

Universal force from exhaustification: Farsi *hame -i* DPs*

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Abstract Polarity items have been analyzed as existential DPs that introduce into the semantic derivation two types of alternatives: domain alternatives (corresponding to possible restrictions of the domain of quantification) and scalar alternatives (corresponding to stronger quantificational forces.) This approach has led to the development of a typology of polarity items that is based on the types of alternatives that these items introduce (Chierchia 2013). What are the possible dimensions of variation? Bar-Lev & Margulis (2014) argue that the Hebrew determiner *kol* introduces domain, but not scalar alternatives. This paper shows that a class of Farsi DPs, which we call ‘*hame -i* DPs’, do too.

Keywords: polarity items, exhaustification, Farsi

1 Introduction

In an influential line of work, polarity items are analyzed as existential quantifiers that introduce into the semantic derivation alternative meanings (Krifka 1991, 1995; Kratzer & Shimoyama 2002; Chierchia 2013). An important contribution of this type of analysis is the realization that the diverse behavior of polarity items can be reduced to a small number of parameters of variation that have to do with the types of alternatives that these items introduce, as seen most clearly in Chierchia 2013. For instance, the so-called ‘*even-type*’ negative polarity items have been analyzed as introducing alternatives ordered by likelihood, while the ‘*only-type*’ negative polarity items have been taken to introduce alternatives ordered by entailment (Krifka 1991; Chierchia 2013); or, to provide another example, some free choice items, like German *irgendein* or Italian *un qualunque*, have been claimed to introduce alternatives corresponding to all subsets of the extension of the NP they combine with (‘full domain alternatives’), while others, like Spanish *algún* or Romanian

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vreun, have been claimed to introduce only those alternatives that correspond to the singleton subsets ('singleton domain alternatives') (Alonso-Ovalle & Menéndez-Benito 2010; Fălăuș 2014; Alonso-Ovalle & Menéndez-Benito 2015)

Other dimensions of variation have been found. Bar-Lev & Margulis (2014) show that the Hebrew determiner *kol* oscillates between existential and universal force: in unembedded contexts, *kol* contributes universal quantification, as seen in (1a), while in downward entailing contexts, it can be seen as contributing existential force, like in (1b).

- (1) a. (etmol) kol yeled ciyer et acmo b-a-maxberet Selo.
 (yesterday) KOL boy drew ACC self in-the-notebook his
 '(Yesterday,) every boy drew himself in his notebook.'
 (Bar-Lev & Margulis 2014: p. 60)
- b. lo nigram kol nezek.
 NEG was.caused KOL damage
 'No damage was caused.' $\neg > \exists$ (Bar-Lev & Margulis 2014: p. 61)

The variation in quantificational force that *kol* illustrates can be related to the types of alternatives that polarity items invoke. Chierchia (2013) proposes that polarity items introduce into the semantic derivation two types of alternatives: (i) domain alternatives (obtained by contrasting the actual domain of quantification with smaller subdomains) and (ii) scalar alternatives (obtained by contrasting the existential quantifier with stronger quantifiers). Bar-Lev & Margulis (2014) show that the variation in quantificational force of English *kol* can be derived from the assumption that this polarity item is existential at core, but that, unlike other polarity items, it introduces domain but not scalar alternatives. In this paper, we show that the pattern extends beyond Hebrew.

We will focus on a variety of Farsi DPs ('*hame -i* DPs') that quantify over types. The main goal of the paper is to argue that, despite appearances, the quantificational force of *hame -i* DPs can vary: it can be existential or universal, much like that of Hebrew *kol*. Once we establish that point, we can resort to the type of analysis proposed by Bar-Lev & Margulis (2014) to capture the attested variation in quantificational force.

The paper is organized as follows. Section 2 presents the basic profile of *hame -i* DPs. The section shows that *hame -i* DPs contribute universal quantification in positive episodic environments and that this universal interpretation can, but does not have to, survive embedding under a downward entailing operator. In downward entailing contexts, a second interpretation emerges. This interpretation could be derived via a *hame -i* DP with universal force scoping over the downward entailing operator, or via a *hame -i* DP with existential force scoping under it. Section 3 argues for the second possibility. In section 4, we show that, unsurprisingly,

the variation in quantificational force can be captured by importing Bar-Lev & Margulis's analysis of Hebrew *kol*. Finally, section 5 defends this analysis over two possible alternatives: analyzing *hame -i* DPs as universal free choice items or definites. Section 6 concludes.

2 *Hame -i* DPs: Interpretation

We will start by surveying the interpretation of *hame -i* DPs. Section 2.1 contextualizes *hame -i* DPs with respect to other Farsi DPs with similar morphology. Section 2.2 shows that there is a difference in interpretation between positive episodic sentences and downward entailing sentences. Section 2.3 concludes with a question: whether the difference in interpretation is due to a difference in scope or a difference in the quantificational force that *hame -i* DPs convey. Section 3 will argue for the second possibility.

2.1 Farsi *-i* DPs

Farsi has several types of DPs that convey existential quantification. The language can convey existential quantification through bare NPs, as shown in (2), or with NPs marked with enclitic *-i*, as seen in (3).

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

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

Existential quantification can be expressed with the addition of determiners, too. The determiner *ye* ('one') can be added to either bare NPs or to NPs marked with enclitic *-i*, and the result still conveys existential quantification, as the examples below illustrate.

