hame -i* DPs range over *ad hoc* subkinds.

[3] From now on, for the purposes of illustration, we will represent each domain alternative as 'G' and 'R'.

(8) LF: EXH [$_{IP}$ hame$_{\mathbb{C}}$ hole-i$_C$ λ_1 Forood fell in t_1]

(9) $[\![\text{hole}_C]\!] = \{R_1, R_2, G_1, G_2\}$, $\mathbb{C}([\![\text{hole}_C]\!]) = \{\text{RED}, \text{GREEN}\}$

(10) $[\![[_{IP}\ \text{hame}_{\mathbb{C}}\ \text{hole-i}_C\ \lambda_1\ \text{Forood fell in}\ t_1]]\!]^O =$
$\exists x[\text{HOLE}(x) \wedge \text{RED}(x) \wedge \text{FALL}(F,x)] \ \vee\ \exists x[\text{HOLE}(x) \wedge \text{GREEN}(x) \wedge \text{FALL}(F,x)]$

(11) $[\![[_{IP}\ \text{hame}_{\mathbb{C}}\ \text{hole-i}_C\ \lambda_1\ \text{Forood fell in}\ t_1]]\!]^{ALT} = \left\{ \begin{array}{c} \exists x[\text{HOLE}(x) \wedge \text{RED}(x) \wedge \text{FALL}(F,x)], \\ \exists x[\text{HOLE}(x) \wedge \text{GREEN}(x) \wedge \text{FALL}(F,x)] \end{array} \right\}$

EXH strengthens its prejacent by negating all 'innocently excludable' alternatives and asserting it together with all 'innocently includable' alternatives. An alternative is innocently excludable if it's in every set containing the prejacent and as many negated alternatives as consistency allows for. An alternative is innocently includable if it can be asserted together with the prejacent and all negated innocently excludable alternatives (if there are any) [7]. The set containing all maximal subsets of alternatives whose negation is consistent with (10) together with (10) is in (12). There is no alternative that is in all members of (12), and, therefore, there is no innocently excludable alternative. All alternatives are innocently includable. Conjoining the disjunction in (10) with all alternatives turns the disjunction into a conjunction, thus deriving the attested universal force, as seen in (13).

(12) $\{\{(10), G\}, \{(10), R\}\}$

(13) $[\![(8)]\!]^O = (G \vee R) \wedge G \wedge R \Leftrightarrow G \wedge R$

In DE contexts, like (14), global exhaustification is vacuous. We see in (15) that the prejacent entails now all the alternatives, so none is innocently excludable. All alternatives are innocently includable, but conjoining them with the prejacent has no effect, since they are entailed by it.

(14) Age Forood too hame chale-i bioft-e, shart ro mibar-am.
if Forood in hame hole-IND fall-3SG, bet ACC win-1SG
'If Forood falls in some type of hole or other, I win the bet.'

(15) a. EXH [$_{IP}$ if hame$_{\mathbb{C}}$ hole-i$_C$ λ_1 Forood fall in t_1, I win the bet]
b. $[\![[_{IP}\ \ldots\ ]]\!]^O = (G \vee R) \rightarrow \text{BET}$, $[\![[_{IP}\ \ldots\ ]]\!]^{ALT} = \{G \rightarrow \text{BET}, R \rightarrow \text{BET}\}$
c. $[\![\text{EXH}\ [_{IP}\ \ldots\ ]]\!]^O = [(G \vee R) \rightarrow \text{BET}] \wedge G \rightarrow \text{BET} \wedge R \rightarrow \text{BET} \Leftrightarrow (G \vee R) \rightarrow \text{BET}$

Assuming that *hame -i* DPs are existential quantifiers that introduce only domain alternatives naturally captures the oscillation in quantificational force that we have attested.

3 Interaction with modals

The existential force of *hame -i* DPs is not limited to DE contexts. We also find it in some (but not all) modal contexts. Intensional Transitive Verbs (ITVs) are a case at hand. Consider, for instance, (16), with the Farsi counterpart of *look for*, which is expressed with the 'light' verb *gashtan* ('to search') and the noun *donbal* ('pursuit') ('search in pursuit of.')

(16) Forood donbal-e hame ketab-i gasht.
Forood pursuit-EZ hame book-IND searched.3SG
'Forood looked for some type of book or other.'

The truth of (16) does not require that Forood looked for *every* type of book: (16) is true in the scenario in (17). The sentence conveys a free choice effect: it is true just in case Forood wanted to have *some* type of book or other and *any type* was a good option for him.

(17) There are two types of books: red and green. Forood didn't look for red books and green books. He looked for a book of one of these colors: it could be red or green.

