

## *Korean -lato as additive free choice*

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*-Lato* in Korean combines with indefinite expressions to form a distinct type of polarity sensitive item (PSI), whose meaning and distribution differ from those of negative polarity items (NPIs) and free choice items (FCIs). I argue that *-lato* constitutes an instance of “additive free choice” (Fălăuş & Nicolae, 2022); that is, *-lato* can be further decomposed into the disjunction *-la(-na)* and the additive *-to*.

### *Introduction*

In Korean, *wh*-indefinites can combine with particles such as *-to*, *-(i)na*, and *-(i)lato*, forming what are now commonly known as Polarity Sensitive Items (PSIs).

- (1) a. Nwukwu-to hakkyo-ey an w-ass-ta.  
who-ADD school-to NEG come-PST-DECL  
‘No one came to school.’  
b. Nwukwu-na hakkyo-ey o-l swu iss-ta.  
who-DISJ school-to come-REL way exist-DECL  
‘Anyone can come to school.’  
c. Nwukwu-lato hakkyo-ey o-l swu iss-ta.  
who-DISJ-ADD school-to come-REL way exist-DECL  
‘Anyone can come to school.’

*Nwukwu-to* exhibits the semantics of a **Negative Polarity Item (NPI)**, licensed in anti-morphic contexts (cf. Zwarts, 1996), whereas *nwukwu-na* exhibits the semantics of a **Free Choice Item (FCI)**, licensed in modal contexts. An increasing body of recent work aims to derive the semantics and distribution of PSIs from their morphological structure: cross-linguistically, they are made up of an indefinite plus either an additive (e.g. Hindi *ek bhii*) or disjunction (e.g. Hungarian *akárki*) (see, e.g., Chierchia, 2013, among others). Korean also fits this paradigm, as *-to* and *-na* function as plain additive and disjunction markers, respectively:

- (2) a. Mina-to hakkyo-ey w-ass-ta.  
Mina-ADD school-to come-PST-DECL  
‘Mina came to school, too.’  
b. Mina-na Chelswu-ka hakkyo-ey w-ass-ta.  
Mina-DISJ Chelswu-NOM school-to come-PST-DECL  
‘Mina or Chelswu came to school.’

### Alternatives & exhaustification

Chierchia (2013), drawing on prior work by Kadmon & Landman (1993), Lahiri (1998), Fox (2007), Gajewski (2011), etc., shows how the semantics of PSIs are compositionally derived from their morphological structure. The key assumption is that these items activate **subdomain alternatives** that must be obligatorily exhaustified.

$$(3) \quad \llbracket \text{EXH} \rrbracket(\text{Alt})(p) = p_w \wedge \forall q \in \text{Alt} : p \not\subseteq q \rightarrow \neg q_w$$

The exhaustification operator **EXH** asserts  $p$  (prejacent) and negates all alternatives  $q$  in the alternative set  $\text{Alt}$  if not entailed by  $p$ . **EXH** also plays a role in deriving what are commonly known as *scalar implicatures* (cf. Chierchia et al., 2011).

- (4) Some student came to school.
- a.  $p: \exists x \in D : \text{come}(x)$
  - b.  $\text{Alt}: \{\exists x \in D : \text{come}(x), \forall x \in D : \text{come}(x)\}$
  - c.  $\llbracket \text{EXH} \rrbracket(\text{Alt})(p) = \exists x \in D : \text{come}(x) \wedge \neg \forall x \in D : \text{come}(x)$

### Negative polarity items

Let us first see how the alternatives-&-exhaustification theory predicts the semantics of an NPI. Exhaustifying NPIs with respect to their subdomain alternatives in *affirmative episodic contexts* results in a contradiction, explaining their ungrammaticality in such environments.

