

# Turkish

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## 1. Language description

Turkish is one of the Turkish languages from the Altaic language family. It is the official language in Turkey and is spoken by approximately 70 million people worldwide. There are different dialects within Turkey. Standard Turkish is basically a standardisation of the Istanbul dialect. Kurdish is not a dialect of Turkish, but a separate language. There are also regional accent differences that are comparable to the differences between Dutch and Flemish.

**Tabel 1**

*Consonant system Turkish according to Kopkallı-Yavuz (2010).*

	Coronal					Dorsal				
	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Palatal	Velar	Uvular	Faryngal	Glottal
plosives	p	b		t	d	(c) (ɟ)	k	g		
nasals	m			n		(ɲ) <sup>1</sup>	(ŋ)			
tap flap				r						
fricatives		f	v <sup>2</sup>	s	z	ʃ	ʒ	x	ʕ <sub>3</sub>	h
affricates						tʃ	dʒ			
liquids				l	(ɭ) <sup>4</sup>					
semi vowels						j				

( ) These are allophones

<sup>1</sup>/ŋ/ does not appear in the consonant overview, but if the /n/ is followed by a velar sound, then it is realised as /ŋ/.

<sup>2</sup>This fricative does not appear in the overview from Kopkallı-Yavuz (2010).

<sup>3</sup>Not everyone records this as a phoneme. Corresponds with grapheme ğ. Typically realised as lengthening of the preceding vowel, sometimes as a soft g or uvular r.

<sup>4</sup>In both languages, /ɭ/ is an allophone of /l/. In Dutch, this is regional (e.g. Amsterdam). In Turkish, /ɭ/ occurs in combination with back vowels.

<sup>5</sup>In some cases, Turkish /v/ is realised as /v/. See Kopkallı-Yavuz (2010) for a discussion.

### Syllable structure

Most of the syllables are open. If a word ends in a consonant and has a suffix that starts with a vowel, then resyllabification occurs. The consonant of the main word becomes the onset of the suffix: *aç im* → *a çim*.

In Turkish, no consonant clusters are syllable initial or word initial. A cluster is 'broken apart' by placing a vowel between the consonants (e.g. *grup* → *gurup*) or by placing a vowel in front of the word: (e.g. *skelet* → *iskelet*). This concerns words that are not Turkish in origin.

Clusters at the end of a syllable do occur, but not often. They consist of no more than two consonants.

### Stress

Usually on the last syllable.

Exceptions: place names (Ankara), adverbs, interjections

Due to the stress pattern, the complex morphology, and the vowel harmony, children pay relatively much attention to final syllables. Therefore, omitting final syllables is not to be expected, and was not found in our own research.

## 2. Phonological development

**Table 2**

*Age of acquisition of Turkish consonants (Topbaş, 2006, 2007; Topbaş & Yavaş, 2006; Topbaş & Konrot, 1998).*

Ages	Initial	Final
1;6 – 1;11	b d k t	p t k
	m	m n j
2 – 2;5	p t g n	c
	tʃ dʒ	tʃ
	j l	ʊ
2;6 – 2;11	s ʃ	s ʃ l
3 – 3;5	f v z ʒ h	f ʒ z h
3;6 - 4	r	r
>4		ʎ
		clusters

*Acquired means: 90% of the children produces the phoneme correctly in at least 68% of the cases*

## 3. Common phonological processes in monolingual Turkish children

Substitutions are most frequent around age 2, when a leap in the lexical development occurs. Most substitutions are disappeared by the 3<sup>rd</sup> year, but substitutions for /r/, gliding and cluster reduction may persist until the 4<sup>th</sup> year. With 3;6 years, in principle, almost all phonemes should have been acquired in syllable initial and final position. Note: children who grow up in a multilingual environment receive less input from the native language than monolingual children. This means the development in their own language may be slower as compared to monolingual Turkish children.

The overview below lists many common processes, as reported by Topbaş (2006, 2007). The examples on the right come from our own research among typically developing Turkish toddlers in the Netherlands.

