# Similative disjunction and strengthening[1]

Giulio CIFERRI MURAMATSU — *University of Connecticut*
Pravaal YADAV — *University of Connecticut*

**Abstract.** Many natural languages have a simplex form and a complex form of disjunction, and it is commonly assumed that the complex form has stronger exclusive and exhaustive inferences. This study investigates Hindi disjunction, in its simple form and complex form. We report that Hindi disjunction follows the general tendency, but crucially, its simplex form can also give rise to a "similative inference". We propose an analysis treating Hindi disjunction as a "similative disjunction", and demonstrate how this similative disjunction can be strengthened into an exhaustive disjunction.

**Keywords:** Disjunction, similativity, exclusivity, exhaustivity, Hindi-Urdu.

## 1. Introduction

The different inferences arising with disjunctive sentences have been a central area of research on natural language semantics. Along with the well-studied exclusive inference (1a), there is another inference, which has received much less attention: the exhaustive inference (1b). While the exclusive inference makes reference to the disjuncts and negates the conjunction of the two, the exhaustive reference negates the contextual alternatives made salient by the disjuncts.

(1) Mary goes to the movies on Monday or Wednesday.
   a. ⇝ Mary doesn't go to the movies on Monday and Wednesday. (**exclusive**)
   b. ⇝ Mary doesn't go to the movies on days other than Monday and Wednesday. (**exhaustive**)

The common approach for the exclusive inference is to assume that disjunction is semantically inclusive, but it comes with an exclusive implicature (Gamut, 1991; Coppock and Champollion, 2022: i.a.). There isn't an equally unanimous approach to the exhaustive inference, but one way to go is to analyze it as an ad-hoc implicature, negating the ad-hoc alternatives (Nicolae et al., 2024: i.a.). The focus of this paper will be the exhaustive inference, or its lack in Hindi disjunction. Precisely, we will compare complex disjunction, which is exclusive and exhaustive, and simplex disjunction, which is inclusive and non-exhaustive/similative. Our main empirical contribution in this paper is the observation that Hindi sentences with the simplex disjunction *yaa* can give rise to a non-exhaustive/similative inference[2].

(2) John beer yaa whiskey pii raha thaa.
John beer YAA whiskey drink do.PROG be.PST
(lit.)'John was drinking beer or whiskey.'

[1]We would like to thank Jon Gajewski, Magdalena Kaufmann, Stefan Kaufmann, Diti Bhadra, and Rajesh Bhatt for their invaluable feedback. We would also like to thank the audience at CLS 59, SALA 37 in Venice, SuB 29 in Noto, and FASAL 15 in Austin, where different versions of this project were presented. All remaining errors are ours.

[2]All the judgments on Hindi reported in this paper belong to the second author.

 Similative disjunction and strengthening. In: Federica Longo and Daniele Panizza (eds.) *Proceedings of Sinn und Bedeutung 29*, pp. 340-351. Noto: University of Messina, C.U.M.O.

When sentences like (2) give rise to a non-exhaustive/similative inference, the disjunction phrase *beer yaa whiskey* ends up having a meaning best paraphrased as "beer or whiskey, or something like that." We relate this to the literature on various expressions with a "similative meaning" (Smith, 2020a, b; Krifka and Modarresi, 2024; Trinh, prep). We aim to add to this literature (i) by presenting the novel data from Hindi of a disjunction marker that can give rise to a similative inference. As far as we know, this is the first report of such an inference with disjunction. And (ii) by proposing an account of the behavior of such disjunction.

We also discuss the complex form of Hindi disjunction: *yaa toh yaa fir*. We observe that this disjunction is exclusive and exhaustive.

(3) John yaa-toh beer yaa-fir whiskey pii raha thaa.
John YAA-TOH beer YAA-FIR whiskey drink do.PROG be.PST
'John was drinking either beer or whiskey.'

That sentences with *yaa toh yaa fir* have a stronger exclusivity inference is not surprising, as across many languages, complex disjunction commonly has a stronger exclusive inference than its simplex counterpart (Spector, 2014; Szabolcsi, 2015; Nicolae et al., 2024: i.a.). It's perhaps more interesting that *yaa toh beer yaa fir whiskey* cannot have a similative meaning. It's also common for complex disjunctions to have a stronger exhaustivity, but how exactly does exhaustivity block the similative inference? Answering this question will be the second objective of this paper.

