

Production and perception of focus in naturalistic Turkish speech

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*Focus is not a homogeneous information structural reflex, with three major asymmetries observed cross-linguistically: **focus scope**, **focal argument hierarchy**, and **focus type**.*



Asymmetries in focus: Focus scope

(2) What did John buy? → John bought [the NEWSpaper]_{FOCUS}.



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- focus on a single constituent (2) → **narrow (scope) focus**
- focus projected on the sentence (3) → **broad (scope) focus**



Asymmetries in focus: Argument hierarchy

Focal argument hierarchy (cf. Skopeteas & Fanselow, 2010)

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(4) Who bought the newspaper yesterday? → [JOHN]_{NARROW.F} bought the newspaper yesterday.

(5) Subject inversion in Spanish (Büring & Gutiérrez-Bravo, 2001: 42):

Quién compró el periódico ayer? → *Ayer compró el periódico*
who bought the newspaper yesterday → yesterday bought the newspaper
[JUAN]_{NARROW.F}
Juan

‘Who bought the newspaper yesterday?’ → ‘Juan bought the newspaper yesterday.’



Asymmetries in focus: Focus types (Kiss, 1998)

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Focal argument hierarchy (cf. Skopeteas & Fanselow, 2010)

Cross-linguistically, non-canonical realisation is more likely in identificational foci than for information foci.



Word order in Turkish and information structure

(8) **SOV**

Ahmet gazete-yi al-dı.

Ahmet newspaper-ACC buy-PAST

(9) **OSV**

Gazete-yi Ahmet al-dı.

newspaper-ACC Ahmet buy-PAST

(10) **OVS**

Gazete-yi al-dı Ahmet.

newspaper-ACC buy-PAST Ahmet

(11) **SVO**

Ahmet al-dı gazete-yi.

Ahmet buy-PAST newspaper-ACC

(12) **VSO**

Al-dı Ahmet gazete-yi.

buy-PAST Ahmet newspaper-ACC

(13) **VOS**

Al-dı gazete-yi Ahmet.

buy-PAST newspaper-ACC Ahmet

‘Ahmet bought the newspaper.’



Proposed focus realisation strategies in Turkish

Syntactic hypothesis (Erguvanlı, 1984; Şener, 2019)	Dual hypothesis (İssever, 2003, 2006)	Prosodic hypothesis (Özge & Bozşahin, 2010)
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- Foci are prosodically prominent (H*L- pitch contour)
 - Foci are banned from postverbal positions
 - Only default, verb-adjacent (information) focus can project to broad focus
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(8a) *Ahmet*_{SUBJ} [*GAZETEYİ*]_{OBJ.F} *aldı*_{VERB}.

(8b) [*AHMET*]_{SUBJ.F} *gazeteyi*_{OBJ} *aldı*_{VERB}.

(9a) [*GAZETEYİ*]_{OBJ.F,i} *Ahmet*_{SUBJ} *t_i* *aldı*_{VERB}.

(9b) *Gazeteyi*_{OBJ,i} [*AHMET*]_{SUBJ.F} *t_i* *aldı*_{VERB}.

'Ahmet bought the newspaper.'



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Immediately preverbal focus position	Focus types trigger p-movement	Focus realisation in Turkish solely prosodic
Subject foci involve movement	Non-adjacent focus always identificational	Focus (types) do not cause movement
Speaker variability	Information subject focus causes movement	Identificational foci are postfocally deaccentuated

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- **Experiment 2** on comprehension of naturalistic focus realizations (sentence processing/felicitousness judgement): Data collection complete and ongoing analysis
- **Experiment 3** on processing of naturalistic focus realizations (online self-paced reading): Data collection to begin soon



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- (iii.) Do realizations of *information foci* in Turkish differ from realizations of *identificational foci* in word order, intensity, and/or f0?



