Intervening and non-intervening Interference

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Intrusion Effects

- Negative Polarity Items (NPIs) require the presence of a structurally inappropriate licensor to be well formed.

  `Licensing` No man who had a beard was ever happy.
  `Intrusion` A man who had no beard was ever happy.
  `Violation` A man who had a beard was ever happy.

- Structurally inappropriate licensors have been found to drive Intrusion Effects (grammaticality illusion) using a variety of experimental methods [1; 3; 4; 5; 2].
- The current web-based self-paced reading/judgment study examines previously untested possible intrusion configurations in Turkish.

Intrusion in Turkish: Previous Findings

ERP evidence:

Critical conditions in [6]

`Licensing`	Kimse	Ali'nin	çalıştığını	söylemedi bana
	NPI	[ES	EV]	MV.NEG
`Intrusion`	Kimse	Ali'nin	çalışmadığını	söyledi bana
	NPI	[ES	EV.NEG]	MV
`Violation`	Kimse	Ali'nin	çalıştığını	söyledi bana
	NPI	[ES	EV]	MV

Findings of Intrusion in [6]:

- ERP response profiles of Intrusion strongly resemble those of local licensing condition of embedded NPIs:
  - Both conditions attenuated N400 effects otherwise observed for embedded negation. Both conditions elicited similar LAN profiles.
- Intrusion induced complete attenuation of main verb violation P600 effects that unlicensed conditions elicited.
- Intrusion condition demonstrated acceptance rates in EoS judgment in between licensing and violation conditions.

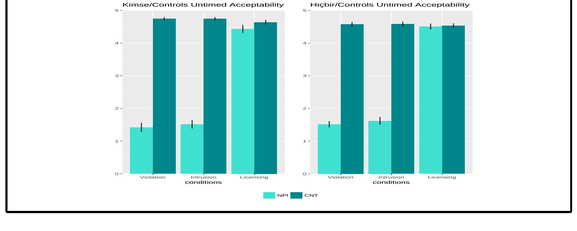
Present Study

- Research questions:
  - What is the sensitivity of intrusion effects for context manipulations?
  - Can intrusion effects be turned on/off by target manipulations?
  - What are the experimental task effects for intrusion effects?
- Context manipulation: Complementation (Exp.1&2) vs Relativization (Exp.3)
- Target manipulation: Pronominal NPI (*kimse*) vs Determiner NPI (*hiçbir*) (Exp.1&2)
- Tast effects: Time-insensitive measures (Exp.1) vs time-sensitive measures (Exp.2&3)

Experiment 1: Untimed task

- Replication of [6] with the addition of determiner NPI (*hiçbir*) conditions (see the tables under Exp. 2).
- Web-based (Ibex Farm). 38 Turkish native speakers (21 F; mean age=29.5, SD = 5.2)

Figure 1: **Untimed acceptability judgment task results**



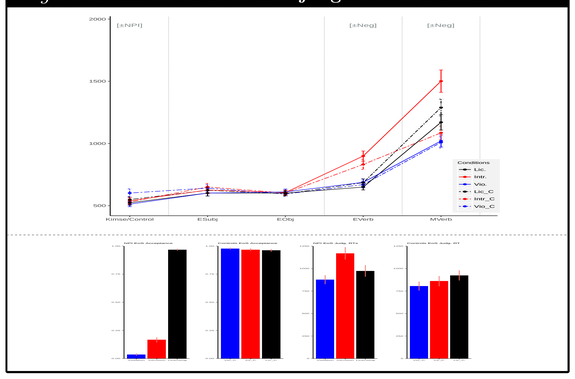
Experiment 2: Intervening interference

Web-based (Ibex Farm software) Self-paced reading with EoS acceptability judgment task. 2x2x3 design with 6 items per condition. 72 sets of items for critical/control conditions + 48 Filler items= 120 sentences, half ungrammatical. 67 Turkish native speakers (35 F; mean age=29.8, SD=5.4)

Pronominal NPI & Control conditions

	Regions				
	NPI/Cont.	ESubj	EObj	EVerb	MVerb
`Licensing`	Kimse/Esra,	Eren'in	elmayı	yediğini	görmedi.
	Anybody/Esra	Eren-G	apple-A	eat-FN-AG-A	see-NEG-P.3SG
	'Anybody/Esra did not see that Eren ate apple.'				
`Intrusion`	Kimse/Esra,	Eren'in	elmayı	yemediğini	gördü.
	Anybody/Esra	Eren-G	apple-A	eat-NEG-FN-AG-A	see-P.3SG
	'*Anybody/Esra saw that Eren did not eat apple.'				
`Violation`	Kimse/Esra,	Eren'in	elmayı	yediğini	gördü.
	Anybody/Esra	Eren-G	apple-A	eat-FN-AG-A	see-P.3SG
	'*Anybody/Esra saw that Eren ate apple.'				