The structure of the paper is as follows. In section 2, we present the various facts of Hindi disjunction. We lay out the inferences associated with simplex *yaa* and complex *yaa toh yaa fir*. In section 3, we propose an analysis for simplex and complex disjunction. We argue that *yaa* denotes a similative disjunction and that it can be strengthened to an exhaustive disjunction, which is denoted by *yaa toh yaa fir*. We conclude in section 4, with a few remarks on possible extensions.

## 2. Exclusivity and exhaustivity in Hindi Disjunction

In this section, we illustrate the different inferences arising with the two forms of Hindi disjunction. We first lay out the facts about simplex *yaa*, with a focus on presenting the non-exhaustive/similative inference. We then present the facts for complex disjunction. The crucial difference between the two forms is that simplex *yaa* is inclusive and non-exhaustive/similative, while complex *yaa toh yaa fir* is exclusive and exhaustive.

### 2.1. Simplex disjunciton

A sentence with simplex *yaa* is ambiguous between an inclusive and an exclusive interpretation. (4) can be followed up felicitously with an inclusive (5a) or an exclusive (5b) continuation.

(4) John beer yaa whiskey pii raha thaa.
John beer YAA whiskey drink do.PROG be.PST

(lit.)'John was drinking beer or whiskey'

(5) a. ho saktaa hai dono pii rahaa ho.
happen could AUX both drink do.PROG AUX
'It's possible that he was drinking both.'

b. aur dono-me-se ek hii pii raha tha.
and two-out-of one only drink do.PROG be PST
'And he was drinking only one of the two.'

We assume that *yaa* denotes an inclusive disjunction, which can be strengthened into an exclusive interpretation via a scalar implicature. In this respect, there seems to be nothing particular of *yaa*, as it follows the general pattern of disjunction. Our main empirical focus of this paper is the fact that *yaa* can denote a non-exhaustive/similative disjunction. We use the term non-exhaustive disjunction not because *yaa* lacks an exhaustive inference, but rather, because its disjuncts do not exhaust the space of possibilities. An exhaustive disjunction negates the alternatives to the disjuncts, while a non-exhaustive disjunction does not even commit to at least one of the two disjuncts being true.[3] We exemplify this with a context of uncertainty, as in (6).

(6) a. [Context: The speaker walks into the living room, noticing that John is drinking some kind of beverage. The speaker cannot see what he is drinking but notices that he seems to be rather intoxicated.]

b. John beer yaa whiskey pii raha thaa.
John beer YAA whiskey drink do.PROG be.PST
'John was drinking beer or whiskey, or something like that.'

What the speaker conveys, by uttering (6b) is that John is drinking beer, whiskey, or some other alcoholic beverage. They thus do not commit to it being one between beer or whiskey. In fact, a different speaker who knows that John is actually drinking, say, rum, can follow up either positively or negatively.

(7) a. John beer yaa whiskey pii raha thaa.
John beer YAA whiskey drink do.PROG be.PST
'John was drinking beer or whiskey, or something like that.'

b. haaN/nahiiN, woh rum pii rahaa thaa.
yes/no he rum drink PROG PST
'Yes/No, he was drinking rum.'

[3]We distinguish non-exhaustivity from anti-exhaustivity (Sudo, 2014). Consider Japanese *ya*, an anti-exhaustive coordinator. (i) entails that (a) John drank tea, (b) John drank coffee, and (c) John drank something else.

i. John-wa ocha-ya cohi-o non-da
John-TOP tea-YA coffee–ACC drink-PST
'John drank tea and coffee, and something like that.'

Anti-exhaustivity entails that at least one of the alternative propositions to the disjuncts is true. It is thus stronger than non-exhaustivity, which has no such entailment.

