Floating Numeral Classifiers in Korean: A Thematic-Structure Perspective

Jong-Bok Kim jongbok@khu.ac.kr

Kyung Hee Univ., Seoul

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Three different types

There are at least three different environments where numeral classifiers (NUM-CL) in Korean can appear:

- (1) a. Genitive-Case (GC) Type: [sey myeng-uy pemin-i] iss-ta three CL-GEN criminal-NOM exist-DECL 'There are three criminals.'
 - Noun Initial (NI) Type:
 [pemin sey myeng-i] iss-ta
 criminal three CL-NOM exist-DECL
 - c. Floated Numeral Classifier or Quantifier (FQ) Type:

 [pemin-i] [sey myeng] iss-ta

 criminal-NOM three CL exist-DECL

Some main differences

- In the GC type, the NUM-CL appears with genitive case marking, preceding the head noun pemin 'criminal' whereas in the NI, the NUM-CL sequence follows the head noun.
- Meanwhile, in the FQ type, the head noun is case-marked, followed by the NUM-CL. In this case, the NUM-CL can further 'float' away from the associated NP:
 - (2) **pemin-i** cengmal **sey myeng** te iss-ta criminal-NOM really three CL more exist-DECL 'There are really three more criminals.'

Research Questions

These three types of NUM-CL constructions behave similarly with respect to basic truth conditional meaning, but are different in many syntactic and semantic respects.

- What is the syntactic structure of the three types, the non-floated and floated ones? How do we generate the FQ?
- Why does the NUM-CL float? Why are the FQ and its host NP separated from each other? What functional purpose and benefit might there be for the floating?
- Are there any cross-linguistic generalizations?

Organization of the talk

- Discuss pros and cons of the stranding (or movement)
 view and VP-modifier view (non-movement)
- Discuss the relationships between FQ and information structure
- Check the idea of the FQ as a constraint on the thematic structure

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Stranding View

The traditional wisdom: link the NI or GC type to the FQ type by movement operations. (cf. Lee 1989, Choi 2001, Ko 2007 for Korean, Miyagawa 1989, Miyagawa and Arikawa 2007, for Japanese).

- (3) a. Mia-nun **chayk-ul** ceketo **sey kwen-(ul)** ilkessta Mia-TOP book-ACC at least three CL-ACC read 'Mia read at least three books.'

Movement and Locality Conditions

- Mutual C-command Constraint (cf. Miyagawa and Arikawa 2007): The NUM-CL and its associate NP or its trace are in a locality condition.
- Predictions with the VP-internal subject hypothesis

b. Object of transitive $\text{NP} \left[\begin{array}{ccc} \text{NP} & \text{PP/Adv} & [\text{VP} & \text{NP} & \text{FNQ} & \text{V} \end{array} \right]$

c. Unergative/subject of transitive:
$$\begin{tabular}{ll} & & & \\ &$$

Advantage 1

- The locality condition & VP-internal subject hypothesis together may capture the contrast between subject and object (cf. Ko 2007 for Korean):
 - (5) a. **maykcwu-lul** haksayngtul-i **sey pyeng** beer-ACC students-NOM three CL masiessta drank

 'Students drank three bottles of beer.'

'Three students drank beer.'

 b. ?*haksayng-tul-i maykcwu-lul sey myeng students-NOM beer-ACC three CL masiessta drank

Advantage 2

- Capturing close (semantic) relationships among the three types: in terms of truth-conditional meaning, the three types show no clear differences.
- Capturing the agreement between the NUM-CL and its associate NP: they need to agree in case:
 - (6) haksayng-tul-i ecey sey myeng-i/*lul student-PL-NOM yesterday three CL-NOM/*ACC maykcwu-lul twu pyeng-ul/*i masiessta beer-ACC two CL-ACC/*NOM drank 'Three students drank two bottles of beer last night.'

