

From lists to universal quantification: Disjunction in Korean*

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Hong, Minpyo. 2013. From lists to universal quantification: Disjunction in Korean. *Linguistic Research* 30(3), 489-515. This paper examines the syntactic, semantic, and pragmatic aspects of the so-called disjunctive morpheme *-(i)na* used in various Korean constructions, first noted by Saman Hong (2002). The relevant constructions are grouped into three categories depending on the number and nature of disjuncts (i.e., uni-disjunction, di-disjunction, and multi-disjunction). Various constructions in context are examined to show that the three apparently unrelated meaning aspects (universal quantification, disjunction, and list enumeration) can be derived ultimately from multi-disjunctions through the covert operation of closure or exhaustification in Groenendijk & Stokhof's (1984) sense. The paper argues that the various usages can be accounted for in a uniform manner by assuming that *-na* is essentially a morpheme that indicates the presence of additional alternatives in the list, or an anti-exhaustivity marker in Kratzer & Shimoyama's (2002) sense. (Myongji University)

Keywords disjunction, list, universal quantification, anti-exhaustivity, free choice, modality

1. Introduction

In Korean, disjunction is marked in various ways, employing different morpho-syntactic combinations as shown below:

- (1) a. John-un sakwa ttonun pay-lul cohahayssta.
John-Top apple or pear-Acc liked
“John liked apple or pear.”
b. John-un sakwa hogun pay-lul cohahayssta.

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- John-Top apple or pear-Acc liked
 “John liked apple or pear.”
- c. John-un sakwa animyeon pay-lul cohahayssta.
 John-Top apple or pear-Acc liked
 “John liked apple or pear.”
- d. John-un sakwa-na pay-lul cohahayssta.
 John-Top apple-OR pear-Acc liked
 “John liked apple or pear.”

In (a), (b) and (c), the two disjuncts (*sakwa* ‘apple’ and *pay* ‘pear’) are combined with the help of an adverbial element (*ttounun*, *hogun*, and *animyeon*), whose nature is not quite well-understood and is not the concern of this paper.¹ In (d), the nominal disjuncts are coordinated with the aid of a particle *-na*, which is often referred to as a disjunctive particle in the traditional literature on Korean.

What is interesting about this particle *-na* is that it often combines with the so-called indeterminate pronouns such as wh-phrases (those equivalent to English *who*, *what*, *where*, *when*, etc.) or free-choice indefinites (*amwu-* is the case in point) to produce a quantificational reading, as shown below:

- (2) a. John-un ettenkwail-ina kkak-ci an-ko mekessta.
 John-Top which fruit-OR peel-NOT-and ate
 “John ate any fruit without peeling it.”

¹ One of the noticeable differences between (a,b,c) and (d) is phonological: In (a,b,c), there is a short pause right after the first disjunct while in (d) there is no pause, which is expected when we consider the status of disjunctive markers involved in each case. That is, the disjunctors in (a,b,c) are adverbial or parenthetical in essence while *-na* in (d) is a kind of suffix. Another difference is that in (a,b,c), the disjunctive marker can appear as seen below:

- a. John-un sakwa-na ttonun pay-lul cohahayssta.
 John-Top apple-OR or pear-Acc liked
 “John liked apple or pear.”
- b. John-un sakwa-na hogun pay-lul cohahayssta.
 John-Top apple-OR or pear-Acc liked
 “John liked apple or pear.”
- c. John-un sakwa-na animyeon pay-lul cohahayssta.
 John-Top apple-OR or pear-Acc liked
 “John liked apple or pear.”

- b. John-un amwu kwail-ina kkak-ci an-ko mekessta.
 John-Top whichever fruit-OR peel-NOT-and ate
 “John ate any fruit without peeling it.”

Both (a) and (b) are understood as a universal quantification on the domain of fruits relevant to the context of discourse, often with a flavor of free choice or indiscriminacy with respect to the kind of fruit he ate. Note, however, that sentences in (2) above are quite different from those in many European languages in that they involve an episodic predicate in the past tense, but are judged acceptable, even though the free choice NP’s are not subtriggered by a relative clause (LeGrand 1977).

This comes as a surprise given the cross-linguistic observations made in the literature. For example, in Japanese, when a *wh*-phrase is combined with a disjunctive particle, it produces an existential, rather than universal, quantification:

- (3) Dare-mo-ga nani-ka-o tabe-teiru.
 who-Conj.-Nom what-Disj.-Acc eating-be
 “Everyone is eating something.”

Note that the object of *eat* above consists of a *wh*-phrase and a disjunctive particle followed by an accusative marker and is interpreted as an existential quantifier. Malayalam is similar in this regard. When the *wh*-word is suffixed by the disjunctive marker, it is understood as an existential quantifier, as shown below:

- (4) arr-e-oo
 who-Acc-Disj
 “someone”

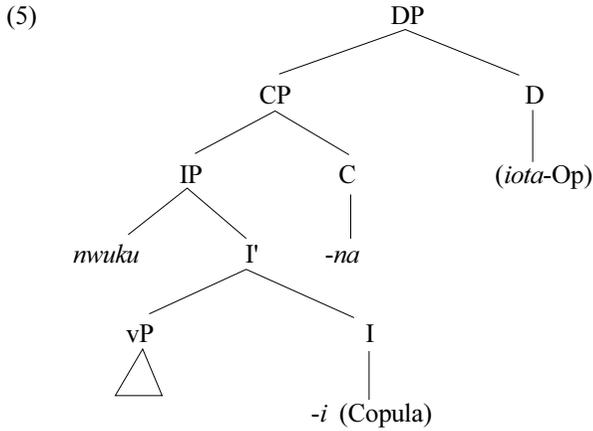
Cross-linguistic considerations such as these raise a series of questions: How is it possible for the Korean disjunctive particle to get involved in a universal quantification, unlike many other languages? Or, how is disjunction related to universal quantification and free choice? Is the particle ambiguous?