This means that (7a) is in principle ambiguous between an exhaustive and non-exhaustive reading. A speaker who understands it exhaustively would follow up with a *no*, as for them (6b) is false. A speaker who understands it non-exhaustively would follow up with a *yes*, as John is indeed drinking a "beer-or-whiskey-like drink". Hence the non-exhaustive reading can be also termed as the "similative reading", as *beer yaa whiskey* means "beer or whiskey, or something like that." The similative inference is quite generally available; to just list a few, *joote yaa chappal* (moccasin or sandal), *kursii yaa table* (chair or table), and *jacket yaa coat* (jacket or coat) also give a similative inference. This inference, however, does not come unconstrained. It arises only when the two disjuncts are "similar enough". For instance, *beer yaa doodh* (beer or milk) has no similative inference.

(8) a. John beer yaa doodh pii raha thaa.
John beer yaa milk drink do.PROG be.PST
'John was drinking beer or milk.'

b. #haaN/nahiiN, woh rum pii rahaa thaa.
yes/no he rum drink PROG PST
'Yes/No, he was drinking rum.'

According to native speakers, (8a) cannot mean that John was having a beer-or-milk-like drink. And a different speaker cannot follow it up with a *yes*, even if John was in fact having a drink, say rum (8b). This is somewhat surprising. Since *beer yaa whiskey* can losely refer to alcoholic drinks, one might expect that *beer yaa milk* loosely refers to drinks in general. The conventional restrictions impose that the disjuncts should be grouped together as stereotypical representatives of some kind [4]. In 3.2, we discuss how such restrictions could arise in more detail. We now turn to complex disjunction.

## 2.2. Complex disjunction

Hindi forms its complex disjunction by reiterating the disjunction marker, and adding particles *toh* and *fir*[5]. For languages with both a simplex and a complex disjunction, it is often the case

[4]We observe other restrictions on the similative reading. For instance, the reading does not seem to arise when the disjuncts are case-marked, or when there is object agreement on the verb.

i. John table-ko yaa kursii-ko laat maar raha thaa.
John table-DOM yaa chair-DOM kick hit do.PROG be.PST
'John was (either) kicking (the) table or (the) chair.'

ii. John-ne pedaa yaa jalebii khaayii.
John-ERG milk-fudge.M yaa funnel-cake.F eat.PFV
'John ate ??(either) a milk-fudge or a funnel-cake.'

This is probably because of the discourse effects induced by case marking (Dayal and Sağ, 2020: i.a.), or verb agreement. To avoid these complications, in this paper, we focus on non-case-marked object disjunction with imperfective aspect, where the verb agrees with the subject. See Yadav (prep) for more discussion on the matter.

[5]Neither *toh* or *fir* is specific to disjunction. *toh* appears in conditional consequents, with a meaning akin to English *then*. *fir* also has a meaning similar to *then*, but it is used to express temporal sequence.

that the latter comes with stronger exclusive and exhaustive inferences (Spector, 2014: i.a.). This is the case with Hindi as well. *yaa toh yaa fir* is incompatible with an inclusive follow-up.

(9) John yaa-toh beer yaa-fir whiskey pii raha thaa.
John YAA-TOH beer YAA-FIR whiskey drink do.PROG be.PST
'John was drinking beer or whiskey.'

(10) a. #ho saktaa hai dono pii rahaa ho.
happen could AUX both drink do.PROG AUX
'It's possible that he was drinking both.'

b. aur dono-me-se ek hi pii raha tha.
and two-out-of one only drink do.PROG be PST
'but was drinking only one of the two.'

Furthermore, *yaa toh yaa fir* is incompatible with a similative scenario. As we saw with (6), repeated here as (11), a speaker can utter a sentence with the disjunction phrase *beer yaa whiskey* without committing to beer and whiskey (12a). A sentence with a complex disjunction,(12b), on the other hand, is judged infelicitous with the same scenario.

(11) [Context: Mary walks into the living room, noticing that John is drinking some kind of beverage. Mary cannot see what he is drinking but notices that he seems to be rather intoxicated.]

(12) a. John beer yaa whiskey pii raha thaa.
John beer YAA whiskey drink do.PROG be.PST
'John was drinking beer or whiskey, or something like that.'

b. #John yaa-toh beer yaa-fir whiskey pii raha thaa.
John YAA-TOH beer YAA-FIR whiskey drink do.PROG be.PST
'John was drinking either beer or whiskey.'