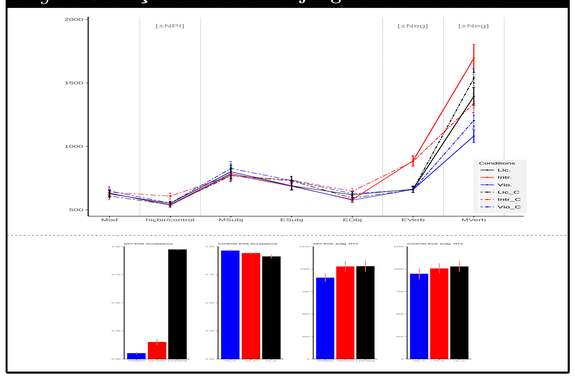
Figure 2: **Kimse SPR & EoS judgment task results**



Determiner NPI & Control conditions

	Regions						
	Mod	NPI/Cont.	MSubj	ESubj	EObj	EVerb	MVerb
`Licensing`	Okuldaki	hiçbir/yeni	öğrenci,	Eren'in	elmayı	yediğini	görmedi.
	School-L-P	any/new	student	Eren-G	apple-A	eat-FN-AG-A	see-NEG-P.3SG
	'Any/new student at the school did not see that Eren ate apple.'						
`Intrusion`	Okuldaki	hiçbir/yeni	öğrenci,	Eren'in	elmayı	yemediğini	gördü.
	School-L-P	any/new	student	Eren-G	apple-A	eat-NEG-FN-AG-A	see-P.3SG
	'*Any/new student at the school saw that Eren did not eat apple.'						
`Violation`	Okuldaki	hiçbir/yeni	öğrenci,	Eren'in	elmayı	yediğini	gördü.
	School-L-P	any/new	student	Eren-G	apple-A	eat-FN-AG-A	see-P.3SG
	'*Any/new student at the school saw that Eren did not eat apple.'						

Figure 3: **Hiçbir SPR & EoS judgment task results**



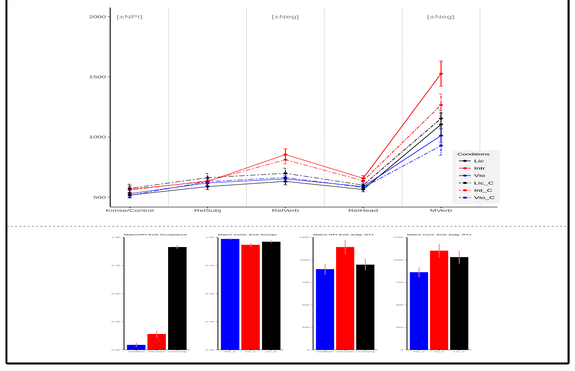
Experiment 3: Intervening & Non-intervening interference

Same as Exp.2 in terms of method & # of materials. 53 Turkish native speakers (29 F; mean age=25.1, SD=5.4)

Matrix NPI & Control conditions

	Regions				
	NPI/Cont.	RelSubj	RelVerb	RelHead	MVerb
`Licensing`	Kimse/Esra,	Eren'in	yıkadığı	elmayı	yemedi.
	Anybody/Esra	Eren-G	wash-FN-AG	apple-A	eat-NEG-P.3SG
	'Anybody/Esra did not eat the apple Eren washed.'='Nobody ate ...'				
`Intrusion`	Kimse/Esra,	Eren'in	yıkamadığı	elmayı	yedi.
	Anybody/Esra	Eren-G	wash-NEG-FN-AG	apple-A	eat-P.3SG
	'*Anybody/Esra ate the apple Eren did not wash.'				
`Violation`	Kimse/Esra,	Eren'in	yıkadığı	elmayı	yedi.
	Anybody/Esra	Eren-G	wash-FN-AG-A	apple-A	eat-P.3SG
	'*Anybody/Esra ate the apple Eren washed.'				

