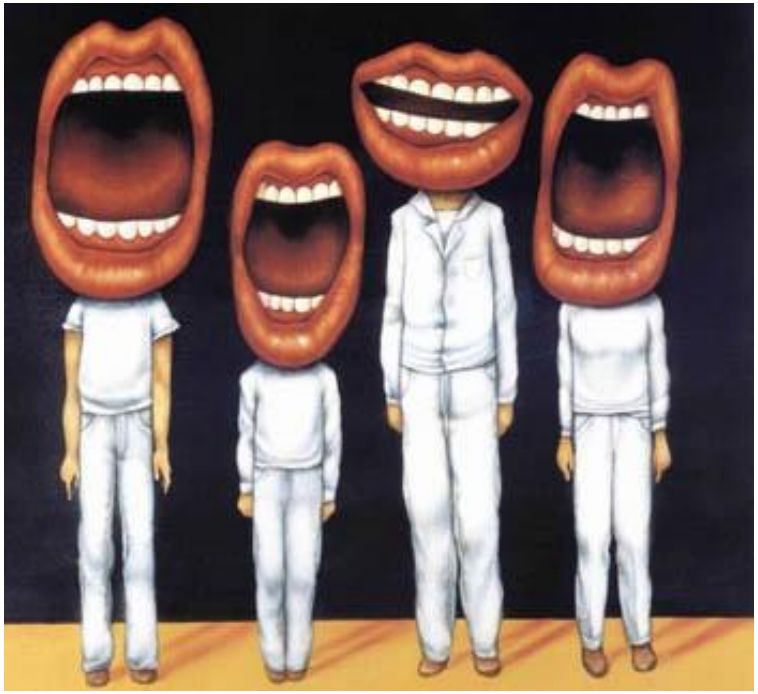
Psikohizkuntzalaritza
Gillen Mtz de la Hidalga
2019-2020

3. Hitzak bilatzen eta erabiltzen

c. Hitzen ekoizpena



HITZEN EKOIZPENA

- Hizkuntz ulermenaz, ekoizpenaz baino gehiago dakigu.
- Hizkuntz ekoizpenaz, esperimentu gutxiago egiten dira ulermenaz baino.
- Zergatik?

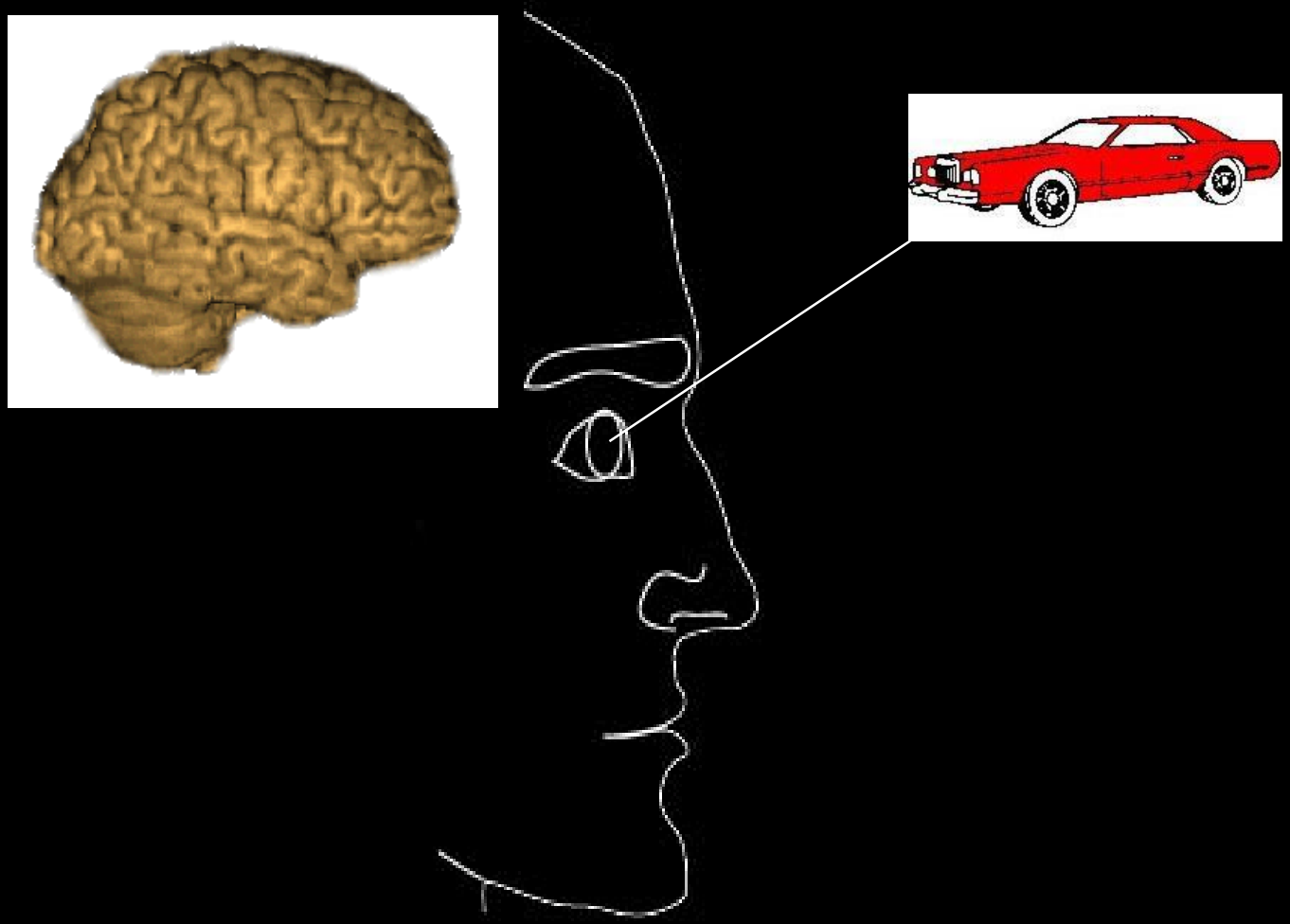
HITZEN EKOIZPENA

Errazagoa da kontrol esperimentala ezartzea ulertuko diren materialen gainean, norbanako bakoitzak ekoizten duen hizkuntzaren gainean baino.

Hizkuntza ekoiztea helburu batekin egiten ekintza da. Jendeak hitz egiten edo idazten duenean informazioa partekatzeko egiten du, Horregatik, ezaugarri sozialak eta motibazioa ere kontuan hartu beharrekoak dira.

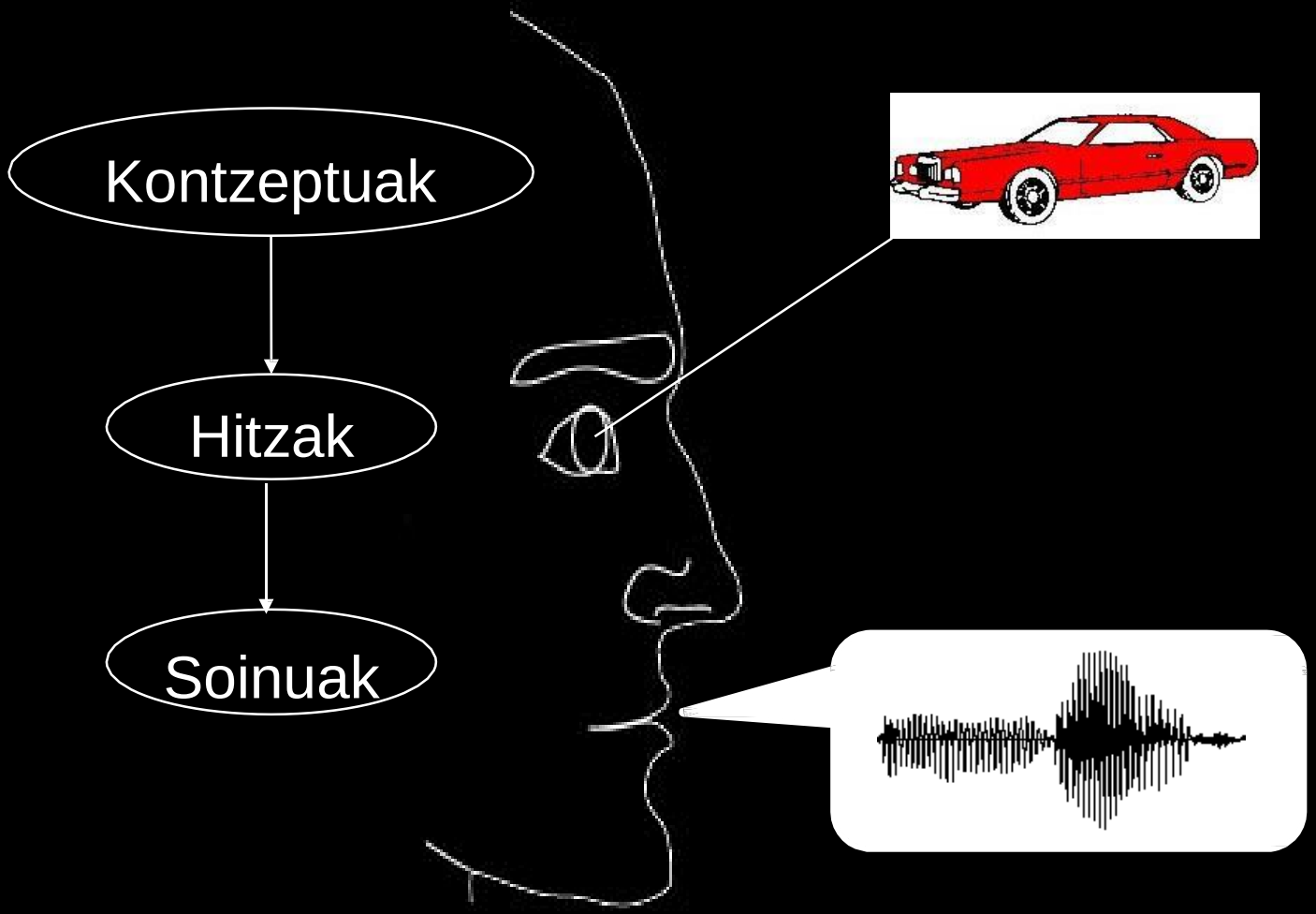
Hizkuntza ekoizpenaren egitura funtzionala

Hizkuntza ekoizpena ideiak soinu patroi zehatzetan bihurtzean datza.



Hizkuntza ekoizpenaren egitura funtzionala

Hizkuntza ekoizpena ideiak soinu patroi zehatzetan bihurtzean datza.



