An -*(i)na* Disjunction Phrase and a Limited Access to a Scalar Alternative[*]

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ABSTRACT

This paper investigates how conjunctive meaning is derived from a disjunctive phrase, marked by -*(i)na*, in Korean. Previous studies on English disjunction phrases (Allonso-Ovalle 2005; Simons 2005; Saurland 2004; Fox 2007; Klinedinst 2007) have found that the contexts with possibility modals or plural domains provide environments for conjunctive inferences to be evoked via scalar implicatures. What is interesting in Korean -*(i)na* phrases is that the contexts where conjunctive meaning is derived from -*(i)na* appear to be more prevalent than it would have been expected under the system based on English disjunction phrases. I propose that the basic mechanism amounts to that of Fox 2007; Crnic, Chelma, and Fox 2015, among many others. In Korean, however, a lexical scalar alternative of a disjunction phrase, the conjunction phrase, is missing. When a strengthening process applies recursively in the given condition, a conjunctive inference, instead of an exclusive disjunction reading, is derived from a disjunction phrase.

Keywords: a disjunction phrase, a conjunctive inference, grammatical scalar implicature, plurality, recursive strengthening

1. Introduction

This paper studies how a conjunctive meaning is derived from a disjunctive marker, -*(i)na*, in Korean. We discuss this issue based on the general assumption that we want to make our utterance as informative as possible. This informativeness can be understood as making a stronger assertion, if possible, and is illustrated as the following process. When a sentence is uttered, it is compared to other alternative sentences and the reason why that specific sentence is chosen instead of other alternatives is considered and reflected in the interpretation of the sentence. For instance, when one says, "John has eaten some cookies", in the condition where John has eaten all the cookies, truth-functionally, the utterance is true. However,

we feel that it is not felicitous to say it under the eat-all situation. It is because we assume that the speaker is knowledgeable and if it was the case that John had eaten all the cookies, we believe that the speaker would have said so. From the speaker's choice of the lexical item 'some' instead of 'all', we conjecture that it is not the case that the speaker believes that John has eaten all the cookies. Adding the assumption of a knowledgeable speaker, the negation lowers to the embedded clause as a speaker believes that John has not eaten all the cookies. The general description done here is basically rewording of Grice's (1975) quantity principle and negation lowering in Saurland (2004). Horn (1972) suggests that there be scalar items that trigger this strengthening such as an existential quantifier, *some*, and a disjunction marker, *or*. This explains the above example and the following one.

(1) John chose a cake or an ice-cream as a dessert last night.

We understand the sentence as John has chosen either of the two types of dessert but not both. The exclusive meaning of a disjunction phrase, which only appears in the natural language disjunction but not in the logical disjunction, can be explained by the above illustration. However, It has been observed that, if some conditions are met, such as being under the scope of possibility modal expressions, a disjunction phrase expresses conjunctive meaning (Zimmermann 2000; Kratzer and Shimoyama 2002; Allonso-Ovalle 2005; Simons 2005; Saurland 2004; Fox 2007, inter alia). By adding a possibility modal, we have a sentence (2), which coordinates both options as a conjunction.

(2) John may have an ice-cream or a cake for dessert tonight.
   = $\diamondsuit$ (John has an ice-cream $\vee$ John has a cake)
   = $\diamondsuit$ John has an ice-cream $\wedge$ $\diamondsuit$ John has a cake

This phenomenon is called the free-choice effect (Kratzer and Shimoyama 2002; Alonso-Ovalle 2005; Fox 2007; Chierchia 2004, 2006, 2013, inter alia). Despite some variations among the analyses, various previous studies arrive at the conclusion that the free-choice effect is derived through negating its alternatives and generating a scalar implicature. In this process, to obtain the conjunctive meaning, the existence of possibility modality is essential. A disjunction phrase in Korean was reported to have a similar problem with the free-choice issue in J-H Yoon (2000). In Korean, *-(i)na* is a disjunction coordinator. The following is an example of an *-(i)na* disjunction.