This means that *yaa toh yaa fir* denotes an exhaustive disjunction. We attribute the infelicity of (12b) to the fact that in context (11), the speaker does not have evidence to conclude that the drink John is consuming is one between beer and whiskey. They would be violating the maxim of QUALITY; *do not say what for which you lack adequate evidence* (Grice, 1975).

In this section, we laid out the various facts regarding Hindi simplex and complex disjunction. We reported that simplex *yaa* denotes an inclusive and non-exhaustive/similative disjunction, while complex *yaa toh yaa fir* denotes an exclusive and exhaustive disjunction.

---

i. Agar baarish hui **toh** main ghar chala jaaungaa.
If rain.F happen.F then I home walk go.FUT
'If it rains, then I will go home.'

ii. Agar baarish hui **fir** main gaadi nahi chalaunga
If rain.F happen.F then I car NEG drive.FUT
'Once it rains, I will stop driving the car.'

We currently don't have anything to say on how the different meanings of *toh* and *fir* relate to each other. We will have to leave it to future research.

## 3. Similative disjunction

### 3.1. Similative expressions

Hindi has another expression with a similative meaning; nominal reduplication (Abbi, 1992; Singh, 1982; Mohan, 2008; Montaut, 2009: i.a.). We can speculate that the similative inference of disjunction is due to the existence of this expression in the language.

(13) Ram kitaab vitab parh rahaa thaa.
Ram-NOM book RED read PROG PST
'Ram was reading book-like things.'

This is in fact a quite common strategy in languages in South Asia and South East Asia (Lidz, 1999; Mauri and Sansò, 2018; Barotto and Mauri, 2022; Mattiola and Barotto, 2023: i.a.). There is recent interest in possible formal accounts on this broad phenomenon of "similative reduplication" (Smith, 2020b; Krifka and Modarresi, 2024; Trinh, prep). Among these works, the analysis on Persian *m*-reduplication from Smith (2020b), as far as we are aware, is the only work to incorporate a strengthening mechanism. We base our account on his proposal, as we aim to have a strengthening mechanism from simplex to complex disjunction[6]. We will first summarize his discussion, before extending it to Hindi disjunction.

Any discussion on similative expressions must start with a definition of similarity. Smith (2020b) defines a "similarity relation" $\sim_c$ to hold between properties salient in the context.

(14) a. P $\sim_c$ Q iff P counts as similar to Q in context *C* & P $\cap$ Q = $\emptyset$
b. P counts as similar to Q in *C* iff there is an S such that S is salient in *C* and P $\subset$ S and Q $\subset$ S.

$\sim_c$ is symmetric, irreflexive, and non-transitive. Sets of similar objects to P are defined based on this notion of similarity. $P^{\frown}$, the similarity set of P, consists of P-like objects. $P^{\frown\!\!=}$, the proper similarity set of P, is the union of P and $P^{\frown}$.

(15) a. $[\![P^{\frown}]\!] = \{x|\exists\ Q.P\sim_c Q.Q(x)\}$
b. $[\![P^{\frown\!\!=}]\!] = [\![P^{\frown}]\!] \cup [\![P]\!]$

Based on this, Persian *m*-reduplication can be analyzed as the algebraic closure (Link, 1983) of the proper similarity set of the set denoted by the reduplicated noun. *ketâb metâb*/book-RED thus refers refers to atomic and plural individuals in the mixture of set of books and book-like things.

(16) $[\![$ketâb metâb$]\!]$ = *(Book$^{\frown\!\!=}$)

Now this is strengthened in upward-entailing environments, where *ketâb metâb* refers to at least a book and another such thing. This meaning is attained by negating two alternatives, *Book$^{\sim}$ and *Book.

[6]Also, similative reduplication came into existence in Hindi through language contact with Persian (Singh, 1982).