To better understand the syntactic, semantic, and pragmatic contributions the particle makes to the meaning of the sentences containing it, this paper makes a close examination of its properties in various contexts and provide a tenable solution

so that the various instances can be accounted for in a unified way, namely by assuming that the Korean disjunctive morpheme *-na* is essentially an anti-exhaustivity marker in Kratzer & Shimoyama's (2002) sense, or a morpheme that indicates the presence of additional alternatives on a list. To this end, I begin with a review of some previous research on this issue (Gill et. al. (2004) and Choi (2007) among others) in section 2. In section 3, I introduce Hong Saman's (2002) examples involving the disjunctive morpheme *-na* to show that the previous approaches are limited as they cannot properly deal with the examples in various environments. In section 4, I make a few additional observations about the constructions, involving modality and anti-exhaustivity, and provide a new account and conclude the paper in section 5.

2. Previous accounts

Gill et. al. (2004) provides an account of universal quantificational interpretation of Korean [ind. + Disj.] construction (e.g., (2) above) based on an elaborate syntactic structure and a few semantic manipulations. Following Chung (2000), who claims that *mwuku-na* has to be understood syntactically as an indirect question, Gill et. al. argue that it is in fact a clausal construct due to the presence of *-i*, which is understood as a copula in traditional Korean linguistics. They depart from Chung (2000), however, and instead treat the construction as an internally-headed relative clause, similar in structure and meaning to the DP headed by a definite article in English, which is interpreted as involving the *iota* operator. The following is their syntactic representation of the relevant construction (Gill et. al.: 83):



They go further to make a few novel proposals for the semantic interpretation of the structure given above. (As will be discussed below, some of them lack empirical support though.) First, they treat the indeterminate wh-phrase *mwukwu* as a kind of meta-variable, ranging over individual variables. Then, they propose that the particle *-na* is “an unpacking disjunctive operator with no peculiar quantificational properties of its own,” whose effect is “to unpack the indeterminate into an infinite set of variables.” These free variables inside the relative clause are then bound by the *iota* operator that unselectively binds all free variables within its scope, resulting in a representation as follows, in which *H* stands for *Human*, a kind of restriction on the meta-variable (Gill et al. : 83):

$$(6) ((H(x_1) \wedge (x_1)) \vee ((H(x_2) \wedge (x_2)) \vee ((H(x_3) \wedge (x_3)) \vee \dots ((H(x_n) \wedge (x_n))))))$$

Noting that the *iota* operator is anti-additive (*The men or women who left early missed the best part of the party* = *The men who left early missed the best part of the party AND the women who left early missed the best part of the party*),² they derive the following from (6) above:

² To be precise, when $\langle A, \leq \rangle$ and $\langle B, \leq \rangle$ are partial orders, a function f from A to B is anti-additive if and only if $f(a \vee b) = f(a) \wedge f(b)$. Negation is a typical anti-additive operator as *No student showed up at the party or sent a card to the host* is understood as *No student showed up at the party and no student sent a card to the host*.

$$(7) \quad x_1((H(x_1) \wedge (x_1)) \wedge x_2((H(x_2) \wedge (x_2)) \wedge x_3((H(x_3) \wedge (x_3)) \wedge \dots x \\ ((H(x) \wedge (x)))$$

This is what they sought to derive as the interpretation of *wh-(i)-na* as a universal quantifier. In short, they claim that “the interaction of the *-*operator with disjunction turns an infinite disjunction to an infinite conjunction.”

It is regrettable, however, that they do not provide any evidence for their treatment of the indeterminate pronoun as a meta-variable, let alone the exact nature of the notion of meta-variable or “unpacking.” They are silent about their motivations for such a move, simply admitting “We will remain rather vague regarding the precise formal characterization of this operation [*unpacking the meta-variable*] for lack of space.” (p. 78) They do not provide evidence for the *iota*-operator introduced as the head of the DP either.

More seriously, their *iota*-operator may have given them a solution to their problem, but causes a greater disaster to the overall system. First of all, their account will force simple disjunction constructions with the morpheme *-(i)na* to be analyzed as internally-headed relative clauses, and consequently interpreted as introducing an *iota*-operator of a similar kind, generating the definiteness or uniqueness effect, which is not attested at all. For example, a simple nominal disjunction below, will be predicted to show an asymmetric definiteness effect between the first disjunct and the second because the first disjunct comes with the disjunctive morpheme while the second disjunct does not.

- (8) John-un sakwa-na pay-lul cohahayssta.
 John-Top apple-OR pear-Acc liked
 “John liked apples or pears.”

However, as shown in the gloss, this sentence means that John liked apples or pears. There is no uniqueness or definiteness involved in the interpretation of the apples or pears in question, not to mention the asymmetry between them. Notice that if [*Indeterminate-(i)-na*] is to be analyzed as an internally-headed relative clause, [*common noun-(i)-na*] should also be analyzed as such, because *-na* requires an explicit copula if the preceding disjunct ends with a consonant, as seen below:

- (8) John-un pap-ina kwukswu-lul cohasyssta.
 John-Top rice-OR noodle-Acc liked
 “John liked rice or noodles.”

No Koreans would admit in any circumstances that this sentence is read as “There is a uniquely identifiable, definite (bowl or kind of) rice that John liked while John liked noodles in general.” To avoid such a problem, they will have to make an ad hoc stipulation that the *iota*-operator is introduced only when *-na* is added to a *wh*-phrase or an indeterminate pronoun.

More seriously, when the semantic representation in (7) is closely examined, it seems to give a wrong reading. (7) is read as “There is a unique object x_1 such that x_1 is human and has the property . And there is a unique object x_2 such that x_2 is human and has the property . And there is a unique object x_3 such that x_3 is human and has the property . And there is a unique object x such that x is human and has the property .” Each proposition closed under the *iota*-operator seems to contradict the others because the *iota*-operator is understood as picking up only one object under consideration rejecting all others that have the property. Gill et. al. say that the interaction between the *iota*-operator and the disjunction turns an infinite disjunction to an infinite conjunction, but each conjunct in their representation contradicts all other conjuncts after all.