(3) a. Minswu-nun cikum pwusan-ina wulsan-ey iss-eyo.
   Minsu-Top   now   Pusan-or   Ulsan-in   be-Dec.
   Minsu is either in Pusan or in Ulsan now.

   b. Minswu-nun kheik-ina ais   khurim-ul   meke-to   toy-yo.
   Minsu-Top   cake-or   ice   cream-Acc   eat-   may-Dec.
   Minsu may eat a cake or an ice cream.
   (=◇Minsu eat a cake ∧ ◇Minsu eat an ice cream)

Sentence (3a) means that Minsu is in one of the two places, Pusan or Ulsan. It makes an inference that the speaker is not sure which one is exactly the place of Minsu's existence, called an ignorance inference (Saurland 2004). This usage does not exhibit anything special about an *-(i)na* disjunction. Based on our world knowledge, the exclusive reading of disjunciton is natural here. When a possibility modal is added as in (3b), it expresses a conjunctive coordination of two sentences with a possibility modal. Thus far, nothing special is observed in this type of a disjunction phrase. However, J-H Yoon (2000) notes that the Korean disjunction marker *-(i)na* exhibits a broader range of conjunctive examples. The following examples from him do not have any overt modal expressions but still have conjunctive meanings.

(4) a. abeci-nun   nakksi-na sanyang-ul   cohahasi-ess-ta.
   father-Top fishing-or hunting-Acc like-Past-Dec.
   #My father liked fishing or hunting[1]. (√ fishing and hunting: OK.)

   b. ocinge-na hotokwaca   isse-yo[2].
   Squid-or   walnut snack   be-Dec.
   #I have dried squids or walnut snacks.
   (√ dried squids and walnut snacks: OK)

   c. Kim-kyoswu-nun   yeksa-na   chelhak-ul   kanguihay-ss-ta.
   Kim-professor-Top history-or   philosophy lecture-Past-Dec.
   #Prof. Kim taught history or philosophy. (√ history and philosophy: OK)

J-H Yoon (2000) notes that the conjunctive usage of *-(i)na* occurs in generic and

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[1] The '#' at the beginning of a sentence means that interpreting the sentence in a disjunctive way sounds infelicitous.

[2] Dried squid and walnut snack are typical items sold in the long-distance bus terminal in Korea. Unlike coffee and donut, customers seek one of them in general. So, the example sentence means that whenever it is the case that a customer seeks a dried squid or seeks a walnut snack, I have them. J-H Yoon (2000) also makes the same point regarding this example based on his intuition.

habitual sentences as well as contexts with possibility modal expressions. These cases are interesting but not surprising. J-H Yoon's claim can be more theoretically supported by Klinedinst's argument in his dissertation (Klinedinst 2007). Klinedinst (2007) extends the free-choice issue raised in the possibility modal context to a broader range of contexts, including plural domains in non-modal environments. He basically ascribes the conjunctive meaning of *or* to plurality, providing examples as in (5), and through extending the plurality on entity types to a possible worlds, he ultimately argues that a possibility modal corresponds to plural accessible worlds. The gist of his idea is on the obligatory distribution of each conjuncts of a disjunction phrase when it meets a plural domain.

(5) a. A beer is in the refrigerator or behind the door.
    b. Beers are in the refrigerator or behind the door.

Plurality combined with an obligatory distributive implicature of disjunction allows (5b) to be interpreted as beers are in the refrigerator and also behind the door. Adoption of Klinedinst's idea makes it possible to analyze J-H Yoon's examples in (4) in a general approach to the free-choice phenomena. As hinted from J-H Yoon's suggestion that the genericity/habituality contributes to forming conjunctive meanings, we conjecture that generic/habitual sentences bear a hidden plurality in them. However, although we understand the generic/habitual examples to be not puzzling any more, it seems hard to fit the following example (6) to the current system.