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

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

Other determiners beyond *ye* can combine with NPs marked with enclitic *-i*. For instance: the combination of the determiner *har* with NPs marked with enclitic *-i* behaves as a universal free choice item (Alonso-Ovalle & Moghiseh 2019b, 2021). In episodic sentences like (6), *har* DPs can be licensed by modification ('subtriggered', (Legrand 1975)) and have universal force: (6) conveys that Forood fell in *every* hole that was on his way. The sentence also conveys the type of counterfactual implications familiar from other universal free choice items (in this case, that if there had been other holes in his way, he would have fallen in those holes, too.)

- (6) Forood too **har chale-i** too masir-esh boode bashe oftad-e.
 Forood in **har hole-IND** in way-3SG.POSS was be.SUBJ fell-3SG
 'Forood fell in any hole that was on his way.'

Adding *hame* to NPs with enclitic *-i* also conveys universal quantification, but this time over types of entities, as the translation of (7) hints at. We will focus on this construction in the rest of the paper.

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

2.2 A contrast

We will now probe into the interpretation of *hame -i* DPs. In this section, we will see that the universal force of *hame -i* DPs can be weakened to existential in downward entailing environments.

2.2.1 *Hame -i* DPs in positive episodic sentences

As we have just seen, *hame -i* DPs can convey universal force in positive episodic sentences.¹ For instance, the sentence in (7) claims that for each (contextually relevant) type of (contextually relevant) hole P, Forood fell in a hole of type P.

¹ We say *can*, because *hame -i* DPs can convey a 'random choice' interpretation, with volitional verbs (Alonso-Ovalle & Menéndez-Benito 2018). The sentence in (i), for instance, can convey that Forood bought *a* book of some type and chose the type randomly. We leave aside cases like this for the moment being. We focus on them, together with other cases where *hame -i* DPs combine with modal expressions, in ongoing unpublished work.

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

Accordingly, that sentence is true in the scenario in (8), represented in figure 1 and false in the scenario in (9), represented in figure 2.

- (8) *Scenario 1.* At the adventure race, there were three types of holes (red, green, blue), and two holes of each type (red₁, red₂, green₁, green₂, blue₁, blue₂). Forood fell in red₁, red₂, green₁, green₂, blue₁ and blue₂.

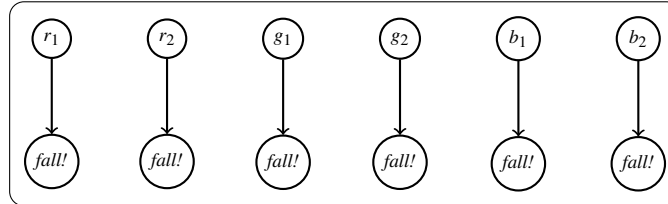


Figure 1

(7) *Forood fell in hame hole-i.* = ✓
 ‘r_n’ are red holes, ‘g_n’ are green holes, ‘b_n’ blue holes.

- (9) *Scenario 2.* At the adventure race, there were three types of holes (red, green, blue), and two holes of each type (red₁, red₂, green₁, green₂, blue₁, blue₂). Forood fell in red₁, red₂, green₁, green₂ and in no other hole.

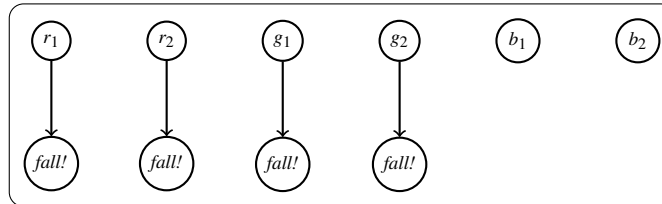


Figure 2

(7) *Forood fell in hame hole-i.* = ✗
 ‘r_n’ are red holes, ‘g_n’ are green holes, ‘b_n’ blue holes. Nodes without an arrow represent successful jumps.

Hame -i DPs quantify over types, not tokens. We can see that by noting that the sentence in (7), repeated below, can be felicitously continued with (the Farsi counterpart) of (11a), but not with (the Farsi counterpart of) (11b).

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

- (11) a. ... But, he didn't fall in every hole.
 b. # ... But, he didn't fall in every type of hole.

Accordingly, (7) is true in the scenario in (12), represented in figure 3, where Forood did not fall in every hole, but did fall in every contextually determined type of hole.

- (12) *Scenario 3.* There are three types of holes (red, green, blue), and two holes of each type (red₁, red₂, green₁, green₂, blue₁, blue₂). Forood fell in red₁, green₁, blue₁ and in no other hole.

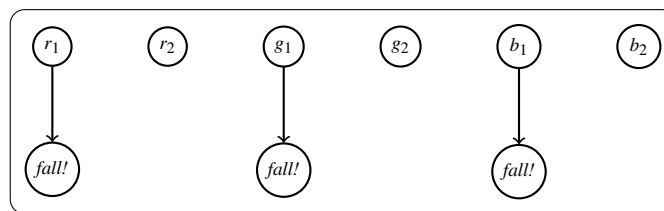


Figure 3

(7) *Forood fell in hame hole-i.* = ✓
 ‘r_n’ are red holes, ‘g_n’ are green holes, ‘b_n’ blue holes.’