Within the framework that we are assuming, free choice readings are derived from LFs where a modal expression intervenes between EXH and the existential *hame -i* DP, as in (18-a). Assuming that $\mathbb{C}([\![\text{book}_C]\!]) = \{\text{G}, \text{R}\}$, the prejacent of EXH in (18-a) conveys the proposition in (18-b). All alternatives, in (18-b), are now innocently excludable and none are innocently includable. EXH excludes all alternatives, as in (18-c), yielding a free interpretation: that Forood wanted to have a book of some type and any type was a good option for him.

(18) a. $\text{EXH}\ \Box\ [_{\text{IP}}\ \text{hame}_{\mathbb{C}}\ \text{hole-i}_C\ \lambda_1\ \text{Forood bought}\ t_1]$
b. $[\![\Box\ [_{\text{IP}}\ \ldots\ ]]\!]^{\text{O}} = \Box(\text{G} \vee \text{R}),\ [\![\Box\ [_{\text{IP}}\ \ldots\ ]]\!]^{\text{ALT}} = \{\Box\text{G},\ \Box\text{R}\}$
c. $[\![\text{(18-a)}]\!] = \Box(\text{G} \vee \text{R}) \wedge \neg\Box\text{G} \wedge \neg\Box\text{R} \Leftrightarrow \Box(\text{G} \vee \text{R}) \wedge \Diamond\text{G} \wedge \Diamond\text{R}$

Hame -i DPs do not have free choice readings with all ITVs, though. The sentence in (19), with the Farsi counterpart of *want*, for instance, cannot describe the scenario in (17). The sentence conveys that for each (contextually relevant) type of (contextually relevant) book P, Forood wanted a book of type P.

(19) Forood hame ketab-i khast.
Forood hame book-IND wanted.3SG
'Forood wanted all types of books.'

Modal auxiliaries pattern with *want*, rather than with *look for*. To illustrate, consider the sentence in (20) below, with the necessity modal auxiliary *bayad* ('must'). The *hame -i* DP in (20) has universal force. The sentence conveys that for each type of book P, Forood is required to buy a book of type P. The sentence is therefore false in the context in (21), where Forood is not required to buy books of all types. In (21), the potential free choice interpretation is true, but the sentence is false.[4,5]

(20) Forood bayad hame ketab-i bekhar-e.
Forood must hame book-IND buy-3SG
'Forood must buy all types of books.'

(21) There are two types of books (red, green). Forood is required to buy a book of some type or other—any type. He is not required to buy red books and green books.

We conclude that *hame -i* DPs do not convey a free choice interpretation with all expressions. Free choice interpretations are known to be limited to some modal flavors [1], but the data

[4]One may think that the contrast between the Farsi counterparts of *must* and *look for* is due to the complex structure of the latter. We can see that this is not the case with the help of non-modal complex verbs that have a construction similar to that of *look for*: (i), with *savar shodan* ('to get on'), composed of the noun *savar* ('passenger') and the light verb *shodan* ('to become'), does not convey free choice. The sentence conveys that for each type of car P, Forood is required to get on a car of type P.

(i) Forood bayad savar-e hame mashin-i beshe-e.
Forood must passenger-EZ hame car-IND become-3SG

[5]The sentence in (i), with a possibility modal auxiliary, conveys that for each type of book P, Forood is allowed to buy a book of type P. Notice, however, that this can be due to a wide scope universal interpretation of the *hame -i* DP, hence our focus on the necessity modal auxiliary case.

(i) Forood mitun-e hame ketab-i bekhar-e.
Forood can-3SG hame book-IND buy-3SG

pattern that we illustrate here seems new: in the next section, we point out that there is a correlation between the types of modal expressions that allow for a free choice interpretation with *hame -i* DPs and the possible syntactic size of their complements.

4 A correlation between types of ITVs and FC readings

In [10], Barbara Partee noted a split between types of ITVs that has to do with the interpretation of adverbial modifiers. Consider the case of *want*: (22-a) can be paraphrased as in (22-b). In (23-a) we add the temporal modifier *by Saturday*. The interpretation of (23-a) can be paraphrased with (23-b), where the adverbial phrase is part of the clausal complement.

(22) a. Martha wants an apartment.
b. Mary wants [to have an apartment].

(23) a. Martha wants an apartment by Saturday.
b. Mary wants [to have an apartment by Saturday].

Now consider (24-a), with *look for*, which can be paraphrased with (24-b). We could then entertain the possibility of reducing *look for* to *trying to find*. If so, we would expect the temporal modifier in (25-a) to be able to be interpreted within the complement clause of *try*, and for (25-a) to be possibly paraphrased with (25-b). This is not the case: the temporal adverbial *by Saturday* can only convey information about the search, not the goal of the search.