(6) Q: How much do your employees get paid in your company?
    A: (sam nyencha-in) Ayengi-na Byeli-nun sam-chen   cengto pat-ko
       Third year-be   Ayeng-or Byel-Top three thousand about get-and
       (I nyencha-in)   Cinhi-na Dajini-nun i-chen cengto pata.
       (second year-be) Cinhi-or Dajin-Top   two   thousand around get[3].

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3) An anonymous reviewer of Language Research has pointed out that in (6) we can simply use a conjunctive form rather than depending on the disjunctive form. Ryu(2013) has done a research on corpus data of *-(i)na* and his research strongly supports for the natural usage of conjunctive *-(i)na*. I do not know of any judgment or perception test between two types of coordinators at this moment. However, *-(i)na* can deliver an unambiguous meaning in some contexts where the conjunctive coordinator *-(k)wa* cannot. For instance, in the example (6), if we use *-(k)wa* instead of *-(i)na*, the sentence can deliver two meanings: one is a sum(group) reading in which Ayeng and Byel together get three thousand dollars and the other is the same distributive reading that we have with *-(i)na*. So, using the conjunctive coordinator does not exactly correspond to using *-(i)na* and one might prefer to using *-(i)na* instead of *-(k)wa* in order to avoid ambiguity in some contexts.

#Ayeng or Byel, the third years, get about three thousand and Cinhi or Dajin, the second years, get about two thousand. (OK: Ayeng and Byel, Cinhi and Dajin).

Q: Then, the total you pay for the employees amounts to about 10 thousand, right?

A: Yes, that's right.

(6) is not a generic sentence. Having an ignorance inference with the wide scope of *or* does not go along well with this context. It is a simple sentence 'A-*(i)na* B get 3000$,' and the two propositions are interpreted to be connected in a conjunctive fashion. This is puzzling. Even a generic operator or habitual aspect is not found here. We are only sure that the predicate 'get 3000$' applies distributively to both A and B. The above conversation confirms the distributive application of the predicate to each disjunct.

To understand this puzzle, let us start from the basic examples in section two. The basic examples are the ones with both hidden and explicit plurality domains, which can be embraced within Klinedinst's claim. In this process, although it is not necessarily required to employ a specific theoretical framework, in order to exhibit the point of plurality and the distributive application of a predicate more explicitly, let me take an advantage of an event semantics for the moment. In section three, our try to solve the puzzle will be laid out. Section four sums up the discussion.

2. Scalar implicatures in domains of plurality

This section explains how distributive application of a predicate is done in the domains with plurality, which leads to the conjunctive inference of a disjunction phrase. As previously noted, this process has already been established in several studies (Chierchia 2004; Fox 2007; Chierchia, Fox and Spector 2011; Crnic, Chelma, and Fox 2015, inter alia). This section is a mixture of a literature review and the analysis of present data on this topic. The way I analyze the Korean data here follows Crnic, Chelma, and Fox (2015). Let us look at the following example.

(7) kim kyoswu-nun cinan o nyen-kan thongsalon-ina uimilon-ul kaluchi-ess-e.
  a. ?Prof. Kim has taught syntax or semantics for the last five years (but I am not sure exactly which one).
  b. Prof. Kim has taught syntax and semantics for the last five years.

In the example (7), with the obvious duration phrase *cinan o nyen-kan* 'for the last five years', we regard the events as occurring during multiple semesters. When we consider a single semester as a unit here, what it applies to is a teaching event. Sentence (7) generalizes the multiple events accumulated for the last ten semesters. Here, we have a sum event that involves both syntax and semantics in its teaching. For instance, if, in Prof. Kim's school, a syntax class is offered only in a spring semester, and a semantics class is offered only in a fall semester, and Prof. Kim has been the only syntax/semantics professor for the last five years, (7) is appropriate. In order to express the pluralized atomized durations and the events that correspond to each atomic duration more explicitly, let me employ an event semantics framework.[4] Before the activation of a strengthening procedure, a disjunction phrase is interpreted inclusively; 'syntax or semantics' as 'syntax, semantics, or both syntax and semantics' as follows.