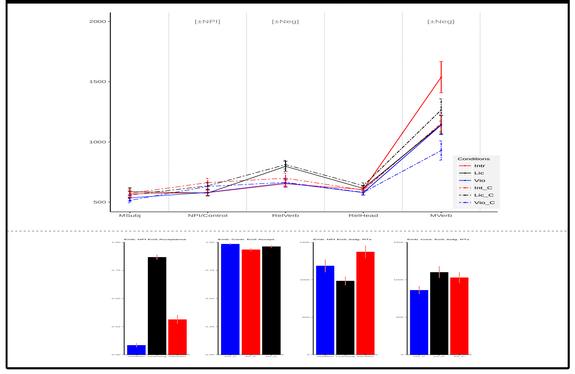
Figure 4: **Matrix NPI SPR & EoS judgment task results**



Embedded NPI & Control conditions

	Regions				
	MSubj	NPI/Cont.	RelVerb	RelHead	MVerb
`Intrusion`	Esra,	kimsenin/Eren'in	yıkadığı	elmayı	yemedi.
	Esra	anybody/Eren-G	wash-FN-AG	apple-A	eat-NEG-P.3SG
	'Esra did not eat the apple *anybody/Eren washed.'				
`Licensing`	Esra,	kimsenin/Eren'in	yıkamadığı	elmayı	yedi.
	Esra	kimsenin/Eren-G	wash-NEG-FN-AG	apple-A	eat-P.3SG
	'Esra ate the apple anybody/Eren did not wash.'				
`Violation`	Esra,	anybody/Eren'in	yıkadığı	elmayı	yedi.
	Esra	anybody/Eren-G	wash-FN-AG-A	apple-A	eat-P.3SG
	'Esra ate the apple *anybody/Eren washed.'				

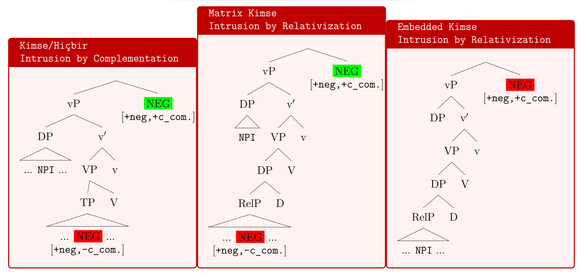
Figure 5: **Emb. NPI SPR & EoS judgment task results**



Summary

- To our knowledge, intrusion effects have been observed for the first time in contexts when the interference occurs in a non-intervening position (Fig. 5).
- Main effect of negation at the embedded verbs (Fig.2-5).
- Intrusion effect was observed in categorically two different NPIs for the first time (Fig. 2/3).
- EoS judgments show strong indication of intrusion in non-intervening interference cases.
- Experimental task is a significant factor in intrusion effects. Intrusion effects have only been observed in time-sensitive measures as also observed in [2].
- Online results of intrusion did not pattern with the licensing cases, contra the findings in [2]
- Intrusion effects were evident in EoS acceptance judgments (Fig. 5).

Discussion



- Licensing prediction is triggered only after NPI is processed in prospective licensing contexts.
- Processing of NPI licensing is closely connected to the structural variability. There is a locality requirement when an NPI occurs in a RC, no such requirement was observed in cases when NPIs occur in a complement clause (see [6])
- Intrusion effects have been observed in environments where the illicit licensor occurred in a structurally higher position (Embedded Kimse case).
- The presence of a licensor with [+neg] and [+c_command] features [3] does not guarantee a successful parsing of NPI licensing.

References & Acknowledgments

[1] H. Drenhaus, S. Frisch, and D. Saddy. Processing negative polarity items: When negation comes through the backdoor. *Linguistic Evidence. Mouton de Gruyter, Berlin*, 2005.

[2] D. Parker and C. Phillips. Negative polarity illusions and the format of hierarchical encodings in memory. *Cognition*, 157(Supplement C):321 – 339, 2016.

[3] S. Vasishth, S. Brüssow, R.L. Lewis, and H. Drenhaus. Processing polarity: How the ungrammatical intrudes on the grammatical. *Cognitive Science*, 32(4):685–712, 2008.

[4] M. Xiang, B. Dillon, and C. Phillips. Illusory licensing effects across dependency types: ERP evidence. *Brain and Language*, 108(1):40–55, 2009.

[5] M. Xiang, J. Grove, and A. Giannakidou. Dependency-dependent interference: NPI interference, agreement attraction, and global pragmatic inferences. *Frontiers in Psychology*, 4:708, 2013.

[6] A. Yanilmaz and J. E. Drury. Prospective NPI licensing and intrusion in Turkish. *Language, Cognition and Neuroscience*, 33(1):111–138, 2018.

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