(17) a. Mohsen ketâb metâb xund.
Mohsen book RED read.pst
'Mohsen read a book and other such things.'
b. $\exists x.[*(\text{Book}^{\backsim})(x) \wedge \neg *\text{Book}(x) \wedge \neg *\text{Book}^{\backsim}(x) \wedge \text{Read}(m,x)]$

(17b) means that there is a sum individual x that Taro read, and x is in the proper similarity set of books, and x does not consist of just books, or just book-like things. It thus has to contain at least a book and a book-like thing[7]. The reason for the implicature analysis is *m*-reduplication's behavior in non-upward-entailing environments. In such environments, *ketâb metâb* has the denotation in (16).

(18) man ketâb metâb na xund-am
I book RED neg read.PST-1.SG
'I didn't read books or anything like that.'

(18) is true if and only if the speaker did not read any book or any book-like thing. Speakers deem it false if, say, the speaker read a book. This means *ketâb metâb* doesn't have a strengthened meaning (*at least a book and a book-like thing*) here, otherwise (18) would be true if the speaker read a book. This follows from Smith (2020b)'s analysis; the negation of the alternatives *Book$^{\sim}$ and *Book results in a stronger meaning only in upward-entailing environments, and the implicature thus does not arise in non-upward-entailing environments. Our analysis of Hindi disjunction will be heavily based on Smith (2020b)'s discussion. The questions we aim to answer are how a similative inference can arise with a disjunction, and how strengthening can block that similative inference.

## 3.2. Similative disjunction

We propose that *yaa* denotes a similative disjunction; it takes two predicates and denotes the union of their proper similarity sets. It also comes with the presupposition that the two disjuncts are similar to each other within a contextually salient domain S[8].

(19) a. $[\![\text{A yaa B}]\!] = [\![\text{A} \vee_s \text{B}]\!]$
b. $[\![\text{A} \vee_s \text{B}]\!]$ is defined only if $\text{A} \sim_S \text{B}$.
When defined, $[\![\text{A} \vee_s \text{B}]\!]^g = [\![\text{A}^{\backsim s}]\!] \cup [\![\text{B}^{\backsim s}]\!]$
c. $\text{A} \sim_S \text{B}$ in c iff $\text{A} \subset \text{S}$ & $\text{B} \subset \text{S}$, and A is similar to B in c.
d. $[\![\text{A}^{\backsim s}]\!] = [\![\text{A}]\!] \cup \{x \mid \exists \text{Q}: \text{A} \sim_S \text{Q} \wedge x \in \text{Q}\}$

This derives the desired meaning with (6), repeated as (21a)[9]. We assume that the presupposition is met because beer and whiskey are conventionally considered prototypical alcoholic drinks, thus making the property Alcohol salient.

[7]This is a brute simplification of the discussion in Smith (2020b). For instance, (17b) is not quite correct, as *(Book$^{\backsim}$) does not asymmetrically entail *(Book) and *(Book$^{\backsim}$). The two alternatives are thus not innocently excludable. Smith (2020b) circumvents this problem by using event semantics. See the original paper for a more detailed discussion.
[8]See Smith (2020a) for further discussion on how to derive similarity in a context.
[9]We set aside tense and aspect for ease of presentation.

(20) [Context: Mary walks into the living room, noticing that John is drinking some kind of beverage. Mary cannot see what he is drinking but notices that he seems to be rather intoxicated.]

(21) a. John beer yaa whiskey pii raha thaa.
'John was drinking beer or whiskey, or something like that.'

b. $[\![\text{Beer} \vee_s \text{Whiskey}]\!] = [\![\text{Beer}^{\backsim s}]\!] \cup [\![\text{Whiskey}^{\backsim s}]\!]$
$\approx$ Alcohol

c. $[\![\text{John beer yaa whiskey pii raha thaa}]\!]$
$= \exists x \exists S.\text{drink}(j.x) \wedge x \in S$
$\approx \exists x.\text{drink}(j.x) \wedge \text{Alcohol}(x)$

(21c) means that John drank something in S, and that given the context in (20) S picks up the set of alcoholic drinks. Now note this holds because S coincides with the proper similarity set of the two disjuncts. This is true more generally; S is equivalent to the proper similarity set of a disjunct iff it consists of all the similar properties to that disjunct.

