

Examining the roles of phonology, orthography, and semantics in the speed of lexical access in bilinguals

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Turkish-English bilinguals were tested in a two-part lexical decision experiment. Word stimuli were 180 Turkish and English word pairs: 20 in each of nine categories representing every possible combination of same or different phonology, orthography, and meaning between the two words in the pair. In each part of the experiment, participants identified words in a single target language. Previous research has demonstrated a facilitation effect in the speed of lexical access for bilinguals when the word stimulus is a cognate. However, in this experiment, reaction times for non-cognate translation words were faster than those for cognate or false cognate words. These results are consistent with the hypothesis that cognate words inhibit lexical access when bilinguals are instructed to consider only one language.

The cognitive relationship between the two languages of a bilingual is a frequently studied subject, and accordingly there are several theories about when one or both languages are activated. The current dominant theory is that access to lexical items in bilinguals is not language specific. The cognate facilitation effect, a phenomenon documented by Caramazza and Brones in 1979, provides consistent evidence for the theory that lexical access is not language-dependent.

Cognates are translation words that share phonology and/or orthography in the two languages. For example, in English and Turkish, the words “cake” and “kek” are cognates: their pronunciation and meaning are the same. Caramazza and Brones used a lexical decision task with Spanish-English bilinguals to investigate the effect of cognates on the speed of word recognition.

They found that bilinguals responded faster to L2 (secondary language) cognates than to L2 control words. This cognate facilitation effect was attributed to the theory that cognate words activate the L1 (dominant language) as well as the L2 lexical representation, augmenting the activation and speeding word recognition. This experiment provided the first evidence that lexical access in bilinguals is not

language specific.

The cognate facilitation effect in L2 has since been replicated in multiple studies (Dijkstra et al., 1999; Lemhofer & Dijkstra, 2004; Schwartz, Kroll, & Diaz, 2007). Additionally, research by Lemhofer, Dijkstra, and Michel (2004) demonstrated that the effect increases with the addition of languages. In an experiment with Dutch-English-German trilinguals, they found that participants had faster responses to L3 (tertiary language) words that were cognates in all three languages than to words that were only cognates in two.

Although Caramazza and Brones' original study did not show a cognate facilitation effect when subjects were tested in their dominant language, later research did find faster responses to L1 cognate words. In an experiment with Dutch-English-French trilinguals, Van Hell and Dijkstra (2002) demonstrated a cognate effect for L1-L2 cognates and L1-L3 cognates for participants who were extremely proficient in their third language, French.

Van Hell and Dijkstra ascribed their results, which contradicted earlier studies that did not find an L1 cognate effect, to the proficiency of their participants in the L2 and L3 languages. Because the L1-L3 cognate effect only appeared in the

participants who were very proficient in French, the researchers theorized that the strength of cognate facilitation is dependent on the level of participants' fluency in the L2 or L3 languages.

Their findings were especially interesting considering that most of the stimuli they used were "near-cognates," or words that were not completely orthographically or phonologically identical. Many experiments have used different definitions for the terms *cognate*, *false cognate*, and *homograph*, sometimes combining two or more types of words into one category. The first experiment to clarify the roles of orthography, phonology, and semantics in the cognate facilitation effect was conducted by Dijkstra et al. (1999). They used a lexical decision task with Dutch-English bilinguals to examine the recognition of L2 (in this case, English) words. The word stimuli varied in the degree of similarity to their Dutch equivalents according to semantics, orthography, and phonology.

Dijkstra et al. found a cognate effect for words that had all three components in common, as well as for words with the same meaning and orthography. Results for combinations with common phonology in addition to either semantics or orthography were inconsistent. Also, interlingual homographs, words that share only phonology across languages, were recognized slower than other word types.

In another study by Lemhofer and Dijkstra (2004), a cognate effect was replicated for the same categories, but they did not replicate the interlingual homograph inhibition. In 2007, Schwartz et al. documented faster recognition for words that had all three factors in common than those who only shared semantics and orthography, suggesting that common phonology facilitates recognition in the presence of semantic and orthographic overlap.

Other studies have produced mixed results, especially those focusing on the role of orthography by using interlingual homographs. Some have found orthographic inhibition (Jared & Szucs, 2002), facilitation (Dijkstra, De Bruijn, Schriefers, & Ten Brinke, 2000; Dijkstra, Timmermans, & Schriefers, 2000; Dijkstra, Van Jaarsveld, & Ten Brinke, 1998) and no effect (Altenberg & Cairns, 1983).