- (5) \*Nwukwu-to hakkyo-ey w-ass-ta.  
 who-ADD school-to come-PST-DECL  
 'Anyone came to school.'
- (6)
- a.  $p: \exists x \in D : \text{come}(x)$
  - b.  $\text{Alt}: \{\exists x \in D' : \text{come}(x) \mid D' \subseteq D\}$
  - c.  $\llbracket \text{EXH} \rrbracket(\text{Alt})(p) = \exists x \in D : \text{come}(x) \wedge \neg \exists x \in D' : \text{come}(x),$   
 for all  $D' \subseteq D$

(6c) is equivalent to saying "there exists some individual who came to school in  $D$ , but there is no individual who came to school in  $D'$ , for every subdomain  $D'$  of  $D$ ." This is a clear contradiction. An easier way of seeing this is by assuming that there are three contextually relevant individuals, Shrek, Fiona, and Donkey.

- (7)
- a.  $p: s \vee f \vee d$
  - b.  $\text{Alt}: \{s \vee f \vee d, s \vee f, s \vee d, f \vee d, s, f, d\}$
  - c.  $\llbracket \text{EXH} \rrbracket(\text{Alt})(p) = (s \vee f \vee d) \wedge \neg(s \vee f) \wedge \neg(s \vee d) \wedge \neg(f \vee d) \wedge \neg s \wedge \neg f \wedge \neg d = \perp$

Let us now see what happens in *negative episodic contexts*. Exhaustifying NPIs with respect to their subdomain alternatives in negative episodic contexts turns out just fine. This is because, due to the presence of negation, the entailment relationship between the prejacent and its alternatives is reversed.

- (8) Nwukwu-to hakkyo-ey an w-ass-ta.  
 who-ADD school-to NEG come-PST-DECL  
 'No one came to school.'
- (9) a.  $p: \neg \exists x \in D : \text{come}(x)$   
 b. *Alt*:  $\{\neg \exists x \in D' : \text{come}(x) \mid D' \subseteq D\}$   
 c.  $\llbracket \text{EXH} \rrbracket(\text{Alt})(p) = p = \neg \exists x \in D : \text{come}(x)$

Notice that  $p$  entails all its alternatives in this case; if there is no individual who came to school in  $D$ , it naturally follows that there is no individual who came to school in  $D'$ , a subdomain of  $D$ . Given the semantics of *EXH* (3), no alternative propositions will be negated (vacuous exhaustification). Therefore, the felicity of NPIs in negative contexts is predicted.<sup>1</sup>

#### Free choice items

The FC effect was first observed with disjunction in the scope of a possibility modal:

- (10) You may eat an apple or a blueberry.  
 a.  $\Diamond(a \vee b)$   
 b. FC effect:  $\Diamond a \wedge \Diamond b$

Fox (2007), building on insights from Sauerland (2004), famously proposed that the FC effect arises from **pre-exhaustified subdomain alternatives**.<sup>2</sup>

- (11) a.  $p: \Diamond(a \vee b)$   
 b. *Alt*:  $\{\text{EXH } \Diamond a, \text{EXH } \Diamond b\} = \{\Diamond a \wedge \neg \Diamond b, \Diamond b \wedge \neg \Diamond a\}$   
 c.  $\llbracket \text{EXH} \rrbracket(\text{Alt})(p) = \Diamond(a \vee b) \wedge \neg(\Diamond a \wedge \neg \Diamond b) \wedge \neg(\Diamond b \wedge \neg \Diamond a)$   
 $= \Diamond(a \vee b) \wedge (\Diamond a \rightarrow \Diamond b) \wedge (\Diamond b \rightarrow \Diamond a)$   
 $= \Diamond a \wedge \Diamond b$

Similar analysis can be extended to so-called FCIs:

- (12) Nwukwu-na hakkyo-ey o-l swu iss-ta.  
 who-DISJ school-to come-REL way exist-DECL  
 'Anyone can come to school.'

<sup>1</sup> Notice that this account wrongly predicts *nwukwu-to* to exhibit the distribution of a weak NPI like English *any*. I argue that the crucial difference between weak and strong NPIs lies in the fact that the latter are subject to a locality constraint — an issue I elaborate on in the following sections.

<sup>2</sup> In the following presentations, I focus on pre-exhaustified subdomain alternatives to illustrate the derivation of the FC effect. However, to prevent existentials from incorrectly surfacing as universals in non-modal contexts, scalar alternatives must also be taken into account (cf. Chierchia, 2013).