(22) a. $[\![A^{\backsim s}]\!] = S$, iff $\bigcup\{C|A \sim_S C\} \cup A = S$

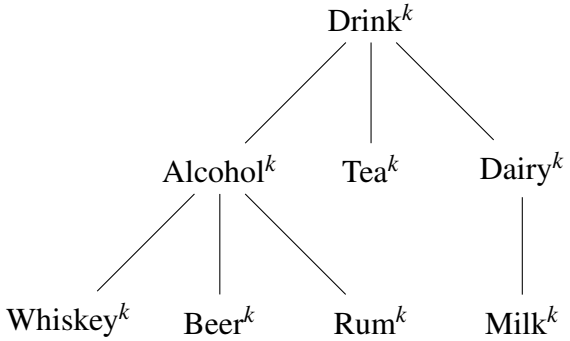
b. $\bigcup\{P|\text{Beer} \sim_S P\} \cup \text{Beer} = \bigcup\{Q|\text{Whiskey} \sim_S Q\} \cup \text{Whiskey} = \text{Alcohol}$

Now let us move on to cases where there is no similative inference. *beer yaa milk* is one of such cases, repeated below in (23).

(23) John beer yaa doodh pii raha thaa.
'John was drinking beer or milk.'

We propose that *beer yaa milk* gives no similative inference because there is no S in the context with which (22a) holds both for $\text{Beer}^{\backsim}$ and $\text{Milk}^{\backsim}$. We hypothesize that the conventional restrictions on the identification of a salient S within context may be coming from levels in a taxonomic hierarchy (Dayal, 2004), as in (24a). Drink, or the set of general drinks, would contain drinks not similar to beer, and it would also contain drinks not similar to milk. We also speculate that when a salient S cannot be determined based on the two disjuncts A and B, S is accommodated as A∪B, as a default (24b).

(24) a. Taxonomic hierarchy of drinks



b. ⟦John beer yaa whiskey pii raha thaa⟧
= ∃x∃S.drink(j.x)∧x∈S
≈∃x.drink(j.x)∧Beer ∪ Milk(x)

(24b) is thus equivalent to an exhaustive disjunction.

Now the question is how this similative disjunction can be strengthened into an exhaustive disjunction. Complex *yaa toh yaa fir* gives rise to an exhaustive inference and an exclusive inference.

(25) John yaa-toh beer yaa-fir whiskey pii raha thaa.
'John was drinking either beer or whiskey (and nothing else).'

We propose that the two inferences are derived through separate mechanisms. The exclusivity inference is through obligatory exhaustification, due to *yaa toh yaa fir*'s complex morphology (Spector, 2014; Nicolae and Sauerland, 2016; Nicolae et al., 2024). The exhaustive inference, on the other hand, is contributed by the morpheme *toh-fir*. In doing this, we depart from the line of works proposing that the same exhaustification operation derives both the exclusive and exhaustive inference (Spector, 2014: i.a.). This is however in line with recent experimental findings which show that the two inferences do not necessarily go hand-in-hand across complex disjunctions of different languages (Nicolae et al., 2024). We propose *toh-fir* binds the domain variable S on the similative disjunction and applies strengthening through a minimality operator.

(26) ⟦yaa toh A yaa fir B⟧ = Min($\lambda$S.⟦A $\vee_s$ B⟧)

The minimality operator applies to a Function F and applies F to the minimal element in the domain of F.

(27) a. Min(F) = F(min{T:F(T) $\neq$ #}}
b. For any set of sets V, min(V) = $\iota$U[U∈V∧∀T[T∈V → U⊆T ]]

The minimal set S for which $\lambda$S.⟦A$\vee_s$B⟧ is defined is A ∪ B. *yaa toh beer yaa fir whiskey* thus denotes the union of the sets denoted by the disjuncts.

(28) a. Min($\lambda$S.⟦Beer $\vee_s$ Whiskey⟧) = Beer ∪ Whiskey
b. ⟦John yaa-toh beer yaa-fir whiskey pii raha thaa⟧
=∃x∃S.drink(j.x)∧x∈S
≈ ∃x.drink(j.x)∧x∈Beer ∪ Whiskey

In this section, we proposed that *yaa* denotes a similative disjunction. We then speculated how this similative disjunction can be strengthened into an exhaustive disjunction.