The present study attempts to further clarify the roles of phonology, orthography, and semantics in bilingual word recognition using Turkish-English bilingual subjects in a language specific lexical decision task. The design is similar to that of Dijkstra et al. (1999), except that test stimuli were words in both the L1 and L2 languages. In addition to examining word recognition in both languages of a bilingual, the current study also sought to determine whether the cognate facilitation effect would survive in a language specific task.

Method

Participants

Participants were paid volunteers or students receiving extra credit for a psychology course who were fluent in both English and Turkish. Of the 13 bilinguals tested, the data for 1 was removed due to insufficient fluency in Turkish.

Language and background information was assessed by a questionnaire. Six participants were male and six were female. The average age of participants was 26. Four participants were college students, seven were graduate students or had completed graduate school, and one was a PhD student.

Nine participants reported being more fluent in Turkish than in English, two considered themselves equally fluent, and one reported being more fluent in English. The average number of years that

participants had been fluent in Turkish was 22.83, and the average rating for Turkish fluency on a scale of 1 to 10 was 9.33. The average number of years that participants reported being fluent in English was 11, and their estimated fluency in English was 8.20 on the same scale. Three participants reported fluency in one other language.

Stimuli

The stimuli used for the experiment were 180 English and Turkish word pairs selected for the relationship between their phonology, orthography, and meaning. There were 20 pairs in each of nine groups representing every possible combination of same or different phonology, orthography, and meaning between the two words in the pair (Table 1).

Two sets of nonsense words were also created for the experiment: 90 that were pronounceable in Turkish, and 90 that were pronounceable in English. The nonsense words were formed by rearranging the letters of the test stimuli, with some letter substitutions in order to make the plausible Turkish or English nonsense words.

The word groups each fall into one of three categories: cognates, “false” cognates, and control words. The cognate groups are DDSc, DSS, SDS, and SSS. The “false” cognates, or words that were orthographically or phonologically the same with different meanings, were the DSD, SDD, and SSD groups. The control word groups, or words that did not have the same orthography or phonology, were DDD and DDSn.

Figure 1

Word groups based on phonological, orthographical, and semantic relationships between the English-Turkish word pair.

Group	Phonology	Orthography	Meaning
1-SSS	Same	Same	Same

2-SSD	Same	Same	Different
3-SDD	Same	Different	Different
4-DDD	Different	Different	Different
5-DSS	Different	Same	Same
6-DSD	Different	Same	Different
7-SDS	Same	Different	Same
8-DDSc	Different	Different	Same
9-DDSn	Different	Different	Same

Design

Each participant performed a series of 180 lexical decisions in either English or Turkish, followed by another block of 180 lexical decisions in the second language. Participants were urged to consider only the target language in each block when making the lexical decisions.

The order of the blocks was counterbalanced so that half of the participants completed the study in each order (English-Turkish or Turkish-English). Each block contained 10 words from each of the nine groups as well as 90 nonsense words. This created a total of 180 trials, which were randomized within each block.

On each trial, the appearance of the stimulus word initiated a millisecond timer that was stopped by the participant’s response. Reaction times were only recorded for correct responses. There were three seconds between the participant’s response and the appearance of the next word.

Procedure

Each participant was tested individually in a one hour session of 360 lexical decision trials. Participants were given five practice trials at the beginning of the experiment to become familiar with the procedure. The practice trials consisted of words not used in

the actual study. The practice trials were followed by 180 lexical decisions in either Turkish or English. After a short break between blocks, participants made another 180 lexical decisions in the second language.

When completing each language block, participants were instructed to disregard the other language. For example, when completing the English block, they were told to decide if the stimulus words were real words *in English*, without considering whether or not they were real words in Turkish.

Stimuli appeared as lowercase black-on-white letters on a computer screen. After the appearance of the word, the participant pressed the “J” key on the keyboard to give an affirmative response (real word) and the “F” key to give a negative response (nonsense word). After each response, the screen was cleared for 1s. Then, three black-on-white asterisks appeared as a fixation point for 2s before the beginning of the next trial. Participants were told to respond as quickly and as accurately as possible.

Upon completion of the study, each participant was given a short translation test to assess whether or not s/he knew all the words used in the study.