In addition to Gill et al. (2004), there is another account, discussed in a dissertation by Choi (2007), in which she extensively discusses the semantics and pragmatics of *-na* in *amwu-na* or *nwukwu-na*, in particular, the free choice reading when combined with such indefinites as *amwu-* or *wh*-phrases in Korean. She identifies the semantics of the Korean particle *-na* with that of *-ever* in English free relatives, e.g., *whoever* or *whatever*, and argues that *-na* triggers a presupposition of variation based on either counterfactual or epistemic worlds, following von Stechow’s (2000) analysis of English free relatives. According to her analysis, for example, the disjunctive particle in (9) below is said to introduce a presupposition that “If a different set x of meat had been considered, John would have permission to eat meat out of x .” (p. 34)

(9) John-un amwu koki-na mek-ul swu-iss-e.

John-Top Ind. meat-OR eat-can-DEC

“John can eat any meat, every meat is an eating option for John.”

From such a presupposition, she derives the following inference that gives us the free choice or universal quantificational effect: (p. 35)

(10) FC effects: For every (type of) meat x, John is allowed to eat x.

In short, the disjunctive particle is the source of free choice in [indefinite + OR] constituents in Korean in her analysis.

As will be shown in the following sections, however, there are numerous examples that neither Gill et. al. (2004) nor Choi (2007) can deal with, mainly because they fail to make proper observations about the particle. Their accounts are limited because they focus only on the quantificational interpretation involving the particle and such indeterminate phrases as *amwu-* or wh-words, without mentioning many other examples that give rise to a whole variety of different readings such as second-best choice, surprise, approximation, etc. I now turn to the various readings induced by the particle *-na*, mostly from the work by Hong (2002).

3. Various readings of *-na*: Observations by Hong (2002)

In his attempts to describe the various semantic and pragmatic aspects of the Korean particle *-na*, Saman Hong (2002), one of the traditional Korean linguists, presents various examples and enumerates an array of nuances or usages conveyed by the particle in various environments, which are not properly dealt with in Choi (2007) or Gill et. al. (2004). He distinguishes seven different readings in his book on the semantics and pragmatics of various particles in Korean (Hong 2002: 268-291).

The first set of examples are named the second-best choice or settle for less reading and can be found in the following examples:

(11) Second-best choice / Settle for less

a. Kukcang-ey-na kake-la.

theater-to-OR go-*Imp*.

“(I know it’s not the best choice, but why don’t you) Go to a movie.”

b. Cam-*ina* ca-*ca*.

sleep-OR sleep-*let’s*

“(I know it’s not the best option, but) Let’s go to bed.”

Here in (a), the particle is attached to a postpositional phrase, rendering a reading in which the speaker is expressing his acknowledgement that going to a movie may not be the best option available to the hearer, asking him/her to settle for the less attractive choice of movie-watching. Likewise, the particle in (b) gives us a reading in which the speaker is suggesting that going to bed is not the best available choice that s/he can make at the moment, typically uttered when the speaker is bored without there being anything exciting to do.

The second reading of the particle is disjunction, in which two disjuncts of the same syntactic and semantic type are coordinated, as shown in the following examples:

(12) Disjunction

a. Ku-nun mokmaru-myeon mwul-*ina* kola-lul masinta.

he-Top thirsty-if water-OR cola-Acc drank

“When thirsty, he drank water or cola.”

b. Ku-nun cip-eyse-na tosekwan-eyse kongpwuhanta.

he-Top house-at-OR library-at study

“He studies at home or in the library.”

c. Ku-nun mayil cam-ul cake-na TV-lul poassta.

he-Top every day sleep-Acc sleep-OR TV-Acc watched

“He slept or watched TV every day.”

When the particle is used as a disjunctive morpheme, it can combine two nominal elements as in *mwul-ina kola* ‘water or cola’ in (a) above, two postpositional phrases as in *cip-eyse-na tosekwan-eyse* ‘at home or in the library’ in (b), or two verbal phrases as in *cam-ul cake-na TV-lul po-* ‘sleep or watch TV’ in (c) above. Such a combination gives a typical disjunctive reading: either one disjunct

or the other is true of the meaning of the rest of the sentence.

The third reading is what Hong (2002) calls parataxis, which can roughly be translated into ‘regardless of whether X or Y,’ as illustrated in the following sentences.

(13) Parataxis

- a. Ku-nun achim-ey-na ceonyeok-ey-na chayk-ul ilknunta.
 he-Top morning-at-OR evening-at-OR book-Acc read
 “He reads books regardless of whether it’s in the morning or in the evening.”
- b. Kihonca-na mihonca-na cikcang-ul kaci-lsu issta.
 married-OR unmarried-OR job-Acc have-can
 “Regardless of whether (you’re) married or unmarried, (you) can have a job.”
- c. Ku nonmwun-un nayyong-ina hyeongsik-ina mwunceyita.
 the paper-Top content-OR form-OR problem-be
 “Regardless of its contents or form, the paper is problematic.”

It is interesting that the paratactic usage gives rise to the universal quantification reading: (a) above is interpreted as “He always reads books,” (b) is understood as “Everyone can have a job,” and (c) is understood as “Everything in the paper is problematic.” It is also interesting that such a usage requires two occurrences of the particle on both disjuncts: when the second disjunct does not have the particle, it renders the usual disjunction reading. For example, consider the following:

- (14) Ku-nun achim-ey-na ceonyeok-ey chayk-ul ilknunta.
 he-Top morning-at-OR evening-at book-Acc read
 “He reads books in the morning or in the evening.”