Hizkuntza ekoizpenaren egitura funtzionala

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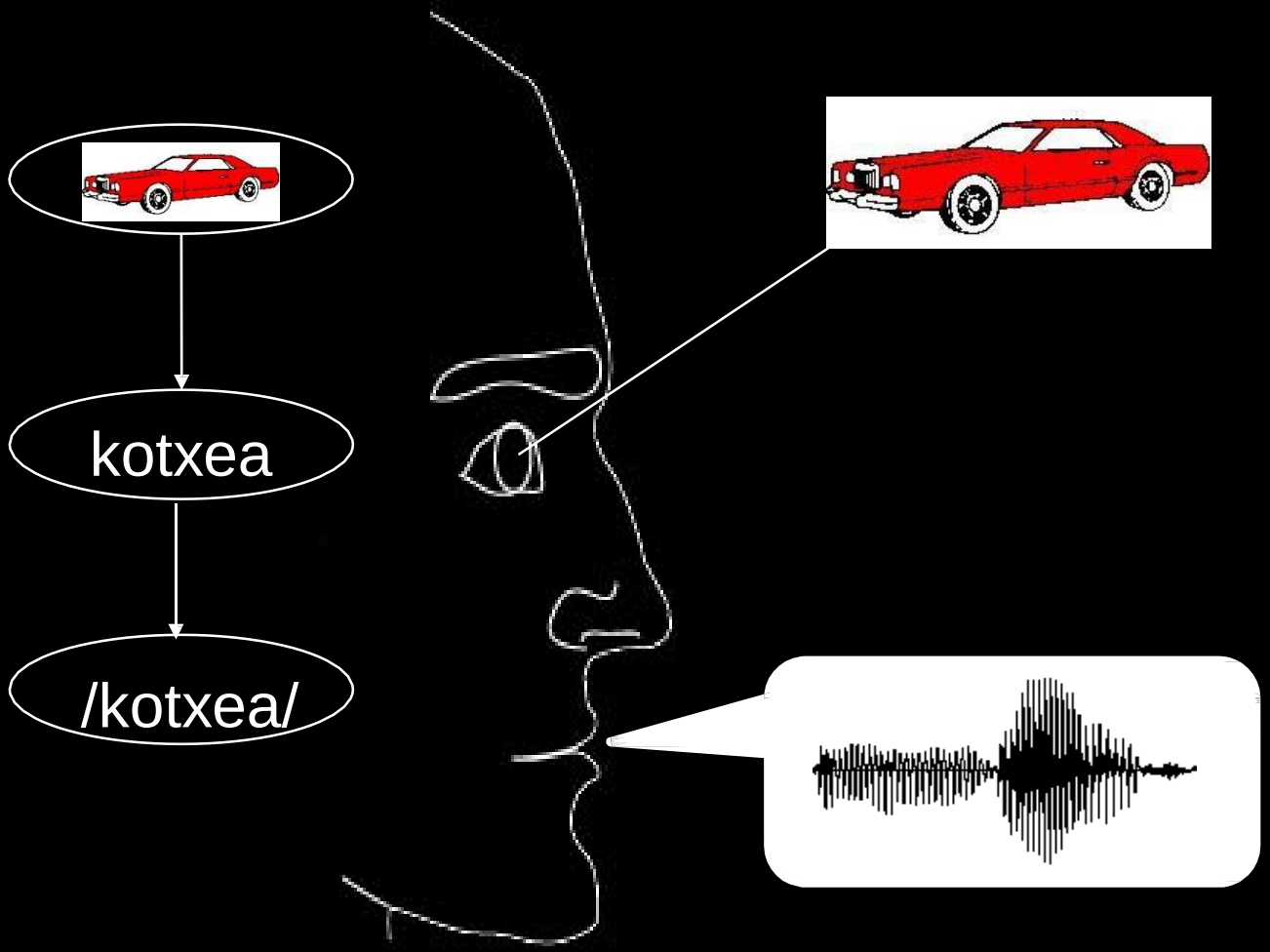

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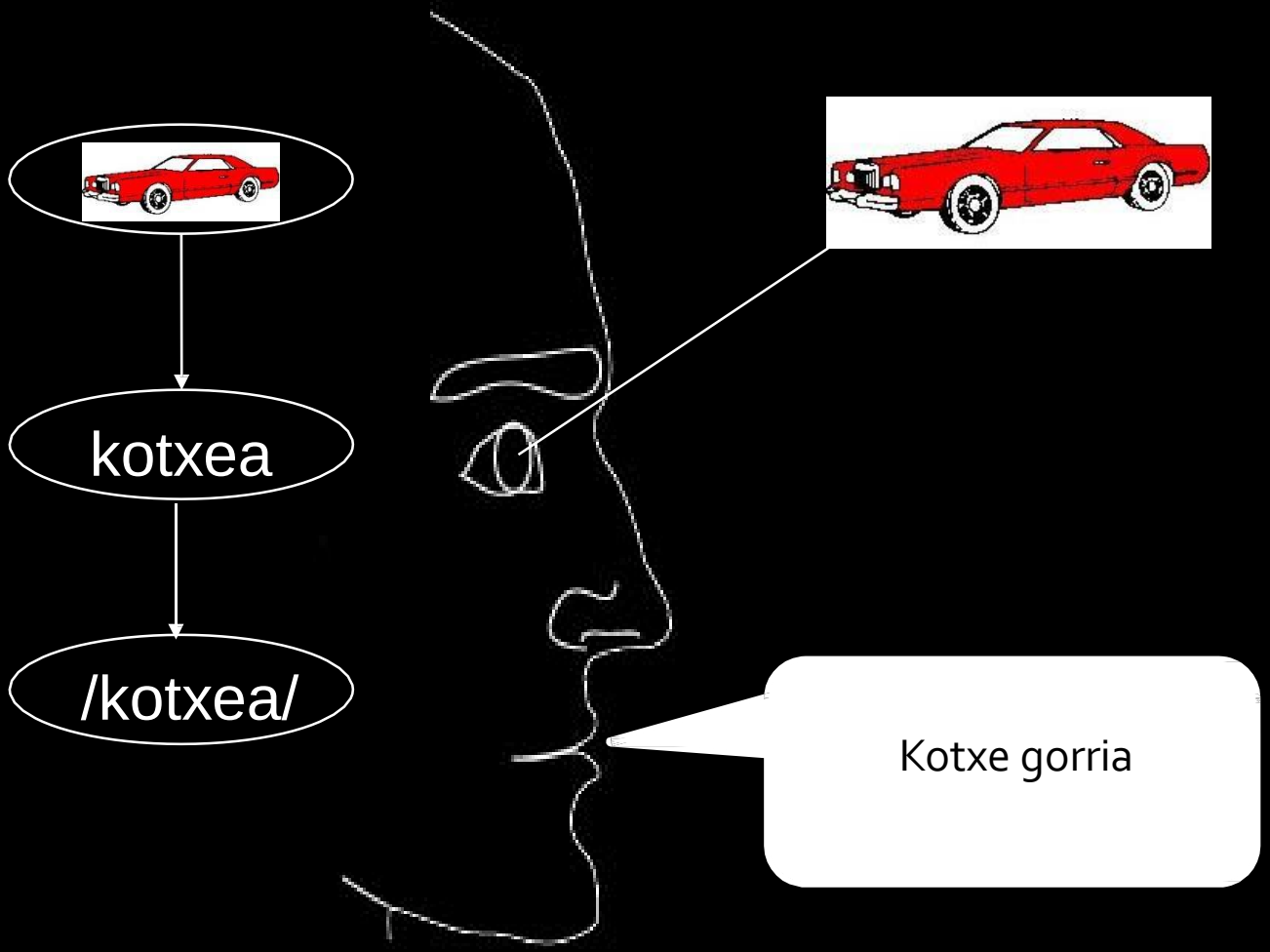