Advantage 3

- Capturing some distributional possibilities: the NUM-CL cannot precede its host NP. Given that the NUM-CL is a head and forms a constituent with its host NP (reflecting the head-finalness of the language), the ungrammaticality of (7b) may follow because of an illegitimate movement of the head (cf. Ko 2007):
 - (7) a. cengmal photocwu-ka nayngcangko-ey **sey** really wine-NOM refrigerator-at three **pyeng** iss-ney
 NUM-CL exist-DECL
 'There are really three bottles of wine in the refrigerator.'
 - *sey pyeng cengmal photocwu-ka three CL-NUM really wine-NOM nayngcangko-ey iss-ney refrigerator-at exist-DECL

Problems

- There are ample cases where subject and object asymmetries disappear if proper context is given.
- There are many syntactic, semantic, and pragmatic differences among the three types. Movement approaches then are required to assume that movement accompanies semantic/pragmatic differences, contrary to its traditional wisdom.
- Case agreement and distributional possibilities can be captured without resorting to movement operations. Only NOM and ACC markers can be attached to the NUM-CL and at the same time only these case markers can also function as focus markers (cf. multiple nominative/accusative constructions).

VP modifier approach

- Unlike the standing analysis, the VP modifier analysis assumes that there is no transformational relation between the NI or GC and FQ version.
- Contrary to the stranding view, the VP-modifier view assumes that the NUM-CL (i) directly combines with a verbal predicate in syntax and (ii) semantically modifies the event structure of the predicate:
 - (8) pemin-i cengmal [sey myeng [te criminal-NOM really three CL more iss-ta]] exist-DECL 'There are really at least three more criminals.'

No Subject/object asymmetry

- A case marking or a delimiter marker on the NUM-CL makes the subject/object asymmetry disappear:
 - (9) haksayng-tul-i [maykcwu-lul [sey students-NOM beer-ACC three myeng-i/ina/man] masiessta]
 CL-NOM/even/only drank
 'Even/Only three of the students drank beer.'

No unaccusative and uneragative contrast

- There are also numerous cases where there is no clear difference in terms of grammaticality between unergative and unaccusative verbs.
 - (10) a. **ai-tul-i** kyosil-eyse khukey **sey myeng-i** child-PL-NOM classroom loudly three CL-NOM wus-taka **honassta** laugh-while scolded 'Three children were scolded while laughing loudly at the classroom.'
 - ai-tul-i ecey sey myeng-i yelsimhi child-PL-NOM yesterday threeCL-NOM diligently talliessta ran
 'Three children ran hard yesterday.'

Semantic Differences: Partitive reading

b.

- For the FQ, the preferred reading is a partitive reading.
 - (11) a. Seoul-lo tomangka-n tases myeng-uy
 Seoul-to run-away-MOD five CL-GEN
 haksayng-i tolawassta
 student-NOM returned
 'The five students who ran away for Seoul returned.'
 - Seoul-to run-away-MOD student-NOM five myeng-(i) tolawassta.

 CL-NOM returned
 'Of those who ran away for Seoul, just five returned.'

Seoul-lo tomangka-n haksayng-i tases

Semantic difference: Specific vs. non-specific reading

- In the NI type, the two criminals can be either specific or nonspecific whereas in the FC, they can be only nonspecific.
 - (12) a. pemin **twu myeng-i** ecey tomangkassta criminal two CL-NOM yesterday ran.away 'Two (specific or nonspecific) criminals ran away yesterday.'
 - b. pemin-i ecey **twu myeng-i** tomangkassta criminal-NOM yesterday two CL-NOM ran.away 'Of the criminals, two (nonspecific) ran away.'

Semantic difference: Narrow scope

(13)

a.

 The FQ type allows only a narrow scope reading when interacting with another scope operator such as negation:

NI Type: $\exists 3 > NOT \text{ or } NOT > \exists 3$

namhaksayng sey myeng-i ecey cenyek male.student three CL-NOM last night tolao-ci anh-ass-ta return-COMP not-PAST-DECL 'Three male students didn't come back last night' or or

those three students didn't come back last night.'

b. FQ Type: *∃3 > NOT or NOT > ∃3
 namhaksayng-i sey myeng ecey cenyek male.student-NOM three CL-NOM last night tolao-ci anh-ass-ta return-COMP not-PAST-DECL

 'Three male students didn't return last night',

(even though more had come back.)'

Semantic difference: Distributive vs. collective reading

- The NI allows both a distributive or collective reading whereas the FQ allows only a distributive reading (cf. Nakanishi 2008 for Japanese, Lee 1989 for Korean):
 - (14) a. [ceyca-tul twu myeng]-i ecey pupil-PL two CL-NOM yesterday kyelhonha-yess-ta marry-PAST-DECL 'Two students married yesterday.' (distributive or collective)
 - b. [ceyca-tul-i] ecey [twu myeng-i]
 pupil-PL-NOM yesterday two CL-NOM
 kyelhonha-yess-ta
 marry-PAST-DECL
 'Two pupils married yesterday.' (distributive only)

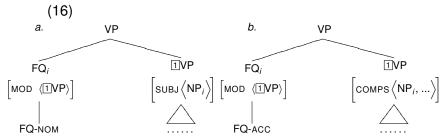
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How to link an FQ with its host NP?

