

An experimental investigation of intervention effects with *wh*-in-situ in Korean

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1. Introduction

This paper seeks to bring novel experimental data from adult and child, as well as Heritage and L2, Korean, to bear on the well-known and thorny issue of intervention effects with *wh*-in-situ. Although the topic of intervention effects has been extensively studied in the theoretical literature on *wh*-in-situ – be it in *wh*-in-situ languages, such as Korean, typically (Beck 1996; Jun and Oh 1996; Beck and Kim 1997; Lee and Tomioka 2001; Kim 2002; Ko 2005; Beck 2006; Tomioka 2007 among many others), or in non *wh*-in-situ languages such as English where *wh*-in-situ is licensed in multiple questions, there is scarcely any experimental work on intervention effects across languages, whether they are *wh*-in-situ languages or not. This research is thus to our knowledge, one of the few experimental investigations into intervention effects^{1 2}. Specifically, the novel contribution of our study lies foremost in the experimental design of the task: we designed an original experimental task which uses elicited production in a controlled discourse context to assess/verify the interpretation of in-situ *wh*-phrases in negative questions with an (NPI) intervener in Korean.

The phenomena of intervention effects can be characterized as follows: when a *wh*-phrase in-situ falls in the surface scope of a certain class of elements, known as interveners (e.g. quantifiers, focus particles such as *only*, or Negative Polarity Items (NPIs)), the intended *wh*-question is ill-formed (Hoji 1985; Beck 1996; Beck and Kim 1997; Tanaka 1997; Hagstrom 1998 among many others). This generalization holds for *wh*-in-situ languages such as Japanese and Korean, as well as for non *wh*-in-

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¹ Yoon (2011) explored IEs with a series of experiments carried out with adult native speakers of Korean (n=13). Yoon's goal was to experimentally establish that there exists an asymmetry between *wh*-phrases with respect to IEs in Korean: IEs only hold for argument *wh*-phrases that are base-generated in a structurally low position (i.e. *what*, *who*, *where*) as shown in (1a), but not for adjunct *wh*-phrases generated in a high position (i.e. *how*, *when*, *why*) as shown in (1b).

- (1) a. Amwuto **nwukwu-lul** manna-ci anh-ass-ni?
anyone who-ACC meet-CI NEG-PST-Q
'Who did no one meet?'
b. Amwuto **way** swukcey-lul ceychwulha-ci anh-ass-ni?
anyone why homework-ACC submit-CI NEG-PST-Q
'Why did nobody submit their homework?'

(Yoon 2011: 947)

² Another indirectly relevant study is Marsden (2008) investigating the interpretation of questions with a scrambled *wh*-phrase object and a universal quantifier subject (*nwukwuna* 'everyone') in Korean. Like Japanese, Korean *wh*-questions with a universal quantifier subject in the OSV order such as the (2) below allow only an individual interpretation, 'What did each person buy in common?', lacking a pair-list interpretation, 'For each person, what did that person buy?' (Ahn 1990, Beck and Kim 1997, Hoji 1985, Yoshida 1995, Saito 1999), while English allows both of them. Marsden experimentally examined whether Korean native speakers show target-like rejection of pair-list answers with Korean Wh-object/QP-subject questions ((2)), as the baseline for her study on L2 acquisition.

- (2) Mwues-ul nwukwuna sa-ss-ni?
what-ACC everyone buy-PST-Q
'What did everyone buy?'

(Marsden 2008: 192)

situ languages, where *wh*-in-situ is restricted to multiple questions. A representative example from Japanese is given in (1). The unacceptability of the *wh*-question reading in (1a) is referred to as an “Intervention Effect (henceforth IE)”³: the idea being that negative subject *daremo* ‘anyone’ acts as an intervener on the path of the *wh*-phrase from its in-situ position to its scope position at Logical Form (LF). The IE observed in (1a) can be avoided by scrambling the *wh*-phrase above the intervener, as shown in (1b).

(1) a. ?***Daremo** *nani-o* *yom-ana-katta-no?*
 anyone what-ACC³ read-NEG-PST-Q
 Intended: ‘What did no one read?’

b. ✓*Nani-o_i* **daremo** *t_i* *yom-ana-katta-no?*
 what-ACC anyone read-NEG-PST-Q
 ‘What did no one read?’ (Tomioka 2007: 6)

Grammatical judgments for *wh*-questions with putative IEs are notoriously known to be subtle and, in particular, graded (that is, reported in the literature to yield violations ranging from ‘*’ to ‘?*’), as well as showing widespread variability among native speakers (Lee and Tomioka 2001; Ishihara 2002; Kitagawa and Fodor 2003; Kitagawa and Tomioka 2003; Tomioka 2007 among others).

“[G]rammatical judgments on these intervention effects are notoriously subtle, and the variability among native speakers vast. [...] Those of us who rely on native speakers’ intuition for analyzing empirical data know how difficult it can be to obtain uniform judgment, and the existing analyses take the steps that are not uncommon when we encounter messy judgments: Make certain decisions (what is grammatical and what is not) based on one’s own judgment, and proceed to theorization. **Disagreement in grammatical judgments is often noted, but it itself is not a target of explanation.** While this type of strategy may have proved successful in certain cases, the state of affairs in intervention effects is so complex that I do not think that we would benefit from such an approach.”
 (Tomioka 2007, 1572-1573)

This paper aims to provide novel empirical evidence to bear further on these issues from *wh*-in-situ in Korean. Specifically, this paper takes up the question of whether different populations of speakers of Korean are sensitive to IEs for *wh*-in-situ argument questions triggered by a NPI (i.e. *amwuto* ‘anyone’)

³ The following abbreviations are used for the data in this paper: ACC = accusative case; CI = ‘ci’-marker (complementizer); LOC = locative case; NEG = negation; NOM = nominative case; PST = past tense; Q = question marker

and seeks to answer this question experimentally. As we shall see directly below, Korean is a language all the more interesting to experimentally probe in that questions with an (NPI) intervener in the subject position and an in-situ *wh*-phrase in the object position (parallel to (1a) in Japanese), are not ungrammatical altogether. Rather, they are ungrammatical/unacceptable solely on a *wh*-question reading, but grammatical/acceptable on a polar question reading. To experimentally probe IEs in Korean, we designed a novel task which was carried out with four different groups of Korean speakers: (i) native adults; (ii) native children; (iii) heritage speakers; (iv) second language learners. Our goal was fourfold. (i) We sought to experimentally probe whether *adult Korean monolinguals* have the expected judgements reflecting IE constraints – that is, whether these monolinguals interpret differently an in-situ *wh*-phrase falling in the scope of an intervener and a *wh*-phrase scrambled over the intervener, since the former is expected to yield a polar question interpretation, while the latter is expected to yield a *wh*-question interpretation. (ii) Given that knowledge of such subtle contrasts (ungrammaticality vs. grammaticality of *wh*-question vs. polar question interpretations depending on the relative scope of the *wh*-word and the NPI) is undetermined by the data of experience, we then sought to find out whether *child monolinguals* have the adult pattern of distribution for IEs, appropriately discriminating the interpretations of in-situ *wh*-phrases from scrambled *wh*-phrases in negative questions with an intervener. (iii-iv) We further sought to compare our findings for monolingual adult vs. child speakers of Korean with two other types of populations: *second language (L2) learners* of Korean (with French as an L1), and adolescent *heritage speakers* of Korean residing in France (Valdés 2000; Polinsky and Kagan 2007; Montrul 2008, Benmamoun, Montrul and Polinsky 2010 among others). In line with Polinsky and Kagan (2007), heritage language speakers as unbalanced bilinguals “who grew up exposed to a minority language at home, who speak or merely understand it to some degree, but who feel more comfortable with the dominant language of the society in which they live”. Taking the adult pattern of behavior as a baseline, we investigate to what extent knowledge of the notoriously subtle judgments for IEs is acquired by 5 to 7 year children vs. L2 learners of Korean vs. heritage speakers of Korean. In particular, to what extent do heritage speakers of Korean pattern more like L1 (adult vs. child) speakers of Korean or like L2 speakers? And how do our overall experimental findings bear on the theoretical understanding of IEs?

This paper is organized as follows. Section 2 provides an overview of the basic syntactic properties of IEs in negative *wh*-in-situ questions in Korean. Section 3 presents our experimental investigation of IEs for *wh*-in-situ argument questions triggered by a NPI intervener in adult, child, heritage and L2 Korean. Section 4 discusses our experimental findings with respect to L1 Korean and provides theoretical implications accounting for the results obtained from native (adult and child) speakers of Korean. Section 4 also discusses heritage Korean speakers’ pattern of behavior in comparison with L1 vs. L2 speakers. Finally, Section 5 concludes the paper.