- (13) a.  $p: \Diamond \exists x \in D : \text{come}(x)$   
 b.  $\text{Alt}: \{\text{EXH } \Diamond \exists x \in D' : \text{come}(x) \mid D' \subseteq D\} =$   
 $\{\Diamond \exists x \in D' : \text{come}(x) \wedge \neg \Diamond \exists x \in D \setminus D' : \text{come}(x) \mid D' \subseteq D\}$   
 c.  $\llbracket \text{EXH} \rrbracket (\text{Alt})(p) = \Diamond \exists x \in D : \text{come}(x) \wedge [\Diamond \exists x \in D' : \text{come}(x)$   
 $\rightarrow \Diamond \exists x \in D \setminus D' : \text{come}(x)], \text{ for all } D' \subseteq D$   
 $= \forall x \in D : \Diamond \text{come}(x)$

Again, an easier way of seeing this is by assuming that there is a fixed number of contextually relevant individuals. For ease of exposition, let us assume there are only two, Shrek and Fiona.

- (14) a.  $p: \Diamond(s \vee f)$   
 b.  $\text{Alt}: \{\Diamond s \wedge \neg \Diamond f, \neg \Diamond s \wedge \Diamond f\}$   
 c.  $\llbracket \text{EXH} \rrbracket (\text{Alt})(p) = \Diamond(s \vee f) \wedge \neg(\Diamond s \wedge \neg \Diamond f) \wedge \neg(\neg \Diamond s \wedge \Diamond f)$   
 $= \Diamond(s \vee f) \wedge (\Diamond s \rightarrow \Diamond f) \wedge (\neg \Diamond s \rightarrow \neg \Diamond f)$   
 $= \Diamond s \wedge \Diamond f$

### *A new paradigm: -lato*

While *nwukwu-to* and *nwukwu-na* may receive straightforward analyses under the alternatives-&-exhaustification theory of PSIs, the case of *nwukwu-lato* remains less clear. Below, I outline several empirical puzzles that any theory of *nwukwu-lato* must account for.

#### *Distribution*

*Nwukwu-lato* exhibits a distribution that resembles FCIs in some respects, but NPIs in others (cf. Lee et al., 2000; Choi, 2005; Lim, 2017).

- (15) *Affirmative episodic contexts*  
 a. \*Nwukwu-to hakkyo-ey w-ass-ta.  
 who-ADD school-to come-PST-DECL  
 b. \*Nwukwu-na hakkyo-ey w-ass-ta.  
 who-DISJ school-to come-PST-DECL  
 c. \*Nwukwu-lato hakkyo-ey w-ass-ta.  
 who-DISJ-ADD school-to come-PST-DECL
- (16) *Negative episodic contexts*  
 a. Nwukwu-to hakkyo-ey an w-ass-ta.  
 who-ADD school-to NEG come-PST-DECL  
 'No one came to school.'  
 b. \*Nwukwu-na hakkyo-ey an w-ass-ta.  
 who-DISJ school-to NEG come-PST-DECL  
 c. \*Nwukwu-lato hakkyo-ey an w-ass-ta.  
 who-DISJ-ADD school-to NEG come-PST-DECL

(17) *DE environment I: Conditional antecedent*

- a. \*Nwukwu-to hakkyo-ey o-myen...  
 who-ADD school-to come-COND
- b. \*Nwukwu-na hakkyo-ey o-myen...  
 who-DISJ school-to come-COND
- c. Nwukwu-lato hakkyo-ey o-myen...  
 who-DISJ-ADD school-to come-COND  
 'If anyone comes...'

(18) *DE environment II: Restrictor of every*

- a. \*Nwukwu-to o-n motun hakkyo-nun...  
 who-ADD come-REL every school-TOP
- b. \*Nwukwu-na o-n motun hakkyo-nun...  
 who-DISJ come-REL every school-TOP
- c. Nwukwu-lato o-n motun hakkyo-nun...  
 who-DISJ-ADD come-REL every school-TOP  
 'Every school to which anyone came...'