Here, there is no particle on the second disjunct and it is only the disjunction reading we get from this sentence: either he reads books in the morning or he reads books in the evening. The absence of disjunctive morpheme *-na* on the second disjunct here indicates that the list is exhaustive, and thus that the second disjunct is the final element in the list.³

Hong (2002) notes that there is another usage of the particle *-na*, namely, the universal quantification reading, as shown below:

(15) Universal Quantification

- a. Ku sasil-un nwukwu-na cal al-ko issta.
 the fact-Top who-OR well know-Prog
 “The fact is well known to everyone.”
- b. Kuken etise-na po-l suiss-nun phwungkyeong-ita.
 that where-OR see-can-Comp scenery-be
 “That’s the scenery you can see every where.”
- c. Cwuin-un encey-na wus-umyeonse macacwuessta.
 owner-Top when-OR smile-while welcomed
 “The owner always welcomed (us) with a smile.”

When the particle is added to a *wh*-phrase, it is understood as a universal quantification. Much detail will be discussed about this reading in section 4 below, but suffice it to note that various types of *wh*-based quantifiers (e.g. *nwuku-na* ‘everyone,’ *mwues-ina* ‘everything,’ *eti-na* ‘everywhere,’ *enjey-na* ‘whenever/always,’ *etten N-ina* ‘whichever N’ among others) belong to this category. Free choice reading can be understood as part of this universal quantification too, which involves the indeterminate pronoun *amwu-* plus the particle *-na*.

Another usage of the particle is what Hong (2002) calls surprise or exclamation reading: the speaker is expressing her/his surprise about the given quantity, as illustrated below:

(16) Surprise or Exclamation

- a. Cheycwung-i 10 kilo-na cwulessta.
 weight-Nom 10 kilogram-OR reduced
 “(I’ve) lost as many as 10 kilograms.”
- b. Pelsse 10 si-na toyessney.
 already 10 hour-OR became
 “It’s already as late as 10.”

³ See section 4 below for further discussion on this issue.

- c. A: Man won-man nay-sipsiyo.
 10,000 won-only pay-please
 “Pay me 10,000 won only, please.”
- B: Man won-ina-yo?
 10,000 won-OR-Q
 “As much as 10,000 won?”
- A: Kulayto ssaakey pat-nun kepniita.
 though cheap receive-Comp
 “It’s still cheap, though.”

It’s to the speaker’s surprise that she has lost as many as ten kilos in (a) and that it’s already as late as ten o’clock at night. A typical case of this reading can be found in (c) above. The seller (Speaker A) is showing off his/her generosity by saying that it costs only 10,000 won, to which the buyer (Speaker B) is expressing his/her surprise at the price by using the particle *-na*, implying that the price is too high. According to Hong (2002), when the particle is used with a quantity-denoting expression, such a surprise reading is generated.

There is another usage Hong (2002) describes as approximation, in which a *wh*-phrase of amount or quantity is required. Consider the following:

(17) Approximation

- a. Motwu myeot kay-na toy-nunya?
 all how many-OR become-Q
 “About how many in total?”
- b. Nam-un ton-i elma-na iss-nunya?
 remain-Comp money-Nom how much-OR be-Q
 “About how much money is left?”
- c. Ku-ka enjey-na o-lkesin-ka?
 he-Nom when-OR come-will-Q
 “Approximately when will he come?”

All these sentences are acceptable without the particle, but the absence of the particle strengthens the accuracy or precision of the amount information the hearer is requested to provide while the presence of the particle reduces it to a rough

approximation of the amount.

The final usage noted by Hong (2002) is what he calls idiomatic expressions, often found in a figure of speech such as simile. The following illustrates similes:

(18) Idiomatic Expressions

- a. Khunnwuna-nun emeni-na kathta.
 eldest sister-Top mother-OR same
 “The eldest sister is like (my) mother.”
- b. i sihap-un cin kes-ina talum epsta.
 this game-Top loss/defeat-OR difference absent
 “This game is almost like a (total) loss.”

Similes like these are treated as an idiomatic expression in Korean, in which *-na* is understood as replacing the nominal suffix *-(k)wa* that is frequently used in coordinating conjunctive constructions.⁴

So far, I have enumerated a variety of readings the disjunctive particle *-na* can bring about based on Hong’s (2002) observation. His description is mainly based on the intuitive judgements on the semantic and pragmatic effects of the particle *-na*. Witness the terminology he adopts in classifying the usages: second-best choice, surprise, approximation, etc. When we consider the syntactic behavior of these examples, however, they can be re-classified into three different groups depending on the number and nature of disjuncts that co-occur with the particle *-na*. For example, his universal quantification and approximation examples ((15) and (17) above) contain an indeterminate pronoun (e.g., *wh*-phrases or *amwu*-phrases) while the rest of the examples do not require such phrases. For another, the number of disjuncts varies, too: the settle for less examples have only one disjunct attached to *-na* while paratactic examples have two or more occurrences of *-na* and as many disjuncts.

⁴ Note that those in (18) can be re-written as follows, without losing their semantic and/or pragmatic flavor of figurative reading:

- a. Khunnwuna-nun emeni-**wa** kathta.
 eldest sister-Top mother-with same
 “The eldest sister is like (my) mother.”
- b. i sihap-un cin kes-**kw**a talum epsta.
 this game-Top loss/defeat-with difference absent
 “This game is almost like a (total) loss.”

(See footnote (5) below.)