2. Background

2.1. Intervention effects with *wh*-in-situ in Korean

Korean is a *wh*-in-situ language where *wh*-phrases remain in their base-generated position, but can optionally undergo scrambling, be it in a positive or a negative question. Examples of negative *wh*-questions with an in-situ *wh*-phrase vs. a scrambled *wh*-phrase are given in (2) below.

- (2) a. ✓ Yuna-ka **mwues-ul** mek-ci anh-ass-ni ?⁴
Yuna-NOM what-ACC eat-CI NEG-PST-Q
'What did Yuna not eat?' SO_{wh}V (in-situ)
- b. ✓ **Mwues-ul**_i Yuna-ka *t*_i mek-ci anh-ass-ni?
What-ACC Yuna-NOM eat-CI NEG-PST-Q
'What did Yuna not eat?' O_{wh}SV(scrambled)

The Korean sentences in (2a) and (2b) are both grammatical negative *wh*-questions yielding the same reading – that is, 'What did Yuna not eat?'. This shows that scrambling does not trigger any difference in grammaticality in questions with propositional negation.

Importantly, however, when the subject *Yuna* in (2a) is replaced by a scope-bearing element (e.g. the NPI *amwuto* 'anyone'), then the resulting sentence is degraded, becomes unacceptable (on the intended reading), – thus exhibiting an IE, as illustrated in (3a).

- (3) a. ?*Amwuto **mwues-ul** mek-ci anh-ass-ni ?
anyone what-ACC eat-CI NEG-PST-Q
'What did no one eat?' S_{NPI}O_{wh}V (in-situ)
- b. ✓ **Mwues-ul** amwuto mek-ci anh-ass-ni?
what-ACC anyone eat-CI NEG-PST-Q
'What did no one eat?' O_{wh}S_{NPI}V (scrambled)

The sentence (3a) where the NPI subject *amwuto* 'anyone', c-commands the in-situ *wh*-phrase *mwues-ul* 'what-ACC' in object position is unacceptable on a *wh*-question reading. In this case, scrambling of the object *wh*-phrase above the subject NPI becomes obligatory, as shown in (3b). The effect observed in (3a) can be generalized as follows: an in-situ *wh*-phrase cannot be c-commanded by a negative indefinite in Korean (cf. (4a))⁵. On the classical and earliest account of IEs, put forth by Beck (1996)

⁴ The Yale Romanization system has been used for the transcription of the Korean data in this paper.

⁵ As mentioned earlier, sentences containing quantifiers or focus particles such as *only* also exhibit the same IE.

and Beck and Kim (1997), IEs reflect a constraint of the LF-movement of an in-situ *wh*-phrase, stated as the filter in (4b) for simplicity. Assuming that at the level of interpretation (LF), the in-situ *wh*-phrase in (3a) undergoes covert movement to its scope position (i.e. SpecCP), the resulting LF in (5a) will be filtered by the constraint in (4b) and (3a)/(5a) is ruled out as a *wh*-question. IEs can be avoided, however, if the in-situ *wh*-phrase scrambles above the NPI intervener, as illustrated in (3b)/(5b), where the object *wh*-phrase has scrambled across the NPI subject, adjoining to VP. Since subsequent LF-movement from this position no longer crosses the NPI intervener, the constraint on LF-movement is satisfied and (3b) is grammatical on a *wh*-question reading

(4) a. “S-structure” generalization (schema from Beck and Kim 1997):

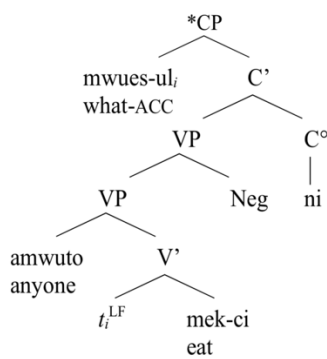
*[... [NPI [..... *wh*-phrase]] Q⁶]

b. Constraint on LF-movement of an in-situ *wh*-phrase

*[... WH_i ... [NPI ... [... t_i^{LF} ...]]]

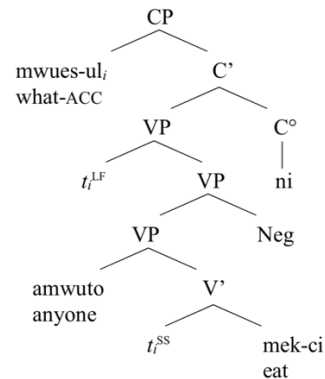
(5) a. LF for (3a):

*‘*What did no one eat?*’



b. LF for (3b):

‘*What did no one eat?*’



Crucially, Korean questions with an (NPI) intervener in subject position and an in-situ *wh*-phrase in object position, such as (3a), are not ungrammatical altogether. Rather, they are ungrammatical/unacceptable on a *wh*-question reading, but grammatical/acceptable on a polar question reading (cf. Beck and Kim 1997; Hwang 2008; Song 2008). Thus, (3a), repeated in (6) below can be salvaged if it is interpreted as a polar, *yes/no*-question (‘Did no one eat anything?’) where the in-situ *wh*-phrase is interpreted as an existential.

⁶ Since Korean is a head-final language, the Q-morpheme base-generated in C^o appears at the right edge of the clause.

- (6) ✓ Amwuto **mwues-ul** mek-ci anh-ass-ni ?
 anyone something-ACC eat-CI NEG-PST-Q
 ‘Did no one eat anything?’ S_{NPI}O_{wh}V (in-situ)

This contrast reflects a well-known property of *wh*-words in Korean: they are ambiguous between *wh*-interrogatives and indefinites/existential⁷, as the example (7) shows.

- (7) a. **Nwukwu-ka** o-ass-ni?
 WH-NOM come-PST-Q
 ‘Who came?’ wh-interrogative
- b. **Nwukwu-ka** o-ass-ta.
 WH-NOM come-PST-DEC
 ‘Someone came.’ wh-existential

In (7a), the *wh*-word *nwukwu* is interpreted as a *wh*-interrogative (*who*), thus yielding the interpretation of *wh*-question (‘Who came?’), whereas in (7b), it is interpreted as an existential (*someone*) yielding an existential statement (‘Someone came’). (cf. Nishigauchi 1990; Aoun and Li 1993; Cheng 1997).

To summarize so far, in Korean, canonical questions with a non-intervener subject and a *wh*-phrase in the object position, be the latter in-situ ((2a)) or scrambled ((2b)), yield a *wh*-question reading. In questions with an (NPI) intervener subject, the in-situ *wh*-phrase in the object position cannot be interpreted as a *wh*-interrogative due to the IE triggered by the (NPI) intervener. It yields a polar question reading where the *wh*-phrase is interpreted as an existential. Scrambling the *wh*-phrase over the (NPI) intervener eliminates the IE and yields a *wh*-question reading.

3. Experiment: Interpretation verification task

Despite the numerous theoretical studies on IEs with *wh*-in-situ in Korean developed in the literature (Beck 1996; Jun and Oh 1996; Beck and Kim 1997; Lee and Tomioka 2001; Kim 2002; Ko 2005; Beck 2006; Tomioka 2007 among many others), few studies have tackled the question of IEs experimentally. The novel contribution of our study lies foremost in the experimental design of the task as we shall see in the next section.

⁷ Note that this is also the case in Chinese and Japanese, but for independent (morphosyntactic) reasons. *Wh*-words in Chinese can be interpreted as interrogative or existential/indefinite (also as universal quantifiers) according to licensing contexts. For instance, in *yes/no*-question context and *if*-conditional context, *wh*-words are interpreted only as existential, while in negative context, the *wh*-words can be interpreted either as interrogative or as existential/indefinite. As for Japanese, bare *wh*-words are interpreted only as interrogative (e.g. *nani* ‘what’). If a *wh*-word is suffixed with the morpheme *-ka*, then it is interpreted as indefinite (e.g. *nani-ka* ‘something’) (see Kuroda 1965, Huang 1982; Nishigauchi 1990, Cheng 1997 for the details).

3.1. Research questions

We designed a novel experimental task to investigate sensitivity to IEs with *wh*-in-situ across four different groups of speakers of Korean: (i) native adults; (ii) native children; (iii) heritage speakers; (iv) L2 learners.