Cluster reduction	bisiklet→bisikilet
Lateralisation	fare→fale, araba→aʔaba, daktɔr→dɔktɔl, karpuz→kalpuz
Gliding	fil→fij, telefɔn→teʃefɔn, fare→faje, limɔn→jimɔn
Stopping	salindʒak→talindʒak, fare→pare, dʒep→dep, a:tʃ→a:t
Syllable reduction	bisiklet→bitet, araba→aba, ajakabw →ajabw/akabw, telefɔn→tefɔn
Consonant deletion	bisiklet→bisilet, εmεc→εmεc, karpuz→karpu/kapu
Assimilation	gɔbec→gɔcec, merdiven→mendiven, limɔn→mimɔn, tʃɔdʒuk→tʃɔtʃuk
Fronting	kuf→kus, utʃak→usak, bebεc→bebεt, tʃɔdʒuk→sɔsuk
Affrication	at→atʃ
Devoicing	zejtin→sejtin, bisiklet→pisiklet, gɔbec→kɔpec, muz→mus
Deaffrication	utʃak→ujak, a:tʃ→a:ʃ, dʒep→ʒep
Voicing	jatak→jadak
Metathesis	bisiklet→bikislet, kɔpec→pɔkec, telefɔn→tefelɔn
Backing	kɔpec→kɔpek
Reduplication	daktɔr→tɔktɔk

#### 4. Lexical variation

The words for belly button /gøbɛc/ and abdomen /karnu/ are used interchangeably. The image makes it possible to name both words. We chose the word 'belly button' because of the /g/. When the child responds with 'abdomen', you can try to prompt the word 'belly button' by asking: and what is in the middle of the abdomen? If the child still does not say /gøbɛc/, the word may be said for imitation.

Use of suffixes is frequent in Turkish, and may change the (position of the) target phonemes. If the child uses a suffix that changes the pronunciation of the target word, the word may be said for imitation. This word can be considered spontaneously produced nevertheless. Examples:

- Conjugations, e.g. /dʒɛp/ → /dʒɛbi/, 'his pocket'
- Child language, e.g. /gøbɛc/ → /gøbyʃ/, 'abdomen'

When children name pictures in Dutch, rather than in Turkish, you can prompt the Turkish word by asking: and what is it in Turkish? If the child still does not say the Turkish word, the word may be said for imitation.

#### 5. Results of typically developing Turkish toddlers in the Netherlands

Between June 2016 and July 2018, 32 bilingual Turkish-Dutch toddlers are assessed using Speakaboo (Verbeek, 2018). All toddlers acquired Turkish as their dominant language and were typically developing. The group consisted of 14 boys and 18 girls. Their mean age was 3;5 years (41 months, range: 30-37 months).

The Turkish results will be discussed in section 5.1. Additionally, a part of the Turkish-Dutch toddlers were assessed using the Dutch version of Speakaboo. These results will be discussed in section 5.2.

Overall, the bilingual toddlers obtained a slightly higher Percentage Consonants Correct (PCC) in Turkish than in Dutch. A positive relation was found between their speech production abilities in both languages: that is, children who obtained a high score in Turkish, were likely to obtain a high score in Dutch as well. On average, Turkish children obtained higher scores for phonemes that occur both in Turkish and in Dutch, than for phonemes that occur in only one of the languages.

Furthermore, we found that age was related to vocabulary and speech production. Older children named more pictures spontaneously in both languages and made fewer mistakes in doing so. This is reflected in higher PCCs.

### 5.1. Results: Turkish

Table 3 shows the mean scores of the full group. The Turkish test contains 35 words and 103 consonants. Note: for some children, not all 103 consonants were assessable, for example because some words were not produced.

**Table 3**

*Mean Turkish speech production scores for typically developing bilingual Turkish-Dutch children in the Netherlands (mean age 3;5).*

		Mean	Standard deviation	Minimum-Maximum
Consonants (total: 103)	Number of consonants correct	86.0	10.7	55-99
	Number of consonants evaluated	100	3.4	89-103
	Percentage of Consonants Correct (PCC)	85.9%	10.7%	57.3%-98.0%
Words (total: 35)	Number of words produced spontaneously	22.7	6.9	5-33
	Number of words mistakenly produced in Dutch	5.4	5.3	0-19
	Total number of words produced	34.8	0.6	32-35

On average, children made 14 errors in the Turkish version of Speakaboo (PCC: 85.9%). Most errors were made in the following words: *mouse* /fare/, *car* /araba/, *bicycle* /bisiklet/ and *child* /çocuk/. Least errors were made in the words *meat* /et/, *ball* /top/ and *cat* /kedi/.

The bilingual children in our study showed relatively many typical phonological processes that would not be expected to be seen at the age of testing: in particular assimilation, syllable deletion, fronting, stopping, and lateralisation.