(8) ∃e[e is a sum event of teaching syntax, semantics or both by Kim for last 5 years ∧ ∀t [t is a semester in the last 5 years → ∃e'[e' is an atomic part of e → e' is an event of teaching syntax or semantics by Kim]]]

The scalar implicature of (8) is formed as follows.

(9) ¬∀t [t is a semester in the last 5 years → ∃e'[e' is an atomic part of e → e' is an event of teaching syntax]] ∧¬∀t [t is a semester in the last 5 years → ∃e'[e' is an atomic part of e → e' is an event of teaching semantics]] ∧ ¬∀t [t is a semester in the last 5 years → ∃ e'[e' is an atomic part of e → e' is an event of teaching syntax and semantics]]

(8) and (9) together are paraphrased as follows. There is a sum event of teaching syntax or semantics by Prof. Kim for five years and for each semester, which is an atomized time interval of five years, there is an atomized event of teaching syntax or semantics by Prof. Kim. It is not the case that, for every atomic event, Prof. Kim taught syntax, and it is not the case that, for every atomic event, he taught semantics. Also, it is not the case that, for every atomic event, he taught both syntax and semantics. This corresponds to what we understand from (7) in a given context. This logic can be extended to other characterizing sentences whose plurality in events is

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4) Employing event semantics is not a crucial device here. It is just for convenience of deliverance.

hard to be detected. As for generic or characterizing sentences, we can form general quantified situations. Instead of a fixed duration of 5 years, the time or situation is atomized pragmatically (for instance, whenever free time occurs or every weekend). Under this approach, we do not need to set up different conditions for conjunctive meanings of disjunctive -(i)na cases from other disjunction cases.

3. An alternative proposal

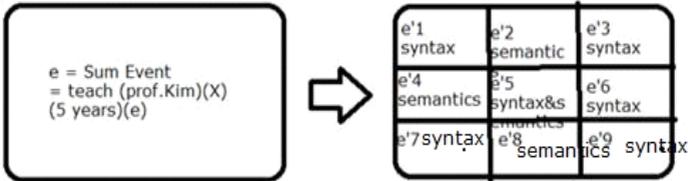### 3.1. A puzzling case of -(i)na disjunction

It is quite appealing to say that the conjunctive meaning of -(i)na is derived from a scalar implicature in a domain with plurality. However, the puzzling example (6) remains unsolved under the current system. I repeat (6) below, making it in a more succinct form.

(6) (sam   nyencha-in) Ayengi-na Byeli-nun sam-chen   cengto pat-a
    (Third year-be)   Ayeng-or Byel-Top three thousand about get-Dec
    Ayeng and Byel (who are in their third years) get paid around three thousand dollars.

Let us first consider why this does not fit to the analysis illustrated in section two. I visualize the analysis below.

(10) Prof. Kim has taught [X] [for the last five years]. (X = syntax or semantics)

As visualized above, the plurality of events of the sentence (7) arises from the sum of atomized semesters. In contrast to this, in (6), in order to make the event as a sum event, what provides a domain for distribution of each conjunct connected by a disjunction marker? No durational/situational factor for distribution is found in

(6). If X were the conjunctive phrase 'A and B,' using Krifka's non-boolean conjunction (1990), it would have corresponded to 'A⊕B' and form a domain for distribution. However, in the case of (6), it is not 'A and B' but 'A or B'. Now, we need an alternative proposal to explain this puzzle.

3.2. A recursive strengthening process and a lack of a scalar alternative

An alternative proposal put forward here is based on an idea that the strengthening process is not confined to a single time at a sentence level and that there is a limited access to alternatives by *-(i)na*, which makes a difference between an *-(i)na* disjunction and others such as 'or' in English.