Hizkuntza ekoizpenaren egitura funtzionala

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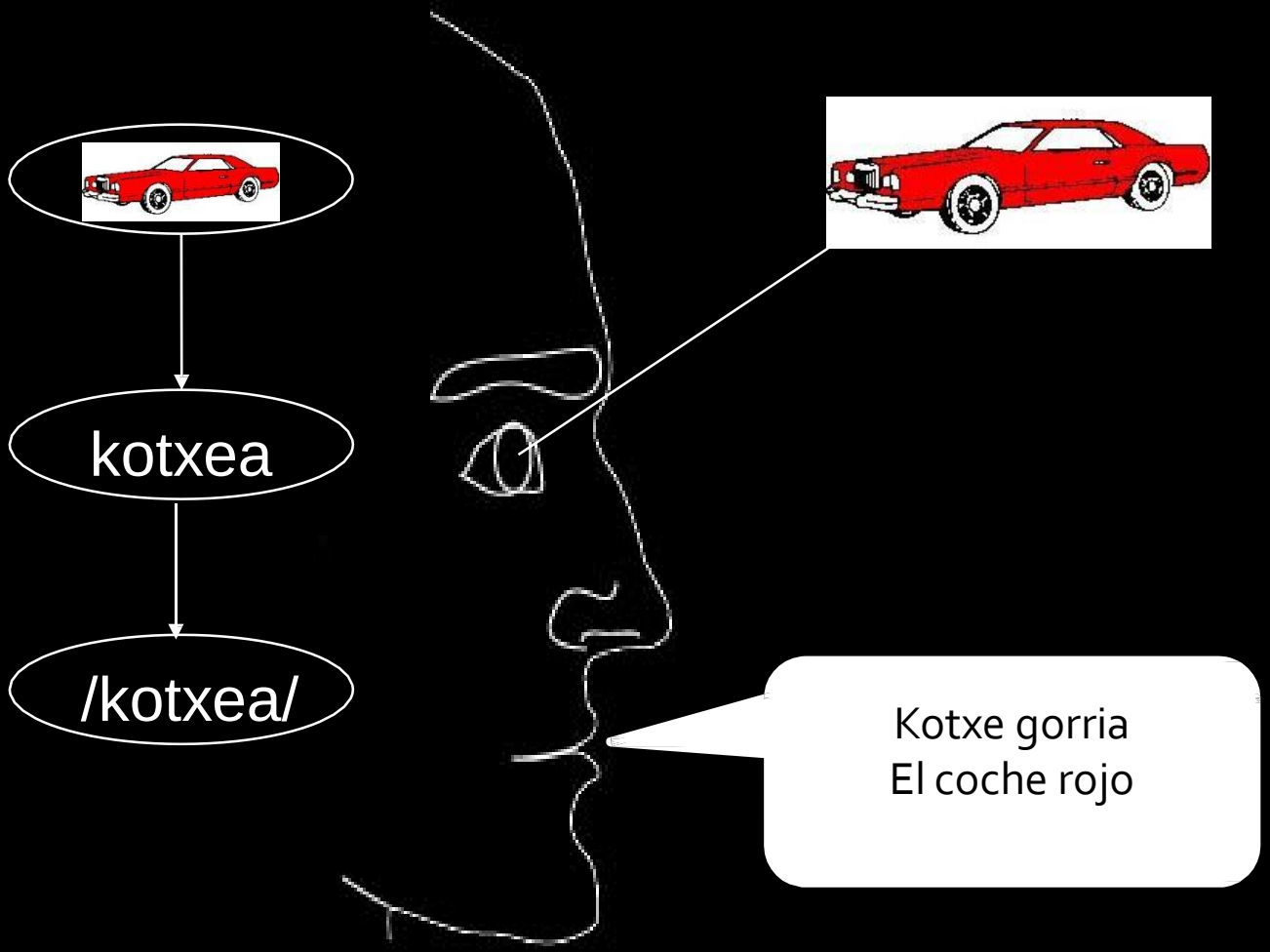
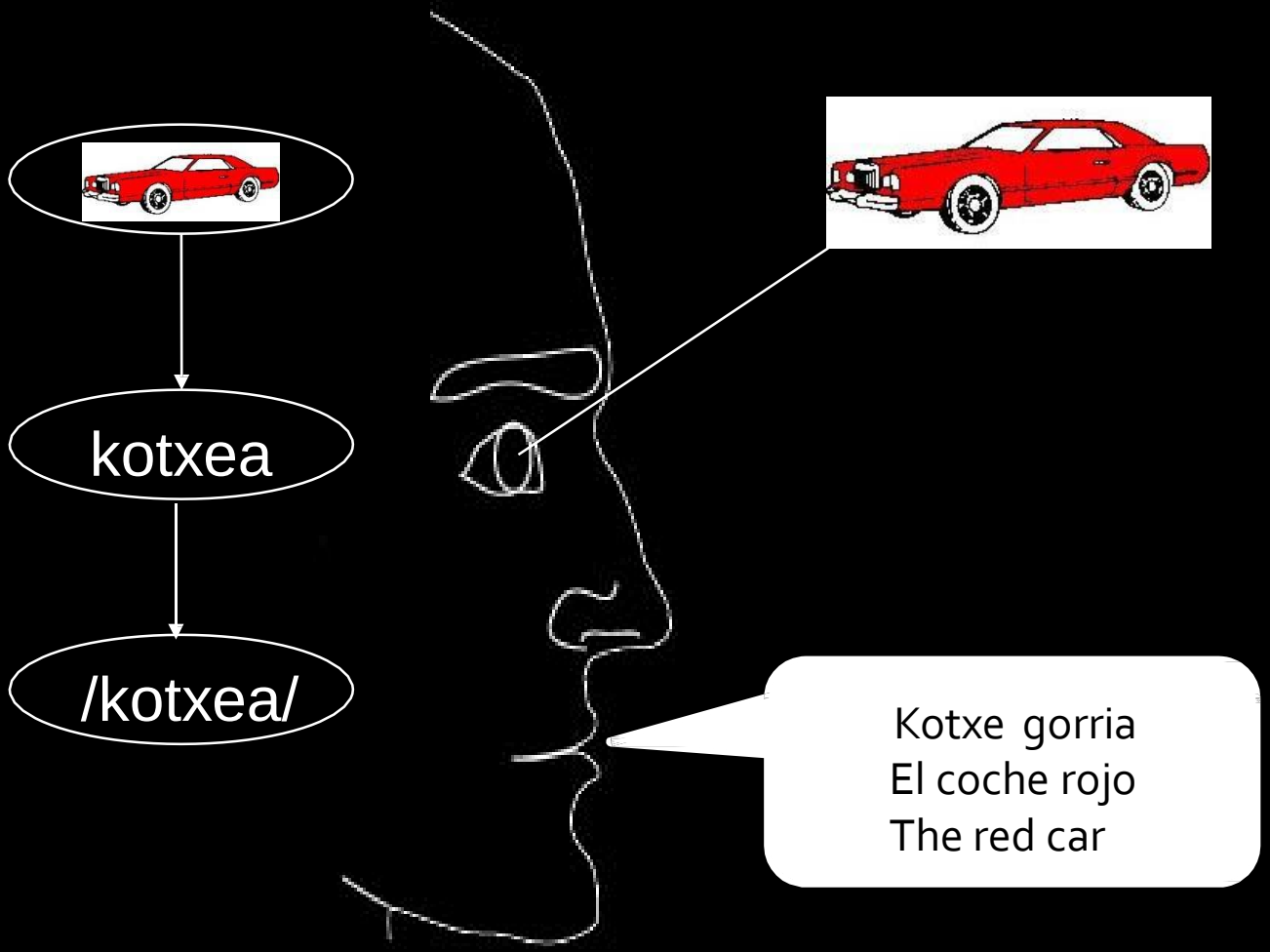


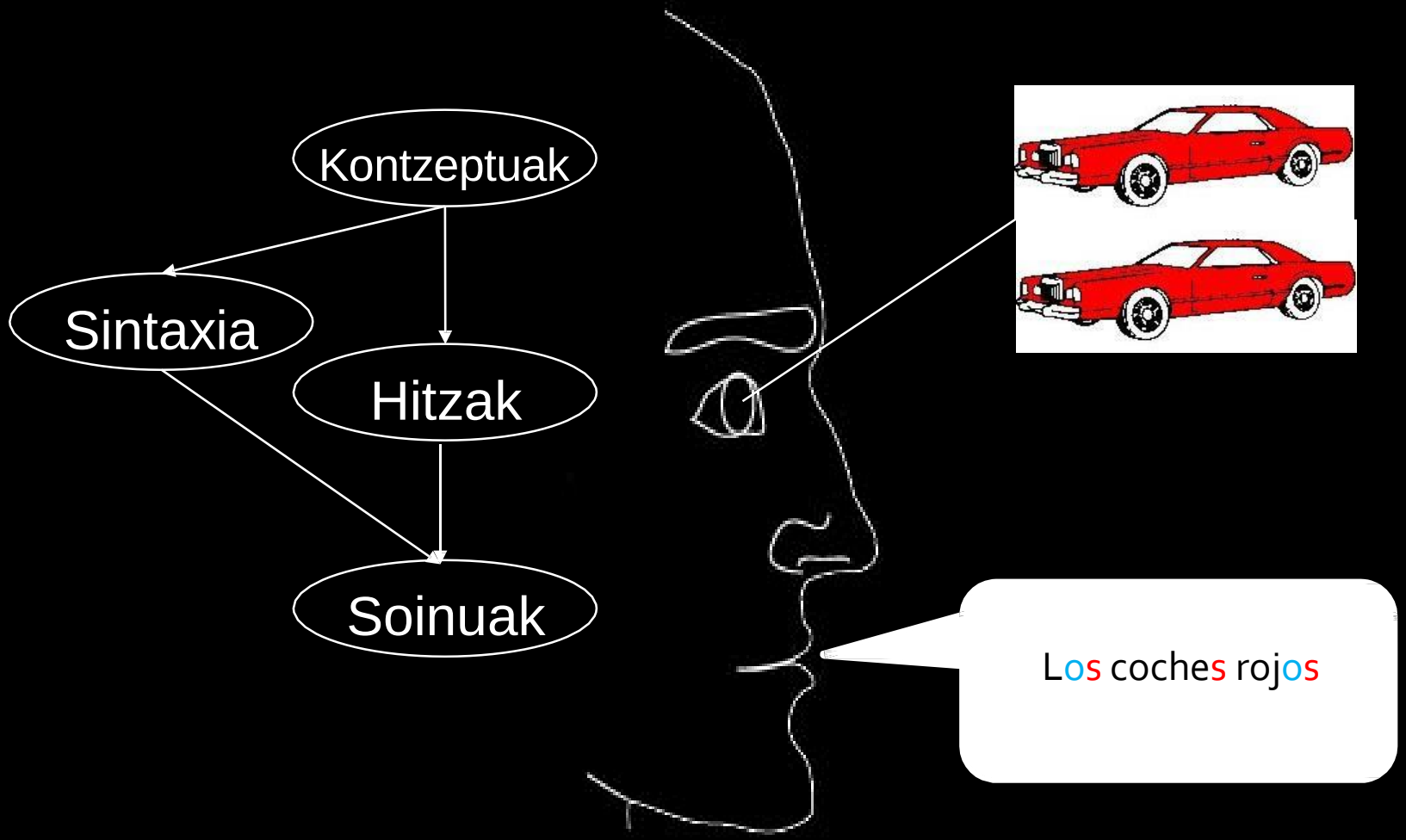
Hizkuntza ekoizpenaren egitura funtzionala

Hizkuntza ekoizpena ideiak soinu patroi zehatzetan bihurtzean datza.



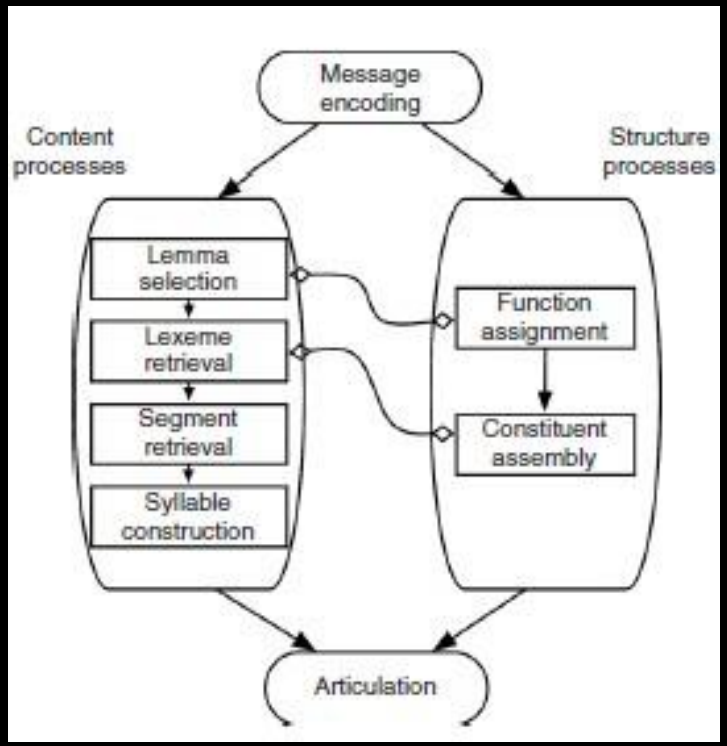
Hizkuntza ekoizpenaren egitura funtzionala

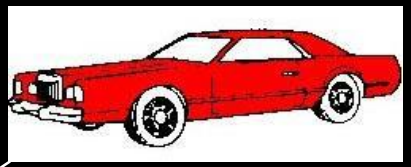
Hizkuntza ekoizpena ideiak soinu patroi zehatzetan bihurtzean datza.



Hizkuntza ekoizpenaren egitura funtzionala

Speaking consists in the translation of ideas into specific patterns of sounds.