The interpretation of *hame -i* DPs in positive episodic sentences, like the one above, contrasts with their interpretation in downward entailing environments, as we will see next.

2.2.2 Downward entailing contexts

In downward entailing contexts, we detect two possible interpretations: a weak and a strong one. We will illustrate this with *hame -i* DPs in the antecedent of conditionals.

First, we note that the universal force of *hame -i* DPs *can* (but does not have to) survive embedding in downward entailing contexts. The sentence in (13), for instance, can convey that the speaker will win the bet if Forood falls in every type of hole. Accordingly, (13) can be continued with (the Farsi counterpart of) (14).

- (13) 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 *hame hole-i*, I win the bet.’
- (14) ... but if he falls in some types of holes but not in all of them, I lose the bet.

At the same time, the sentence in (13) can have a stronger interpretation, under which it conveys that the speaker wins the bet as soon as Forood falls in some type of hole or other. Under that interpretation, the continuation in (15) is contradictory.

(15) # ... but if he falls in some types of holes but not in all of them, I lose the bet.

2.3 Wide-scope universal or narrow-scope existential?

Given the interpretation of *hame -i* DPs in positive episodic environments, the weaker interpretation of the sentence in (13) is unsurprising, as it is captured by assuming that the *hame -i* DP contributes universal force and that the item is interpreted within the antecedent of the conditional: under this interpretation, (13) conveys that the speaker wins the bet if for every contextually relevant type of hole P, Forood falls in a hole of type P.

We will represent this interpretation as in (16) where we assume that \mathbb{C} retrieves a contextually relevant set of properties that partitions (a contextually relevant) set of holes.²

$$(16) \quad [\forall P_{et} \in \mathbb{C}(\llbracket \text{hole}_C \rrbracket)] \exists x_e [\llbracket \text{hole}_C \rrbracket(x) \wedge P(x) \wedge \text{FALL}(F, x)] \Rightarrow \text{WIN}(\text{Sp}, B)$$

The stronger interpretation of (13) is more interesting. In principle, it could be due to the universal component of *hame -i* DPs scoping over the whole conditional, as in (17a), or an existential *hame -i* DP taking narrow scope within the antecedent of the conditional, as in (17b).

$$(17) \quad \begin{array}{l} \text{a. } \forall P_{et} \in \mathbb{C}(\llbracket \text{hole}_C \rrbracket) [\exists x_e [\llbracket \text{hole}_C \rrbracket(x) \wedge P(x) \wedge \text{FALL}(F, x)] \Rightarrow \text{WIN}(\text{Sp}, B)] \\ \text{b. } [\exists P_{et} \in \mathbb{C}(\llbracket \text{hole}_C \rrbracket)] \exists x_e [\llbracket \text{hole}_C \rrbracket(x) \wedge P(x) \wedge \text{FALL}(F, x)] \Rightarrow \text{WIN}(\text{Sp}, B) \end{array}$$

We could discard the first possibility based on the observation that the antecedent of conditionals should block extraction of the DP. However, we can't discard the possibility that *hame -i* DPs be existential at core, with the universal force attested in positive episodic sentences being derived via exhaustification. If that were the case, then, perhaps *hame -i* DPs could get exceptional wide scope by whatever mechanism assigns exceptional scope to other existentials, with further exhaustification deriving the wide scope universal force. It is worth investigating then if the strong interpretation attested in downward entailing environment corresponds to a narrow scope existential interpretation or not. This is the goal of next section.

3 *Hame -i* DPs contribute existential force in DE environments

Investigating the interpretation of *hame -i* DPs in conditionals will not be useful to tease apart the two possibilities just discussed. The reason why is quite straightforward: to the extent that conditionals are 'anti-additive' functions (Zwarts 1998),

² It looks like the types that *hame -i* DPs range over are not necessarily stable, hence our choice 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.

functions for which the equality in (18) holds, the two interpretations in (17a) and (17b) are logically equivalent.

- (18) Anti-additivity:
 $f(A \vee B) = f(A) \wedge f(B)$

To determine whether *hame -i* DPs contribute narrow scope existential quantification or wide scope universal quantification over types, we need to probe into the interpretation of *hame -i* DPs in other downward entailing contexts that are not anti-additive. That's what we will do next.

We will start by considering the interpretation of the sentence in (19), with the adverb of quantification *rarely*, which, with Ladusaw (1980), we take to convey 'usually not.'

- (19) Forood be-nodrat too hame chale-i oftad, har zaman-i az roo chale
 Forood rarely in hame hole-IND fell.3SG, har time-IND from on hole
 parid.
 jumped.3SG
 'Forood rarely fell in *hame* hole -i, whenever he jumped over a hole.'

Rarely is not anti-additive. To see that, consider the sentences in (20) below. We will take (20b), for instance, to mean that on less than half of the occasions where Forood had dinner at the cafeteria last month, he had tofu, as in (21).