The idea that strengthening process to derive scalar implicatures does not necessarily take place only a single time but can occur recursively is not new to us. There exist two views on the strengthening of a sentence: one party conceives derivation of a scalar implicature to take place at a sentence level completely based on the interaction of the scalar items and the presumed speakers' intention to use that specific item instead of a stronger one (Horn 1972; Saurland 2004, inter alia). The other party attributes the strengthening to an activation of a null exhaustive operator (Chierchia 2004, 2006, 2013; Fox 2007; Chierchia, Fox, and Spector 2011, inter alia). A substantial difference between these two appears as to whether to admit an embedded exhaustification or not. One advantage that we can get by having an exhaustive operator is that it can be inserted at any available position. The exhaustive operator used in this sense is not motivated by morphologically or syntactically. It is originally pragmatically driven but its character is grammatical in that it can appear at any position smaller than a proposition[5]. Whenever an exhaustive operator appears, a strengthening process can occur, simply illustrated as (11).

(11) a. An alternative Set C of α = {β, γ}
     b. *Exh*(C)(α) = $\alpha \wedge \neg\beta \wedge \neg\gamma$[6]

The strengthening system works as in (11b). First, when our target item α comes

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5) An anonymous reviewer has suggested that the term 'recursive' may be better to be replaced with 'double' application. However, the application of this exh operator is not restricted to two times but can be as many times as possible if it can make the utterance more informative. Whenever it is available, the operator, pragmatically driven, applies to any size of constituent. I will maintain the term 'recursive' strengthening in this paper following Fox (2007).

6) *Exh* = an exhaustive operator

into the strengthening process, it comes with its alternatives. An exhaustive operator takes two arguments, α and its alternative set C. What is emphasized in Fox (2007) is that the process of negating alternatives does not apply to just any alternatives. Fox (2007) and Fox and Katzir (2011) have a serious discussion on the eligibility of an alternative. As shown below, some alternatives cannot be negated even though it is a stronger alternative than the target, α. If the negation of an alternative does not make a stronger inference or does not go consistently with α, it is not counted as an eligible alternative at the stage. Fox (2007) introduces a term, innocent exclusion, in order to explain this[7].

The point is that the process is done at each separate stage and the result is accumulated. For instance, at the first stage of the application of an exhaustive operator, if an alternative turns out not to be an eligible alternative, not being innocently excludable, no strengthened inference is generated and it moves on to the next stage. However, at the second stage, we have a different set of alternatives from those at the first stage. The alternatives we get at the second stage are those applied by the first exhaustive operator. Accordingly, the derivation will be as follows.

(12) $Exh_2(C_2)(Exh_1(C_1)(\alpha))$

We have established how scalar implicature is derived through an exhaustive operator and discussed a potential controversial point regarding the eligibility of an alternative. However, even if the recursive application of an exhaustive operator is available to strengthen the meaning of a sentence, it constitutes the basic architecture of a general communicative system and can hardly be construed as a language specific parameter. It means that the question why -(i)na disjunction expresses a conjunctive meaning more prevalently than expected in other languages has not been answered yet. We find the answer from the variance in the formation of an alternative set. The inventory of an eligible alternative varies according to Singh et al. (2016) and Meyer (2015). There are two types of alternatives in the strengthening process. One is a lexical scalar alternative suggested in Horn (1972). The other is a sub-domain alternative suggested to be added to the scalar one by Saurland (2004).

(13) a. scalar alternatives of a disjunction, 'A∨B' : {A∧B}
    b. sub-domain alternatives of a disjunction, 'A∨B' : {A, B}

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7) I am not going to delve into the details of the concept of 'innocent exclusion' here. For those who are interested, please refer to the above references.

In general, a disjunction phrase access both types of alternatives. However, what would it be like if some disjunction items have a limited access to a specific type of alternatives? If it is the case, then what would be the type of a domain of a limited access? It should be a scalar alternative, which is lexical. The sub-domain alternatives cannot be excluded since it is a set of co-ordinated elements and forms the basic constituent of a disjunction phrase. However, as for a lexical alternative, it is possible for a language-specific parameter to decide whether to participate in the strengthening process or not. It can be explained as a lexical property of a specific item. The same pattern is also observed from children in their development stage, who conceive a disjunction phrase to be used felicitously in a conjunctive situation (Singh et al. 2016)[8]. Let us explore the possibility that the disjunction marker *-(i)na* lexically lacks its scalar alternative. Let us examine the sentence (6) under this assumption.