The aim of the present study was as follows: First, we sought to experimentally probe whether adult native speakers of Korean have clear-cut judgements reflecting IE constraints – that is, whether these speakers interpret differently an in-situ *wh*-phrase falling in the scope of an intervener and a *wh*-phrase scrambled over the intervener. Recall that the former is expected to yield a polar question interpretation, while the latter is expected to yield a *wh*-question interpretation. This will provide us the baseline for investigating IEs in child language vs. heritage Korean (HK) vs. L2 Korean. The overarching question was to determine to what extent heritage knowledge at the syntax-semantics interface is (un)like both L1 and L2 knowledge. Specifically, we sought to find out whether HK speakers master the interpretive restrictions known as IEs on negative *wh*-questions with a NPI intervener, to the same degree as native speakers of Korean. To the best of our knowledge, the present study is thus the first experimental study of IEs with *wh*-in-situ in Korean in the field of first language acquisition and heritage language acquisition. Since the experiments include adult native speakers of Korean, this study also contributes experimental data to bear on the theoretical account of IEs for *wh*-in-situ argument questions triggered by a NPI intervener in Korean.

The experimental research questions can be specified as follows.

- (8) In questions with an (NPI) intervener subject and a *wh*-phrase (WH) object,
- a. Adult and child L1 Korean:
 - Do native speakers of Korean straightforwardly interpret the scrambled WH object (i.e. $O_{wh}S_{NPI}V$) as a *wh*-interrogative, yielding a *wh*-question reading?
 - Do they straightforwardly interpret the in-situ WH object (i.e. $S_{NPI}O_{wh}V$) as an existential, yielding a polar question reading?
 - b. Heritage and L2 Korean:
 - Do Heritage Korean (HK) speakers and L2 French learners of Korean have native-speaker pattern of distribution for IEs, distinguishing the scrambled WH (i.e. $O_{wh}S_{NPI}V$) from the in-situ WH (i.e. $S_{NPI}O_{wh}V$)?*
 - c. *How do these experimental findings bear on our theoretical understanding of IEs?*

3.2. Participants

A total of 120 participants took part in this study: 27 adult Korean native speakers aged from 24 to 36 as the control group, 25 child Korean native speakers aged from 5;1 to 7;11 (Mean Age (MA)= 6;7), 10

heritage Korean (HK) speakers⁸ aged from 13 to 16 (MA=14;2, MA of onset of French= 0;5 (ranging from 0 to 3)) and 35 French-speaking learners of Korean aged from 17 to 29 (MA= 21;3). Moreover, 23 adult Korean native speakers participated in a follow-up experiment. None of the participants were linguists or students of linguistics. The experiments with native speakers (adults and children) took place in the Seoul area, while those with HK speakers and L2 learners took place in Paris. The 10 HK speakers residing in Paris were all high school students and they were born in France or had arrived in France before the age of 3. All the L2 learners of Korean were undergraduate students at the INALCO⁹ in Paris. All participants except the monolingual children completed a Korean proficiency test examining how they master various aspects of Korean grammar. The L2 learners scoring 50 or above out of 100 were classified as High L2 (proficiency) speakers; those scoring 49 or below as low L2 (proficiency) speakers. Mean scores in the Korean proficiency test are summarized in Table 1.

Table 1. Mean scores on Korean proficiency

		Mean	Range
Adult native speakers (n=27)		100	100
Heritage Korean speakers (n=10)		70.5	30-90
L2 learners of Korean (n=35)	Low (n=23)	30.8	15-50
	High (n=12)	65.8	55-95

3.3. Procedure and materials

As mentioned earlier, since on the one hand, judgments for IEs are notoriously subtle and difficult to elicit and, on the other hand, standard comprehension tasks (truth-value and grammaticality judgment tasks) require metalinguistic awareness which is problematic for heritage speakers, we chose to probe comprehension of *wh*-in-situ through a production task that heritage speakers could perform in either their heritage language (i.e. Korean) or the dominant language (i.e. French), in order to assess their comprehension knowledge independently of their production skills. To this effect, we designed an original experimental task which uses elicited production in a controlled discourse context to assess/verify the interpretation of in-situ *wh*-phrases in negative questions with an (NPI) intervener in Korean. Specifically, the participant was asked to answer negative *wh*-questions in both SO_{wh}V order (in-situ WH) vs. O_{wh}SV (scrambled WH) order. Our heritage speakers could thus provide answer in either their heritage language (i.e. Korean) or their dominant native language (i.e. French).

Crucially, target questions were embedded in controlled discourse contexts (i.e. short stories with a picture) licensing both a *wh*-question reading and a polar question reading of the given question. Two types of *wh*-phrases (*mwues* ‘what’ and *nwukwu* ‘who’) and the NPI *amwuto* ‘anyone’ were used in the test sentences.

⁸ Unfortunately, the number of HK speakers who participated in our experiment was smaller than we would hope for in order to examine their knowledge of the target property.

⁹ Institut National des Langues et Civilisations Orientales

Four experimental conditions were constructed in a 2x2 design with word order (SOV vs. OSV) and question type (question without vs. with a NPI intervener) as factors:

- (9) a. Condition 1: Question WITHOUT a NPI intervener in SOV order
 b. Condition 2: Question WITHOUT a NPI intervener in OSV order
 c. Condition 3: Question WITH a NPI intervener in SOV order
 d. Condition 4: Question WITH a NPI intervener in OSV order

Examples of the experimental stimuli translated into English are given in (10-13) below (See Appendix for the examples in Korean).

- (10) Condition 1: Question WITHOUT a NPI intervener in SOV order



a. Context: *A naughty cat who always hits his friends showed up in the field! The cat hit the rabbit who was eating a carrot. He also hit the bird who was sitting. But, the cat didn't hit the hedgehog because he was afraid he would get his hand pricked by the hedgehog's spines.*

- b. Test sentence: **in-situ *wh*-phrase (SO_{wh}V)**

Koyangi-ka **nwukwu-lul** ttayli-ci anh-ass-ni?

Cat-NOM who-ACC hit-CI NEG-PST-Q

'Who did the cat not hit (in the field)?'

Expected answer: hedgehog (DP-answer)

- (11) Condition 2: Question WITHOUT a NPI intervener in OSV order



a. Context: *Mina, Juno and their father went to the market for grocery shopping. Dad bought milk, bananas and tomatoes in the market. But, Dad forgot to buy some sugar in the market.*

- b. Test sentence: **scrambled *wh*-phrase (O_{wh}SV)**

Mwues-ul appa-ka sa-ci anh-ass-ni ?

What-ACC dad-NOM buy-CI NEG-PST-Q

'What did Dad not buy (in the market)?'

Expected answer: sugar (DP-answer)

The examples (10-11) show a canonical *wh*-question with a non-intervener subject. Both the in-situ *wh*-phrase in (10b) and the scrambled *wh*-phrase in (11b) yield a *wh*-question reading where the *wh*-phrase is interpreted as a *wh*-interrogative. Notice, however, that the contexts provided in (10) and (11) license the target *wh*-question construal for which the expected answer is the DP “hedgehog”/“sugar”. Participants are thus expected to produce DP-answers, no matter what word order on both of these conditions.

(12) Condition 3: Question WITH a NPI intervener in SOV order



a. Context: *Mina, Juno and mother went to the cake shop. Mom said that Mina and Juno could buy a chocolate donut and a chocolate cake in the shop. Juno bought only a chocolate donut because he was not very hungry. However, Mina does not like chocolate so she did not buy anything in the shop.*

b. Test sentence: **in-situ *wh*-phrase (S_{NPI}O_{wh}V)**

Amwuto mwues-ul sa-ci anh-ass-ni ?

Anyone what-ACC buy-CI NEG-PST-Q

‘Did no one buy anything (in the shop)?’ / ?*‘What did no one buy (in the shop)?’

Expected answer: No (y/n-answer), Juno bought a chocolate donut.¹⁰

*chocolate cake (DP-answer)

(13) Condition 4: Question WITH a NPI intervener in OSV order



a. Context: *Minsu and Juno do not like to eat vegetables. But, today, Mom said that they have to eat the carrots and broccoli she prepared for lunch. Minsu is an amenable child and he tried to eat his vegetables. He ate his carrots up, but he could not eat the broccoli. Juno, on the other hand, really hates vegetables, so he did not eat any of his vegetables.*

¹⁰ As has been discussed in the literature, answering negative polar questions is not straightforward across languages. In languages with the polarity system (e.g. English, Spanish, Swedish), the negative particle *no* expresses the speaker’s agreement with the propositional content of the question ((1a)). On the contrary, in languages with the truth-based system (e.g. Japanese, Korean, Cantonese), the negative particle *no* expresses the speaker’s disagreement with the negative proposition ((1b)). This is why the expected answer to the target question (12b) is *no* which is followed by a positive proposition.