- (20) a. Whenever he had dinner at the cafeteria last month, Forood rarely had tofu or rice.
 b. Whenever he had dinner at the cafeteria last month, Forood rarely had tofu.
 c. Whenever he had dinner at the cafeteria last month, Forood rarely had rice.

$$(21) \frac{|\{e : \text{DINE}(F, T, e) \wedge \text{AT-CAFETERIA}(e) \wedge \text{LAST-MONTH}(e)\}|}{|\{e : \exists x[\text{DINE}(F, x, e) \wedge \text{AT-CAFETERIA}(e) \wedge \text{LAST-MONTH}(e)]\}|} < \frac{1}{2}$$

Now consider the scenario represented in figure 4, which assumes that Forood had dinner at the cafeteria last month on ten occasions (d_1, \dots, d_{10} .) Under the truth-conditions that we are assuming, the sentence in (20b) is true in this scenario, since Forood only had tofu twice out of ten times. Likewise, (20c) comes out true, since Forood only had rice three out of ten times. That means that the conjunction of (20b) and (20c) will be true. If *rarely* were anti-additive, (20a) would have to be true in the world represented in figure 4, but (20a) is false, since Forood had rice or tofu five out of ten times, not less than five times.

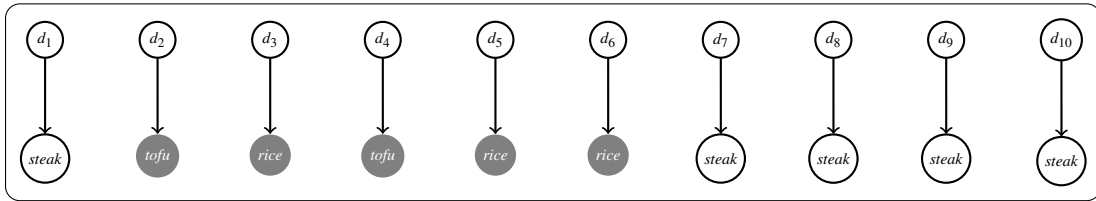


Figure 4 Whenever he had dinner at the cafeteria last month, Forood *rarely* ate tofu or rice.

Let us now get back to the interpretation of *hame -i* DPs in sentences like that in (19), where a *hame -i* DP is under the scope of *rarely*. We note that (19) is false in the scenario in (22) below, represented in figure 5.

- (22) Scenario 5: Forood participated in an adventure race. In the race, there were forty holes: five types of holes and eight holes of each type. Forood jumped over the first ten holes. Those were of five different types. These were the only jumps he took. He fell in every hole. (19) = ✗

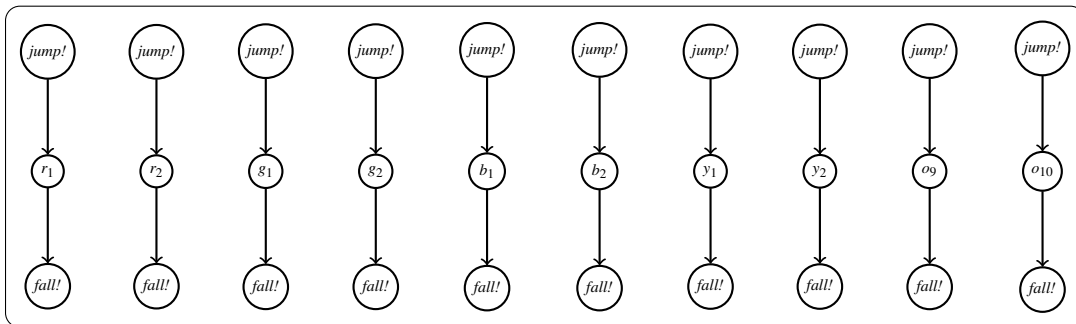


Figure 5 (19) Whenever he jumped, Forood *rarely* fell into *hame hole-i* = ✗ ‘*r_n*’ are red holes, ‘*g_n*’ green, ‘*b_n*’ blue, ‘*y_n*’ yellow, ‘*o_n*’ orange.

The truth-conditions associated with the *hame -i* DP taking narrow or wide scope with respect to *rarely* are not equivalent. The truth-conditions associated with an existential *hame -i* DP taking narrow scope are represented in (23): they convey that less than half of the jumping events were falling events.

$$(23) \quad \frac{\left| \left\{ e : \begin{array}{l} \exists x[\text{JUMP}(F, x, e) \wedge \exists P_{et} \in \mathbb{C}(\llbracket \text{hole}_C \rrbracket)] \\ \exists x_e[\llbracket \text{hole}_C \rrbracket](x) \wedge P(x) \wedge \text{FALL}(F, x, e)] \end{array} \right\} \right|}{|\{e : \exists x[\text{JUMP}(F, x, e)]\}|} < \frac{1}{2}$$

These truth-conditions are not met in the scenario represented in figure 5. In that scenario, there were ten events of Forood falling over some type of hole or other and ten events of Forood jumping. The proportion of events of the first type that are events of the second type is 100%, hence the truth-conditions are not met.

$$(24) \quad \frac{\left| \left\{ e : \begin{array}{l} \exists x[\text{JUMP}(F, x, e)] \wedge \exists P_{et} \in \mathbb{C}(\llbracket \text{hole}_C \rrbracket) \\ \exists x_e[\llbracket \text{hole}_C \rrbracket(x) \wedge P(x) \wedge \text{FALL}(F, x, e)] \end{array} \right\} \right|}{|\{e : \exists x[\text{JUMP}(F, x, e)]\}|} = 1$$

The truth-conditions associated with a universal *hame* -i DP taking scope over *rarely*, represented below, convey that for every type of hole P, less than half of the jumping events are fallings into a P-hole.