- When the floating quantifier is case-marked, it is linked to the subject or object with the same case marking (see Choi 2001, O'Grady 1982, Gerdts 1987).
 - (15) a. haksayng-tul-i **sey myeng-i** sakwa-lul student-PL-NOM three CL-NOM apple-ACC cengmal mek-ess-ta really eat-PAST-DECL 'As for the students, three really ate apples.'
 - haksayng-tul-i sakwa-lul sey myeng-i cengmal mek-ess-ta
 - haksayng-tul-i sakwa-lul cengmal sey myeng-i mek-ess-ta

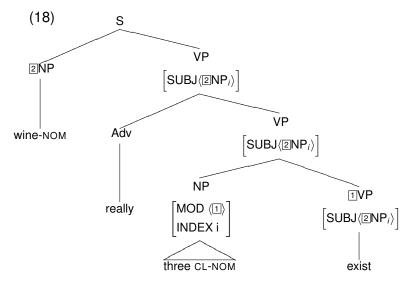
Linking the FQ and its host NP without movement

 Constraints on the FQ: the FQ is an adverbial nominal anaphorically linked to the host through the VAL feature on the modified VP (cf. Kim and Yang 2007).



Linking the FQ and its host NP

- Capturing the following contrast in a straightforward manner: the FQ cannot precede its host NP
 - (17) a. photocwu-ka cengmal [sey pyeng-i wine-NOM really three CL-NOM [nayngcangko-ey iss-ney]] refrigerator-at exist-DECL 'There are really three bottles of wine in the refrigerator.'
 - b. haksayng-tul-i sakwa-lul [sey kay-lul student-PL-NOM apple-ACC three CL-ACC [cengmal mek-ess-ta]]
 really eat-PAST-DECL
 'As for the apples, three really ate three.'

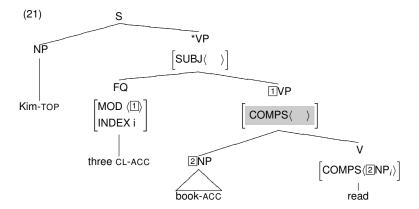


FQ: Different from Canonical Adverbials

- The FQ is taken to be a VP-modifier. However, the FQ has different distributional possibilities from temporal adverbials: the FQ cannot precede its host NP.
 - (19) Frequency Adverbial:
 - Kim-un chayk-ul sey pen-(ul) ilkessta.
 Kim-TOP book-ACC three times-ACC read
 'Kim read the book three times.'
 - b. Kim-un **sey pen-ul** chayk-ul ilkessta
 - c. **sey pen-ul** chayk-ul Kim-un ilkessta.
 - (20) FQ:
 - a. Kim-un chayk-ul sey kwen-(ul) ilkessta.
 Kim-TOP book-ACC three CL-NUM-ACC read
 'Kim read three books.'
 - b. *Kim-un **sey kwen-ul** chayk-ul ilkessta
 - c. *sey kwen-ul chayk-ul Kim-un ilkessta.



FQ: Different from Canonical Adverbials 2



Other Advantage: No long distance dependency

- Unlike a canonical adverbial nominal, the FQ cannot participate in a long-distance dependency relations: topicalization, relativization, and cleft.
 - (22) a. **sey pen-un** Kim-i chayk-ul ilkessta three time-TOP Kim-NOM book-ACC read 'Kim read the book at least three times.'
 - b. *sey kwen-un Kim-i chayk-ul ilkessta three CL-TOP Kim-NOM book-ACC read
 - (23) a. Kim-i __ chayk-ul ilk-un sey pen Kim-NOM book-ACC read-MOD three times 'the three times that Kim read the book'
 - b. *Kim-i chayk-ul __ilk-un sey kwen Kim-NOM book-ACC read-MOD three CL