(19) *Modal contexts*

- a. %Nwukwu-to hakkyo-ey o-l swu iss-ta.  
 who-ADD school-to come-REL way exist-DECL
- b. Nwukwu-na hakkyo-ey o-l swu iss-ta.  
 who-DISJ school-to come-REL way exist-DECL
- c. Nwukwu-lato hakkyo-ey o-l swu iss-ta.  
 who-DISJ-ADD school-to come-REL way exist-DECL  
 'Anyone can come to school.'

	<i>nwukwu-to</i>	<i>nwukwu-na</i>	<i>nwukwu-lato</i>
affirmative	✗	✗	✗
negative	✓	✗	✗
DE	✗	✗	✓
modal	✗	✓	✓

1. If *nwukwu-lato* is an FCI, why is it grammatical in DE environments (except negation) where *nwukwu-na* is infelicitous?
2. If *nwukwu-lato* is an NPI, why is it grammatical in DE environments (except negation) where *nwukwu-to* is infelicitous, but ungrammatical in the immediate scope of negation where *nwukwu-to* is felicitous? (**complementary distribution** between *nwukwu-to* and *nwukwu-lato*)

### Semantics

3. Why is *nwukwu-lato* interpreted existentially in DE environments but universally (FC effect) in modal contexts?
4. When attached to regular NPs, *-lato* is known to yield a ‘concessive’ interpretation (cf. Lee et al., 2000; Kim, 2020). How is this meaning compositionally derived?

I leave question 4 for future research. I believe the empirical picture illustrated above points to a clear generalization: *-lato* is *locally* an FCI but *globally* an NPI. Fălăuș & Nicolae’s (2022) discussion of “additive free choice” is shown to bear a close connection to my analysis.

### Additive free choice: Fălăuș & Nicolae (2022)

Fălăuș & Nicolae (2022) introduce a novel class of free choice items in Romanian, which they refer to as **additive FCIs (ADD-FCIs)**.

- (20) a. ADD-FCIs (e.g. *orișicine*): *ori* ‘DISJ’ + *și* ‘ADD’ + *wh*-word  
 b. FCIs (e.g. *oricine*): *ori* ‘DISJ’ + *wh*-word

In contrast to *oricine*, *orișicine* is shown to be felicitous in an unconditional structure only when the antecedent is marked with the conditional mood.

- (21) a. {Oricine/\*orișicine} va suna azi, sunt ocupată.  
 FCI/ADD-FCI FUT.3SG call today am busy  
 ‘Whoever is going to call today, I’m busy.’  
 b. {Oricine/orișicine} ar suna azi, sunt ocupată.  
 FCI/ADD-FCI COND.3SG call today am busy  
 ‘Whoever may call today, I’m busy.’

Fălăuș & Nicolae’s (2022) analysis of ADD-FCIs builds on two assumptions: (i) the additive *și* signals exhaustification of the assertion with respect to its pre-exhaustified variant ( $\text{EXH}_{\text{ADD}}$ ), and (ii)  $\text{EXH}_{\text{ADD}}$  takes scope over  $\text{EXH}_{\text{FCI}}$ .

- (22) Și Ana a venit la petrecere.  
 ADD Ana has come to party  
 ‘Even Ana came to the party.’

- (23) a.  $p: \text{come}(\text{Ana})$   
 b.  $\text{Alt}: \{\text{EXH } \text{come}(\text{Ana})\}$   
 $= \{\text{come}(\text{Ana}) \wedge \forall x \in D : x \neq \text{Ana} \rightarrow \neg \text{come}(x)\}$   
 c.  $\llbracket \text{EXH} \rrbracket (\text{Alt})(p) = \text{come}(\text{Ana}) \wedge \neg [\text{EXH } \text{come}(\text{Ana})]$   
 $= \text{come}(\text{Ana}) \wedge \exists x \in D : x \neq \text{Ana} \wedge \text{come}(x)$

The pre-exhaustified variant of the assertion, “Ana came,” is shown in (23b), which can be roughly paraphrased as “only Ana came.” Since the assertion does not entail this alternative,  $\text{EXH}$  negates it, resulting in the additive interpretation shown in (23c).