EX1: Data collection and participants

- **25 native speakers of Turkish** participated in person (13 women; age range 19.8 – 36.3 years; mean age 22.7, SD 3.6 years)



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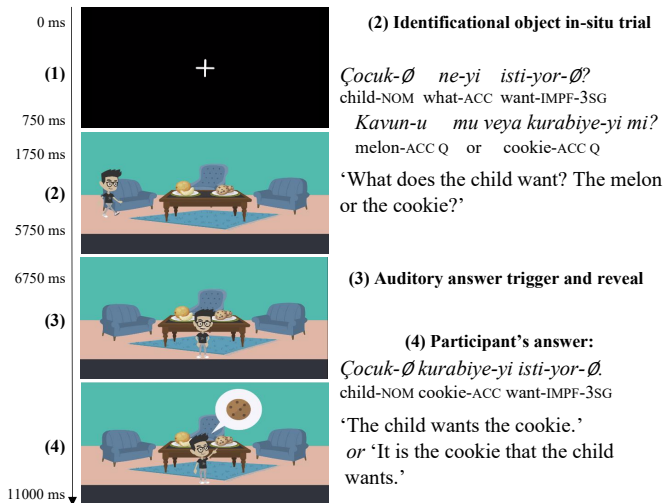
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EX1: Procedure





EX1: Summary of results

Research questions	Results
Do focus scopes in Turkish differ in word order, f0, and/or intensity?	(✓) Word order ✓ Fundamental frequency ✓ Intensity
Do subject and object foci in Turkish differ in word order, f0, and/or intensity?	(✓) Word order ✓ Fundamental frequency ✓ Intensity
Do focus types in Turkish differ in word order, f0, and/or intensity?	✗ Word order ✓ Fundamental frequency ✗ Intensity



EX2: Research questions

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- (i.) Do focus asymmetries (i.e., focus target, type, & wh-question configuration) affect felicitousness of syntactically variable question-answer pairs?



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Using an online judgment task with the answers collected in experiment 1...

- (i.) Do focus asymmetries (i.e., focus target, type, & wh-question configuration) affect felicitousness of syntactically variable question-answer pairs?
- (ii.) Are native speakers of Turkish sensitive to focus type mismatch between question/context and answer?

EX2: Procedure

(1) 250 ms

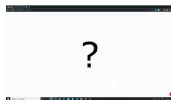
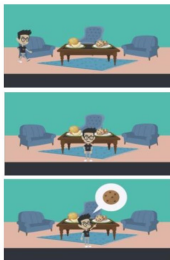
(2) 5000 ms

(3)

(4)

(5)

0 ms

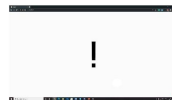


Identificational object in-situ trial:

Çocuk-Ø ne-yi isti-yor-Ø?
child-NOM what-ACC want-IMPF-3SG

Kavun-u mu veya kurabiye-yi mi?
melon-ACC Q or cookie-ACC Q

‘What does the child want? The melon or the cookie?’



Answer recorded in EX1:

Çocuk-Ø kurabiye-yi isti-yor-Ø.
child-NOM cookie-ACC want-IMPF-3SG

‘The child wants the cookie.’
or ‘It is the cookie that the child wants.’





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- Focus types are not realized through word order in the collected naturalistic sample, as *information foci are not restricted to the immediately preverbal position*.



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- Naturalistic focus realizations in Turkish contradict the assumption of a fixed immediately preverbal focus position, providing evidence for the proposed *focus field*.
- Focus types are not realized through word order in the collected naturalistic sample, as *information foci are not restricted to the immediately preverbal position*.
- In our naturalistic sample, we have found *acoustic correlates of focus scope (i.e., broad vs narrow foci), focus type (identificational vs information foci), and focus target (i.e., subject vs object foci)* in f0 and/or intensity.



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- In our naturalistic sample, we have found *acoustic correlates of focus scope (i.e., broad vs narrow foci), focus type (identificational vs information foci), and focus target (i.e., subject vs object foci)* in f0 and/or intensity.
- However, early analysis of experiment 2's data indicates that native speakers of Turkish are NOT sensitive to focus type mismatch in question-answer pairs, possibly indicating an overruling effect of the context over focus realization.

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Thank you for listening!