Thus, I would like to re-classify them into three groups, primarily in terms of the number of disjuncts that appear with *-na*: uni-disjunction, di-disjunction, and multi-disjunction. Another important factor to be considered in an attempt to correctly understand the meaning of *-na* is the nature of disjuncts: whether an indeterminate phrase (*wh*-words or *amwu*-phrases) is used in the disjunct or not. The following table (19) summarizes these groupings:⁵

(19) Various Meanings of *-na* in Korean

	[+Ind.]	[-Ind.]
Uni-disjunction (<i>XP-na</i>)	a. Universal Q. b. Approximation	c. Second best choice d. Surprise e. Idiomatic/Simile
Di-disjunction (<i>XP₁-na ... XP_n</i>)		f. Disjunction
Multi-disjunction (<i>XP₁-na XP₂-na ... XP_n-na</i>)		g. List enumeration

In the multi-disjunction series (*XP₁-na XP₂-na ... XP_n-na*), note that I've replaced Hong's (2002) term parataxis with 'list enumeration' in the table above. It was because of a few observations I've made about the construction. Consider the following:

- (20) Q: Chwulchwulha-Ittay cwulo mweol tuseyyo?
 hungry-when usually what eat
 "What do you usually eat when you feel empty?"
- A: Lameyon-ina sakwa-na pizza-na (amwu ke-na) yo.
 ramen-OR apple-OR pizza-OR (Ind. thing-OR) yo.
 "(I eat) ramen, apple, pizza, (or anything)."

⁵ I do not distinguish *XP₁-na XP₂* from *XP₁-na XP₂-na ... XP_n*. They are grouped together and called di-disjunctions here. However, I do differentiate them from *XP₁-na XP₂-na* or *XP₁-na XP₂-na ... XP_n-na*. What is at stake is the presence or absence of the particle *-na* on the final disjunct. See sections 4.2 and 4.3 for further details about them.

Here, the number of disjuncts in the answer is not limited and each disjunct has to be flanked by *-na*, enumerating a list of things under discussion. It is also interesting that the final disjunct can be optionally followed by [*Ind.-na*], which will turn out to play a very important role in understanding the nature of universal quantification usage of the particle as will be shown below.⁶

One more interesting observation about this list enumeration usage is that the syntactic category of the disjuncts is not limited to noun phrases: it can be verb phrases as in (21) below or adverbials or postpositional phrases as in (22).

- (21) a. Ku emma-nun ca-na kkay-na casik kekceng-man
the mother-Top sleep-OR wake-OR child worry-only
hanta.
do
“The mother only worries about (her) children, asleep and/or awake.”
- b. Kim ssi-nun pi-ka o-na nwun-i o-na
Mr. Kim-top rain-Nom come-OR snow-Nom come-OR
ku kil-lo sanchayk hanta.
the road-along stroll do
“Mr. Kim takes a walk along the road, rain and/or snow.”
- (22) a. John-un nac-ey-na pam-ey-na pwul-ul khyenohko isseyo.
-Top day-at-OR night-at-OR light-Acc on keep
“John keeps the light on, day and/or night.”
- b. Ku sosik-un i kos-ulo-na cekos-ulo-na ppalli
the news this place-to-OR that place-to-OR quickly
phecye nakassta
spread went
“The news got spread out quickly, this way and/or that way.”

In terms of the semantic relationships among the disjuncts, it is noticeable that the disjuncts should be of the same semantic type or in a taxonomic sisterhood relationship. That is, each disjunct has to be alternatives to one another, or of

⁶ See section 4.3 for details.

equivalent level in the taxonomic hierarchy. For example, if the taxonomy of color or weekdays is under discussion, the disjuncts should be the color terms or days, respectively.

To sum up, the Korean disjunctive morpheme *-na* appears in uni-disjunction ($XP-na$), di-disjunction ($XP_1-na \dots XP_n$), or in multi-disjunction ($XP1-na XP2-na \dots XP_n-na$). Among these three structures, di-disjunctions and multi-disjunctions have a very simple meaning, disjunction (19f above) and list enumeration (19g), respectively. It is the uni-disjunction constructions that display the most variegated meanings: the universal quantification and approximation readings when used with an indeterminate phrase (19a and b, respectively) and the second-best choice (19c), surprise (19d), or simile (19e) when used with a non-indeterminate phrase. In the following sections, I would like to provide a unified account of the universal quantificational meaning of uni-disjunctions (19a), the disjunctive meaning of di-disjunctions (19f), and the list enumeration reading of multi-disjunctions (19g), as well as the interactions among the three constructions.

4. Proposal

In order to capture the semantic and pragmatic property of *-na* as a disjunctive marker, second-best choice, surprise, approximation, as well as a free choice or universal quantification marker, there are basically two approaches. One is to define the meaning of *-na* essentially as a disjunction and apply it to derive the rest of its meaning effects. This is what Gill et. al. chose to adopt. The other approach is to begin from the more complicated, non-cannonical meaning to get to the meaning of the others. I guess the first approach conforms more naturally to native speakers' intuition than the second. In this paper, I would like to propose a way to implement the first approach.

Before going into details, however, I would like to mention a few remarks about the basic idea that I assume here, which comes from various sources in the semantics and pragmatics literature including Zimmermann (2000) and Sauerland (2009) among others. In an attempt to solve the puzzle behind what's been called the free choice problem, originally pointed out by Hans Kamp (1973), Zimmermann (2000) proposes to treat disjunctions as lists of epistemic possibilities.⁷ He notes that

the disjunction of non-modalized disjuncts in (23) can be understood as a conjunction of modalized disjuncts as in (24).

(23) Mr. X is in Victoria or he is in Brixton.

(24) Mr. X might be in Victoria and he might be in Brixton.

When the speaker utters a sentence with a disjunction, we basically get a few inferences in addition to the propositional content expressed by the sentence itself. For example, we infer that the speaker is not certain about the place where Mr. X is (cf. Sauerland 2009). Observations on examples like these led Zimmermann (2000) to propose that disjunction is essentially a list of epistemic possibilities. What is clear is that when a speaker utters a sentence with a disjunction, he or she is divulging his or her knowledge state, epistemicity. However, I do not follow Zimmermann (2000) or Sauerland (2009) in a strict sense, as will be made clear as the argument unfolds below.