What happens when *și* associates with a **quantifier**? Fălăuș & Nicolae (2022) argue that in those cases the pre-exhaustified alternative of the assertion takes the form ‘ $\exists x \in D P(x) \wedge \neg \exists x \in D' \setminus D P(x)$ ,’ for some superset  $D'$  of  $D$ . This explains the ‘emphatic’ component of ADD-FCIs: on top of universal quantification derived from the application of  $\text{EXH}_{\text{FCI}}$ ,  $\text{EXH}_{\text{ADD}}$  results in a **domain-widening effect**.

$$(24) \quad \exists x \in D P(x) \rightarrow \boxed{\text{EXH}_{\text{FCI}}} \rightarrow \forall x \in D P(x) \rightarrow \boxed{\text{EXH}_{\text{ADD}}} \rightarrow \forall x \in D' P(x), \text{ where } D \subset D'.$$

The ungrammaticality of *orișicine* in (21a) is attributed to its emphatic nature; it quantifies over larger domains, which renders it incompatible with the indicative mood. The intuition behind this contrast is that the use of a conditional mood expands the modal base, thereby introducing a larger set of accessible worlds.

### Analysis

I argue that Korean *-lato* can also be decomposed into the disjunction *-la(-na)* and the additive *-to*, placing it within the novel class of the FC paradigm: **additive free choice**. Its combination with a *wh*-indefinite, *nwukwu-lato*, has been repeatedly reported by Korean researchers to convey a kind of ‘emphasis’ in comparison to its pure FCI counterpart, *nwukwuna* (Lee et al., 2000; Choi, 2005).

### Locally FCI

In affirmative/negative episodic contexts, the application of  $\text{EXH}_{\text{FCI}}$  leads to ungrammaticality.

- (25) a. \*Nwukwu-lato hakkyo-ey w-ass-ta.  
       who-DISJ-ADD school-to come-PST-DECL  
       b. LF:  $\text{EXH}_{\text{ADD}} \text{EXH}_{\text{FCI}} \exists x \in D : \text{come}(x)$
- (26) a. \*Nwukwu-lato hakkyo-ey an w-ass-ta.  
       who-DISJ-ADD school-to NEG come-PST-DECL  
       b. LF:  $\text{EXH}_{\text{ADD}} \text{EXH}_{\text{FCI}} \neg \exists x \in D : \text{come}(x)$

This can be straightforwardly explained, under the assumption that *nwukwu-lato* is *locally* an FCI. The local application of  $\text{EXH}_{\text{FCI}}$  results in a contradiction, which is reflected in the ungrammaticality of *nwukwu-na* in the same contexts.<sup>3</sup>

<sup>3</sup> This, however, requires consideration of scalar alternatives (see footnote 2).

In modal contexts, on the other hand, the application of  $\text{EXH}_{\text{FCI}}$  results in an FC effect. On top of this,  $\text{EXH}_{\text{ADD}}$  yields a **domain-widening effect**.

- (27) a. Nwukwu-lato hakkyo-ey o-l swu iss-ta.  
           who-DISJ-ADD school-to come-REL way exist-DECL  
           ‘Anyone can come to school.’  
       b. LF:  $\text{EXH}_{\text{ADD}} \text{EXH}_{\text{FCI}} \Diamond \exists x \in D : \text{come}(x)$
- (28) *Application of  $\text{EXH}_{\text{FCI}}$*   
       a.  $p: \Diamond \exists x \in D : \text{come}(x)$   
       b. *Alt*:  $\{\text{EXH} \Diamond \exists x \in D' : \text{come}(x) \mid D' \subseteq D\}$   
       c.  $\llbracket \text{EXH} \rrbracket(\text{Alt})(p) = \forall x \in D : \Diamond \text{come}(x)$
- (29) *Application of  $\text{EXH}_{\text{ADD}}$*   
       a.  $p: \forall x \in D : \Diamond \text{come}(x)$   
       b. *Alt*:  $\{\text{EXH} \forall x \in D : \Diamond \text{come}(x)\}$   
            $= \{\forall x \in D : \Diamond \text{come}(x) \wedge \neg \forall x \in D' \setminus D : \Diamond \text{come}(x)\}$  for  
           some  $D \subset D'$   
       c.  $\llbracket \text{EXH} \rrbracket(\text{Alt})(p) = \forall x \in D' : \Diamond \text{come}(x)$ , where  $D \subset D'$

This explains why *nwukwu-lato* behave like FCIs in *local* contexts.