$$(25) \quad \left[\frac{\forall P_{et} \in \mathbb{C}(\llbracket \text{hole}_C \rrbracket) \left| \{e : \exists x[\text{J}(F, x, e)] \wedge \exists x_e[\llbracket \text{hole}_C \rrbracket(x) \wedge P(x) \wedge \text{F}(F, x, e)]\} \right|}{|\{e : \exists x[\text{JUMP}(F, x, e)]\}|} < \frac{1}{2} \right]$$

These truth-conditions are met in the scenario represented in figure 5, since, as seen below, for every type of hole P, two out of the ten times when Forood fell, he fell into a P-hole.

$$(26) \quad \left[\frac{\forall P_{et} \in \mathbb{C}(\llbracket \text{hole}_C \rrbracket) \left| \{e : \exists x[\text{J}(F, x, e)] \wedge \exists x_e[\llbracket \text{hole}_C \rrbracket(x) \wedge P(x) \wedge \text{F}(F, x, e)]\} \right|}{|\{e : \exists x[\text{JUMP}(F, x, e)]\}|} = \frac{1}{5} \right]$$

As reported above, the sentence in (19) is judged to be false in the scenario represented in figure 5 above. This means that there must be a way of interpreting the *hame* -i DPs as conveying existential force within the scope of *rarely*.

Other non anti-additive operators lead to the same results. Consider, for instance, the determiner *few*. We will take the sentence in (27b) to convey that less than half of the students who ate something ate tofu, as in (28). To see that *few* is not anti-additive, consider the scenario represented in figure 6, with ten students (s_1, \dots, s_{10}). In this scenario, the sentences in (27b) and (27c) are both true (since only two students ate tofu and three rice), but the sentence in (27a) is not, since exactly half of the students ate tofu or rice.

- (27) a. Few students ate tofu or rice.
 b. Few students ate tofu.
 c. Few students ate rice.

$$(28) \quad \frac{|\{x : \text{STUDENT}(x) \wedge \text{ATE}(x, T)\}|}{|\{x : \text{STUDENT}(x) \wedge \exists y[\text{ATE}(y, x)]\}|} < \frac{1}{2}$$

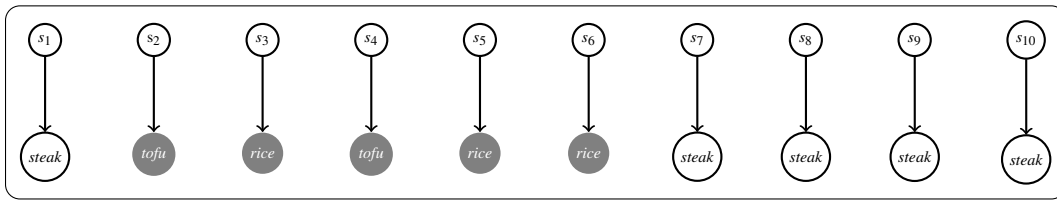


Figure 6

Few students ate tofu or rice.

Let us now examine the interpretation of *hame -i* DPs in the context of non anti-additive *few*. Consider, for instance, the sentence in (29).

- (29) Tedad-e kam-i danshjo too hame chale-i oftad-and.
 number-EZ little-IND student in hame hole-IND fell-3PL
 ‘Few students fell in *hame hole -i*.’

The sentence in (29) is judged to be false in the scenario below, represented in figure 7.

- (30) *Scenario 6*: There were ten holes of ten different types. Twenty students jumped over the ten holes. Every student fell in a hole. Two students fell in each type of hole. (29) = ✗

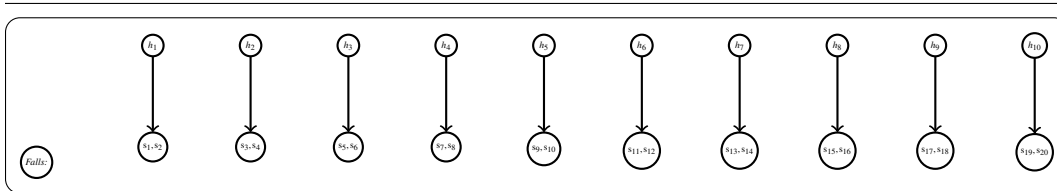


Figure 7

(29) *Few students fell into hame hole-i.* = ✗

The truth-conditions predicted if the *hame -i* DP had existential force and took scope under *few* are represented in (31): they convey that less than half of the students fell into a hole.

$$(31) \frac{|\{y : ST(y) \ \& \ \exists e \exists P_{et} \in \mathbb{C}(\llbracket hole_C \rrbracket) \exists x_e [\llbracket hole_C \rrbracket](x) \wedge P(x) \wedge F(y, x, e)]\}|}{|\{y : STUDENT(y)\}|} < \frac{1}{2}$$

These truth-conditions do not obtain in the scenario represented in figure 7, since, in that scenario, all twenty students fell into a hole.

$$(32) \quad \frac{|\{y : \text{ST}(y) \ \& \ \exists e \exists P_{\text{et}} \in \mathbb{C}(\llbracket \text{hole}_C \rrbracket) \exists x_e [\llbracket \text{hole}_C \rrbracket](x) \wedge P(x) \wedge F(y, x, e)]\}|}{|\{y : \text{STUDENT}(y)\}|} = 1$$

In contrast, the truth-conditions derived by assuming that the *hame -i* DP has universal force and scopes over *few* are represented in (33): they convey that, for every type of hole P, less than half of the students fell into a hole of type P.