(1) a. *English* (Holmberg 2013)
A: Isn’t he coming?
B: No. (=‘He is not coming?’)

b. *Japanese* (Yabushita 1998)
A: John-wa hashitte i-masen ka?
John-TOP running be-PRS.3SG.NEG Q
‘Isn’t John running?’
B: Iie. ‘No’ (= ‘John is running.’)

b. Test sentence: **scrambled *wh*-phrase (O_{wh}S_{NPI}V)**

Mwues-ul amwuto mek-ci anh-ass-ni?

What-ACC anyone eat-CI NEG-PST-Q

‘What did no one eat (at lunch)?’ / ?*‘Did no one eat anything (at lunch)?’

Expected answer: Broccoli (DP-answer)

The examples (12-13) illustrate a *wh*-question with an intervener subject and either an in-situ *wh*-phrase ((12b)) or a scrambled *wh*-phrase ((13b)) in the object position. Notice that here, the contexts in both (12) and (13) are set up to license both a *wh*-question construal (‘What did no one buy in the cake shop?’/‘What did no one eat at lunch?’) for which the expected answer is the DP “chocolate cake/broccoli”, as well as a polar question construal (‘Did no one buy anything in the cake shop?’/‘Did no one eat anything at lunch?’) for which the expected answer is No (*because Juno bought a chocolate cake/Minsu ate his carrots*). What distinguishes (12) and (13), however, is the word order of the test items. The crucial condition is (12) with SOV order. Since the in-situ *wh*-phrase falling in the scope of the NPI intervener subject cannot be interpreted as a *wh*-interrogative, only as an existential, (12) can only be construed as a polar question and the participants are thus expected to volunteer only *yes/no*-answers if they have IEs, as expected for configurations such as the (12). In contrast, under the OSV condition (i.e. Condition 4) given in (13), the scrambled *wh*-phrase must be interpreted as a *wh*-interrogative and the participants are thus expected to volunteer only DP-answers.

The predictions for each experimental condition are summarized in Table 2 below.

Table 2. Predictions for experimental conditions

		<i>Word order</i>	
		in-situ WH (SOV)	Scrambled WH (OSV)
<i>Question (Q) type</i>	Q without a NPI intervener	DP-answer (10b)	DP-answer (11b)
	Q with a NPI intervener	<i>y/n</i> -answer (12b)	DP-answer (13b)

To summarize, our experimental design allows us to check for IEs in negative questions with *wh*-in-situ without relying on truth-value judgments which are difficult to elicit in particular with heritage/L2 speakers (since they involve metalinguistic awareness), but rather on the answers volunteered by participants for negative questions under controlled discourse contexts. Participants were moreover instructed that they could freely answer in either their heritage language (i.e. Korean) or the dominant native language (i.e. French). A DP-answer on the critical NPI intervener subject condition (illustrated in (12)) tells us that the participant does not have IEs since (s)he can interpret the target question as a constituent question, while a *yes/no*-answer tells us that (s)he does indeed have IEs since (s)he can only interpret the target question as a polar question.

Each participant was presented with 16 test items (i.e. 4 items per condition) interspersed with 16 fillers, for a total of 32 items. Fillers were positive *wh*-questions (e.g. ‘What did Sue buy?’) and polar questions (e.g. ‘Did father eat a cake?’) with two orders (SOV vs. OSV) respectively.

In order to avoid any possible effect of particular intonation pattern, test sentences were given as visual-stimuli, but not as audio-stimuli.

3.4. Results

The production rate of DP-answers or *yes/no*-answers was the dependent variable in the experiment. All participants performed well on the fillers: they correctly produced DP-answers for positive *wh*-questions, and *yes/no*-answers for polar questions, in both SOV and OSV orders. The participants’ target-like behavior with the fillers allowed us to establish that participants, be they L1 children, HK speakers or L2 learners have no problems interpreting scrambled *wh*-questions.

Figure 1 below presents the overall results for questions without a NPI intervener for each group of participants.

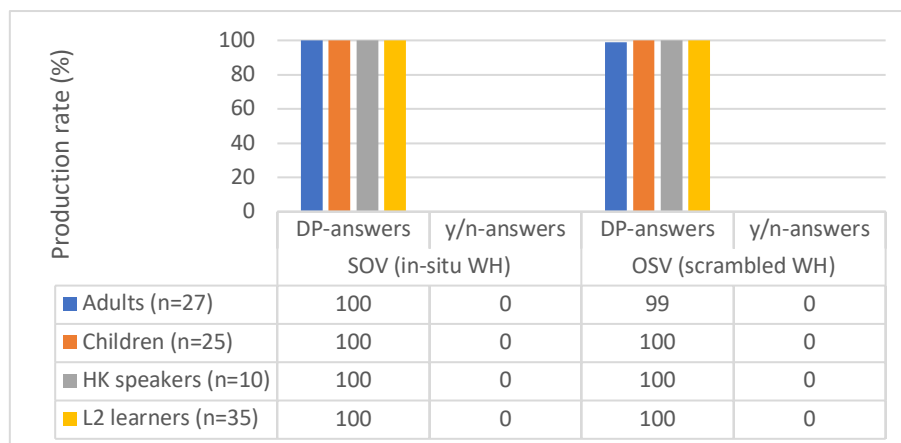


Figure 1. Results for Questions WITHOUT a NPI in SO_{wh}V vs. O_{wh}SV orders

As we can observe, all participants across the four populations performed at ceiling for canonical questions with a non-intervener subject: children, as young as five, just like adults, produced only DP-answers no matter what word order, correctly assigning a *wh*-question reading on both the in-situ *wh*-phrase and the scrambled *wh*-phrase, as expected. Both HK speakers and L2 learners of Korean showed a native-like pattern of behavior on these conditions since they volunteered only DP-answers. This also tells us that they have no problem interpreting scrambled *wh*-phrases in Korean.

The results for questions with a NPI intervener are presented in Figure 2 below.

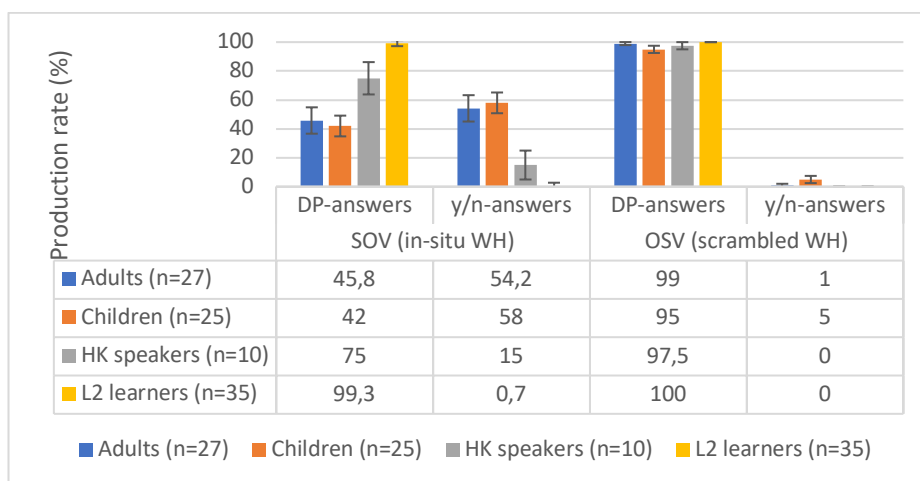


Figure 2. Results for Questions WITH a NPI $S_{NPI}O_{wh}V$ vs. $O_{wh}S_{NPI}V$ orders

As shown in Figure 2, in questions with an intervener subject, all participants across four populations showed the expected behavior with the scrambled *wh*-phrase (OSV): Both adults and children assigned a *wh*-question reading volunteering DP-answers at near ceiling levels (99% of the time for adults and 95% for children). HK speakers (97.5%) and L2 learners (100%) also showed an L1 pattern of behavior on this condition.

Interestingly, the results under the crucial NPI intervener condition (SOV) are surprising: children, just like adults, volunteered both target *yes/no*-answers (54,2% for adults and 58% for children) and non-target DP-answers (45,8% of the time for adults and 42% for children). These results show graded unacceptability of questions with an intervener on a *wh*-question reading in adult, as well as child L1 Korean. Statistical analyses revealed that native participants (adult or child) did not significantly differentiate between DP-answers and *yes/no*-answers under the SOV order ($\chi^2(1)= 0.667, p = .414$ for adults; $\chi^2(1)= 2.560, p = .110$ for children).