4.1 Disjunction and modality in Korean

I will begin with the typical instances of the disjunctive morpheme in Korean, namely di-disjunction constructions, that is, the reading in (19f). First of all, all the examples discussed so far reveals that *-na* is essentially a marker for the presence of a new alternative. That is, *XP-na* indicates that there is an alternative to the entity denoted by *XP*. The alternatives can either be realized phonetically or implicitly. In the typical di-disjunction cases (e.g., ... *XP-na YP* ...), this requirement is trivially met because of the explicit presence of *YP*. In uni-disjunction and multi-disjunction

⁷ The free choice problem refers to the phenomenon where the apparently valid entailment involving a disjunction (e.g., *Mr. X may take a bus or a taxi* implies that Mr. X may take a bus and Mr. X may take a taxi) often results in a disastrous inference as illustrated below: (Zimmermann 2000: 256)

- (i) Detectives may go by bus. (Rule)
- (ii) Anyone who goes by bus goes by bus or boat. (Tautology)
- (iii) Detectives may go by bus or boat. (from (i) and (ii))
- (iv) Detectives may go by boat.

Note that it was the free choice disjunction that allowed the inference from (iii) to (iv), a clearly false conclusion.

constructions, the alternatives are provided implicitly in the context of utterance.⁸

Furthermore, it is interesting that the use of disjunctive morpheme *-na* in Korean also shows its close association with modality or evidentiality.⁹ That is, it is rarely allowed to occur in a non-modalized context. Consider the following:

- (25) Q. Cheolswu-nun ejey pam-ey nwukwu-lul mannessni?
 -Top last night-at who-Acc met
 “Who did Cheolswu meet last night?”
- A1. #John-ina Mary-lul mannessayo.
 -OR -Acc met
 “(He) met John or Cheolswu.”
- A2. John-ina Mary-lul manness-ulkeyeyo.
 -OR -Acc met-likely
 “It is likely that (he) met John or Mary.”

(A1) as an answer to Q sounds strange while (A2) sounds perfect, indicating that modality is involved in uttering a sentence with a disjunction. A disjunctive episodic sentence without an appropriate verbal inflection for modality (or evidentiality) is not acceptable in Korean.¹⁰ From the morpho-syntactic perspectives, we could say that the disjunctive morpheme *-na* requires an agreement relation with the verbal ending of modality, which indicates that the disjunctive morpheme has an inherent modal element. In a sense, the inherent modal element in the disjunctive morpheme requires the presence of modality marking on the verb, which explains why (A1) is not acceptable as an answer to Q while (A2) is.¹¹ Such an observation seems to conform

⁸ See sections 4.2 and 4.3 for an extensive discussion on this issue.

⁹ It is still to be investigated exactly what kind of modality is involved in the use of the disjunctive morpheme *-na* in Korean, e.g., epistemic modality or evidentiality. What is at stake here, however, is that the morpheme *-na* gives rise to a reading in which the speaker’s knowledge state is not fixed, or her willingness to commit herself to the truth of the given proposition is somewhat withheld, such that the listeners usually infer that the given proposition is weaker than the one without the disjunctive morpheme, which I subsume with the term ‘modality’ here.

¹⁰ I do not distinguish the notion of modality from that of evidentiality or habituality in this paper, which does not hinge on the arguments presented here. That is, the verbal ending *-ulkeyeyo* is simply treated as a modality marker.

¹¹ What I call “an agreement relation” above between the disjunctive morpheme *-na* and the verbal ending should remind readers of the notion of modal concord, first mentioned by Halliday (1970) and Lyons (1977), according to a recent paper by Huitink (2012). An English example (i) below

to native speaker judgements: (A1) is anomalous because the answerer is contradicting herself with the uncertainty expressed by the disjunctive morpheme and the certainty expressed by the non-modalized verbal ending. Meanwhile, in (A2), such a contradiction is not attested.

The element of modality involved in Korean disjunctive morpheme is witnessed in the following conversational exchange, too:

- (26) Q. Ne ejey pam-ey nwukwu-lul mannassni?
 You last night-at who-Acc met
 “Who did you meet last night?”
- A1. #John-ina Mary-lul mannasseyo.
 -OR -Acc met
 “(I) met John or Mary.”
- A2. #John-ina Mary-lul mannass-ulkeyeyo.
 -OR -Acc met-likely
 “It is likely that (I) met John or Mary.”

Both (A1) and (A2) are anomalous as an answer to (Q) because (Q), being a question about the hearer’s own experience which the interlocutors regard as part of vivid and factual memories as it happened last night, is answered in a tone that sounds rather aloof. The aloofness or uncertainty comes from the disjunctive morpheme *-na* in (A1) and from both *-na* and the modal ending *-ulkeyeyo* in (A2). That is, both (A1) and (A2) are denying the speaker’s own knowledge base that is obtainable via first-hand experience of the previous night, which makes them anomalous.

In contrast, the implicit habituality seems to rescue the use of disjunctive morpheme in a sentence without an explicit modal inflection on the verb. Consider the following:

illustrates the case of modal concord, where *possibly* and *may* are not interpreted independently but as one, similar to the negative concord in (ii):

- (i) Possibly this gazebo may have been built by Sir Christopher Wren.
- (ii) I didn’t see no one.

Modal concord is a topic that deserves some further research by Korean linguists, especially in light of the Korean examples above, which I leave for future work.

- (27) Q. Simsimha-Ittay cwulo mwues-ul haseyyo?
 bored-time usually what-Acc do
 “What do you usually do when you’re bored?”
- A. TV-lul poke-na sinmwun-ul ilgeyo.
 TV-Acc watch-OR newspaper-Acc read
 “(I) watch TV or read the newspaper.”

Here, the question is about the answerer’s current habit of killing time. Thus, the habituality operator somewhere at the top of (A) above licenses the use of disjunctive morpheme here, again showing that Korean *-na* is allowed in modalized contexts.