$$(33) \quad \forall P_{\text{et}} \in \mathbb{C}(\llbracket \text{hole}_C \rrbracket) \left(\frac{|\{y : \text{STUDENT}(y) \ \& \ \exists e \exists x_e [\llbracket \text{hole}_C \rrbracket](x) \wedge P(x) \wedge \text{FALL}(y, x, e)]\}|}{|\{y : \text{STUDENT}(y)\}|} < \frac{1}{2} \right)$$

These truth-conditions are satisfied in the scenario represented in figure 7, since, for every type of hole P, two out of twenty students fell into a P-hole.

$$(34) \quad \forall P_{\text{et}} \in \mathbb{C}(\llbracket \text{hole}_C \rrbracket) \left(\frac{|\{y : \text{STUDENT}(y) \ \& \ \exists e \exists x_e [\llbracket \text{hole}_C \rrbracket](x) \wedge P(x) \wedge \text{FALL}(y, x, e)]\}|}{|\{y : \text{STUDENT}(y)\}|} = \frac{1}{10} \right)$$

Once again, the narrow scope existential analysis derives truth-conditions that match the predicted truth-value, but the wide scope universal analysis doesn't. We conclude then that a narrow scope existential parse of *hame -i* DPs must exist.

4 Applying Bar-Lev & Margulis (2014) to *hame -i* DPs

Let us summarize. We have seen that *hame -i* DPs quantify over types. In downward entailing contexts they can contribute existential force. This contrasts with their behavior in positive episodic sentences, where they convey universal quantification. This means that *hame -i* DPs, like the Hebrew determiner *kol*, oscillate between existential and universal force, depending on the monotonicity properties of the environment that they are in.

To account for the oscillation between existential and universal force, we can simply import the analysis of *kol* presented in Bar-Lev & Margulis (2014), which naturally extends to *hame -i* DPs.

Farsi NPs marked with enclitic *-i* have been argued to introduce domain alternatives (Alonso-Ovalle & Moghiseh 2019a,b; Deal & Farudi 2007). In line with this, we will treat *hame -i* DPs as existential quantifiers that quantify over types at the ordinary semantics level, as in (35). As before, we assume that \mathbb{C} retrieves a contextually relevant set of properties that partitions (a contextually relevant) set of holes.

$$(35) \quad \llbracket \text{hame hole-}i \rrbracket^0 = \lambda Q. \exists P_{\text{et}} \in \mathbb{C}(\llbracket \text{hole}_C \rrbracket) \exists x_e [\llbracket \text{hole}_C \rrbracket](x) \wedge P(x) \wedge Q(x)$$

We follow Bar-Lev & Margulis’s assumptions for Hebrew *kol* and take *hame -i* DPs to introduce into the semantic derivation domain but not scalar alternatives. Domain alternatives are determined by considering subsets of the contextually relevant set of properties partitioning the relevant domain of entities in the extension of the NP, as in (36).

$$(36) \quad \llbracket \text{hame hole-i} \rrbracket^{\text{ALT}} = \{ \lambda Q. \exists P_{\text{et}} \in D \exists x_e [\llbracket \text{hole}_C \rrbracket(x) \wedge P(x) \wedge Q(x)] : D \subset \mathbb{C}(\llbracket \text{hole}_C \rrbracket) \}$$

As is standard, we assume that these alternatives grow propositional and can be accessed by an exhaustification operator at propositional sites. To illustrate, we consider our target example in (37a) below, together with its LF, in (37b).

- (37) a. Forood too *hame chale-i* oftad.
 Forood in *hame hole-IND* fell.3SG
 ‘Forood fell in all types of holes.’
 b. LF: EXH [_{IP} *hame hole-i* λ_1 Forood fell in t_1]

We will assume, for illustration, that the 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.

- (38) a. $\llbracket \text{hole}_C \rrbracket = \{R_1, R_2, G_1, G_2\}$
 b. $\mathbb{C}(\llbracket \text{hole}_C \rrbracket) = \{\text{RED}, \text{GREEN}\}$

The sister of EXH in the LF in (37b) denotes the disjunction in (39a) at the ordinary semantic level. At the alternative level, it denotes a set of propositions, containing each of the disjuncts.³

- (39) a. $\llbracket [\text{IP } \text{hame hole-i } \lambda_1 \text{ Forood fell in } t_1] \rrbracket^{\text{O}} = \exists x_e [\text{RED}(x) \wedge \text{FALL}(F, x)] \vee \exists x_e [\text{GREEN}(x) \wedge \text{FALL}(F, x)]$
 b. $\llbracket [\text{IP } \text{hame hole-i } \lambda_1 \text{ Forood fell in } t_1] \rrbracket^{\text{ALT}} = \left\{ \begin{array}{l} \exists x_e [\text{RED}(x) \wedge \text{FALL}(F, x)], \\ \exists x_e [\text{GREEN}(x) \wedge \text{FALL}(F, x)] \end{array} \right\}$

As Bar-Lev & Margulis 2014 proposed for Hebrew *kol*, grammatical strengthening via a covert exhaustivity operator, EXH, captures the quantificational force of *hame -i* DPs.

We follow Bar-Lev & Fox (2017) in defining EXH, which considers two types of alternatives: the ‘innocently excludable’ alternatives and the ‘innocently includable’ alternatives, described below.