However, the statistical analyses also revealed that the L1 participants significantly distinguished between the in-situ *wh*-phrase (SOV) and the scrambled *wh*-phrase (OSV) with respect to the production of DP-answers ($t(26)= -5.858, p < .001$ for adults; $t(24)= -7.025, p < .001$ for children), suggesting that both native adults and children are sensitive, to some extent, to the IE triggered by the NPI subject – that is, they minimally know that SOV word order does not pattern like OSV word order which is necessarily interpreted as a *wh*-question. We will offer a different take on these results in the next section where we examine more closely speaker variation and show that it is systematic and not random.

As for HK speakers, under the critical NPI intervener condition (SOV), they showed a non-native-like pattern of behavior, patterning with L2 learners: both HK speakers and L2 learners showed high levels of production of DP-answers (75% for HK speakers and 99.3% for L2 learners), unlike native speakers. The statistical analyses showed that these two populations did not significantly distinguish between the scrambled *wh*-phrase (OSV) and the in-situ *wh*-phrase (SOV) with respect to the production of DP-answers ($t(9)= -2.212, p = .054$ for HK speakers; $t(34)= -1.000, p = .324$ for L2 learners). It

suggests that HK speakers, like L2 learners, show lack of sensitivity to IEs triggered by an intervener and as such, their interpretation of the in-situ *wh*-phrase falling in the scope of the NPI intervener is not restricted by IEs.

To summarize the results obtained, native speakers, HK speakers and L2 learners showed target-like behavior under three of the four experimental conditions. In canonical questions with a non-intervener subject, they volunteered only DP-answers to both the in-situ *wh*-phrase and the scrambled *wh*-phrase. In questions with a NPI intervener subject and a scrambled *wh*-phrase object, they volunteered DP-answers. In these cases, both HK speakers and L2 learners patterned similarly with native speakers in that they assigned a *wh*-question reading to the *wh*-phrase, as expected.

However, on the critical condition with a NPI intervener subject and an in-situ *wh*-phrase object, both L1 adults and children volunteered target *yes/no*-answers as well as non-target DP answers. Given this surprising pattern, it might seem that the L1 participants are answering randomly since the percentage of *yes/no*-answers is 54.2% for adults and 58% for children. However, as we shall see in the next section, the variation is across subjects, not across answer types. With regard to HK speakers and L2 learners, they volunteered only non-target DP answers, suggesting that they are not sensitive to the IEs triggered by the in-situ *wh*-phrase falling in the scope of the NPI intervener. As such, HK speakers and L2 learners, unlike native speakers, assigned a non-target *wh*-question interpretation to the in-situ *wh*-phrase.

4. Experimental findings and theoretical implications

4.1. Speaker variation with IEs in L1 Korean

Let us go back to our research questions for adult and child L1 Korean in (8a), repeated below.

- (8) In questions with an (NPI) intervener subject and a *wh*-phrase (WH) object,
- a. Adult and child L1 Korean:
 - i. *Do native speakers of Korean straightforwardly interpret the scrambled WH object (i.e. $O_{wh}S_{NPI}V$) as a wh-interrogative, yielding a wh-question reading?*
 - ii. *Do they straightforwardly interpret the in-situ WH object (i.e. $S_{NPI}O_{wh}V$) as an existential, yielding a yes/no-question reading?*

The answer to the first question in (8a-i) is straightforwardly ‘yes’ since both adult and child native speakers of Korean produced only DP-answers with the scrambled *wh*-phrase (99% of the time for adults and 95% for children). As for the second question in (8a-ii), our results revealed that both adults (54.2% of the time) and children (58%) did not provide target *yes/no*-answers as much as expected. That is, both adults and children showed an unexpected pattern of behavior in volunteering non-target DP-answers to the in-situ *wh*-phrase falling in the scope of the NPI intervener (45.8% for adults and 42% for children). These results suggest that the unacceptability of questions with an intervener subject and an in-situ *wh*-

phrase object on a *wh*-question reading was not as strong as one might expect. However, this pattern is not so surprising in light of variation among native speakers and the graded judgments for IEs (ranging from ‘*’ to ‘?’) that have been reported in the literature (Lee and Tomioka 2001; Kitagawa and Fodor 2003; Kitakawa 2003; Tomioka 2007), as mentioned earlier. The question then is how to account for the graded unacceptability that IEs with *wh*-in-situ yield. To the best of our knowledge, there have been few experimental studies to bear on this question. Given our results (roughly 55% of *yes/no*-answers across adults as well as children), the issue is whether the L1 participants are answering randomly at chance level.

Looking at the results by individual subjects, we found that this graded unacceptability was not across test items or answers, but across subjects. More precisely, 26 out of 27 adults and 22 out of 25 children showed a systematic pattern of response with respect to IEs: on the critical NPI intervener condition (i.e. Condition 3: $S_{NPI}O_{wh}V$), (i) 29 native speakers (of which 15 adults and 14 children) showed sensitivity to IEs since they volunteered target *yes/no*-answers for at least 3 out of 4 test items; (ii) while 19 native speakers (of which 11 adults and 8 children) showed lack of sensitivity to IEs since they volunteered non-target DP-answers for at least 3 out of 4 test items; (iii) only 4 native speakers (of which 1 adult and 3 children) answered at chance level since they volunteered target *yes/no*-answers for 2 out of 4 items. Figure 3 below illustrates the distribution of L1 participants across these three patterns of response for Condition 3.

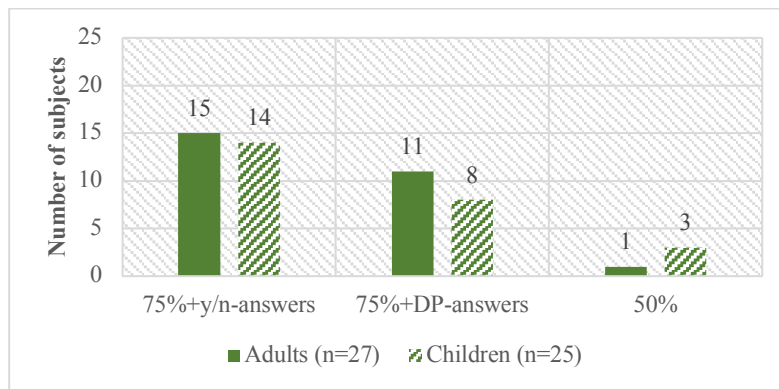


Figure 3. Distribution of L1 subjects across 3 patterns of response for $S_{NPI}O_{wh}V$ Condition

Overall, we observe that out of 52 participants, 29 show IEs, whereas 19 do not. The question that now arises is how to explain this variability across both adult and child native speakers of Korean.

4.1.1. Follow-up task: the role of context

As we have just observed, our results revealed two patterns of systematic variation with respect to IEs across Korean native speakers. Specifically, 19 natives speakers (of which 11 adults and 8 children) out of 52 volunteered non-target DP-answers to questions with a NPI subject and an in-situ *wh*-phrase object exhibiting IEs. The question we now address is to what extent the source of this systematic variation

lies in the grammar. That is, can we safely conclude from the observed distribution of answers that we have two populations of speakers: those whose grammar shows IEs vs. those whose grammar lacks IEs? Or could it be that observed patterns of behavior are an artifact of the experimental set up? In particular, did participants volunteer non-target DP-answers on the critical condition (Condition 3) because they do not have IEs or could this systematic pattern of variation be imputed to the appropriateness, the felicity of the context for a negative polar question? To see why, let us go back to Condition 3 (i.e. *wh*-question with a NPI in SOV order) given in (12) and repeated below.

(14) a. Context: *Mina, Juno and mother went to the cake shop. Mom said that Mina and Juno could buy a chocolate donut and a chocolate cake in the shop. Juno bought only a chocolate donut because he was not very hungry. However, Mina does not like chocolate so she did not buy anything in the shop.*

b. Test sentence ($S_{NPI O_{wh} V}$):

Amwuto kakey-eyse **mwues-ul** sa-ci anh-ass-ni?
 anyone shop-LOC what-ACC buy-CI NEG-PST-Q

- i. ‘Did no one buy *anything* in the shop?’ (polar question reading → IE)
- ii. ‘*What* did no one buy in the shop?’ (*wh*-question reading → no IE)

Wh-questions come with an existential presupposition which must be satisfied in the context provided. This is indeed the case for the *wh*-question reading of (14b-ii). That is, the existential presupposition underlying the negative question on its intended *wh*-question reading – namely, *there is something x such that no one bought x in the shop*, is satisfied in the context provided.