## 4. Concluding remarks

In this paper, we reported that Hindi disjunction can give rise to a non-exhaustive/similative inference. We then proposed that the disjunction marker *yaa* denotes a similative disjunction, and presented a first stab at a possible formal account. Our analysis proposes that a similative disjunction refers to the union of the proper similarity sets of the two disjuncts. We also speculated that a conventionally determined taxonomic hierarchy can constrain the similative inference. We also proposed that the strengthening into the exhaustive interpretation, associated with *yaa toh yaa fir*, is due to the minimality operator contributed by the morpheme *toh-fir*.

We take our main contribution to be the report of a similative disjunction, enriching the literature on similative expressions. A secondary, theoretical contribution was to separate the exclusive and exhaustive inferences with complex disjunction. We proposed that while the exclusive inference of *yaa toh yaa fir* arises because of its complexity in form per se, its exhaustive inference is due to the morpheme *toh-fir*. Works on complex disjunctions often overlook the morphological make-up of different complex disjunctions. For instance, usually, the same treatment is given to the iteration of a regular disjunction marker (e.g. French *ou-ou*) and a complex disjunction consisting of other morphemes (e.g. French *soit-soit*). We hope to have shown the importance to carefully examine the individual complex disjunctions, rather than simply assuming that certain properties hold across different complex disjunctions. In the remainder of the section, we will discuss a possible extension.

### 4.1. Strengthening and positive polarity behavior

In this paper, our discussion was limited to upward-entailing cases. We nonetheless think our analyses can be extended to other environments. Most importantly, the similative inference associated with *yaa* remains even in non upward-entailing environments (29b).

(29) a. [Context: John and the speaker are returning from a party by car. Police stopped the car, and asked the speaker if John had any alcohol. ]

b. John beer yaa whiskey nahi pii raha thaa.
John beer YAA whiskey NEG drink do.PROG be.PST
'John was not drinking beer or whiskey, or anything like that'

c. #John yaa-toh beer yaa-fir whiskey nahi pii raha thaa.
John YAA-TOH beer YAA-FIR whiskey NEG drink do.PROG be.PST
'John was either not drinking beer or not drinking whiskey.'

The exhaustive strengthening associated with *yaa toh yaa fir* remains even in non-upward-entailing environments (29c). We speculate this follows from the fact that this is a strengthening at the nominal level, imposed by the morpheme *toh-fir*, and not a sentence-level scalar implicature. A sentence-level implicature arises only when it contributes to the strengthening of the sentence, like the strengthening associated with Persian *m*-reduplication, as discussed in 3.1. The strenghtening of *yaa toh yaa fir* always arises perhaps because it is a local phenomenon. For exclusive strengthening, on the other hand, we proposed that it is due to a sentence-level exhaustification. This means that this strengthening should arise when it makes the sentence

stronger. If we follow the line of research claiming that disjunctions with obligatory exhaustification show positive polarity behavior (Spector, 2014; Nicolae, 2017a, b; Weerasooriya, 2018, 2019: i.a.), we should expect *yaa toh yaa fir* behave as a positive polarity item. This is in fact the case, as while simplex *yaa* scopes under negation, *yaa toh yaa fir* strictly outscopes it.

(30) a. John beer yaa whiskey nahi pii raha thaa.
John beer YAA whiskey NEG drink do.PROG be.PST
'John was not drinking beer or whiskey.' ($\neg < \vee$,??$\vee < \neg$)

b. John yaa-toh beer yaa-fir whiskey nahi pii raha thaa.
John YAA-TOH beer YAA-FIR whiskey NEG drink do.PROG be.PST
'John was either not drinking beer or not drinking whiskey.'(*$\neg < \vee$,$\vee < \neg$)

This is further evidence for attributing the exhaustive component and exclusive component of *yaa toh yaa fir* to two different mechanisms.