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Preferred Focus Reading

- The unmarked answer to a wh-question asking the quantity of something is the FQ construction, not GC or NI. The FQ introduces the quantity of an entity as new information:
 - (24) A: Mimi-nun kongchayk-ul **myech kwen** sa-ss-ni?
 Mimi-TOP notebook-ACC how CL buy-PAST-Q
 'How many notebooks did Mimi buy?
 - B: kongchayk-un **sey kwen** sa-ss-e notebook-TOP three CL buy-PAST-DECL 'As for notebooks, she bought three.'
 - B: **#sey kwen-uy** kongchayk-ul sa-ss-e (GC) three CL-GEN notebook-ACC buy-PAST-DECL
 - B: #kongchayk **sey kwen-ul** sa-ss-e (NI) notebook three CL-ACC buy-PAST-DECL

FQ: Natural as introducing new information

The FQ is introduced in the context where the information about the number which it carries is new. In the following, the information (the number is two) that the floated NUM-CL gives us is new; but the existence of tigers is given.

- (25) A: i tongmwulwen-ey saca-wa holangi-ka **yele mal**i the zoo-at lion-and tiger-NOM several CL iesse existed 'In the zoo, there are several lions and tigers.'
 - B: kulentey holangi-ka ecey **twu mali** tomangkasse but tiger-NOM ecey two CL ran.away 'But two of the tigers ran away yesterday.'

FQ: Not preferred as old information

The weirdness of B' below shows that unlike the NI type, the FQ participates in introducing novel information to the context, and does not relate to information already established.

- (26) A: han san sok maul-eye holangi twu one mountain inner village-at tiger two mali-ka/holangi-ka twu mali salasse.

 CL-NOM/tiger-NOM two CL lived 'In a deep mountain, two tigers lived.'
 - B: i **holangi twu mali-ka** sanayng-ul nakasse this tiger two CL-NOM hunting went.out 'These two tigers went out for hunting.'
 - B': #i holangi-ka twu mali sanayng-ul nakasse this-PL tiger-NOM two CL hunting went.out 'Two tigers went out for hunting.'

Implicature: FQ is not natural

- The FQ is excluded in contexts where the number of referents is predicted or implied.
 - (27) ??/*Mia-nun pwumonim-ul Seoul-eyse
 Mia-TOP parents-ACC Seoul-at
 twu pwun mosi-ko isse
 two CL take.care exist
 'Mia attends to her two parents in Seoul.'
 - (28) ??/*Mia-nun sonkalak-ul ecey **yel kay** tachiessta Mia-TOP finger-ACC yesterday ten CL hurt 'Mia hurt her ten fingers.'
- pwumonim 'parents' invariably designates two people, father and mother, which makes it hard to introduce the FQ as new information. The scope marker all on the NUM-CL makes the examples fine.

Exhaustive vs. partitive reading

- GC/NI induces an exhaustive or universal reading while FQ gives a partitive or existential reading. Given that topical quantified expressions will have a wider scope reading than focus NUM-CL (Van Valin and LaPolla 1997: 221), the FQ can then be taken to be focus:
 - (29) a. aph-ey ka-ten **twu tay-uy cha-ka**front-at go-MOD two CL-GEN car-NOM
 sako-ka na-ass-ta(GE)
 accident-NOM occured
 'Two cars in front of us were involved in an accident.'
 - b. aph-ey ka-ten **cha twu tay-ka** sako-ka na-ass-ta (NI)
 - c. aph-ey ka-ten **cha-ka twu tay** sako-ka na-ass-ta (FQ)

No FQ in the embedded clause

- Focus projection is in general confined within an embedded clause (but not in a sentential complement clause).
- It is less acceptable to have an FQ in an complex embedded clause:
 - (30) a. sensayngnim-un **twu myeng-uy** haksayng-i teacher-TOP two CL-GEN student-NOM ponay-n phyenci-lul ilk-ess-ta send-MOD letter-ACC read 'The teacher read the letter that two students sent.'
 - b. sensayngnim-un **haksayng-tul twu myeng-i** ponay-n phyenci-lul ilk-ess-ta
 - c. #sensayngnim-un haksayng-tul-i twu myeng-i ponay-n phyenci-lul ilk-ess-ta

Two types of the host NP

- When the host NP is definite, a partitive reading is the default reading.
 - (31) ecey po-n haksayng-tul-ul **twu myeng** yesterday po-MOD student-PL-ACC two CL manna-ss-ta met
 'I met two of the students that I saw yesterday.'
- When the host NP is a bare noun, no partitive reading is obtained. The bare noun represents a 'type' and the FQ tells us the number of its instantiations.
 - (32) kongchayk-ul **twu kwen** sa-ass-ta notebook-ACC two CL bought 'I bought two notebooks.'