Polar questions, likewise, have different conditions of use, depending on their form (in particular, negative vs. positive) which do not make them equally acceptable in different situational contexts. The pragmatic factors at play and the correct characterization of the conditions of use the different forms of polar questions is a widely debated issue. Ladd (1981) claims that a negative polar question is generally used when a speaker wants confirmation for the inference $\neg p$ (i.e. negation of a proposition given in the context). Based on Ladd, Büring and Gunlogson (2000) propose evidence conditions for negative polar questions: negative polar questions (i.e. $\neg p$?) are felicitous if there is “compelling contextual evidence”¹¹ *against p*. Consider the following.

¹¹ *Contextual evidence* (for a proposition *p*) (Büring and Gunlogson 2000: 7):

Expectation that *p* is true (possibly contradicting prior belief of the speaker) induced by evidence that has just become mutually available to the participants in the current discourse situation.

(15) Buring and Gunlogson (2000: 9)

Context: A and S want to go out for dinner.

a. A: Since you guys are vegetarians, we can't go out in this town, where it's all meat and potatoes. (compelling contextual evidence *against p*)

S: Is there no vegetarian restaurant around here?

b. A: I bet we can find any type of restaurant you can think of in this city. Make your choice! (compelling contextual evidence *for p*)

S: # Is there no vegetarian restaurant around here?

Here, *p* is 'there is a vegetarian restaurant around here'. The negative polar question *Is there no vegetarian restaurant around here?* is appropriate only in the context (15a) displaying compelling contextual evidence *against p*, but inappropriate in the context (15b) favoring *p*.

Now, consider our target sentence (14b) embedded in the experimental context ((14a)) in light of B & G's proposal. We see that the evidence condition for the sentence (14b) on its negative polar question reading (i.e. 'Did no one buy anything in the shop?') is not satisfied in the context that was set up: the latter does not provide compelling evidence *against p* where *p* would be the proposition that someone bought something since in (14a), Juno bought a chocolate donut, while Mina did not buy anything. So, could it be the case that (11 out of 27 adult/8 out of 25 child) native speakers did not assign a polar question reading to the IE sentence because the context provided was not felicitous for a negative polar question on its inner negation reading? If the context provided has satisfied the evidence condition for a negative polar question, to what extent would the patterns of response be affected?

To answer this question, we carried out a follow-up task with a different context type designed to make the target sentence felicitous on both its polar (or *yes/no*) question reading and its *wh*-question reading, as illustrated in (16).

(16) a. New context: *Mina, Juno and mother went to the cake shop. Mom said that Mina and Juno could buy a chocolate donut or a chocolate cake in the shop. Mina does not like chocolate so she did not want anything from the shop. Juno likes chocolate but in the end, he did not want anything either because he was not hungry.*

b. Test sentence ($S_{NPIO_{wh}V}$):

Amwuto **akey-eyse** **mwues-ul** **sa-ci** **anh-ass-ni?**
anyone shop-LOC what-ACC buy-CI NEG-PST-Q

i. 'Did no one buy *anything* in the shop?' (polar question reading → IE)

ii. '*What* did no one buy in the shop?' (*wh*-question reading → no IE)

In the new context provided in (16), the evidence condition for the negative polar question (i.e. ‘Did no one buy anything in the shop?’) is satisfied since there is compelling contextual evidence *against p*. That is, the questioner who utters the test sentence is asking for confirmation that no one indeed bought anything. Moreover, the existential presupposition underlying (16b) on its *wh*-question reading (i.e. ‘What did no one buy in the shop?’) is also satisfied in the context. Thus, the test sentence (16b) is acceptable on both a negative polar question reading and a *wh*-question reading. Specifically, if a participant assigns a polar question reading to (16b), then (s)he will volunteer a *yes/no*-answer (i.e. *yes, no one bought anything* (i)). If the participant assigns a *wh*-question reading to (16b), then (s)he will volunteer a DP-answer (i.e. *chocolate cake and chocolate donut* (ii)). The participants’ answer-type (i.e. DP-answers vs. *yes/no*-answers) thus allows us to determine whether or not they have the IE constraint.

23 adult native speakers of Korean participated in the follow-up task which took place online. Two experimental conditions were constructed: Questions with a NPI intervener in $S_{NPI}O_{wh}V$ (in-situ WH) vs. $O_{wh}S_{NPI}V$ (scrambled WH) orders. As in the previous experiment, the task was to answer a negative *wh*-question. Each participant was presented with 8 test items (i.e. 4 items per condition) without fillers.

The overall results are presented in Figure 4 below.

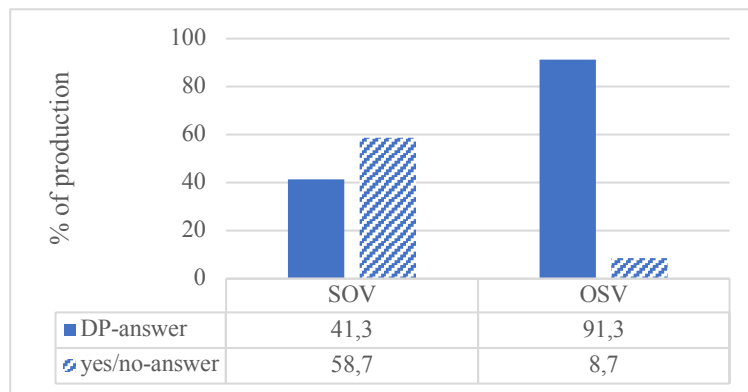


Figure 4. Overall results for Questions WITH a NPI in $S_{NPI}O_{wh}V$ vs. $O_{wh}S_{NPI}V$ orders obtained in the follow-up task (n=23)

First, all participants volunteered DP-answers at near ceiling levels (91.3% of the time) to questions with a NPI subject and a scrambled *wh*-phrase object (i.e. $O_{wh}S_{NPI}V$), as expected. As for questions with a NPI subject and an in-situ *wh*-phrase object (i.e. $S_{NPI}O_{wh}V$) exhibiting IEs, the results show again graded unacceptability of the IE sentences on a *wh*-question reading since the participants volunteered both target *yes/no*-answers (58.7% of the time) and non-target DP-answers (41.3% of the time).

To see whether this graded unacceptability results from variation across test items or answers, and/or across speakers, we looked at the results by individual subjects. All participants were consistent in their answers. Crucially, two systematic patterns of response with respect to IEs were found again across native speakers of Korean: (i) 14 out of 23 native speakers showed sensitivity to IEs since they

volunteered target *yes/no*-answers; (ii) 9 native speakers showed lack of sensitivity to IEs since they volunteered non-target DP-answers. Figure 5 below illustrates the distribution of the participants across two systematic patterns of response for IE sentences (i.e. $S_{NPiO_{wh}V}$) observed in the follow-up task.

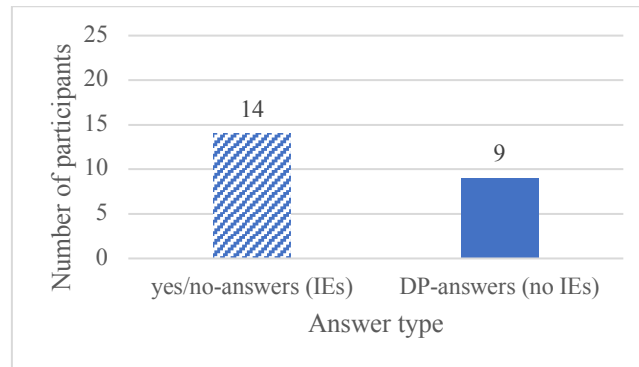


Figure 5. Distribution of L1 Korean speakers ($n=23$) across two patterns of response for $S_{NPiO_{wh}V}$ observed in the follow-up task

Let us start by comparing the overall results for adults across the two experiments – that is, Figure 2 vs. Figure 4: under the new context (cf. (16a)), 58.7% of the speakers provided target *yes/no*-answers to IE sentences, whereas under the previous context (cf. (14a)), 54.2% of the speakers provided target answers. As for non-target DP-answers to IE sentences, 41.3% of the speakers provided non-target answers under the new context, while under the previous context, 45.8% of the speakers provided non-target answers. There was no statistically significant difference between the new and the previous context in the distribution of answer types for test sentences ($F(1,6)= 0.010, p = .923$). We conclude that providing a more felicitous context did not significantly/hardly changed the overall distribution of answer types.