Results

The data were analyzed using SPSS software. Pairwise comparisons were made between word groups for both error rate and reaction time. Overall word error rates were low (6% in the English block and 8% in the Turkish block) and not significantly different between the two languages, indicating comparable levels of fluency in both languages. However, reaction time was significantly faster for lexical decisions made in the English language condition (Table 1). Error rates covaried with the latency of response, which suggests that

participants did not trade accuracy for speed. Mean reaction times and error rates by language and word group are displayed in Table 3. Mean differences in reaction times for each group, standard errors, and p-values are displayed in Table 2.

The main effect of age was statistically significant for DSD English reaction time [$F(1,12)=11.206$, $p=0.02$] and SDS Turkish reaction time [$F(1,12)=8.8$, $p=0.031$]. The main effect of language dominance was only statistically significant for DSD English reaction time [$F(1,12)=31.513$, $p=0.002$]. The main effect of language experience was significant for DSD English reaction time [$F(1,12)=16.453$, $p=0.01$] and SDS Turkish reaction time [$F(1,12)=14.967$, $p=0.012$]. The main effect of age of second language acquisition was significant for DSD English reaction time [$F(1,12)=9.265$, $p=0.029$] and SDS Turkish reaction time [$F(1,12)=12.17$, $p=0.017$]. The main effect of speaking a third language was significant for DDD Turkish reaction time [$F(1,12)=8.534$, $p=0.033$], DDSn Turkish reaction time [$F(1,12)=7.149$, $p=0.044$], DSS Turkish reaction time [$F(1,12)=24.645$, $p=0.004$] and bordering on significance for DDSc Turkish reaction time [$F(1,12)=5.794$, $p=0.061$]. The main effect of gender was significant for DSD English reaction time [$F(1,12)=18.339$, $p=0.008$] and SDS Turkish reaction time [$F(1,12)=7.792$, $p=0.038$]. No other main or interaction effects were significant.

Discussion

The first interesting finding was that average reaction times across word groups, were faster in the English language condition than in the Turkish, despite the fact that most participants reported Turkish as their dominant language. This might be explained by the fact that all participants lived in the United States and used English on a daily basis to communicate.

Comparisons of reaction times between word groups were also interesting. The DDD word group reaction time was significantly faster than reaction times for DSD, DSS, SSD, SSS, and Nonsense words. The DDD group was comprised of words that differed in every possible way between the two languages: pronunciation, spelling, and meaning. The fact that these words, unrelated in the two languages of the subjects, were accessed faster than cognates (DSS and SSS) indicates that similarity between the two languages may slow down lexical access in a language specific task.

A similar result was found for the DDSn group, which was composed of non-cognate translation words. Translation words are words that have the same meaning in the two languages, but do not share pronunciation or spelling. An example for Turkish-English bilinguals is the word pair “air-hava” (“hava” meaning “air” in Turkish). The reaction times for these words were also significantly faster than several types of cognates and false cognates (cognates: DSS, SDS, SSS; false cognates: DSD, SSD). This reaffirms the hypothesis that words that are similar in the two languages are more difficult to recognize as real words in a single language.

DDSc and SDS, both cognate word groups, had reactions times that were only significantly faster than the reaction times for the nonsense word group. The SSS group, words that are exactly the same in the two languages or “perfect cognates,” were not found to be significantly faster than nonsense words, and were accessed significantly slower than both the DDD group (completely different words) and the DDSn group (translation words).

False cognates (DSD and SSD), or words that are pronounced and/or spelled the same in the two languages but do not mean the same thing, were also accessed significantly slower than the DDD and DDSn groups. The

difference between the SSD group (words that are pronounced and spelled the same but mean different things) and the SDS group (phonological cognates) was bordering on significance [$p=0.053$], with the cognate group being accessed slightly faster than the false cognate group.

Thus, the data indicate that the cognate facilitation effect does not occur when subjects are asked to identify words in only one language at a time. In fact, not only does the effect disappear, a reverse cognate effect seems to be taking place. When asked to determine whether a word stimulus is a real word in one specific language, bilingual subjects are slower to respond to words that have similar features to their counterparts in the other language.

This supports our hypothesis that lexical access would be slowed by cognates in a language specific task. The current study also confirms that of Lemhofer and Dijkstra (2004) in not finding any inhibition from interlingual homographs (SDD group). Unfortunately, no reliable interactions between demographic information and reaction times could be determined because of the small sample size of the current study. Future research should include more participants so that these variables may be analyzed.

Another suggestion for future study is a replication of the current experiment in a language non-specific condition. If the “reverse” cognate effect described above is due to the language-specific nature of the task, then the cognate effect should return when participants are asked to decide if the word stimuli are real words in *either* of their languages.