Preferred Definiteness

- The bare object NP preceding the NUM-CL is either generic or interpreted as definite while the NUM-CL introduces new information about the quantity.
- Non-adjacent examples (e.g., where the object intervenes between the FQ and its host subject) are acceptable when the intervening expression carries definite or given (presupposed) information.
- The distribution of FQs is controlled not just by syntax or by the matrix predicate, but also by other factors such as information-structure, intervening expressions, and others.
- There seems to be more than just 'focus'.

Puzzling Contrast 1: Intervention effect

The FQ induces an intervention effect, like a *wh*-expression does. XP/FQ-*pakkey* means the XP or quantity is below the speaker's expectation.

- (33) a. *Mimi-pakkey mwues-ul mek-ci anh-ass-ni?

 Mimi-only what-ACC eat-CONN not-PAST-DECL

 '(Int.) What did only Mimi eat?
 - b. **mwues-ul** Mimi-pakkey mek-ci <u>anh-ass-ni</u>?
- (34) a. haksayngtul-i ku chayk-ul sey myeng-pakkey student-NOM the book-ACC three CL-only ilk-ci anh-ass-ta read-CONN not-PAST-DECL 'Only three students read the book.'
 - b. *haksayngtul-i <u>ku chayk-pakkey</u> **sey myeng** ilk-ci <u>anh-ass-ta</u>
 - c. *haksayngtul-i sey myeng ku chayk-pakkey ilk-ci anh-ass-ta



Puzzling Contrast 2: Manner Adverbs

Unlike a locative adverb, a manner adverb may not precede an FQ:

- (35) a. ai-tul-i kyosil-eyse sey myeng wusessta child-PL-NOM classroom-at three CL laughed 'Three children laughed at the classroom.'
 - b. ??/*ai-tul-i khu-key sey myeng wusessta child-PL-NOM loudly three CL laughed 'Three children laughed loudly.'
 - c. ai-tul-i sey myeng-i khu-key wusessta child-PL-NOM three CL-NOM loudly laughed 'Three children laughed loudly.'

Puzzling contrast 3: subject/object asymmetry disappears

The asymmetry between subject and object disappears when the object is definite (or generic) and the NUM-CL is case-marked or bears a delimiter. Even both direct and indirect object can intervene, which violates the supposed locality condition (cf. Ko 2007):

- (36) a. haksayng-tul-i ku kes-ul sey student-PL-NOM the thing-ACC three myeng-i/man/kkaci ilkessta CL-NOM/only/even read '(Int.) (Even/Only) Three students read the thing.'
 - b. ai-tul-i phyenci-lul kwunintul-eykey yel children-PL-NOM letter soliders-DAT ten myeng-ina ponayssta
 CL-even sent
 'Even ten children sent letters to the soldiers.'



Puzzling contrast 4: Unergative/unaccusative asymmetry

Canonically unergative structures disfavor FQ, but this can also be remedied by context.

- (37) a. ?*haksayng-tul-i caki-uy ton-ulo twu myeng student-PL-NOM self-GEN money-with two CL cenhwahayessta phoned 'Two students made a phone call with their own money.'
 - b. haksayng-tul-i caki ton-ulo cikcep Seoul-ey student-PL-NOM self money-with without.help Seoul-at twu myeng cenhwahayessta two CL phoned 'Two students made a phone call to Seoul with their own money without any help.'

Constraint on the Thematic Structure

- Theme and Rheme:
 - (38) a. The theme is to be thought of as that part of an utterance which connects it to the rest of the discourse.
 - The rheme is that part of an utterance that advances the discussion by contributing novel information.
- FQ and Thematic Structure
 - (39) Thematic Constraints for the FQ in Korean:
 A floated NUM-CL in Korean introduces new information and, as a default, sets off rheme in the thematic structure.

Subject/object asymmetry within the TC

The bare NP canonically represents new information, and thus may start the rheme. The focus marker on the NUM-CL clearly signals starting the rheme:

- (40) a. ??haksayngtul-i || chayk-ul sey myeng sassta student-NOM || book-ACC three CL bought
 - b. haksyangtul-i ku chayk-ul || sey myeng sassta student-NOM the book-ACC three CL bought
 - c. haksayngtul-i ku chayk-ul || sey myeng-i/ina student-NOM the book-ACC three CL-NOM/even sassta bought 'Even three students bought the book.'