³ From now on, for the purposes of illustration, we will represent each domain alternative as ‘GREEN’ and ‘RED’.

- (40) *Innocently excludable alternatives*
- a. Consider all maximal sets of alternatives that can be excluded while being compatible with the prejacent.
 - b. The alternatives that are in all such sets are innocently excludable.
- (41) *Innocently includable alternatives*
- a. Consider all maximal sets of alternatives that can be asserted together with the prejacent and the negation of all innocently excludable alternatives.
 - b. The alternatives that are in all such sets are innocently includable.

EXH excludes all innocently excludable alternatives and asserts all innocently includable alternatives. This will deliver the universal quantification of *hame -i* DPs in positive episodic sentences. The set containing all maximal subsets of alternatives whose negation is consistent with the proposition in (39a) is the set that has as members the singleton containing the proposition that Forood fell into a green hole and the singleton containing the proposition that Forood fell into a red hole. There is no alternative that is in all those sets, and, therefore, there is no innocently excludable alternative. That means that all alternatives are innocently includable.

- (42) a. Maximal sets of alternatives whose negation is consistent with (39a)
 $\{\{\text{GREEN}\}, \{\text{RED}\}\}$
- b. Innocently Excludable alternatives = $\{\text{GREEN}\} \cap \{\text{RED}\} = \emptyset$

Exhaustification derives the attested universal quantification: the ordinary semantic value of the argument of EXH conveys that Forood fell into at least one green hole or into at least one red hole. EXH strengthens this meaning by asserting, on top of that, that he fell into at least one green hole *and* into at least one red hole, deriving the attested universal meaning.

$$(43) \quad \llbracket \text{EXH} \llbracket \text{IP} \dots \rrbracket \rrbracket^{\text{O}} = (\text{GREEN} \vee \text{RED}) \wedge \text{GREEN} \wedge \text{RED} \Leftrightarrow \text{GREEN} \wedge \text{RED}$$

Let us now turn to what happens in downward entailing contexts. Recall that in these contexts, *hame -i* DPs can convey either a weak interpretation (where the universal force of the DP surveys the embedding) or a strong interpretation (where the DP contributes existential force.) Take, for instance, the conditional that we previously discussed, repeated below:

- (44) 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 *hame* hole-*i*, I win the bet.’

Local exhaustification derives its weak interpretation, as illustrated below. This interpretation will be consistent with the continuation in (46), as attested.

- (45) a. if [EXH [IP *hame hole-i* λ_1 Forood fall in t_1]] [I win the bet]
 b. \llbracket [IP...] $\rracket^O =$ GREEN \vee RED
 c. \llbracket [EXH [IP...]] $\rracket^O =$ (GREEN \vee RED) \wedge GREEN \wedge RED \Leftrightarrow GREEN \wedge RED
 d. \llbracket (45a) $\rracket^O =$ (GREEN \wedge RED) \rightarrow BET
- (46) ... but if he falls in some types of holes but not all of them, I lose.

Global exhaustification, as in (47a) derives the stronger interpretation. When EXH operates globally, the alternatives are entailed by its prejacent. None of them can then be negated while preserving consistency with the prejacent, and none of them are therefore innocently excludable. Because the innocently includable alternatives are entailed by the prejacent, asserting them does not lead to strengthening. Inconsistency with the continuation in (48), as attested, is derived.

- (47) a. EXH [IP if *hame hole-i* λ_1 Forood fall in t_1 , I win the bet]
 b. \llbracket [IP...] $\rracket^O =$ (GREEN \vee RED) \rightarrow BET
 c. \llbracket [IP...] $\rracket^{ALT} =$ {GREEN \rightarrow BET, RED \rightarrow BET}
 d. \llbracket [EXH [IP...]] $\rracket^O =$
 \llbracket (GREEN \vee RED) \rightarrow BET $\rracket \wedge$ GREEN \rightarrow BET \wedge RED \rightarrow BET
 \Leftrightarrow (GREEN \vee RED) \rightarrow BET

- (48) ...# but if he falls in some types of holes but not all of them, I lose.

To sum-up: assuming that *hame -i* DPs are existential quantifiers that introduce domain, but not scalar alternatives naturally captures the oscillation in quantificational force that we have attested.

5 Discarding possible alternative analyses

To conclude, we will discuss and reject two alternatives analyses to capture the shift in quantificational force of *hame -i* DPs. Universal free choice items can have universal force in episodic sentences when they are licensed by modification. In downward entailing contexts, some of them have existential force. We will start by considering the possibility of analyzing *hame -i* DPs as universal free choice items. We will then entertain the possibility that they be definite DPs.

5.1 *Hame -i* DPs are not universal free choice items

Some universal free choice items, like English *any* or Farsi *har -i* DPs, are licensed by (postnominal) modification in non-downward entailing contexts (Legrand 1975).

In those cases, they contribute universal quantification: the sentence in (49), with English *any*, for instance, conveys that John saw all students that happened to be around, and the sentence in (50), with a Farsi *har -i* DP, conveys that Forood fell in all holes that were on his way.

- (49) Yesterday, John saw any student that happened to be around.
(Chierchia 2013: 317)
- (50) Forood too **har chale-i** too masir-esh boode bashe oftad-e.
Forood in **har hole-IND** in way-3SG.POSS was be.SUBJ fell-3SG
'Forood fell in any hole that was on his way.'