(14) the 1st round of an exhaustive operator's application to (6) 'A-*ina* B get 3000$'
    a. Alternatives of (6): $C_1 = \{a = \text{Ayeng gets 3000\$}, b = \text{Byel gets 3000\$}\}$
    b. Strengthened reading after the 1st round = $(a \lor b)$

The first round of an exhaustive operation only with the sub-domain alternatives is vacuous. The alternatives in (14a) are not innocently excludable in Fox's (2007) sense. If we try to negate the alternatives and make a stronger statement, we encounter a contradiction, having a denotation as follows: Ayeng or Byel get 3000$ and it is not the case that Ayeng gets 3000$ and it is not the case that Byel gets 3000$. The strengthened inference denies the entailment of a sentence, which makes the whole sentence a contradiction. This is the case that an alternative is not innocently excludable. If it is the case of a *or* disjunction, it has an eligible alternative, the scalar alternative, and the exhaustive operator works. The enforced meaning will

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8) In Sing et al. (2016) and in references there, it is reported that children who are native speakers of English, at some their development stage, exhibit the following patterns in their understanding of disjunctive phrases. The following table is from Sing et al. (2016).

(1) Truth value judgment for matrix disjunctions $A \lor B$ that deviate from inclusive-disjunction

State of Affairs	Child (conjunction)	Adult (exclusive disjunction)
$\neg A \& \neg B$	F	F
$A \& \neg B$	F	T
$\neg A \& B$	F	T
$A \& B$	T	F

Whereas adults strengthen the inclusive meaning by rejecting when both disjuncts are true, children appear to strengthen by rejecting when just one disjunct is true.   (Sing et. al 2016, page 4)

be an exclusive reading of a disjunction phrase. Here, as *-(i)na* lacks its scalar alternative, the first strengthening process does not add anything new. However, in the second round, the recursive application of an exhaustive operator combined with the lack of a conjunctive alternative makes an explicit effect—the conjunctive inference is derived. See the following derivation process in (15).

(15) the 2nd round of an exhaustive operator's application
a. Alternatives of Exh_1(a-*(i)na* b): $C_2 = \{a \wedge \neg b, b \wedge \neg a\}$
b. $Exh_2(C_2)$(a-*(i)na* b) $= Exh_2(\{a \wedge \neg b, b \wedge \neg a\})$(a$\vee$b)
$= (a \vee b) \wedge \neg(a \wedge \neg b) \wedge \neg(b \wedge \neg a)$
$= (a \vee b) \wedge (\neg a \vee b) \wedge (\neg b \vee a)$
$= (a \vee b) \wedge (a \rightarrow b) \wedge (b \rightarrow a)$
$= (a \vee b) \wedge (a \leftrightarrow b)$
$= a \wedge b$

In the second round in (15), the alternatives that come into the strengthening process are in the enforced forms: 'a$\wedge \neg$b' and 'b$\wedge \neg$a.' When these are negated, together with the entailment of the sentence, they generate a conjunctive meaning. Thus far, we have tried to solve the puzzle of an *-(i)na* disjunction in non-plural domains, which is hard to be explained in the general scalar implicature analysis of other disjunction items. We have examined the possibility that there is a lack of a specific type of an alternative set of *-(i)na*, the scalar alternatives, which has also been proposed for the preference for a conjunctive interpretation of a disjunction phrase observed in children (Singh et al. 2016). Now, we need to check whether the suggested analysis can also explain the conjunctive meaning consistently in other examples. For this, a disjunction phrase in a domain of plurality needs to be re-examined in this analysis. The sentence in (7) is brought here, renumbered as (16a).