Interestingly enough, when the habituality is directed to one’s past, the disjunctive morpheme is allowed even when the sentence is about the speaker’s own experience. Consider the following exchange:

- (28) Q. Ne-nun elyessul jeok-ey nwukwu-lang nolassni?
 You-Top young days-at who-with played?
 “When you were young, who did you play with?”
- A. John-ina Mary-lang nolasseyo.
 -OR -with played
 “(I) played with John or Mary.”

Here, (A) is not anomalous any more because it is interpreted habitually. It is also interesting that (A) is ultimately understood as a conjunction, in line with the observations about the contrast in English we saw in (23) and (24): (When I was young,) I played with John and I played with Mary.

So far, it has been made clear that Korean disjunction should occur within a modal context, whether it is epistemic modality or habituality (or genericity).¹² Note

¹² Genericity is also a possible rescuer of the disjunctive morpheme without an explicit modal inflection, as evidenced below:

- (i) Q. Say-nun mwuel mekko sani?
 bird-Top what-Acc eat live-Q
 “What do birds feed on?”
- A. Pelley-na ssiass-ul mekko salayo.
 insect-OR seed-Acc eat live

also that Hong’s (2002) examples we saw in the previous section are all modalized contexts, whether they are uni-disjunction, di-disjunction, or multi-disjunction.¹³ An emerging question is how we should treat this modality-dependence of Korean disjunction. One possibility is adding a semantic feature like [+modal] to the lexical entry of the particle *-na*, which is then to be licensed by an operator of similar nature, for example along the line of proposals by Cinque (1999), who argues based on cross-linguistic observations that functional heads come in along a rigid hierarchy and that epistemic modals seem to appear higher than tense or aspect within the hierarchy of functional heads. However, I will remain open regarding this issue in this paper. Now, it’s time we considered the difference between di-disjunction ($XP_1-na\ XP_2$) and multi-disjunction ($XP_1-na\ XP_2-na\ (XP_3-na\dots)$): what does the presence or absence of the particle *-na* on the second disjunct imply?

4.2 Closure and exhaustification: Di-disjunction vs. multi-disjunction

The disjunctive morpheme *-na* can appear on more than one disjunct, in particular, in what I called multi-disjunction examples as in (13), dubbed by Hong (2002) as parataxis, repeated below:

- (13) a. Ku-nun achim-ey-na ceonyeok-ey-na chayk-ul ilknunta.
 he-Top morning-at-OR evening-at-OR book-Acc read
 “He reads books regardless of whether it’s in the morning or in the evening.”
- b. Kihonca-na mihonca-na cikcang-ul kaci-lsu issta.
 married-OR unmarried-OR job-Acc have-can
 “Regardless of whether (you’re) married or unmarried, (you) can have a job.”
- c. Ku nonmwun-un nayyong-ina hyeongsik-ina mwunceyita.
 the paper-Top content-OR form-OR problem-be
 “Regardless of its contents or form, the paper is problematic.”

“They feed on insects or seeds.”

¹³ Apparently, possible exceptions are questions and imperatives. However, the standard treatment of imperatives in contemporary semantic tradition, as noted in Han (2012), is that they are instances of deontic modality. Questions are not about the current or real world, either.

A closer examination of these multi-disjunction examples from a quantificational point of view reveals that these *XP-na YP-na (...ZP-na)* constructions give rise to a universal quantification: (13a) basically says that he always reads books; (13b) is that everyone can have a job; (13c) is that the paper is problematic in every aspect. When compared with a di-disjunction counterpart of (13a), for example, (14) repeated below, does not have such a universal force:

- (14) Ku-nun achim-ey-na ceonyeok-ey chayk-ul ilknunta.
 he-Top morning-at-OR evening-at book-Acc read
 “He reads books in the morning or in the evening.”

This sentence is about the subject NP’s reading habits that take place either in the morning or in the evening. In addition, the second disjunct in (14) above signals that the speaker does not have any other alternatives to the first disjunct. In a sense, the final disjunct without *-na* indicates that it is the end of the list in the speaker’s mind: the speaker cannot come up with further members of a list s/he has in mind. In contrast, the other disjuncts in the middle that appear with *-na* signals that the speaker has additional alternatives to the previous disjunct. It is further illustrated in the following examples:

- (29) a. Chelswu-nun John-ina Mary-lul manness-ulkeyeyo.
 -Top -OR -Acc met-likely
 “It is likely that Chelswu met John or Mary.”
 b. Chelswu-nun John-ina Mary-na Bill-ul manness-ulkeyeyo.
 -Top -OR -OR -Acc met-likely
 “It is likely that Chelswu met John, Mary, or Bill.”
 c. Chelswu-nun John-ina Mary-na Bill-ina Susan-ul
 -Top -OR -OR -OR -Acc
 manness-ulkeyeyo.
 met-likely
 “It is likely that Chelswu met John, Mary, Bill, or Susan.”

Intuitively, the disjunctive morphemes in the middle signal that an alternative will be presented immediately, while the final disjuncts without *-na* in these

examples give an impression that they are the end of a list: the speaker is closing the list of alternatives.

What do these examples imply? Or, how could we capture such an intuitive judgement on these examples? I would like to propose that the impression of “This is the end of my list” should be treated as a kind of exhaustive interpretation involved in these constructions. That is, the lack of *-na* on the second disjunct in (14) induces an exhaustivity operator while its presence on the second disjunct in (13a) does not induce an exhaustive interpretation.

What is interesting about this exhaustivity phenomenon in Korean is that the phonetic realization of the final disjunct (14) is quite similar to that found in typical focus constructions. Consider the following:

- (30) Q: Mary-ka nwukwu-lul manness-ni?
 -Nom who-Acc met-Q
 “Who did Mary meet?”
 A: John-ul mannasseyo.
 -Acc met
 “(She) met John.”