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Focus vs. focus realisation

- Focus as an information-structural category is not the same as its language-dependent grammatical manifestation (i.e., realisation), as focus is ambiguous due to projection.
- Cross-linguistically, three means of focus realisation are documented:
 - **prosodic** (e.g., focus pitch accent in English)
 - **syntactic** (e.g., focus type realisation in Hungarian)
 - **morphological** (e.g., focus marker in Gürüntüm; Hartmann & Zimmermann, 2009)
- Languages often employ *multiple means of focus realization*, with foci always being maximally prominent in prosody (*FocusProminence* constraint; Truckenbrodt, 1995)



Experimental investigations of acoustic correlates of focus in Turkish

Multiple experimental studies have investigated the acoustic correlates of focus in Turkish:

- Gürer (2014; 2015; 2020), İpek (2011), and İvoşeviç and Pınar Bekâr (2015) investigated acoustic correlates of focus realizations in Turkish, comparing focus types, scopes, targets, and their neutral counterparts.
- These studies applied procedures where participants read sentences embedded in discourse with testers or other participants (i.e., using implicit prosody).
- None of these studies could identify systematic acoustic correlates of focus differentiating focus types, focus targets, or focus scopes.

De Ruiter (2015) found that focus prosody in German read speech differed from naturalistic speech, arguing that “reading intonation is not comparable to intonation in [naturalistic] speech, and that this has important consequences also for [the] choice of methodology”.



EX1: Materials

Total	Focus type	Question order	Question type	Focus target
120	information focus (48)	canonical/ in-situ (24)	no alternatives (12)	subject (6)
				object (6)
		incorrect alternatives (12)	subject (6)	
			object (6)	
	non-canonical/ ex-situ (24)	no alternatives (12)	subject (6)	
			object (6)	
		incorrect alternatives (12)	subject (6)	
			object (6)	
identificational focus (48)	canonical/ in-situ (24)	binary alternatives (48)	subject (12)	
			object (12)	
	non-canonical/ ex-situ (24)		subject (12)	
			object (12)	
broad focus (24)	-	-	-	

- Participants saw ten-second-long animations and answered *wh*-questions consisting of three words.
- Participants were instructed to answer using three words.
- Animations and *wh*-questions were controlled for:
 - Focus type
 - Question order
 - Question type
 - Focus target
 - Focus scope



EX1: Syntactic results

F-Type	F-Target	Q-Order	Q-Type	SOV			OSV		
na.	na.	(O)SV	All-new	556	(25)	100%	0	(0)	0%
Inform.	OBJ	SOV	No A.	143	(25)	100%	0	(0)	0%
Inform.	OBJ	SOV	Incorr. A.	140	(25)	100%	0	(0)	0%
Identific.	OBJ	SOV	Corr. A.	279	(25)	99.6%	1	(1)	0.4%
Inform.	OBJ	OSV	No A.	126	(25)	87.6%	18	(9)	12.4%
Inform.	OBJ	OSV	Incorr. A.	133	(25)	93.1%	10	(7)	6.9%
Identific.	OBJ	OSV	Corr. A.	264	(25)	94.6%	15	(7)	5.4%
Inform.	SUBJ	SOV	No A.	122	(25)	83.6%	24	(10)	16.4%
Inform.	SUBJ	SOV	Incorr. A.	117	(25)	81.8%	26	(11)	18.2%
Identific.	SUBJ	SOV	Corr. A.	230	(25)	79.6%	59	(16)	20.4%
Inform.	SUBJ	OSV	No A.	63	(21)	43.7%	81	(22)	56.3%
Inform.	SUBJ	OSV	Incorr. A.	48	(16)	37.2%	81	(25)	62.8%
Identific.	SUBJ	OSV	Corr. A.	80	(21)	29.6%	190	(25)	70.4%

EX1: Data exclusion

	N	%
Total answers	3120	100%
All answers of participant A189 (ADHD)	120	3.85%
Technical problems	4	0.13%
Answer of more than 3 words	33	1.06%
Errors, stutters, & re-starts within the sentence	47	1.51%
Filled pauses within the sentence	15	0.48%
Aborted answers due to word limit	12	0.38%
All answers to item t114 (broad focus)	25	0.80%
Verb medial answers	4	0.13%
All exclusions	260	8.33%
Usable answers	2860	91.67%

Table 1: Overview of excluded recordings