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Table 1: Pairwise Comparisons for Response (percent correct) and Reaction Time

Measure	(I) LANGUAGE	(J) LANGUAGE	Mean Difference (I-J)	Std. Error	Sig.(a)	95% Confidence Interval for Difference(a)	
						Lower Bound	Upper Bound
RESPONSE	1	2	.031	.027	.283	-.029	.091
	2	1	-.031	.027	.283	-.091	.029
RT	1	2	-130.865*	56.179	.040	-254.514	-7.216
	2	1	130.865*	56.179	.040	7.216	254.514

Based on estimated marginal means

* The mean difference is significant at the .05 level.

a Adjustment for multiple comparisons: Bonferroni.

Table 2: Pairwise Comparisons for Word Type Reaction Times

Measure	(I) WORDTYPE	(J) WORDTYPE	Mean Difference (I-J)	Std. Error	Sig.(a)	95% Confidence Interval for Difference(a)	
						Lower Bound	Upper Bound
RT	DDD	DDSc	-147.069	68.108	1.000	-444.937	150.799
		DDSn	26.076	24.918	1.000	-82.904	135.056
		DSD	-333.983(*)	74.772	.043	-660.994	-6.972
		DSS	-210.519(*)	47.053	.042	-416.303	-4.735
		SDD	-165.872	52.500	.409	-395.478	63.734
		SDS	-115.517	31.941	.182	-255.209	24.174
		SSD	-397.650(*)	81.186	.021	-752.714	-42.586
		SSS	-294.786(*)	63.152	.031	-570.978	-18.593
		NON	-857.599(*)	176.115	.022	-1627.833	-87.365
	DDSc	DDD	147.069	68.108	1.000	-150.799	444.937
		DDSn	173.145	51.790	.295	-53.355	399.646
		DSD	-186.914	81.896	1.000	-545.086	171.258
		DSS	-63.450	41.162	1.000	-243.469	116.570
		SDD	-18.803	74.739	1.000	-345.672	308.067
		SDS	31.552	50.909	1.000	-191.099	254.203
		SSD	-250.581	102.192	1.000	-697.515	196.354
		SSS	-147.717	70.809	1.000	-457.399	161.966
		NON	-710.530(*)	160.074	.045	-1410.610	-10.449
	DDSn	DDD	-26.076	24.918	1.000	-135.056	82.904
		DDSc	-173.145	51.790	.295	-399.646	53.355
		DSD	-360.059(*)	63.561	.007	-638.040	-82.078
		DSS	-236.595(*)	40.905	.005	-415.490	-57.700
		SDD	-191.948	53.956	.202	-427.921	44.025
		SDS	-141.593(*)	25.530	.008	-253.248	-29.938
		SSD	-423.726(*)	76.957	.008	-760.293	-87.159
		SSS	-320.862(*)	52.941	.004	-552.397	-89.327
		NON	-883.675(*)	161.876	.009	-1591.635	-175.715
	DSD	DDD	333.983(*)	74.772	.043	6.972	660.994