In downward entailing environments, both *any* and *har -i* DPs contribute existential quantification, as the sentences below illustrate:

- (51) Yesterday, John did not see any student.
- (52) Age Forood too **har chale-i** bioft-e, shart ro mibar-am.
If Forood in **har hole-IND** fall-3SG, bet ACC win-1SG
'If Forood falls in any hole, I win the bet.'

This behavior is then parallel to the behavior of *hame -i* DPs illustrated above. We should then ask ourselves whether *hame -i* DPs could be universal free choice items, with the attested universal force in the unembedded case being a case of subtrigging, which can possibly be covert (Legrand 1975).

We answer the question in the negative. Here's why. The cases where universal free choice items are licensed by modification, convey, on top of the universal meaning illustrated above, a counterfactual inference (Dayal 1998). *Hame -i* DPs, in contrast, convey universal quantification with no counterfactual component.

To illustrate, consider the sentence in (50), again. The sentence conveys that Forood fell in holes that were on his way. If there were ten holes in his way, Forood must have fallen in each of them for the sentence to be true. On top of that, the sentence conveys that if there had been other holes, Forood would have fallen into them too. Because of this meaning component, the sentence cannot appropriately describe the scenario in (53) below.

- (53) *Scenario 7*: There were twelve holes on Forood's way $h_1, h_2 \dots h_{12}$. Forood fell into all of them. These holes were really big. Forood wouldn't have fallen into other smaller holes. (50) = ✗

Now consider the sentence in (54), with a *hame -i* DP.

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

If the universal interpretation of the *hame -i* DP in (54) were due to some sort of covert subtriggering, (54) would have been false in the scenario in (55) where the expected counterfactual inferences are false. The sentence is however true (and appropriate) in this scenario.

- (55) *Scenario 8*: There were three types of holes (red, green, and blue). In this type of adventure race, these are huge. Yellow and magenta holes are very small. Forood fell in a red, green, and blue hole. He wouldn't have fallen into any other type of hole. (54) = ✓

Another indication that suggests that these are not cases of a subtriggered universal free choice item is the following: with *hame -i* DPs, postnominal modifiers require indicative mood, unlike postnominal modifiers with *har -i* DPs, which require subjunctive, as we saw in (50), repeated in (57) below. The requirement that clausal modifiers in the subtriggered examples is not found only in Farsi, we see the same requirement in Romance, for instance.

- (56) Forood too *hame chale-i* too *masir-esh* bood oftad.
Forood in *hame hole-IND* in way-3SG.POSS was.INDIC fell.3SG
'Forood fell in all types of holes that was on his way.'
- (57) Forood too **har chale-i** too *masir-esh* boode bashe oftad-e.
Forood in **har hole-IND** in way-3SG.POSS was be.SUBJ fell-3SG
'Forood fell in any hole that was on his way.'

We conclude, then, that *hame -i* DPs are not universal free choice items.

5.2 *Hame -i* DPs as plural definites?

Predicating a plural definite of a distributive predicate usually amounts to universal quantification: the sentence in (58a) conveys what (58b) conveys.

- (58) a. Forood read the books.
b. Forood read all the books.

At the same time, we know that, sometimes, plural definites can apparently have non-universal readings. For example: (59a) can describe a situation where Forood touched some, but not all of the statues, where (59b) would be true.

- (59) a. Forood touched the statues.
b. Forood touched some of the statues.

Can *hame -i* DPs be plural definites? We believe the answer is also negative. First, definites trigger accommodation in out of the blue contexts. The sentence in (59a) is infelicitous out of the blue, and probably, needs to be followed by ‘Which statues?’. The sentence in (60), in contrast, is felicitous in an out of the blue context.

- (60) Forood be hame mojassame-i dast zad.
 Forood to hame statue-IND hand hit.3SG
 ‘Forood touched all types of statues.’

Second, unlike definites, *hame -i* DPs do not seem to pick up discourse referents. When it follows (61), the sentence in (59a), with a definite, naturally picks up the bronze statues in the gallery, conveying what (62a) conveys. In contrast, the sentence in (60) does not range over the bronze statues only. Instead, the sentence in (60) conveys what (62b) conveys.

- (61) There were some bronze statues in the gallery. . . .
 (62) a. Forood touched the bronze statues.
 b. Forood touched all types of statues in the gallery.

Finally, while the plural definites allow for non-universal readings in upward entailing contexts, *hame -i* DPs do not. While the sentence in (59a) can be true in the scenario below, the sentence in (60) cannot be.

- (63) *Scenario 9*: There were ten statues, each of a different type. Forood touched nine of them and no other statue. (59a) = ✓, (60) = ✗

6 Conclusion

In this paper, we have seen that the quantificational force of *hame -i* DPs varies between existential and universal and that the shift in quantificational force correlates with the monotonicity properties of the contexts where *hame -i* DPs appear: they express universal force in positive episodic sentences and can express existential force in downward monotone contexts.

We have also seen that, unsurprisingly, an analysis along the lines of Bar-Lev & Margulis (2014), according to which *hame -i* DPs are existential quantifiers that trigger domain but not scalar alternatives, captures the variation in quantificational force. If this analysis is on the right track, then, whether or not polarity items trigger scalar alternatives seems to be a genuine parameter of variation.

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