Let us now turn to the distribution of L1 participants across response patterns found in the two experiments, as shown in Figures 3 and 5, respectively. We observe that under the new context, 14 out of 23 speakers provided target *yes/no*-answers to IE sentences (for at least 3 out of 4 items), whereas under the previous context, 15 out of 27 adult speakers likewise provided target answers. On the other hand, under the new context, 9 out of 23 speakers provided non-target DP-answers to IE sentences vs. 11 out of 27 speakers under the previous context. It thus appears that when the context satisfies the evidence conditions for a negative polar question, we find again two clear patterns of distribution across speakers: speakers who systematically volunteer target *yes/no*-answers and thus, show IEs vs. speakers who systematically volunteer non-target DP-answers and thus, lack IEs. We can conclude that this systematic variation across speakers does not lie in the felicity of the context, but rather in the grammar. The next question then is how to account for the coexistence of these two grammars in L1 Korean and what does the coexistence of these two systematic patterns of response with respect to IEs across speakers tell us about the grammar of *wh*-in-situ in L1 Korean?

4.1.2. Two LF strategies for interpreting *wh*-in-situ in L1 Korean

A common assumption found in the literature going back to Beck (1996, 2006), Beck and Kim (1997), Pesetsky (2000), and advocated more recently by Kotek (2014, 2016) and Kotek and Erlewine (2016) (with compelling arguments from the interaction of IEs and islands in multiple questions) is that IEs serve as a diagnostic for covert *wh*-movement. The idea is that covert movement of a *wh*-phrase over an intervener obviates a potential IE, just as overt movement or scrambling of a *wh*-phrase over an intervener does in Korean (cf. (3b)). The lack of an IE thus tells us that the *wh*-phrase must have moved above the intervener by LF. In line with this proposal, we take variability across speakers with respect to IEs with *wh*-in-situ to show that there are two populations of speakers in L1 Korean: (i) speakers who are immune to IE (volunteer DP-answers) covertly move the *wh*-in-situ to a LF scope position above the NPI subject intervener, thus obviating the potential IE, (ii) speakers who show IE (volunteer *No*-answers) interpret the *wh*-phrase in-situ, in its base position inside the VP, below the subject intervener. In other words, we can make sense of our surprising findings in L1 Korean, if we assume that there are two strategies of interpretation available for *wh*-in-situ in Korean: Covert Movement (CM) vs. in-situ strategy. For concreteness, we adopt the proposal defended by Kotek (2014) and Erlewine and Kotek (2014) for *wh*-in-situ in multiple questions according to which, the in-situ strategy involves the computation of Focus-Alternatives (FA). Crucially, both CM and FA strategies are available within the same language to interpret an in-situ *wh*-phrase. Their proposal builds on Beck's claim that IEs occur when a focus-sensitive operator (e.g. *only* or negation) at LF c-commands a *wh*-phrase interpreted in-situ using Rooth-Hamblin alternatives (Hamblin 1973; Rooth 1985)^{12 13}.

Recapitulating, the variability across speakers with respect to IEs with *wh*-in-situ tells us that there are two populations of speakers in L1 Korean: (i) those who use FA strategy to interpret *wh*-in-situ, and (ii) those who use covert movement to interpret *wh*-in-situ. More specifically, we have established that 55.6% of adults (15/27) and 56% of children (14/25) show sensitivity to IEs since they systematically produced *yes/no*-answers for an in-situ *wh*-phrase falling in the scope of an intervener. By hypothesis, this group of L1 speakers uses the FA strategy to interpret *wh*-in-situ in Korean. In contrast, 40.7% of adults (11/27) and 32% of children (8/25) are immune to IEs since they systematically produced DP-answers for an in-situ *wh*-phrase falling in the scope of an intervener. By hypothesis, this group of L1 speakers resorts to the CM strategy to interpret *wh*-in-situ in Korean. If this analysis is on the right track, it suggests that even in a canonical *wh*-in-situ language such as Korean, there is evidence that the CM strategy is available for interpreting *wh*-in-situ.

¹² Their specific proposal is that IEs occur whenever a focus-sensitive operator intervenes between an in-situ *wh*-phrase projecting alternatives and the C° that must interpret them, preventing the alternatives from reaching C° and thus causing the derivation to crash. Note, importantly, that the proposal defended here is compatible with alternative approaches to the semantics of *wh*-in-situ as long as the latter is interpreted in its base position inside the VP.

¹³ Nothing hinges on the exact choice of mechanism adopted here for interpreting *wh*-in-situ (whether it is FA or an alternative say unselective binding mechanism), since we merely want to distinguish two populations according to whether they move the *wh*-phrase, or leave it in in-situ at LF.

4.2. Lack of variation with IEs in heritage and L2 Korean

Now, let us turn to our research questions for heritage and L2 Korean in (8b), repeated below.

- (8) In questions with an (NPI) intervener subject and a *wh*-phrase (WH) object,
b. Heritage and L2 Korean:

Do Heritage Korean (HK) speakers and L2 French-speaking learners of Korean have native-speaker pattern of distribution for intervention effects, distinguishing the scrambled WH (i.e. $O_{wh}S_{NPI}V$) from the in-situ WH (i.e. $S_{NPI}O_{wh}V$)?

HK speakers mostly produced DP-answers on the two critical experimental conditions with an NPI: 75% on Condition 3 with $S_{NPI}O_{wh}V$ vs. 97.5% on Condition 4 with $O_{wh}S_{NPI}V$. This finding indicates that they fail to distinguish the scrambled *wh*-phrase (i.e. $O_{wh}S_{NPI}V$) from the in-situ *wh*-phrase falling in the scope of the NPI intervener (i.e. $S_{NPI}O_{wh}V$). Turning to the individual level: 9 out of 10 HK speakers did not reveal sensitivity to IEs in that they systematically assigned a *wh*-question reading regardless of the word order. Figure 7 below shows the distribution of HK speakers across three patterns of response for Condition 3.

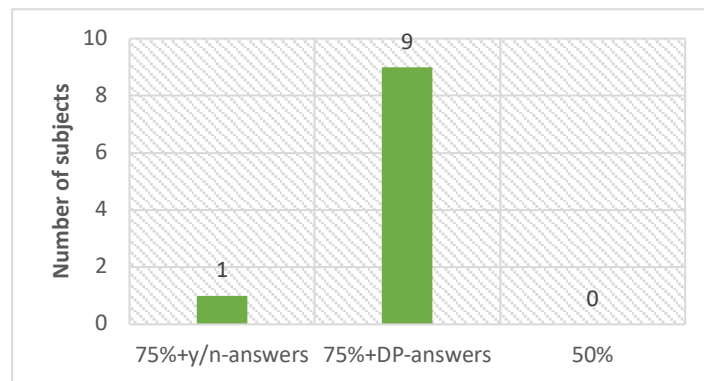


Figure 7. Distribution of HK speakers (n=10) across 3 patterns of response for $S_{NPI}O_{wh}V$ Condition

As shown in Figure 7, only one speaker out of 10 showed the expected pattern of distribution for IEs, systematically volunteered target *yes/no*-answers for the in-situ *wh*-phrases and DP-answers for the scrambled *wh*-phrase. This speaker had the highest proficiency scores in Korean (90/100) and, importantly, when we looked at her language background, we found that she did not have the same quantity and quality of exposure to Korean as the other HK speakers. More precisely, as the other speakers, she was born in France and grew up in an environment where Korean was the language used at home to communicate. What singles her out is that she used Korean to communicate and play with her older brother who was born in Korea and who had arrived in France after the age of 5. She hears Korean up to 70% during a typical week, while it is up to roughly 50% for the other HK speakers. Crucially, moreover, she spent two months in Korea to practice her Korean, unlike the others. This case

demonstrates that heritage speakers can reach native-like proficiency with enough input and opportunities to use the heritage language very early on, before schooling.