	DSS	DDSc	186.914	81.896	1.000	-171.258	545.086
		DDSn	360.059(*)	63.561	.007	82.078	638.040
		DSS	123.464	66.100	1.000	-165.620	412.549
		SDD	168.111	63.265	1.000	-108.574	444.797
		SDS	218.466	69.457	.419	-85.304	522.236
		SSD	-63.667	93.543	1.000	-472.772	345.439
		SSS	39.197	64.351	1.000	-242.238	320.633
		NON	-523.616	164.650	.394	-1243.708	196.477
		DDD	210.519(*)	47.053	.042	4.735	416.303
		DDSc	63.450	41.162	1.000	-116.570	243.469
	SDD	DDSn	236.595(*)	40.905	.005	57.700	415.490
		DSD	-123.464	66.100	1.000	-412.549	165.620
		SDD	44.647	49.385	1.000	-171.339	260.632
		SDS	95.001	32.326	.606	-46.376	236.379
		SSD	-187.131	82.670	1.000	-548.685	174.423
		SSS	-84.267	53.561	1.000	-318.516	149.982
		NON	-647.080	171.922	.141	-1398.973	104.814
		DDD	165.872	52.500	.409	-63.734	395.478
		DDSc	18.803	74.739	1.000	-308.067	345.672
		DDSn	191.948	53.956	.202	-44.025	427.921
	SDS	DSD	-168.111	63.265	1.000	-444.797	108.574
		DSS	-44.647	49.385	1.000	-260.632	171.339
		SDS	50.355	49.547	1.000	-166.338	267.047
		SSD	-231.778	84.637	.868	-601.935	138.379
		SSS	-128.914	66.992	1.000	-421.902	164.074
		NON	-691.727	184.896	.147	-1500.362	116.908
		DDD	115.517	31.941	.182	-24.174	255.209
		DDSc	-31.552	50.909	1.000	-254.203	191.099
		DDSn	141.593(*)	25.530	.008	29.938	253.248
		DSD	-218.466	69.457	.419	-522.236	85.304
	SSD	DSS	-95.001	32.326	.606	-236.379	46.376
		SDD	-50.355	49.547	1.000	-267.047	166.338
		SSD	-282.132	65.070	.053	-566.713	2.448
		SSS	-179.268	46.141	.114	-381.063	22.526
		NON	-742.081(*)	157.550	.029	-1431.120	-53.042
		DDD	397.650(*)	81.186	.021	42.586	752.714
		DDSc	250.581	102.192	1.000	-196.354	697.515
		DDSn	423.726(*)	76.957	.008	87.159	760.293
		DSD	63.667	93.543	1.000	-345.439	472.772
		DSS	187.131	82.670	1.000	-174.423	548.685
	SSS	SDD	231.778	84.637	.868	-138.379	601.935
		SDS	282.132	65.070	.053	-2.448	566.713
		SSS	102.864	62.792	1.000	-171.756	377.484
		NON	-459.949	162.069	.726	-1168.751	248.853
		DDD	294.786(*)	63.152	.031	18.593	570.978
		DDSc	147.717	70.809	1.000	-161.966	457.399
		DDSn	320.862(*)	52.941	.004	89.327	552.397
		DSD	-39.197	64.351	1.000	-320.633	242.238

NON	DSS	84.267	53.561	1.000	-149.982	318.516
	SDD	128.914	66.992	1.000	-164.074	421.902
	SDS	179.268	46.141	.114	-22.526	381.063
	SSD	-102.864	62.792	1.000	-377.484	171.756
	NON	-562.813	140.055	.091	-1175.339	49.713
	DDD	857.599(*)	176.115	.022	87.365	1627.833
	DDSc	710.530(*)	160.074	.045	10.449	1410.610
	DDSn	883.675(*)	161.876	.009	175.715	1591.635
	DSD	523.616	164.650	.394	-196.477	1243.708
	DSS	647.080	171.922	.141	-104.814	1398.973
	SDD	691.727	184.896	.147	-116.908	1500.362
	SDS	742.081(*)	157.550	.029	53.042	1431.120
	SSD	459.949	162.069	.726	-248.853	1168.751
	SSS	562.813	140.055	.091	-49.713	1175.339

Based on estimated marginal means

* The mean difference is significant at the .05 level.

a Adjustment for multiple comparisons: Bonferroni.

Table 3: Mean reaction times in milliseconds and mean error rates for word groups in English and Turkish.

English	Mean RT	Mean Error Rate
DDD	756.19	0.01
DDSc	874.58	0.01
DDSn	730.03	0.02
DSD	991.42	0.07
DSS	1018.46	0.12
SDD	916.88	0.04
SDS	849.25	0.02
SSD	1104.04	0.12
SSS	1117.58	0.1
NON	1753.21	0.11
Turkish	Mean RT	Mean Error Rate
DDD	788.61	0.02
DDSc	941.75	0.01
DDSn	803.19	0.02
DSD	1409.28	0.21
DSS	965.57	0.04
SDD	1047.37	0.07
SDS	977.69	0.07
SSD	1495.22	0.16
SSS	1196.37	0.11
NON	1838.03	0.05