The red car
El coche rojo
Kotxe gorria

Ferreira, 2010

Hizkuntza ekoizpenaren egitura funtzionala

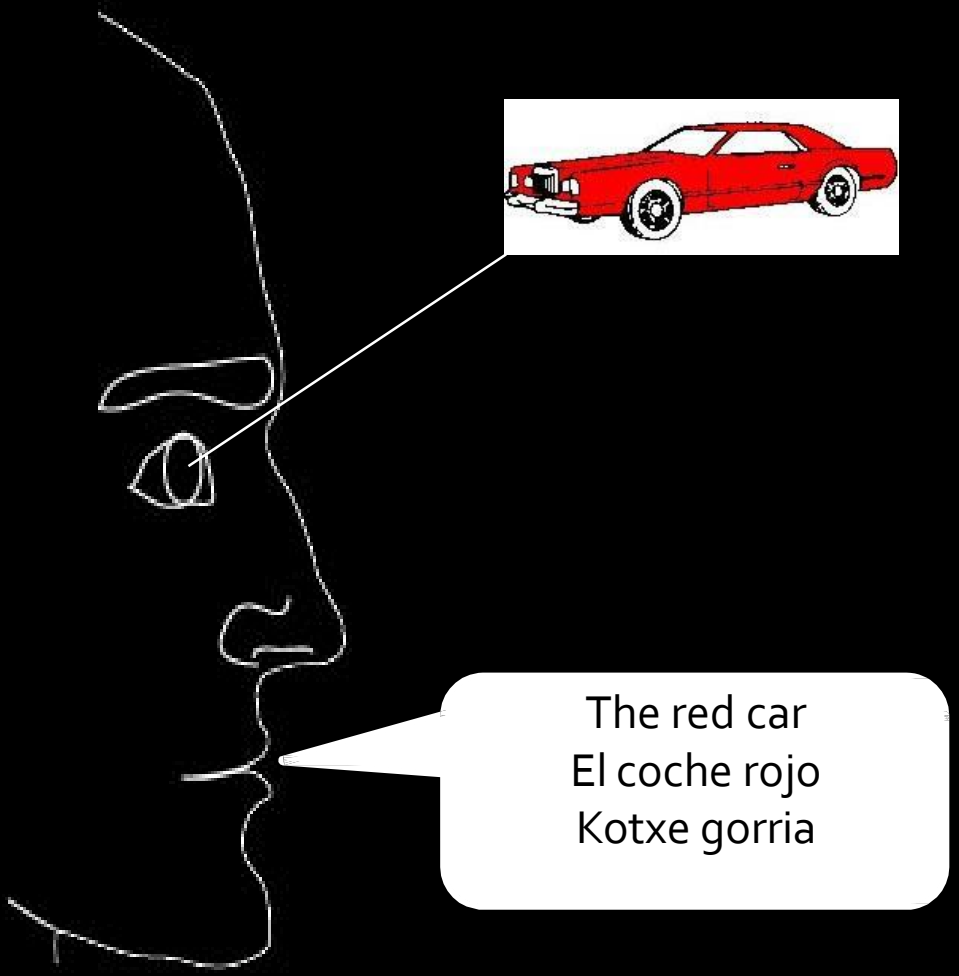
Hizkuntza ekoizpena ideiak soinu patroi zehatzetan bihutzean datza.

SEMANTIKA

Sarbide lexikoa eta Kodetze gramatikala

Kodetze fonologikoa eta fonetikoa

Ahoskatzea



The red car
El coche rojo
Kotxe gorria

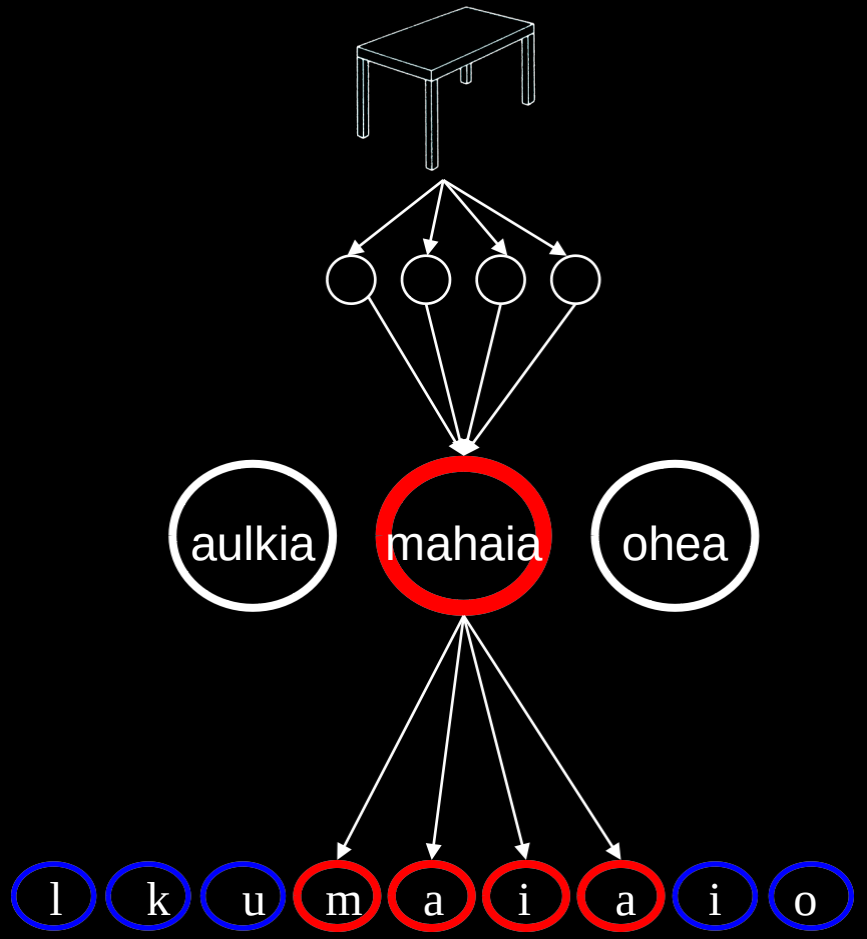
Hizkuntza ekoizpenaren egitura funtzionala

Hizkuntza ekoizpena ideiak soinu patroi zehatzetan bihurtzean datza.

Irudikapen semantikoak

Irudikapen lexikoak

Irudikapen fonemikoak



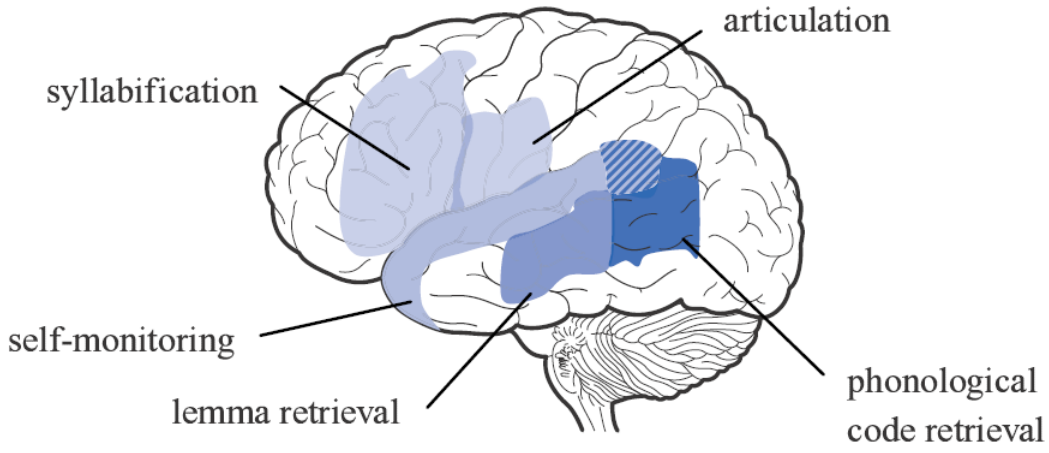
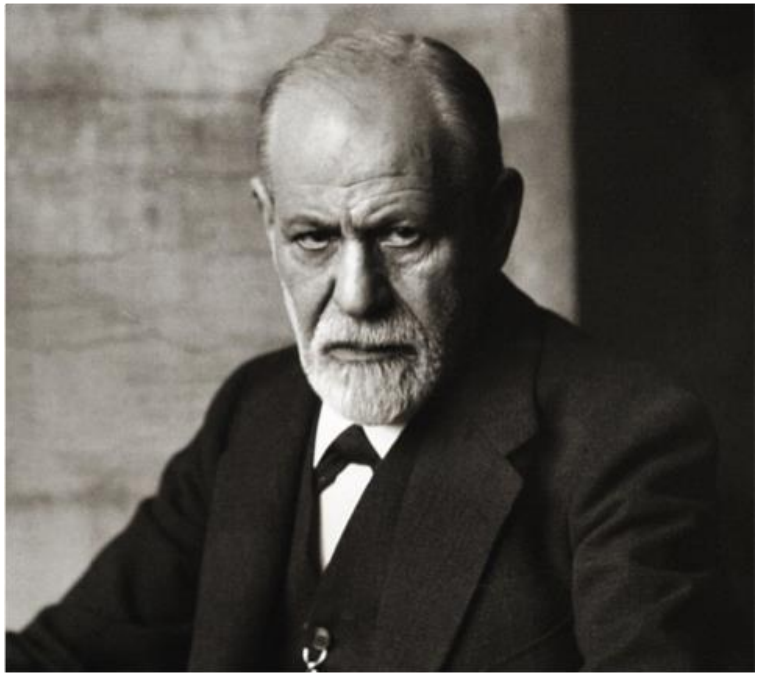


Figure 3.2
Left hemisphere brain areas involved in aspects of word production (simplified from Indefrey, 2007).

Hizketa akatsak



In another example he gives, the President of the Lower House of the Austrian Parliament opened a meeting with “Gentlemen, I take notice that a full quorum of members is present and herewith declare the sitting closed!” (instead of open).

Hizketa akatsak

Zenbait hizketa akatsen adibideak

- Lapsus Linguae
- José Antonio Ovies
- M. Rajoy

Hizkuntza ekoizpena ikertzen:

Hizkuntza akatsetatik ikasten

Hizkuntza ekoizpenaren ikerketa sistematikoa 1960. hamarkada bukaeran hasi zen, psikolinguistak ekoizpen naturaleko hizkuntza akatsak (*lapsus linguae)* corpusetan biltzen eta aztertzen hasi zirenean (Fromkin, 1971; Garrett, 1975)

TABLE 13.1 Examples of speech errors classified by unit and mechanism.

Type	Utterance	Target
	Turn the knop	knob
	The mirst of May	first
	God rest re merry gentlemen	ye
	Do you reel feally bad?	feel really bad
	The chimney catch fire	catches fire
	Backgound lighting	background
	The chung of today	children + young
	Guess whose mind came to name?	whose name came to mind
	I randomed some samply	I sampled some randomly
	Get me a fork	spoon
	Miss you a very much	very much + a great deal

Hizkuntza ekoizpena ikertzen:

Hizkuntza akatsetatik ikasten

Hizkuntza ekoizpenaren ikerketa sistematikoa 1960. hamarkada bukaeran hasi zen, psikolinguistak ekoizpen naturaleko hizkuntza akatsak (*lapsus linguae)* corpusetan biltzen eta aztertzen hasi zirenean (Fromkin, 1971; Garrett, 1975)

TABLE 13.1 Examples of speech errors classified by unit and mechanism.