(16) a. Kim-kyoswu-nun   cinan   onyen-kan   thongsalon-ina
       uimilon-ul   kaluchi-ess-ta.
       Kim-professor-Top last   five years-for   syntax-or
       semantics-Acc   teach-Past-Dec.
       Prof. Kim has taught syntax and semantics for the last five years.
    b. sub-domain alternatives of (16a)
       {h=Prof. Kim taught syntax for 5 years, p=Prof. Kim taught semantics
       for 5 years}

c. the 1st round of an exhaustive operator's application

Exh_1(st-*(i)na* sm) = [(st$\vee$sm) $\wedge$ $\neg$st $\wedge$ $\neg$sm]

= Prof. Kim taught syntax or semantics for 5 years and it is not the case that he/she taught syntax for five years and it is not the case that he/she taught semantics for five years.

Unlike a disjunction without a domain of plurality, the plural case undergoes the first round of exhaustification. The negation of each sub-domain alternative forms a consistent and a stronger statement. The existence of plural number of atomized durations prevents the sentence from forming an inconsistent propositional meaning and forces each conjunct to be distributed to the whole duration. It appears to be the end of the story for the strengthening of this sentence. However, still, we can go one more round of the application of an exhaustive operator. The second application makes a meaningful inference distinguished from the first round. It appears as follows.

(17) the 2nd round of an exhaustive operator's application

Exh_2(C$_2$)(Exh_1(C$_1$)(st-*(i)na* sm)) = Exh_2({Exh_1(st), Exh_1(sm)})(st-*(i)na* sm)

= (st$\vee$sm) $\wedge$ $\neg$(st $\wedge$ $\neg$sm) $\wedge$ $\neg$(st $\wedge$ $\neg$sm)

= Prof. Kim taught syntax or semantics for 5 years and it is not the case that he/she taught only syntax for five years and it is not the case that he/she taught only semantics for five years.

Which inference reflects our interpretation of (16a) better? Both of the strengthened versions successfully explain the usage of the sentence in the scenario in section two: for each spring semester, a syntax class is offered and for each fall semester, a semantics class is offered. However, let us think of a scenario slightly changed from this. For each spring semester, only syntax class is offered but for each fall semester, both a syntax class and a semantics class are offered. In this context, the way we interpret (16a) as (16c) cannot be validated. The way we interpret the sentence must correspond to (17). Based on this, we understand this strengthening process as applying the exhaustive operator until its application does not make a meaningful contribution anymore[9]. In fact, the third and more rounds of applications do not

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9) An anonymous reviewer of Language Research has pointed out that there has to be some way to constrain the conjunctive meaning and explain the disjunctive use of *-(i)na* such as example (3a). As stated above, the derivation of conjunctive meaning is based on the communicative purpose of

contribute anything new to the existing one.

3.3. A different type of a disjunction phrase

Before summing up this discussion, I want to note the existence of a problematic data that does not have a solution yet. An interesting property of *-(i)na* is that it only makes coordination of DPs but not any other categories. Forming a disjunction phrase with other categories, such VPs, APs, or TPs is done with another lexical item, *-kena*. J-H Yoon (2000) compares DP disjunction phrases and VP disjunction phrases and makes a generalization that only DP disjunction phrases, but not VP disjunction phrases, generate conjunctive meanings. Here is a pair of two types of disjunction phrases.

(18) a. abeci-nun   nakksi-na   tungsan-ul   cohaha-si-ess-ta.
        father-Nun   fishing-or   climbing-Acc   like-Hon-Past-Dec.
        'Father liked fishing and climbing.'
     b. abeci-nun   nakksi-lul cohaha-kena tungsan-ul   cohaha-si-ess-ta.
        father-Nun   fishing-Acc like-or   climbing-Acc like-Hon-Past-Dec.
        'Father liked fishing or he liked climbing. (I do not know exactly which one he liked)'

J-H Yoon (2000) attributes the difference between (18a) and (18b) to the difference of a scope between a generic operator and disjunction phrases. He argues that, when a disjunction phrase is inside the scope of a generic operator, it delivers a conjunctive meaning and that, outside of a generic operator, it expresses a disjunctive meaning. However, considering that there does not exist any device to prevent a disjunction coordination from extending to a proposition level, the analysis loses its explanatory power.