Remarkably common were also the following processes:

- Deletion of the (syllable) final consonant.
- Devoicing of /z/, both syllable initial as syllable final.
- Backing of allophone /c/ to /k/.

These processes may be a result of interference from Dutch.

Turkish has one phoneme category that Dutch has not: affricates. Turkish toddlers growing up in the Netherlands may need slightly more time to acquire these phonemes. In our study, simplification of affricates was observed until age 3;6. Most frequent processes were fronting (e.g. /utʃak/ → /usak/) and stopping (e.g. /dʒɛp/ → /dɛp/).

On average, 12 words per child were not produced spontaneously and needed to be elicited via delayed or direct imitation. The following pictures were most often not recognised by bilingual children: *pocket* /dʒɛp/, *elephant* /fil/, *parrot* /papa:n/ and *meat* /et/.

Moreover, bilingual Turkish-Dutch children occasionally named pictures in Dutch, the “wrong” language. On average, 5 pictures per child were named in Dutch, rather than in Turkish. This

concerned most frequently the following words: *elephant* /fil/, *banana* /muz/, *bicycle* /bisiklet/ and *parrot* /papa:n/.

**Example of an average score in Turkish (see Figure 1)**

Girl, 38 months, dominant Turkish

Number of consonants incorrect:	20
Number of words imitated:	12
Number of words in Dutch:	8
Not assessable:	1 word (with 3 consonants)
Assessed:	$103-3=100$ consonants
Correct:	$100-20=80$ consonants
PCC	$80/100*100=80\%$

- X: klank is verkeerd gerealiseerd  
 Ø: klank is weggelaten  
 NTB: woord is niet te beoordelen

Woord	Nagezgd	Proces/opmerking
1.top (bal)	X	
2.at (paard)	X	NL "paard"
3.et (vlees)		
4.kedi (poes)		
5.yatak (bed)		
6.köpek (hond)		
7.bebek (pop)		
8.cep (zak)	X	/ɑs/ → /z/
9.ev (huis)		
10.süt (melk)		/syt/
11.uçak (vliegtuig)	X	NL "vliegtuig" /tʃ/ → /s/
12.limon (citroen)	X	NL "citroen"
13.balık (vis)		
14.göbek (buik)		r, /gøbyʃ/
15.fil (olifant)	X	NL "olifant"
16.kuş (vogel)		
17.ağaç (boom)		/ɑ:tʃ/
18.çocuk (kind)	NTB	
19.muz (banaan)	X	NL "banaan"
20.zeytin (olijf)	X	
21.üzüm (druiven)		
22.araba (auto)		/ɑvɑɑ/
23.fare (muis)	X	/fɑr/ NL "muis"
24.ekmek (brood)		
25.karpuz (meloen)		/r/ → /l/
26.doktor (dokter)		/t/ → /l/
27.yastık (kussen)		
28.tavşan (konijn)		
29.telefon (telefoon)		
30.ayakkabı (schoen)		
31.bisiklet (fiets)	X	NL "fiets"
32.papağan (papegaai)	X	NL "papegaai"
33.merdiven (trap)	X	/bed:innen/
34.salıncak (schommel)		
35.helikopter		
<b>Totaal aantal consonanten fout</b>		<b>A.</b>
<b>Totaal aantal consonanten geproduceerd</b>		<b>B.</b>
<i>103 – aantal consonanten niet geproduceerd</i>		
<b>(B-A) / B * 100</b>		<b>PCC</b>

*wordt niet altijd uitgesproken tussen twee achterlinkers.*

Speakaboo Scoreformulier Turks 0.4

Figure 1: Example of score sheet in Turkish; consonants in clusters counted as single consonants.

## 5.2. Results: Dutch

Table 3 shows the mean scores of the full group. The Dutch test contains 36 words and 87 consonants.

**Table 4**

*Mean Dutch speech production scores for typically developing bilingual Turkish-Dutch children in the Netherlands (mean age 3;5).*

		Mean	Standard deviation	Minimum-Maximum
Consonants (total: 87)	Number of consonants correct	71.3	7.3	57-81
	Number of consonants evaluated	85.9	1.4	82-87
	Percentage of Consonants Correct (PCC)	83.0%	8.7%	65.5%-94.0%
Words (total: 36)	Number of words produced spontaneously	18.5	7.8	5-35
	Number of words mistakenly produced in <u>Turkish</u>	3.4	4.3	0-14
	Total number of words produced	36.0	0.2	35-36

On average, Turkish children made 15 errors in the Dutch version of Speakaboo (PCC: 83.0%). This is slightly more than the average number of errors made in the Turkish version. Most errors were made in the following words: *belt* /rim/, *television* /teləvisi/, *marker* /stift/, and *flower* /blum/. Least errors were made in the words *knife* /mes/, *banana* /bana:n/, *doll* /pɔp/, and *telly* /te:ve:/.