Type	Utterance	Target
Feature perseveration	Turn the knop	knob
Phoneme anticipation	The *m*irst of May	first
Phoneme perseveration	God rest *r*e merry gentlemen	ye
Phoneme exchange	Do you *r*eel *f*eally bad?	feel really bad
Affix deletion	The chimney cat*ch* fire	catches fire
Phoneme deletion	Backgound lighting	background
Word blend	The *chung* of today	children + young
Word exchange	Guess whose *mind* came to *name*?	whose name came to mind
Morpheme exchange	I *random*ed some *sam*ply	I sampled some randomly
Word substitution	Get me a *fork*	spoon
Phrase blend	Miss you *a very much*	very much + a great deal

Hizketa akatsak

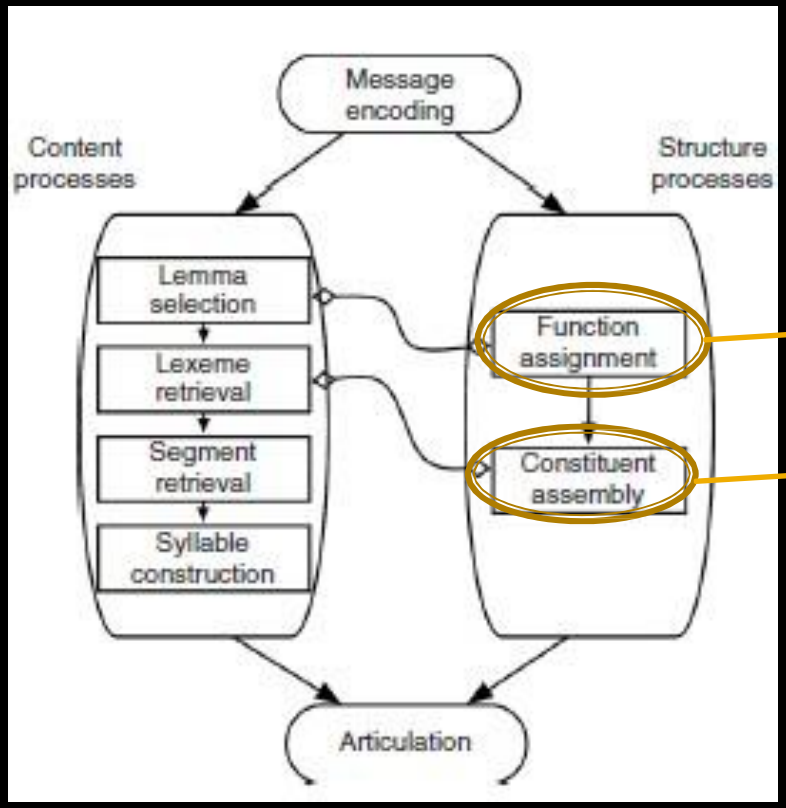
Akatsak sistematikoki sailka daitezke

Recuadro 10-2. Tipos de errores del habla según su naturaleza

- Errores de movimiento o contextuales:
  - Anticipaciones: días de nuvia [lluvia] y nieve, lleva las manos [llaves] en las manos.
  - Perseveraciones: la canción de la cuna [luna], si abres la boca y metes la boca [pata].
  - Desplazamientos: betún de Judera y cea (betún de Judea y cera); ellos siempren viene [ellos siempre vienen].
  - Intercambios: pásame el *gall*ete de *paque*tas [pásame el paquete de galletas]; hay una *médic*a de *huelg*os [hay una huelga de médicos].
  - Errores incompletos: me acaba de venir una cabeza [me acaba de venir una cosa a la cabeza]
- Errores no contextuales:
  - Sustituciones: ¡no voy a volver a zumar [fumar] más!
  - Fusiones: ¡ay, qué *baldejos* más guapos! [baldosas + azulejos]; esto está lleno de *altablos* [altares + retablos].
  - Omisiones: contra las topas croatas [tropas].
  - Adiciones: sí, pero ellas son de claustura [clausura].
- Otros errores: en acento y variables suprasegmentales: que se escucha la exTRANjera (que se escucha la extranJEra).

Hizkuntza ekoizpena ikertzen:
Hizkuntza akatsetatik ikasten

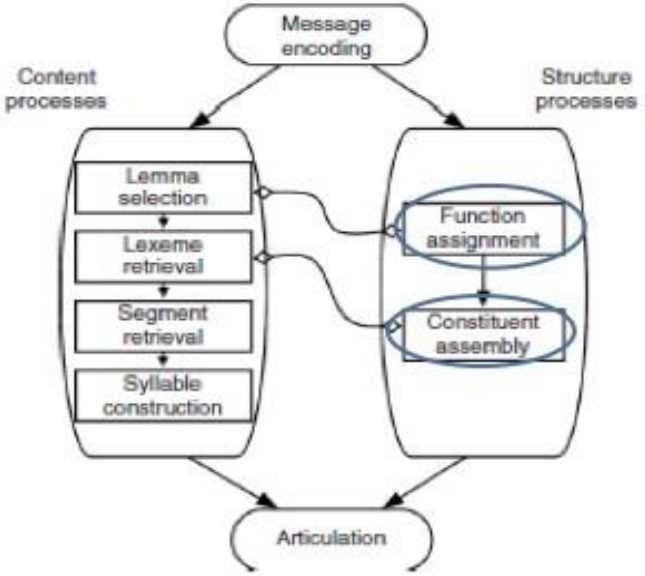
Garrett (1975): Hitz trukatze eta soinu/forma trukatze akatsek bi prozesamendu maila ezberdinen adierazletzat



Funtzio gramatikalen ezartzea
(hitzen trukaketa akatsak)

Forma morfofonologikoen antolaketa
(morfemak, fonemak)
(soinu/forma trukaketa akatsak

Hizketa akatsak



Garret 1975

Hizketa akatsak bi mailatan gertatzen dira normalean:

- **Hitz osoak edota morfemak**

(esanahidun ale txikienak)

  - Pasaizkidazu giltzako kotxeak

    ← Pasaizkidazu kotxeko giltzak

- **Hizketa soinu banakoak**

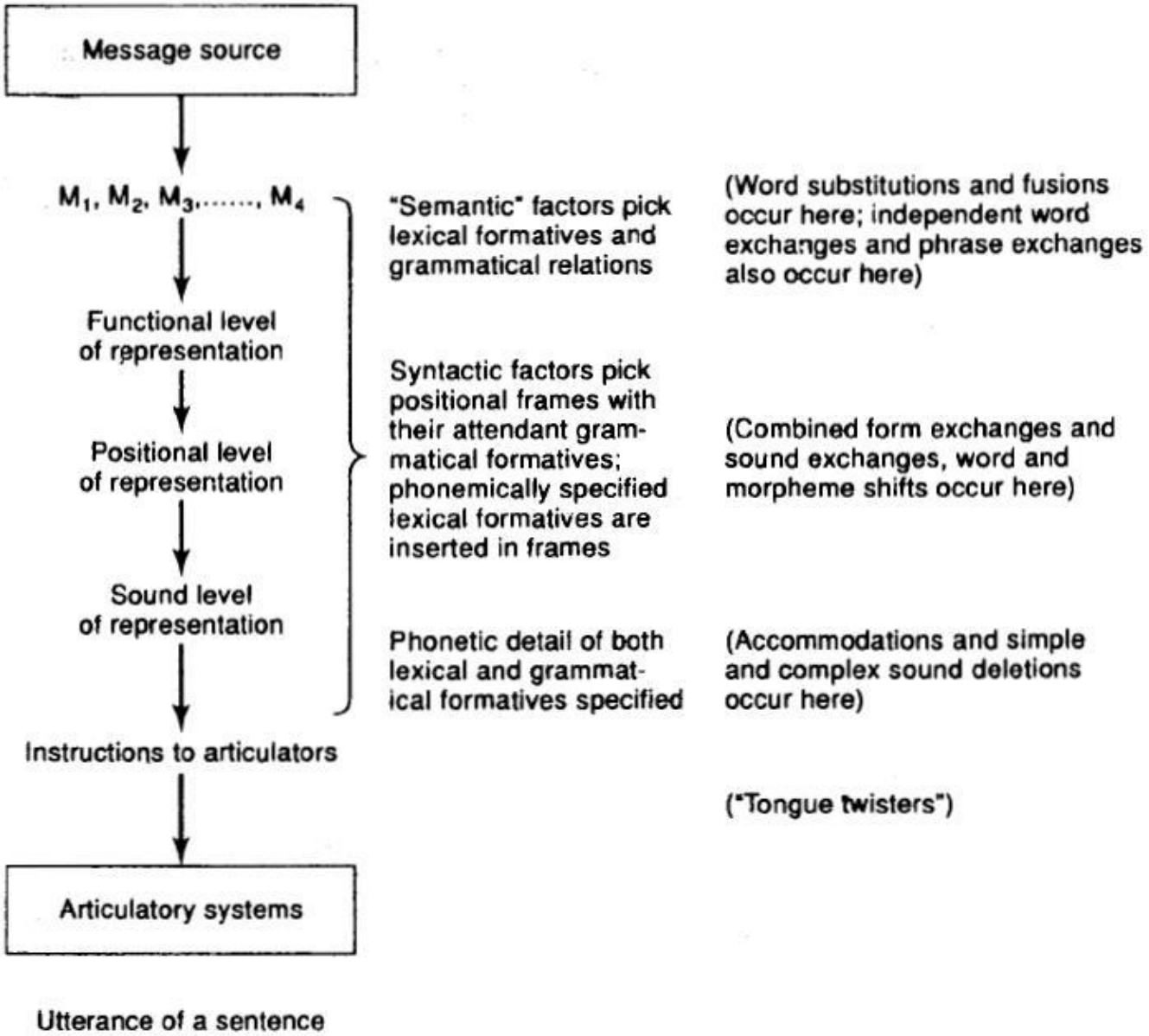
(fonemak, edo fonema multzoak)

  - Erratzak errostera ← Erratzak erostera

(4) a *weekend* for MANIACS—a *maniac* for WEEKENDS

Fromkin (1971/1973)