Table 4: Word Group Comparisons

Word Group	RT	Example	Versus	Versus RTs	Sig. (p)	Speed
DDD: Completely different words	776.58	sky & cam	v. DSD	1110.563	0.043	Faster
			v. DSS	987.099	0.042	Faster
			v. SSD	1174.23	0.021	Faster
			v. SSS	1071.366	0.031	Faster
			v. NON	1634.179	0.022	Faster
DDSc: Cognates that don't look or sound alike	923.649	agent & ajan	v. NON	1634.179	0.045	Faster
DDSn: Translation words, same meaning but don't look or sound alike	750.504	air & hava	v. DSD	1110.563	0.007	Faster
			v. DSS	987.099	0.005	Faster
			v. SDS	892.098	0.008	Faster
			v. SSD	1174.23	0.008	Faster
			v. SSS	1071.366	0.004	Faster
			v. NON	1634.179	0.009	Faster
DSD: False cognates, same writing but diff. sound & meaning	1110.563	bone & bone	v. DDD	776.58	0.043	Slower
			v. DDSn	750.504	0.007	Slower
DSS: Cognates, written same but sound diff.	987.099	atom & atom	v. DDD	776.58	0.042	Slower
			v. DDSn	750.504	0.005	Slower
SDS: Cognates, written differently but sound the same	892.098	cake & kek	v. DDSn	750.504	0.008	Slower
			v. NON	1634.179	0.029	Faster
			v. SSD***	1174.23	.053***	Faster***
SSD: False cognates, same writing and sound, but diff. meaning	1174.23	art & art	v. DDD	776.58	0.021	Slower
			v. DDSn	750.504	0.008	Slower
			v. SDS***	892.098	.053***	Slower***
SSS: Perfect cognates, same everything	1071.366	alarm & alarm	v. DDD	776.58	0.031	Slower
			v. DDSn	750.504	0.004	Slower

Appendix A

Turkish and English Word Stimuli

Language	Word Group								
English	DDD	DDSc	DDSn	DSD	DSS	SDD	SDS	SSD	SSS
	cage	agent	animal	bay	atom	buck	auto	art	alarm
	cave	balcony	bed	bone	final	car	boutique	bark	aroma
	fog	bicycle	book	but	hangar	cell	cake	bent	bar
	friend	blouse	cat	can	ideal	core	coupon	bit	bikini
	moon	chorus	cheese	define	iris	cove	court	boy	delta
	paper	cigarette	circle	fail	jaguar	cut	ferryboat	deli	karate
	rest	circus	comb	fare	jet	dairy	gin	dip	kilo
	road	coffee	drum	file	madam	dull	goal	grip	limit
	rude	concert	fear	gel	metal	dumb	lady	halt	motel
	sea	copy	foot	gem	meteor	feel	leader	pasta	net
	sky	cousin	happy	has	model	gum	massage	post	park
	snake	crisis	iron	mine	modern	honey	photo	put	pedal
	spinach	machine	long	name	motor	hulk	police	red	puma
	stitch	physics	love	nine	patent	leaf	pose	soy	set
	umbrella	potato	magic	ray	pilot	null	regime	tart	soda
	nurse	prince	middle	salt	radar	peace	roulette	ten	solo
	safe	pump	scissors	say	sadist	phone	score	tip	tempo
	save	record	pocket	son	tango	soar	tape	toy	test
	tongue	sausage	sick	tire	tank	tease	technique	silk	video
	essential	symphony	soldier	top	veto	tie	yacht	sofa	villa
Turkish	DDD	DDSc	DDSn	DSD	DSS	SDD	SDS	SSD	SSS
	hafif	ajan	hayvan	bay	atom	bak	oto	art	alarm
	gece	balkon	yatak	bone	final	kar	butik	bark	aroma
	topuk	bisiklet	kitap	but	hangar	sel	kek	bent	bar
	mor	bluz	kedı	can	ideal	kor	kupon	bit	bikini
	erkek	koro	peynir	define	iris	kov	kort	boy	delta
	uslu	sigara	daire	fail	jaguar	kat	feribot	deli	karate
	keyif	sirk	tarak	fare	jet	deri	cin	dip	kilo
	bebek	kahve	davul	file	madam	dal	gol	grip	limit
	resim	konser	korku	gel	metal	dam	leydi	halt	motel
	sakat	kopya	ayak	gem	meteor	fiil	lider	pasta	net
	cam	kuzen	mutlu	has	model	gam	masaj	post	park
	keskin	kriz	demir	mine	modern	hani	foto	put	pedal
	defter	makina	uzun	name	motor	halk	polis	red	puma
	kuru	fizik	sevgi	nine	patent	lif	poz	soy	set
	azot	patates	sihir	ray	pilot	nal	rejim	tart	soda
	acele	prens	orta	salt	radar	pis	rulet	ten	solo
	kasap	pompa	makas	say	sadist	fon	skor	tip	tempo
	yemek	rekor	cep	son	tango	sor	teyp	toy	test
	evrak	sosis	hasta	tire	tank	tiz	teknik	silk	video
	tatil	senfoni	asker	top	veto	tay	yat	sofa	villa