Here, the answer is interpreted exhaustively: Mary met John, and she met no one else. Note that the exhaustivity is accompanied by a few phonological characteristics: the high focal stress is placed on *John* and there is no pause between the accusative case holder *John-ul* and the sentence-final verb. It seems that the whole VP is read in one breath or as one accentual phrase. Similarly, in (14), the second disjunct receives a high focal stress and, though there may be a slight pause between the first disjunct and the second disjunct, from the second disjunct on, the phrase *ceonyeok-ey chayk-ul ilknunta* seems to form one accentual phrase. Indeed, the phonological contour of (14) sounds quite similar to that found in (A) above.¹⁴

When the second disjunct has *-na* as in (13a), however, a short pause is inserted after the second occurrence of *-na*, forming a separate accentual phrase from the rest

¹⁴ So, as pointed out by one of the referees of this journal, it is not clear whether it is the focus feature or the absence of *-na*, or the interactive collaboration between the two, that induces the exhaustification effect, an issue that needs another extensive discussion, which I’d like to leave for future research.

of the sentence. In short, the exhaustive interpretation found in (14), and its lack in (13a), is reminiscent of the typical focus interpretation that is well documented in question-answer pairs, supporting the claim that exhaustivity is at work in di-disjunction constructions.

To sum up, it seems that di-disjunctions should be understood as a contracted form of multi-disjunctions to which exhaustification is added. This is graphically illustrated in the following:

$$(31) [XP_1-na \ XP_2-na \ \dots \ XP_n-na] + [exh] = [XP_1-na \ XP_2-na \ \dots \ XP_n]$$

In a sense, [exh] gets rid of the final occurrence of *-na*. Or we could say that the speaker's intention to close or exhaustify the list is reflected in the lack of *-na* on the final disjunct. The remaining question is: why would exhaustivity obliterate the final disjunctive morpheme? One possible answer should be the following: *-na* is essentially an indicator of the presence of additional alternatives in the list as we saw earlier, while [exh] implies that there is no further alternatives. In (30) above, when *-na* is present on XP_n , it requires that there be an additional alternative to XP_n but the [exh] feature semantically requires that there be no alternatives. Thus, using both *-na* and [exh] together on one disjunct within a sentence leads to a contradiction. To put it in another way, Korean disjunctive morpheme *-na* is an anti-exhaustivity operator (cf. Kratzer & Shimoyama 2002). Therefore, the following corollaries can be made from the considerations above:

- (32) a. When the final disjunct has *-na*, it blocks the exhaustive interpretation.
 b. When the final disjunct does not have *-na*, it can induce an exhaustive interpretation.

4.3 From multi-disjunction to universal quantification

Our discussion so far helps us better understand the universal quantificational force involved in the disjunctive morpheme *-na*. The universal force or the free choice effect is expected when we take *-na* as an anti-exhaustivity marker, especially when we consider the following contrast between the final disjuncts, one without –

na and the other with *-na*:

- (29) c. Chelswu-nun John-ina Mary-na Bill-ina Susan-ul
 -Top -OR -OR -OR -Acc
 mannass-ulkeyeyo.
 met-likely
 ‘‘It is likely that Chelswu met John, Mary, Bill, or Susan.’’
- (30) Chelswu-nun John-ina Mary-na Bill-ina Susan-ina (nwuku/amwu-na)
 -Top -OR -OR -OR -OR(wh-/IND-OR)
 mannass-ulkeyeyo.
 met-likely
 ‘‘It is likely that Chelswu met John, Mary, Bill, or Susan (or
 anyone).’’

Again, (29c) is an assertion about the exhaustive list of persons Chelswu is likely to have met as the final disjunct is not suffixed with *-na*. When the final disjunct has the disjunctive morpheme as in (30), however, it implies that the list is not exhaustive, thus allowing the parenthetical element *amwu-na* to further strengthen the anti-exhaustivity. Notice further that (30) can ultimately be understood as similar to the following, where all the disjuncts are omitted but the indeterminate phrase:¹⁵

- (31) Chelswu-nun nwukwu/amwu-na mannass-ulkeyeyo.
 -Top who/IND-OR met-likely
 ‘‘It is likely that Chelswu met anyone.’’

Thus, the universal quantification examples in (31) and those in (15) involving the *wh*-phrases or the indeterminate phrase *amwu-* can best be understood as a contracted form of multi-disjunctions such as (30). It is a kind of contraction as the speaker is not enumerating the alternatives of the list s/he has in mind, simply replacing them with one strongest anti-exhaustivity expression *nwukwu/amwu-na*.

¹⁵ Unlike English or many other European languages, Korean allows such a free choice item as *amwu-na* to appear in an episodic context without necessarily being subtriggered by a relative clause (LeGrand 1975, Dayal 1998), an issue discussed extensively in Hong (2011).

5. Conclusion

Various constructions involving the Korean disjunctive morpheme *-na* have been discussed so far. Previous accounts were criticized mainly because they cannot cope with the diverse meaning aspects observed by Saman Hong (2002). The various constructions are classified into three syntactic patterns: uni-disjunctions, di-disjunctions and multi-disjunctions, depending on the number of disjuncts and the presence or absence of *-na*. It was pointed out that the core semantic component of the Korean disjunctive particle is modality (or non-episodicity, to be precise) and anti-exhaustivity as it is essentially a marker for the presence of an alternative. This view allowed us to derive the universal quantificational force of [Ind. + *-na*] from the multi-disjunction cases with the help of anti-exhaustivity of *-na*. It also allowed us to distinguish the meaning of [*XP-na YP*] constructions from that of [*XP-na YP-na*] constructions. Questions still remain, however, as to how we should derive the second-best choice, surprise, approximation, or exclamation readings from the semantics of modality and anti-exhaustivity of the particle *-na*, which I leave for future research.

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