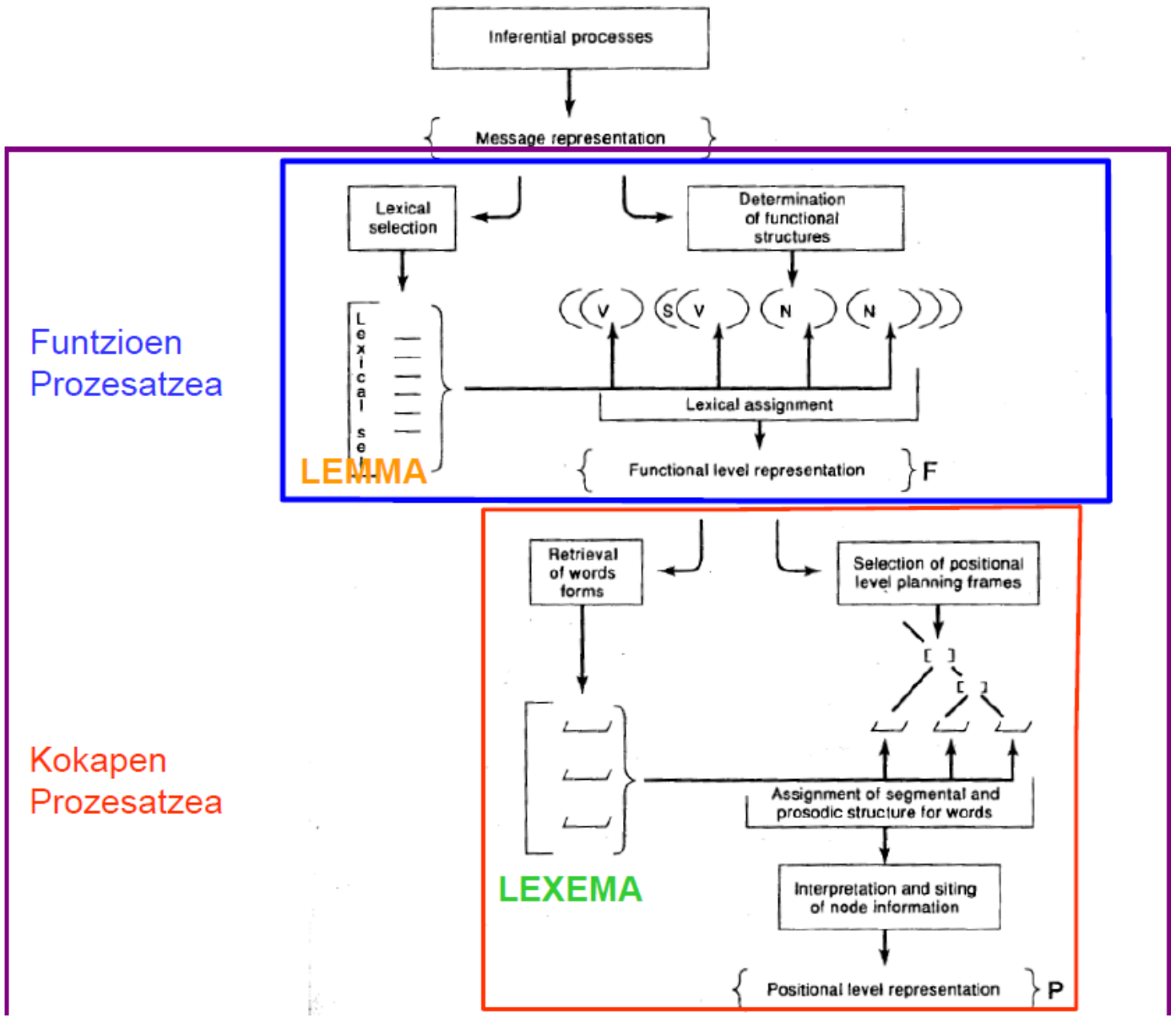
Garret (1975)


Message source
$M_1, M_2, M_3, \ldots\ldots, M_4$
Functional level of representation
Positional level of representation
Sound level of representation
Instructions to articulators
Articulatory systems
Utterance of a sentence
"Semantic" factors pick lexical formatives and grammatical relations
Syntactic factors pick positional frames with their attendant grammatical formatives; phonemically specified lexical formatives are inserted in frames
Phonetic detail of both lexical and grammatical formatives specified
(Word substitutions and fusions occur here; independent word exchanges and phrase exchanges also occur here)
(Combined form exchanges and sound exchanges, word and morpheme shifts occur here)
(Accommodations and simple and complex sound deletions occur here)
("Tongue twisters")

Hitzen ekoizpena: irudikapen mailak

- **Lemma** irudikapen maila:
  - Hitzaren esanahia eta informazio gramatikala (kategoria, generoa, etab.)
- **Lexema** irudikapen maila:
  - Hitzen forma fonologikoa, hitzaren soinuak

Kodetze Gramatikala



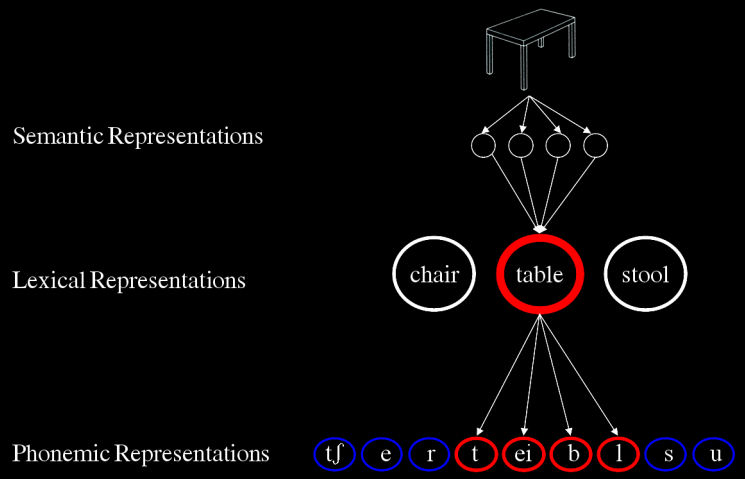
Hizkuntza ekoizpena ikertzen:
Hizkuntza akatsetatik ikasten

Lexikalizatze prozesuak:

Fay & Cutler (1977) ikerlariek sarbide lexikoko lehen modeloetako bat aurkeztu Hizkuntza akatsetan, bi hitz trukatze mota ezberdin agertu ohi dira:

- Trukatze semantikoak:
  - *fingers* for *toes, husband* for *wife*
- Forman oinarritutako hitz trukatzeak (malapropisms):
  - *equivalent* for *equivocal, historical* for *hysterical*

Fay eta Cutler-en modeloak bi motatako hizkuntza akats hauek sarbide lexikorako prozesamendu maila ezberdinetan gertatzen direla argudiatu

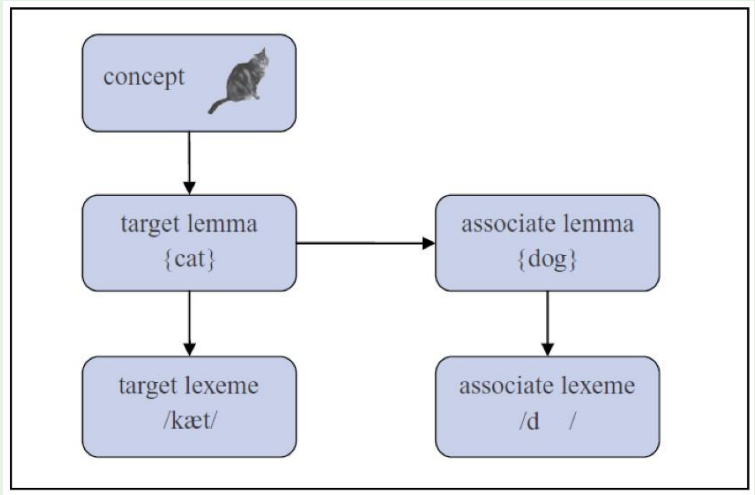


Baina, zergatik gertatzen dira akatsak?

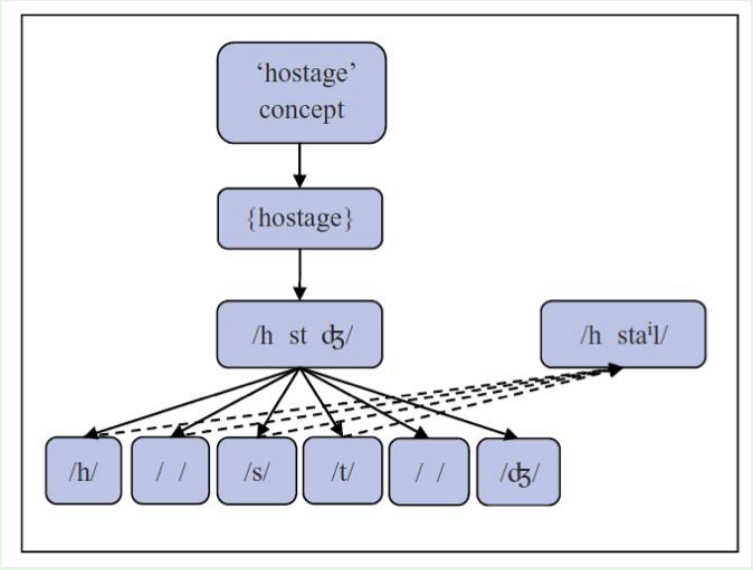
Hizketa akatsak

Eta akatsen jatorria bila daiteke

Aldaketa Semantikoa



Aldaketa Fonologikoa



Helburu hitza: Katua

Helburu perpausa: *We cannot let terrorists and rogue nations hold this nation* ***hostile*** [*hostage*en ordez]

Lemma/Lexema banaketaren aldeko emaitzak: mihi-punta egoerak

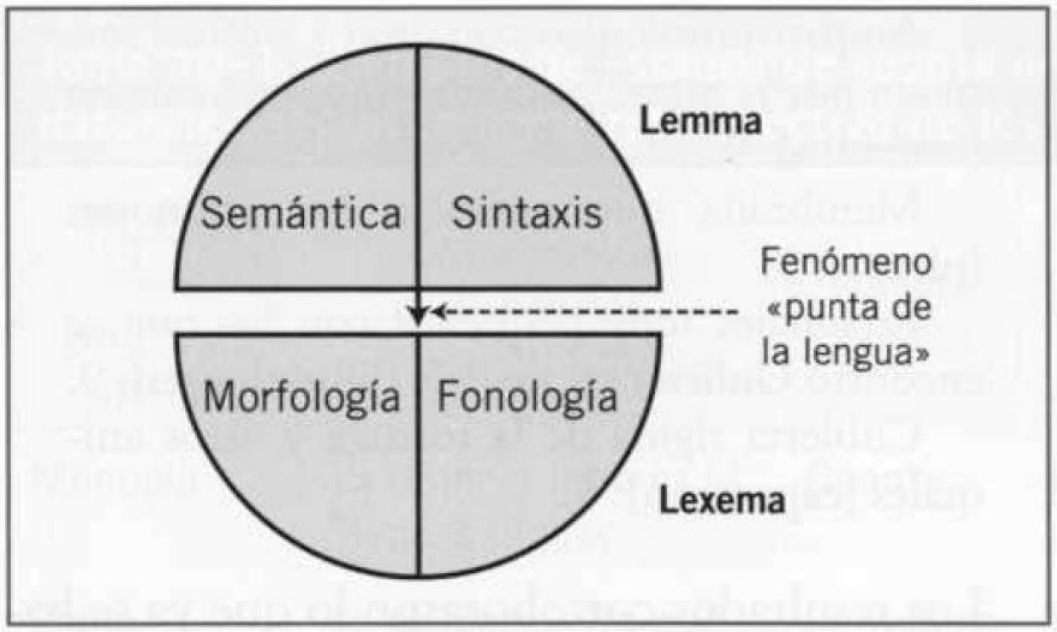


Figura 10-4. El fenómeno de la «punta de la lengua» según Levelt (1989).