(24) a. Martha is looking for an apartment.
b. Martha is trying [to find an apartment]

(25) a. Martha is looking for an apartment by Saturday.
b. Martha is trying [to find an apartment by Saturday.]

Based on contrasts of this nature, Schwarz [11] suggests it is plausible to assume that some but not all ITVs take a hidden clausal complement.

The contrast between (23-a) and (25-a) holds between the Farsi counterparts of *want* and *look for*, too. To illustrate: (26-a), with *khastan* ('want'), can be paraphrased with (26-b), where *want* takes a full clausal complement which the adverbial *dirooz* ('yesterday') is part of. This contrasts with the sentence in (27-a), with the Farsi counterpart of *look for*. The sentence in (27-a) sounds contradictory because the two adverbials *ye hafte pish* ('a week ago') and *dirooz* ('yesterday') convey contradictory information. This contrasts with the sentence in (27-b), where *dirooz* ('yesterday') is interpreted within the clausal complement of *try* and conveys information about Forood's goal.

(26) a. Ye hafte pish, Forood ye mashin dirooz khast.
one week ago, Forood one car yesterday wanted.3SG
'A week ago, Forood wanted a car yesterday.'
b. Ye hafte pish, Forood ye mashin dirooz khast dashte bash-e.
one week ago, Forood one car yesterday wanted.3SG have be-3SG
'A week ago, Forood wanted to have a car yesterday.'

(27) a. #Ye hafte pish, Forood donbal-e ye mashin dirooz gasht.
one week ago, Forood pursuit-EZ one car yesterday searched.3SG
'A week ago, Forood looked for a car yesterday.'

b. Ye hafte pish, Forood talash kard ye mashin dirooz payed kon-e.
one week ago, Forood try did.3SG one car yesterday find do-3SG
'A week ago, Forood tried to find a car yesterday.'

Necessity modal auxiliaries take clausal complements: as expected, (28) is not contradictory.

(28) Ye hafte pish, Forood bayad ye mashin dirooz mikharid.
one week ago, Forood must one car yesterday bought.3SG
'A week ago, Forood was required to buy a car yesterday.'

We are then left with a correlation: the ITVs that allow for *hame -i* DPs to have a free choice reading are those that do not seem to take clausal complements. The free choice interpretation of *hame -i* DPs supports the split between ITVs that the adverbial modification facts motivate.

5 A tentative conclusion

Recall that within the framework that we are assuming, free choice readings are derived from LFs where a modal expression intervenes between EXH and the *hame -i* DP. In view of this, we tentatively conclude that the correlation attested in the previous two sections illustrates that the relation between EXH and *hame -i* DPs is subject to a locality constraint. We suggest, in (29), that EXH and *hame -i* DPs need to be within the same minimal clause at LF.

(29) *LF: EXH $\Box$ [$_{CP}$ ... hame$_{\mathbb{C}}$ hole-i$_C$ ...]

Modals that do not take clausal complements, like the Farsi counterpart of *look for*, can intervene between EXH and the *hame -i* DP without violating the locality constraint in (29), and free choice readings are derived. For modals taking clausal complements, like the Farsi counterpart of *want* or *must*, *hame -i* DPs cannot remain below the modal and no free choice interpretation is derived. In those cases, *hame -i* DPs need to be extracted over the modal to yield a licit LF, as in (30). This correlates with the attested universal force [6].

(30) LF: EXH [hame$_{\mathbb{C}}$ hole-i$_C$] λ_1 $\Box$ [$_{CP}$ ... t_1]

While consistent with the free choice interpretation pattern, (29) is at odds with our description of the behavior of *hame -i* DPs in DE contexts, since in Section 2 we took the embedded existential reading of *hame -i* DPs to arise from an LF of the form in (31), which violates (29).

(31) LF: EXH [$_{CP}$ [$_{CP}$ if ... [hame$_{\mathbb{C}}$ hole-i$_C$] ...] ...]

In [6] we show that *hame -i* DPs can be locally exhaustified in DE environments, as in (32). LFs like (32) obey the locality constraint in (29). In cases like (32), *hame -i* DPs contribute universal force within the minimal clause that they are contained in. But that's not the only possibility. In [3] we defend that the alternatives introduced by NPs marked with *-i* can be deactivated under the threat of deriving a contradiction. If we assume that the alternatives can be optionally pruned or deactivated in (32), we can derive the attested narrow scope existential force in DE environments via an LF that obeys the locality constraint.

(32) LF: [$_{CP}$ [$_{CP}$ if EXH [... [hame$_{\mathbb{C}}$ hole-i$_C$] ...] ...] ...]

To avoid overgeneration of existential readings, we need to assume that total pruning or deactivation is only allowed when it leads to global strengthening.

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