### Globally NPI

My analysis crucially hinges on the fact that strong NPIs require exhaustification within their immediate scope.

- (30) a. \*Nwukwu-to hakkyo-ey o-myen...  
           who-ADD school-to come-COND  
       b. LF 1:  $\text{EXH} [\exists x \in D : \text{come}(x)] \rightarrow q$  (consequent)  
       c. LF 2:  $\text{EXH} [\exists x \in D : \text{come}(x) \rightarrow q]$

In the case of conditionals<sup>4</sup>, there are two potential sites for exhaustification: antecedent (LF 1) or the entire conditional (LF 2). LF 1 will be ruled out for familiar reasons — for within the antecedent the NPI is in a UE context — whereas LF 2 wrongly predicts (30a) to be grammatical. Therefore, we need a constraint to rule out LF 2:

<sup>4</sup> This analysis easily extends to the case of *every*, too.

- (31) *Immediate Scope Constraint*  
       The additive *-to* requires exhaustification in its immediate scope.

*Nwukwu-lato* requires **two layers of exhaustification**,  $\text{EXH}_{\text{FCI}}$  and  $\text{EXH}_{\text{ADD}}$ . This allows a configuration in which  $\text{EXH}_{\text{FCI}}$  satisfies the immediate scope constraint while leaving room for  $\text{EXH}_{\text{ADD}}$  to operate on a higher level.



- (32) a. Nwukwu-lato hakkyo-ey o-myen...  
       who-DISJ-ADD school-to come-COND  
       b. LF:  $\text{EXH}_{\text{ADD}} [\text{EXH}_{\text{FCI}} \exists x \in D : \text{come}(x)] \rightarrow q$
- (33) a.  $p: [\exists x \in D : \text{come}(x)] \rightarrow q$   
       b. *Alt*:  $\{[\exists x \in D' : \text{come}(x)] \rightarrow q \mid D' \subseteq D\}$   
       c.  $\llbracket \text{EXH} \rrbracket(\text{Alt})(p) = p = [\exists x \in D : \text{come}(x)] \rightarrow q$

This explains why *nwukwu-lato* behave like NPIs in *global* contexts.<sup>5</sup>

### Conclusion & Implications

In this paper, I argued that *-lato* can be decomposed into the disjunction *-la(-na)* and the additive *-to*, constituting an instance of “additive free choice” (Fălăuș & Nicolae, 2022). I demonstrated how a compositional analysis of *-lato* accounts for the puzzling distribution and semantics of *nwukwu-lato*, in comparison with *nwukwu-to* and *nwukwu-na*. Before concluding this paper, I would like to highlight a few important implications of this study.

- Korean provides an ideal testing ground for a range of polarity sensitive phenomena, as it attests to the full paradigm predicted in the literature:  $\exists + \text{ADD}$ ,  $\exists + \text{DISJ}$ , and  $\exists + \text{DISJ} + \text{ADD}$ .<sup>6</sup>
- Korean ADD-FCI *nwukwu-lato* also transparently conforms to the scope configuration stipulated in Fălăuș & Nicolae (2022) —  $\text{EXH}_{\text{ADD}} \gg \text{EXH}_{\text{FCI}}$  — in contrast to the Romanian *orișicine*.
- Moreover, Fălăuș & Nicolae’s (2022) account of “additive free choice” is shown to interact with a locality condition on EXH in Korean to explain the puzzling distribution and dual nature of *nwukwu-lato*.

<sup>5</sup> However, this analysis assumes that the apparent failure of the local application of  $\text{EXH}_{\text{FCI}}$  is somehow tolerated in the presence of a higher exhaustification layer, i.e.  $\text{EXH}_{\text{ADD}}$ . I leave this issue open for future investigation.

<sup>6</sup> According to Fălăuș & Nicolae (2022), Romanian lacks the first option.

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