Cuetos et al. 2015)

Hitzen irudikapenari buruzko ohartxo bat…

Lemma/Lexema banaketaren aldeko emaitzak: mihi-punta egoerak

- Partaideek hitzaren informazio sintaktikoa berreskuratzeko gai (adib., generoa), edo baita hitzaren lehen soinua, silaba egitura edo patroi azentuala, baina forma fonologikoa ez

Mihiaren puntako egoera

Brown eta McNeill-ek (1986) aztertu zituzten.

Adibidez:

a navigational instrument used in measuring angular distances, especially the altitude of the sun, moon and stars at sea defines the word...

Mihiaren puntako egoera

Brown eta McNeill-ek (1986) aztertu zituzten.

Adibidez:

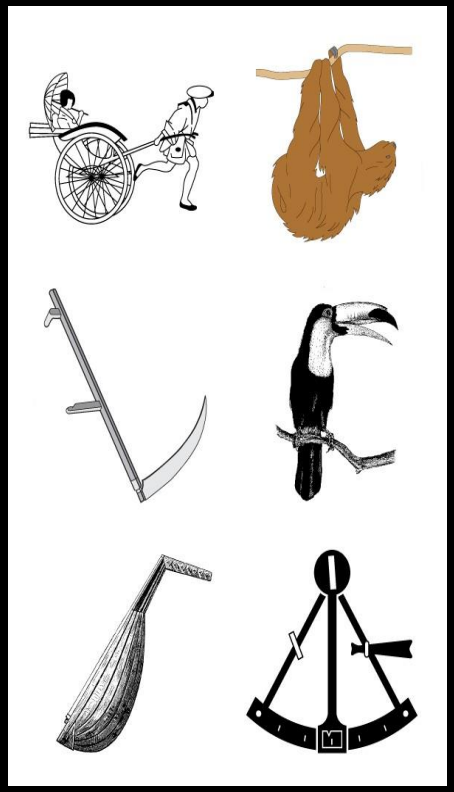
a navigational instrument used in measuring angular distances, especially the altitude of the sun, moon and stars at sea defines the word...

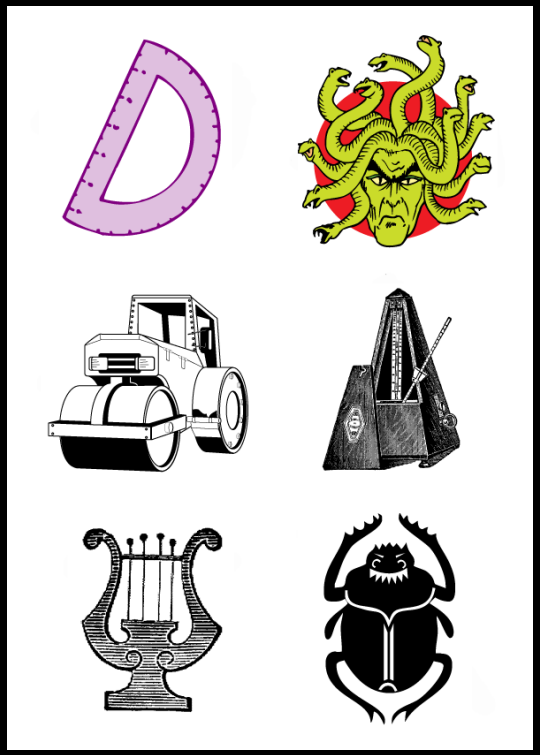
SEXTANTEA

Hizkuntza ekoizpena ikertzen:
Hizkuntza akatsetatik ikasten

Bi mailetako modeloaren aldeko ebidentzia gehiago: **Mihi-puntako egoerak**

Mihi-puntako egoerak esperimentalki sorrarazi egin daitezke



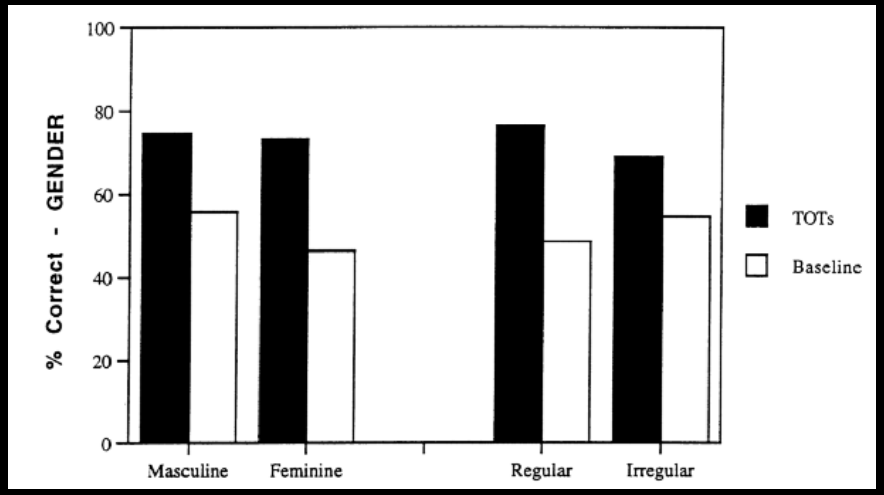


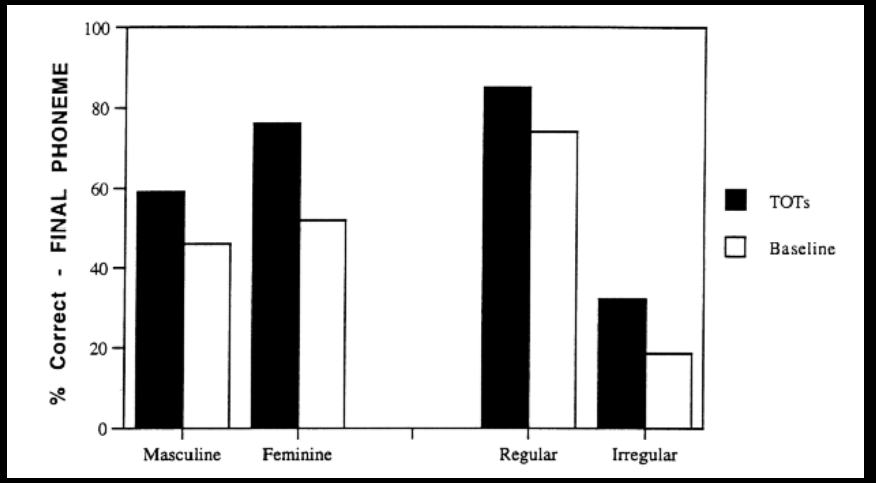
Miozzo & Caramazza, 1997
Caramazza & Miozzo, 1997

Hizkuntza ekoizpena ikertzen:
Hizkuntza akatsetatik ikasten

Bi mailetako modeloaren aldeko ebidentzia gehiago: **Mihi-puntako egoerak**

Mihi-puntako egoerak sortzeko esperimentua italieraz: generoa eta fonologia



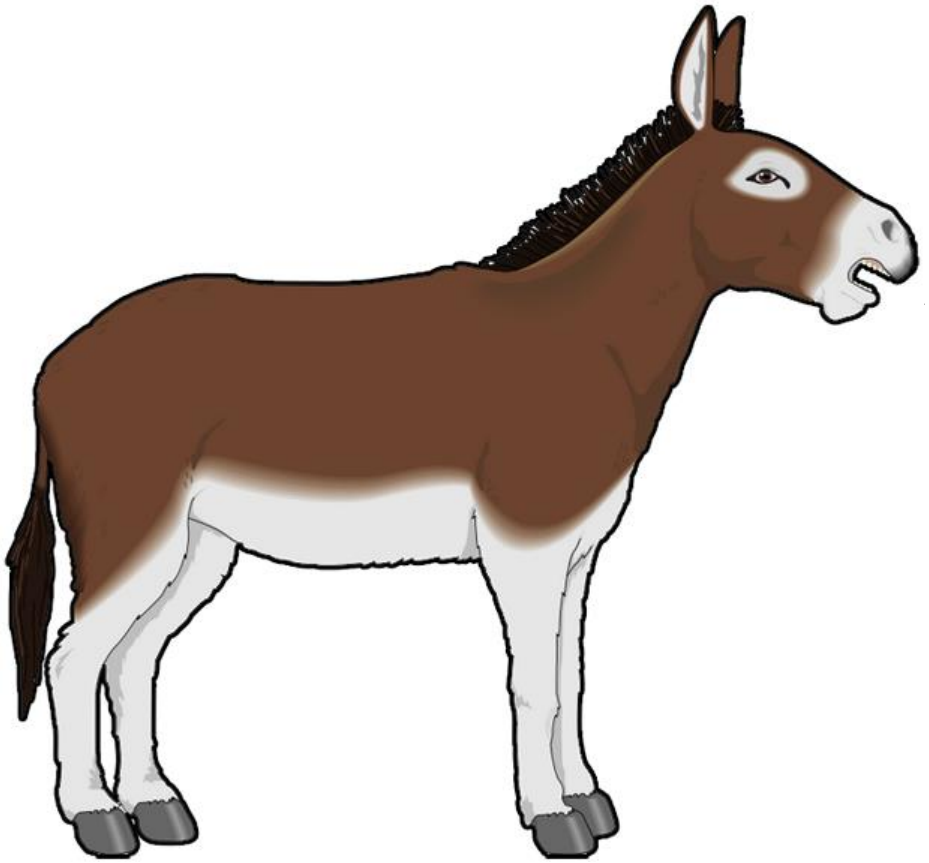


Partaideek emandako hitzei buruzko informazio partzialean hausazko erantzunen estimazio bat izateko, partaideei hitza bazekiten ala ez galdetzen zaie.
Baseline: “Ez dakit” erantzuten dutenean ematen duten erantzunen batez-bestekoa.