Recall our theoretical premises according to which there are two alternative strategies for interpreting *wh*-in-situ in L1 Korean, which have been discussed in Sections 4.1.2: in-situ (unselective binding) strategy vs. covert movement strategy. These assumptions lead us to conclude that HK speakers, except for the one who showed the expected pattern of IEs, systematically use the covert movement to interpret *wh*-in-situ in Korean since they do not have IEs. The question, however, is not whether HK speakers show a native-like pattern of behavior with respect to IEs since the covert movement is a native strategy: Recall that 40.7% of L1 adults (11 out of 27) and 32% of L1 children (8 out of 25) showed lack of sensitivity to IEs since they systematically provided DP-answers for an in-situ *wh*-phrase falling in the scope of an intervener, just like HK speakers. We have claimed that this group of L1 speakers resorts to the covert movement to interpret *wh*-in-situ in Korean. The question is rather why HK speakers, unlike native speakers, appear to use systematically the covert movement strategy over the in-situ strategy. The same question goes for French-speaking L2 learners of Korean who behaved similarly to HK speakers volunteering only DP-answers with the scrambled *wh*-phrase, but also with the in-situ *wh*-phrase. Is covert movement a default strategy in HK speakers and French-speaking L2 learners of Korean? These speakers may show a transfer effect from the dominant/first language (i.e. French) to the heritage/second language (i.e. Korean): covert movement is the only accessible strategy for HK speakers and French-speaking L2 learners of Korean because it is the default strategy in the dominant/first language. However, we need further evidence regarding this matter. We thus leave these issues open here pending further research. We return, however, to Heritage/L2 Korean at the end of the next section, where we discuss correlations between prosody and interpretation, suggesting further avenues of investigations to explore in the future.

4.3. On prosody and interpretation: the prosody-scope correlation in adult Korean

Prosodic information such as special pitch contour or stress on certain elements is known to play an important role in disambiguating the possible meanings associated with a given sentence, alongside contextual information. It has, in particular, been observed that prosodic prominence and boundary effects serve to disambiguate different interpretations of an in-situ *wh*-phrase in Korean (Choe 1985; Kang 1988; Jun and Oh 1996; Kim 2000; Lee and Ramsey 2000; Yun 2012 a.o.). According to these authors, a strong emphasis on the *wh*-word *mwues* in (17) signals a *wh*-interrogative reading ((17a)), while the absence of such a prosodic effect indicates an existential reading (17b/c)). Moreover, there is a consensus that *yes/no*-questions ((17b)) are associated with a sentence-final rising intonation (Jun and Oh 1996; Lee and Ramsey 2000; Kwon 2002; Hwang 2007), unlike declarative sentences ((17c)) which

are associated with a falling intonation (see Martin 1951; Suh 1989; Jun and Oh 1996; Lee and Ramsey 2000; Kwon 2002; Jun 2005; Hwang 2007 for related discussion)¹⁴.

- (17) Minswu-ka **mwues-ul** mek-ess-e
 Minsu-NOM what-ACC eat-PST-INT
 a. ‘*What* did Minsu eat?’
 b. ‘Did Minsu eat *something*?’
 c. ‘Minsu ate *something*.’

It has, moreover, been claimed that prosody serve as cue to improve the acceptability of questions with an in-situ *wh*-phrase falling in the scope of an intervener (i.e. IE sentences) on a *wh*-question reading. In particular, Wee (2007) proposed that if the in-situ *wh*-phrase in an IE sentence is stressed, the sentence then becomes acceptable on a *wh*-question reading. Yoon (2011) made similar observations in terms of the role of prosody in circumventing IEs in *wh*-questions in Korean. She claims that prosody could be a strategy adopted by Korean speakers void IEs, to ameliorate the degraded status of sentences exhibiting IEs and as such, to successfully obtain a *wh*-question reading.

Based on these observations, we sought to check whether our L1 speakers who systematically showed lack of IEs constraint rely on a prosodic contour such as emphasis on a *wh*-word in order that the in-situ *wh*-phrase can be interpreted with scope wider than the NPI. To verify this idea, two of the L1 participants who showed contrasting patterns of behavior with respect to IEs were asked to pronounce the IE sentences previously used in our experiment, conveying the intended *wh*-question reading. The recorded sentences were then analyzed by Praat. An example of the IE sentences is given in (18) and its phonetic descriptions from two speakers are presented in Figures 6a-b.

- (18) **Amwuto** sathang-kakey-eyse **mwues-ul** kolu-ci anh-ass-ni?
 Anyone candy-shop-LOC what-ACC choose-CI NEG-PST-Q
 ‘Did no one choose *anything*?’ (a polar question → IE)
 ‘*What* did no one choose?’ (a *wh*-question → no IE)

¹⁴ The question remains open, however, as to whether *wh*-questions have a rising or falling intonational pattern.

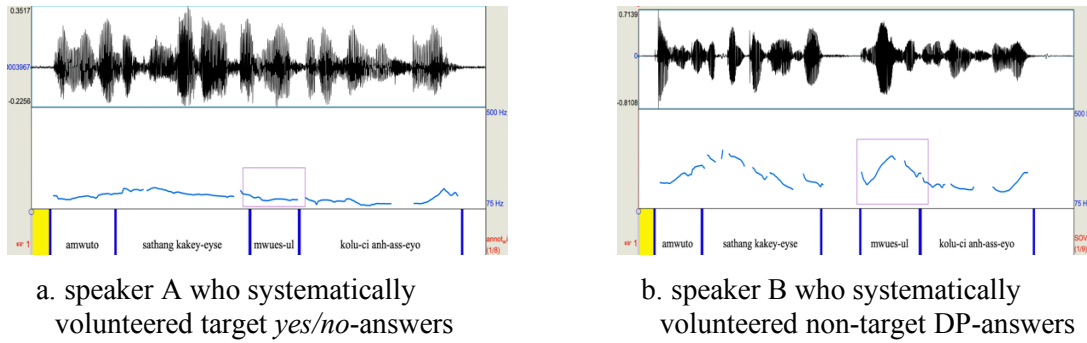


Figure 6. the IE sentence ($S_{NPIO_{wh}V}$) produced by two speakers

Figure 6a represents the phonetic analysis of sentence (18) produced by Speaker A who systematically volunteered target *yes/no*-answers to the in-situ *wh*-phrase falling in the scope of the NPI intervener, thus having IEs. In contrast, Figure 6b represents that of sentence (20) produced by Speaker B who systematically volunteered non-target DP-answers, thus lacking IEs. Comparing the pitch height marked by the square in Figure 6a and 6b, we observe that the speaker B resorts to a strong emphasis on the in-situ *wh*-phrase *mwues* ‘what’ to obtain the intended interpretation (i.e. a *wh*-question reading) obviating IEs (cf. Figure 6b). In contrast, no such prosodic manipulation is taken by the speaker A who assigned an existential reading (i.e. a polar question reading) to the in-situ *wh*-phrase, being restricted by IEs.

It suggests that prosody could be a cue helping Korean speakers whose grammar lacks IEs to obtain a wide scope interpretation of *wh*-in-situ phrases relative to a NPI intervener. However, further experimental research is needed to examine (i) whether and to what extent prosody disambiguates *wh*-scope interpretations in Korean; (ii) what kind of prosodic strategy can be used to disambiguate the semantic scope ambiguity of *wh*-phrases in IE sentences; (ii) whether Korean children vs. L2 learners of Korean as well as heritage Korean speakers resort to such prosodic strategy to interpret IE sentences, to the same degree as adult native speakers of Korean (research in progress).

5. Conclusion

In this paper, we provided empirical evidence to bear further on the thorny issue of IEs from *wh*-in-situ in Korean. Specifically, we addressed the question of whether different populations of Korean speakers are sensitive to IEs for *wh*-in-situ argument questions and thus interpret differently an in-in-situ *wh*-phrase falling in the scope of an intervener and a *wh*-phrase scrambled over the intervener. We also sought to investigate to what extent heritage knowledge at the syntax-semantics interface is (un)like both L1 and L2 knowledge. To this effect, we designed an original experimental task using elicited production in a controlled discourse context to assess the interpretation of in-situ *wh*-phrases in negative question with a NPI intervener in adult L1 vs. child L2 vs. heritage vs. L2 Korean. Surprisingly, our results revealed two patterns of systematic variation with respect to the interpretive restriction (i.e. IEs) across Korean (adult and child) native speakers: speakers who have IEs vs. speakers who lack IEs. To

account for this systematic variation across native speakers, we claimed that there are two alternative strategies for interpreting *wh*-in-situ in L1 Korean: in-situ strategy vs. covert movement strategy. As for HK speakers and L2 learners of Korean, these speakers appear to use only the covert movement strategy when they interpret *wh*-in-situ in Korean – that is, they do not have IEs. The lack of systematic variation related to IEs across HK speakers and L2 learners suggests a transfer effect from the dominant/first language (i.e. French) to the heritage/second language (i.e. Korean), but this idea needs to be confirmed by further research.

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