NPI licensing in Korean: Structural Complexity and Lexical Specific Effects

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1 Introduction. Recent research has shown increasing interest in the phenomenon of "NPI illusion," where negative polarity items (NPI) are erroneously accepted with a structurally invalid licensor (Drenhaus et al. 2005, a.o.). It has been known to be influenced by structural properties as well as the choice of specific items (e.g., *ever* elicits NPI illusion in English, while *any* does not; Parker and Philips 2016), yet the underling mechanism is still being unraveled. Our study investigates NPI illusion in Korean, a language with a strict NPI-licensing condition (i.e., clause-mate negation; Sohn 1995) to shed light on this ongoing research by comparing different NPI items and their surrounding structures. We focus on two types of NPIs, argument (*amwuto* 'anyone') and adjunct (*celtaylo* 'ever'), and two syntactic structures, complement clauses (CCs) and relative clauses (RCs), to access item-specific effects and the influence of structural complexity in NPI processing.

2 Experiments. We used self-paced reading and acceptability judgments to assess processing of sentences involving two NPI types and two embedded clause types, with each combination tested in a separate experiment. Across all four experiments, we systematically manipulated NPI position (E: embedded, M: matrix clause) and negation position (e: embedded clause, m: matrix clause, n: no licensor) to produce conditions with grammatical licensors (E-e, M-m), illusive licensors (E-m, M-e), and no licensors (E-n, M-n). The example configurations of the stimuli for each experiment, along with their interpretations under grammatical conditions, are provided in Tables 1 and 2.

3 Results. Overall, the acceptability results revealed a robust illusion effect across NPI types and embedded clause types, with slight variations in their degree. Illusive cases were judged as acceptable at a statistically significant rate compared to fully unlicensed cases, indicating the parser's susceptibility to licensing errors. In each experiment, we examined the reading time profiles at two critical regions: embedded verb and matrix verb. In **Experiment 1** (NPI: argument; clause type: CCs) (N = 58), at Region 5, both unlicensed and illusory cases exhibited slower reading times, reflecting initial processing difficulty as the parser attempted to resolve the NPI licensing dependency. At Region 7, the illusion effect became evident, with both matrix and embedded NPIs showing significantly longer reading times compared to fully ungrammatical cases. This slow reading time suggests a substantial cost of reanalysis, indicating that the parser revisited earlier representations to resolve the perceived dependency. In **Experiment 2** (NPI: argument; clause type: RCs) (N= 58), the reading time profile mirrored that of Experiment 1. At Region 5, both unlicensed and illusory cases exhibited slower reading times, reflecting initial processing difficulty. At Region 8 (matrix verb), a reanalysis processing effect was observed for both embedded and matrix NPIs. Notably, there were no significant processing differences based on the embedded clause type (EXP1 vs. EXP2), suggesting that CCs and RCs impose similar cognitive demands in NPI licensing contexts in Korean. In **Experiment 3** (NPI: adjunct; clause type: CCs) (N = 114), at Region 9, a reanalysis effect was observed for embedded NPIs, with significantly slower reading times indicating additional processing effort (reanalysis) to resolve the illusory licensing dependency. In contrast, no such effect was found for matrix NPIs. These results highlight lexical differences in how NPIs are processed online, with the adjunct NPI showing distinct patterns of dependency resolution compared to the argument NPI in Korean. In **Experiment 4** (NPI: adjunct; clause type: RCs) (N = 56), the reading time analysis at Regions 6 and 9 revealed results distinct from the previous experiments. At Region 9, there were no significant differences between the three negation conditions for the matrix NPI, indicating an absence of reanalysis or illusion effects. For the embedded NPI, the illusory case showed reading times between the grammatical and ungrammatical cases, while the ungrammatical case exhibited the fastest reading times—an unexpected pattern. This atypical profile may be attributed to the interaction of NPI lexical properties and structural constraints of relative clauses. For example, the inherent flexibility of the adjunct as an adverbial NPI 'ever'

might reduce the parser's sensitivity to licensing violations.