**References**

Abbi, A. (1992). *Reduplication in south asian langauges. An areal. typological and historical study.* Allied Publishers.

Barotto, A. and C. Mauri (2022). Non-exhaustive connectives. *STUF-Language Typology and Universals 75*(2), 317–377.

Coppock, E. and L. Champollion (2022). Invitation to formal semantics. *Manuscript, Boston University and New York University*.

Dayal, V. (2004). Number marking and (in) definiteness in kind terms. *Linguistics and philosophy 27*, 393–450.

Dayal, V. and Y. Sağ (2020). Determiners and bare nouns. *Annual Review of Linguistics 6*(1), 173–194.

Gamut, L. (1991). *Logic, language, and meaning, volume 1: Introduction to logic*, Volume 1. University of Chicago Press.

Grice, H. P. (1975). Logic and conversation. In *Speech acts*, pp. 41–58. Brill.

Krifka, M. and F. Modarresi (2024). Similative plurals in persian: Alternatives, homogeneity, or strongest meanings? In *Proceedings of WCCFL 42*.

Lidz, J. (1999). Echo reduplication in kannada: Implications for a theory of word-formation1. Technical report, Penn Working Papers in Linguistics.

Link, G. (1983). The logical analysis of plurals and mass terms: A lattice-theoretical approach. *Formal semantics: The essential readings 127*, 147.

Mattiola, S. and A. Barotto (2023). Nominal reduplication in cross-linguistic perspective: From plurality to change of referents' specificity. *Studies in Language. International Journal sponsored by the Foundation "Foundations of Language" 47*(1), 135–189.

Mauri, C. and A. Sansò (2018). Linguistic strategies for ad hoc categorization: Theoretical assessment and cross-linguistic variation. *Folia linguistica 52*(s39-s1), 1–35.

Mohan, S. (2008). Echo word formation in indian languages: A typological study. *Bulletin of the Deccan College Research Institute 68*, 329–339.

Montaut, A. (2009). Reduplication and echo words in hindi/urdu. *Annual review of South Asian languages and linguistics*, 21–91.

Nicolae, A. C. (2017a). Deriving the positive polarity behavior of plain disjunction. *Semantics and Pragmatics 10*, 5–1.

Nicolae, A. C. (2017b). A new perspective on the shielding property of positive polarity. In *Semantics and Linguistic Theory*, pp. 266–281.

Nicolae, A. C., A. Petrenco, A. Tsilia, and P. Marty (2024). Exclusivity and exhaustivity of disjunction (s): A cross-linguistic study. In *Proceedings of Sinn und Bedeutung*, Volume 28, pp. 1098–1113.

Nicolae, A. C. and U. Sauerland (2016). A contest of strength: or versus either–or. In *Proceedings of sinn und bedeutung*, Volume 20, pp. 551–568.

Singh, R. (1982). On some 'redundant compounds' in modern hindi. *Lingua 56*(3-4), 345–351.

Smith, R. (2020a). *Similative Plurals and the nature of alternatives*. Ph. D. thesis, The University of Arizona.

Smith, R. W. (2020b). Similative plurality and the nature of alternatives. *Semantics and Pragmatics 13*, 15–1.

Spector, B. (2014). Global positive polarity items and obligatory exhaustivity. *Semantics and Pragmatics 7*, 11–1.

Sudo, Y. (2014). Higher-order scalar implicatures of 'ya'in japanese. *Handout, TEAL 9*.

Szabolcsi, A. (2015). What do quantifier particles do? *Linguistics and Philosophy 38*, 159–204.

Trinh, T. (in prep). On similative reduplication in vietnamese. *University of Nova Gorica*.

Weerasooriya, T. (2018). Exhaustify! locally or globally? implications for ignorance inferences. In *35th West Coast Conference on Formal Linguistics, ed. Wm. G. Bennett et al*, pp. 572–581.

Weerasooriya, W. (2019). *Positive Polarity and Exhaustivity in Sinhala: a study of its implications for grammar*. Ph. D. thesis, Université d'Ottawa/University of Ottawa.

Yadav, P. (in prep). On the differences in agreement between conjunction and disjunction in hindi. *Ms.*.