In bilingual children's Dutch speech production, phonological processes are more frequent than in the Dutch speech production of monolingual peers. The following processes were common:

- Phonological processes that are typical in Dutch speech acquisition: syllable deletion, deletion of final consonants, fronting, stopping, and gliding. These were observed more often and until later age than in monolingual peers.
- Cluster reduction. Remarkably common was that initial clusters were simplified using epenthesis (e.g. /blum/ > /bəlum/), likely as a result of interference from Turkish.
- Backing of fricatives and plosives. This was seen in one third of the Turkish toddlers, and may be interference from Turkish, where backing is considered a typical process.

On average, 17 words per child were not produced spontaneously and needed to be elicited via delayed or direct imitation. Bilingual children named fewer pictures spontaneously in Dutch than in Turkish. Monolingual Dutch children produced significantly more words spontaneously than bilingual Turkish-Dutch children, but it should be noted that a smaller vocabulary is typical in bilingual language development. The following pictures were most often not recognised by bilingual children: *dog house* /hɔk/, *belt* /rim/, *comb* /kam/, *box* /do:s/, and *marker* /stift/. Words that were imitated least frequent were *banana* /bana:n/, *bicycle* /fits/, and *elephant* /olifant/.

Moreover, bilingual Turkish-Dutch children occasionally named pictures in Turkish, the "wrong" language. On average, 3 pictures per child were named in Turkish, rather than in Dutch. This

concerned most frequently the following words: *belt* (Turkish: /kɛmɛr/), *box* (Turkish: /kutu/), *bed* (Turkish: /jatak/), *clock* (Turkish: /sa:t/) and *lamp* (Turkish: /lamba/).

### **Example of an average score in Dutch (see Figure 2)**

#### Boy, 37 months, dominant Turkish

Number of consonants incorrect:	18
Number of words imitated:	17
Number of words in Turkish:	3
Not assessable:	None
Assessed:	87-0=87 consonants
Correct:	87-18=69 consonants
PCC	$69/87*100=79,3\%$

X: klank is verkeerd gerealiseerd

∅: klank is weggelaten

NG: woord is nagezegd

Woord	NG	Proces/Opmmerkingen
1.koe		
2.tas		
3.pop		
4.kip		
5.sok		
6.jas		
7.bed		/b/ → /p/
8.hok	X	
9.vis		/v/ → /f/
10.neus		
11.wip		
12.maan	X	
13.kam	X	/m/ → /n/
14.voet	X	/v/ → /f/ Turks: 'aypak'
15.riem	X	/r/ → /ʃ/ /m/ → /n/
16.zaag		/z/ → /ʒ/
17.rok	X	/r/ → /j/
18.pen	X	
19.mes	X	
20.boek		/b/ → /p/
21.doos	X	/d/ → /t/ Turks: 'kutu'
22.klok	X	/kəlɔk/ Turks: 'saat'
23.bloem		/bɔlu/
24.spin		
25.fles	X	
26.stift	X	/sɔtɪf/
27.kast		
28.lamp	X	
29.fiets		/i/ → /j/
30.auto		/aʊ/ → /a:/
31.banaan		
32.tv*		
32.televisie*	X	/teɪvɪzi:/
33.kado	X	/d/ → /t/
34.olifant		/olɔfɑns/
35.politie	X	
36.kabouter	X	/bʊ/ → /a:/
<b>Totaal aantal consonanten fout</b>	<b>A.</b>	
<b>Totaal aantal consonanten geproduceerd</b>	<b>B.</b>	
87 – aantal consonanten van niet geproduceerde woorden		
<b>(B-A) / B * 100</b>	<b>PCC</b>	

\*beide realisaties mogen goedgekeurd worden.

Speakaboo Scoreformulier Nederlands 0.2

Figure 2: Example of score sheet in Dutch; consonants in clusters counted as single consonants.

## 6. Sources

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### **Other sources**

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