Would it be, then, possible for a VP disjunction to be explained by the suggested

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strengthening a statement. Accordingly, if the purpose of strengthening does not meet, the *Exh* operator stops functioning, which is the case of the third round of *Exh* application. In a similar vein, if the strengthened statement contradicts our world knowledge or a given context, the strengthening process does not need occur. This is the case where we find the disjunctive interpretation of *-(i)na*. In the example (3a), it is physically impossible for Minsu to be both in Pusan and Ulsan at the same time. Therefore, strengthening the meaning of this sentence to be composed of conjunctively coordinated clauses makes the sentence meaning contradict to our world knowledge. Since strengthening is a purpose-derived optional process but not an obligatory one, we have a disjunctive meaning from 'Pusan-ina Ulsan' in (3a).

proposal in the previous section? An idea that instantly comes up in my mind is to stipulate different inventories of alternative sets for each disjunction marker. If we assume that a *-kena* disjunction phrase, unlike an *-(i)na* disjunction phrase, takes the complete set of alternatives, both scalar and sub-domain alternative sets, it is expected to have the same scalar inferences with an English *or* disjunction, which is the case in (18). However, despite this apparently simple solution, this does not seem to be appealing to me. It is because of the complementary distribution that *-(i)na* and *-kena* exhibits: *-(i)na* only appears with DPs but not with any other categories and *-kena* behaves in the other way around. At this point, I do not have a good explanation for this. If *-(i)na* and *-kena* are basically the same word having different realizations depending on its complement types, we may have to find a solution from the properties of a DP, differentiated from other categories. Based on that, we will have to explain why only DP disjunction phrases express conjunctive inferences. Despite the existence of this unsolved puzzle, the analysis of the lack of a specific type of an alternative seems to be the best scenario at this point. I will leave this issue open, expecting a more comprehensive analysis to shed a new light on this problem.[10]

4. Summary

In this paper, we have discussed how a conjunctive meaning is derived from a disjunction phrase co-ordinated by *-(i)na*. I re-interpreted J-H Yoon (2000)'s solution that a generic operator contributes to forming a conjunctive inference as a plurality matter. By explaining it as obligatorily distributed predicates over domains of plurality as a result of a general strengthening process in the interpretation of an utterance, it was possible to extend the range of data that the analysis applies to. Meanwhile, I have raised a puzzle of conjunctive *-(i)na* phrases which do not have a domain of plurality. To solve this problem, two crucial assumptions have been

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10) An anonymous reviewer of Language Research has commented that *-(i)na* does not simply coordinate two DPs but exhibits a more wide range of usages such as having a single argument, A-*(i)na*, meaning a second-best choice (Ryu 2013) or appearing in every argument that it attaches to, A-*(i)na* B-*(i)na*. Ryu's thesis is good research on various types of *-(i)na* constructions. Although he seems to consider all the constructions to be composed by a single type *-(i)na*, I cannot find a unified semantic denotation for it from the thesis. Although I personally agree that *-(i)na*, which appears in all these constructions, is a single lexical item and needs a unified analysis, I do not also have the unified analysis at this point. This is a very promising research topic which needs to be done in the near future.

adopted from previous research on scalar implicatures: (1) the recursive application of an exhaustive operator and (2) the existence of two independent classes of alternative sets. Based on these two assumptions, an analysis that *-(i)na* lacks a scalar alternative and accordingly, the conjunctive co-ordinator does not work in the strengthening process has been suggested. This has led the *-(i)na* phrase to have conjunctive readings in more broad contexts than expected from other disjunction items.

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