Intervention effect within the TC

A focalized element cannot intervene between the FQ and its host: the NUM-CL starts off the rheme:

- (41) a. ??/*haksayngtul-i || sakwa-pakkey sey myeng mek-ci students-NOM apple-only three CL eat-CONN anhassta not 'Three students ate only apples.'
 - b. haksayngtul-i $\mid\mid$ sey myeng-pakkey sakwa-lul mek-ci anhassta
- (42) a. ??/*haksayngtul-i || kyosil-eyse-kkaci sey myeng nolassta students-NOM classroom-at-even three CL played 'Three students even played at the classroom.'
 - b. haksayngtul-i || sey myeng-kkaci kyosil-eyse student-NOM three CL-even classroom-at nolassta played

Intervention effect within the TC

- Unlike a locative adverb, a manner adverb represents narrow focus. No topicalization of a manner adverb is possible (cf. Kuno and Takami 2002):
 - (43) a. kyosil-eyse-nun ai-tul-i wusessta classroom-at-TOP children-NOM laughed 'As for the inside of the classroom, children laughed.'
 - b. *khu-key-nun ai-tul-i wusessta loudly-TOP children-NOM laughed
- Since a manner adverb is narrow-focused, it cannot precede the focused FQ:
 - (44) a. haksayngtul-i || sey myeng khu-key wusessta student-NOM three CL loudly laughed 'Three students laughed loudly.'
 - b. haksayngtul-i $^*||$ khu-key sey myeng wusessta student-NOM loudly three $_{\rm CL}$ laughed



Unaccusative and unergative within the TC

- It is also not difficult to construct acceptable unergative examples with the same configuration but with an enriched scene setting (topic) expression
 - (45) a. haksayng-tul-i himtulkey caki ton-ulo || twu student-PL-NOM hard self money-with two myeng mikwuk-ey kassta
 CL America-to went
 'Two students went to America with difficulties with their own money.'
 - b. haksayng-tul-i pwumonim towum epsi caki student-PL-NOM parents help without self ton-ulo || twu myeng mikwuk-ey kassta money-with two CL America-to went 'Two students went to America for themselves with their own money and without their parents' help.

Overriding the default

- Presentational focus: the FQ can be used in an event-reporting sentence where the entire sentence is focused. The focus can be projected, but the FQ must be within the focus domain.
 - (46) A: What happened?
 - B: || haksayng-tul-i sey myeng-i o-ass-ta student-PL-NOM three CL came 'Three students came.'

Theme/rheme vs. intonation pattern

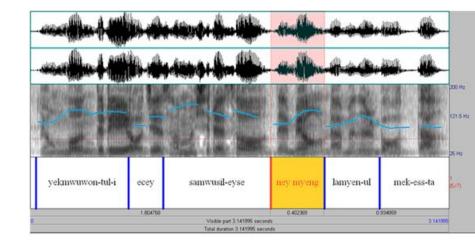
 The intonation also signals the partition of thematic structure into theme and rheme. Steedman (2000) shows that the tunes L+H* LH% and H*L are associated with the 'theme' and 'rheme', respectively:

```
(47) Q:
          I know who proved soundness. But who proved
          COMPLETENESS?
           (MARCEL) (proved
                                 COMPLETENESS).
     A:
                 H* L
                                    L+H*
                                              LH%
          I know which result Marcel PREDICTED. But
(48)
          which result did Marcel PROVE?
           (Marcel PROVED) (COMPLETENESS).
     A:
                      L+H*LH%
                                   H*
                                            LL%
```

Experiments

- We also did a simple experiment with main FQ data with 10 native speakers of Korean.
- The result also shows that just before the FQ, in general we have a high pitch rising, signaling the beginning of the rheme (focus) phrase. The NUM-CL functions as the prominent word, indicating the beginning of an accentual phrase.
 - yekmwuwontul-i ecey samwusil-eyse || station.clerk-NOM yesterday office-at ney myeng lamyeon-ul mekessta four CL ramyeon-ACC ate 'Four station clerks ate raymon at the office yesterday.'

Experiments: A sample



Conclusion

- Korean numeral classifiers displays flexible distributional possibilities including the FQ type.
- Syntax (neither stranding nor VP-modifier) alone cannot account for the distributional possibilities of FQ.
- In particular, we have shown that the distributional possibilities of FQs as default observe the Thematic Constraint that closely interacts with information structure.

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