EXP	**R1**	**R2**	**R3**	**R4**	**R5**	**R6**	**R7**	**R8**	**R9** ...	
1	[***amwudo***/NP	...	[***amwudo***/NP	...	V-that/V-***NEG***-that]	...	V-cause/ V-***NEG***-cause]	...		
2	[***amwudo***/NP	...	[***amwudo***/NP	...	V-REL/V-***NEG***-REL]	NP	...	V-and/ V-***NEG***-and]	...	
3	[***celtaylo***/ADV	NP	...	[NP	***celtaylo***/ADV	...	V-that/V-***NEG***-that]	...	V-cause/ V-***NEG***-cause]	...
4	[***celtaylo***/ADV	NP	...	[NP	***celtaylo***/ADV	V-REL/V-***NEG***-REL]	NP	...	V-and/ V-***NEG***-and]	...

Table 1: Stimuli Configurations with Segmented Regions

EXP	NPI position	grammatical condition interpretations
1	embedded	Grandmother honestly said just before that no one came to Seoul, so Grandfather thought it was strange.
	matrix	No one honestly said just before that the granddaughter came to Seoul, so Grandfather thought it was strange.
2	embedded	The older brother bought again the donuts that no one ate last night, and the older sister brought drinks instead.
	matrix	No one bought again the donuts that the younger sibling ate a lot of last night, and the older sister brought drinks instead.
3	embedded	Grandmother loudly said honestly yesterday that the granddaughter never came to Seoul, so Grandfather thought it was strange.
	matrix	Grandmother never said honestly yesterday that the granddaughter truly didn't come to Seoul, so Grandfather thought it was strange.
4	embedded	The older brother truly bought again the donuts that the younger sibling never ate last night, and the older sister brought drinks instead.
	matrix	The older brother never bought again the donuts that the younger sibling didn't eat a lot of last night, and the older sister brought drinks instead.

Table 2: Example Stimuli Interpretations under Grammatical Conditions

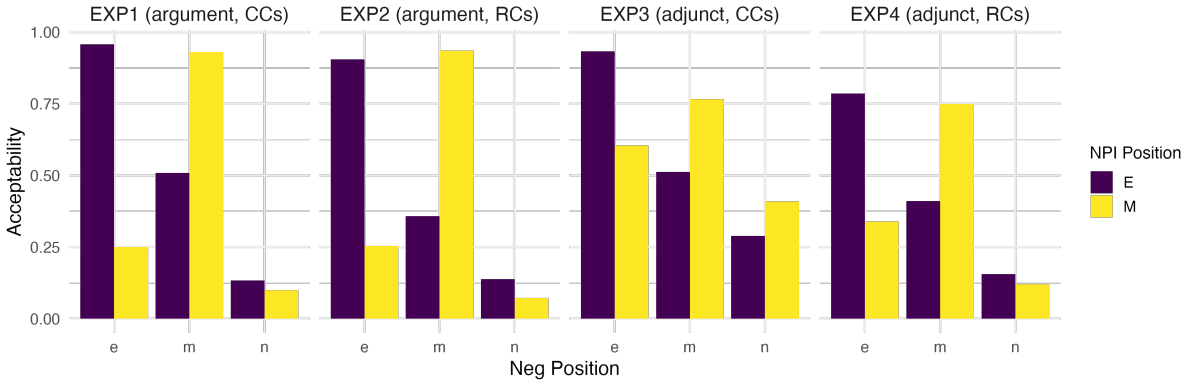

Figure 1: Mean of Acceptability in Each Experiment: NPI-NEG grammatical conditions (E-e, M-m), illusive conditions (E-m, M-e), ungrammatical conditions (E-n, M-n)

Conditions	**NPI**	**NEG**	**EXP1**		**EXP2**		**EXP3**		**EXP4**	
			Region 5	Region 7	Region 5	Region 8	Region 7	Region 9	Region 6	Region 9
Grammatical	e	e	-0.2499	0.1619	-0.1548	0.2548	-0.0546	0.1665	-0.1427	0.4976
Illusive	e	m	-0.0677	0.3737	-0.0191	0.4594	-0.0094	0.3661	0.0019	0.3943
Ungrammatical	e	n	-0.0091	0.2268	0.0149	0.2740	0.0459	0.2272	-0.0035	0.2731
Illusive	m	e	-0.0577	0.6771	-0.1068	0.5940	0.0218	0.3414	-0.1510	0.5062
Grammatical	m	m	-0.0605	0.3083	-0.0194	0.2940	-0.0386	0.3479	-0.0301	0.4942
Ungrammatical	m	n	-0.0833	0.3088	-0.0264	0.3289	0.0499	0.3150	-0.0368	0.5122

Table 3: Residual Reading Times at the Target Regions in Each Experiment