Caramazza & Miozzo, 1997

(Badecker, Miozzo, & Zanuttini, 1995)

- Preservation of gender in an Italian person with anomia



****o

Aho-korapiloak (Tongue twisters)

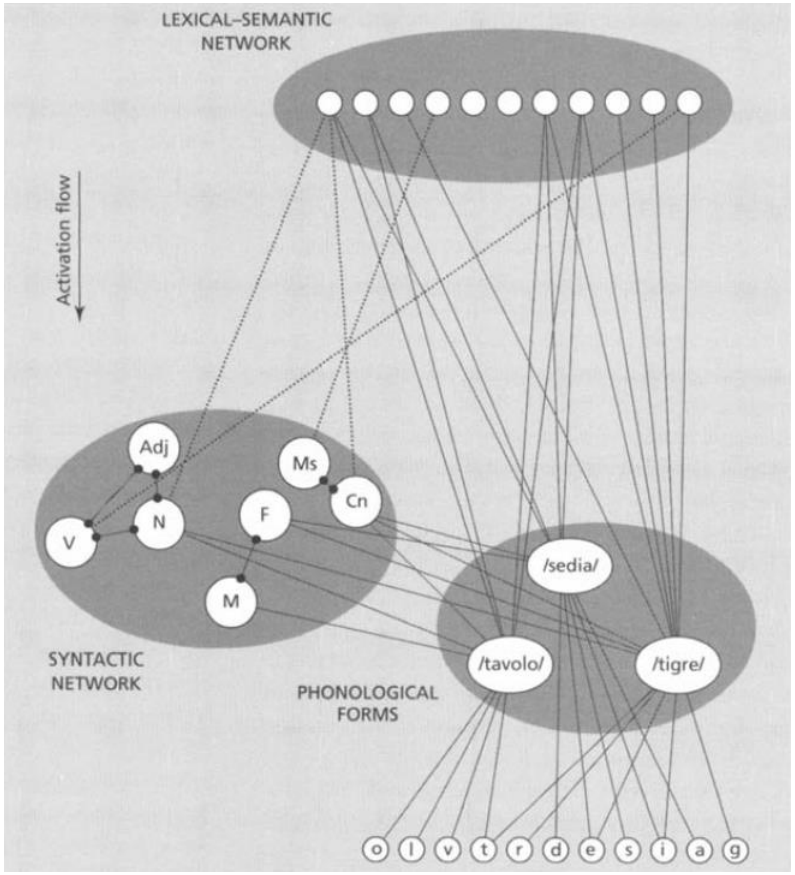
Aho-korapiloak hizkuntza jolasak dira, eta interesgarriak dira hizkuntza akatsak eragiten dituztelako. Orohar antzeko soinuak dituzten hitzak izaten dituzte aho-korapiloek. Soinu berdinak hitz ugaritan denbora motzean erabiltzea zaila da.

- Beleak Berreagara zerbait daroa; badaroa, berea daroa; baba errea agoan daroa.
- Alkipean kapa, kapa alkipean; alkipean kapa, kapa alkipean. ...
- Iputz-apezak napar-istupez atorra, napar-apezak iputz-istupez atorra
- Olagarroaren erro errea larra errean gora
- Akerrak adarrak okerrak ditu. Okerrak adarrak akerrak ditu.
- Itsasoan dabiltzan itsasontziaren ontzian, itsasoko itsazkiak, itxita daude.

Mihiaren puntako egoera

Hala ere... , Caramazza & Miozzo, 1998

Dena den... Harely eta Brown (1998)



A detailed representation of Caramazza's (1997) model. The flow of information is from semantic to lexeme and syntactic networks and then on to segmental information. N=noun; V=verb; Adj= adjective; M=masculine; F=feminine; Cn=count noun; Ms=mass noun. Dotted lines indicate weak activation. Links within a network are inhibitory. Reproduced with permission from Caramazza (1997).

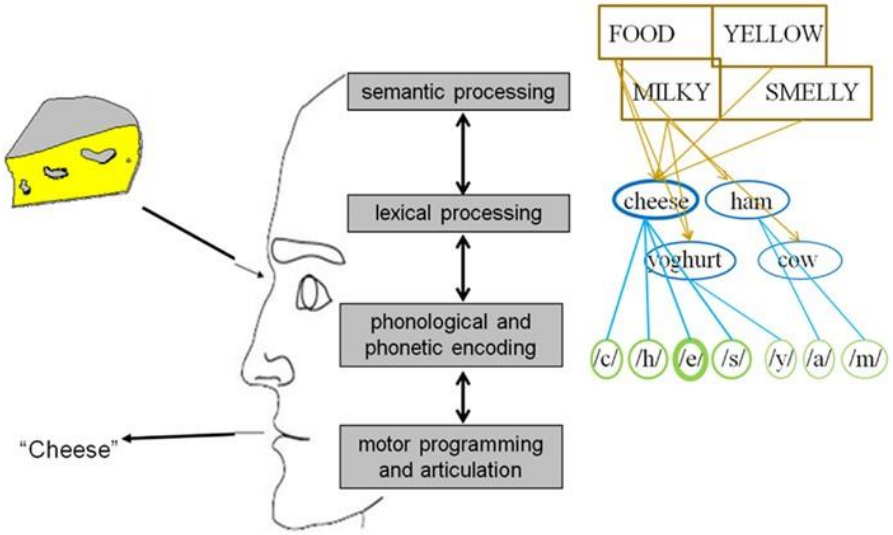
Modelo seriala vs. Kaskada modeloa

Modelo seriala

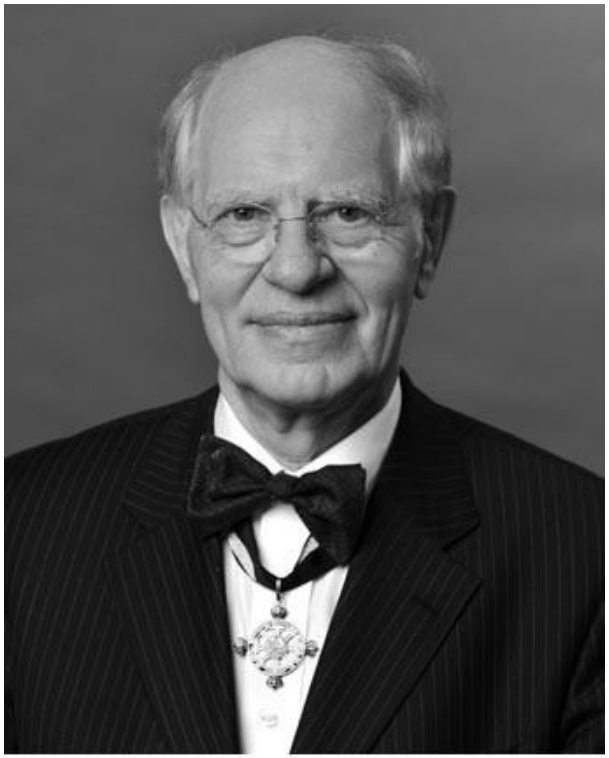
- Levelt-ek eta (1999a) hitzaren lemmaren hautaketa erabat bukatua da, hitz horren informazio fonologikora iritsi baino lehen.

Kaskada modeloa

- Prozesamendu fonologikoa has daiteke hitzaren hautaketa erabat burutu baino lehen.
- Bi maila hauek ez dira erabat independienteak.



Levelt-en teoria seriala: WEAVER++



Willem J. M. Levelt

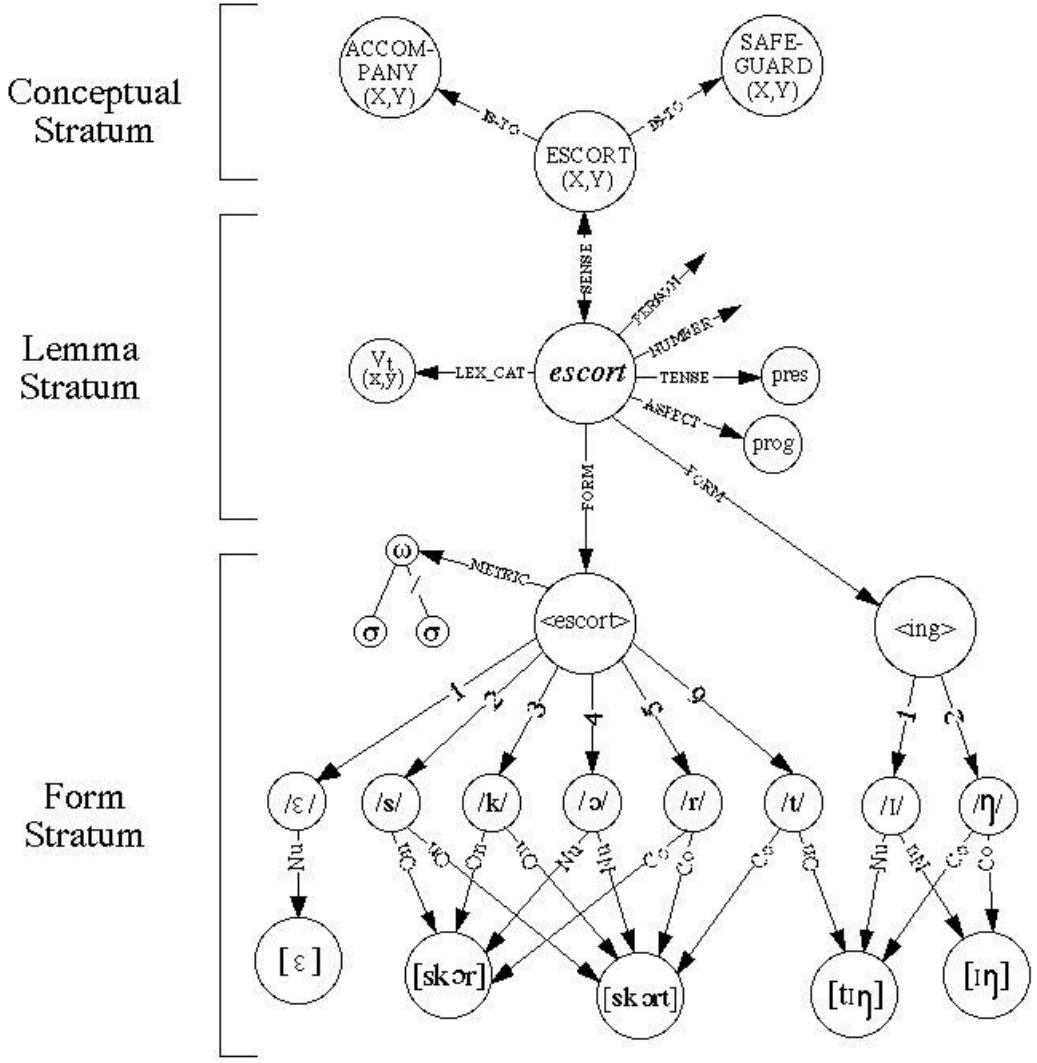
Levelt et al. (1999a)

- Aurreranzko (*feed-forward*) aktibazio-zabaltze sare bat dago.
- Sarean hiru maila nagusi daude:
  - Mailarik altuenean kontzeptu lexikoak adierazten dituzten nodoak daude.
  - Bigarren mailan lexiko-mentaleko hitz abstraktoak edo lemmak errepresentatzen dituzten nodoak daude.
  - Mailarik baxuenean dauden nodoek hitzen formak (morfemak eta segmento fonemikoak) errepresentatzen dituzte.

Levelt-en teoria seriala: WEAVER++

Levelt et al., 1999a

- Sareak ez ditu lotura inhibitorioak
- Hizketa ekoizpenak zenbait prozesatze maila biltzen ditu, eta maila hauek bata bestearen ondoren datoz serialki antolatuta.
- Hizketa akatsak ekiditen dira *checking* mekanismo batzuen bidez.



Levelt-en teoria: WEAVER++

Sei prozesatze maila zehazten dira:

1. Prestatze kontzeptuala: esnahiaren arabera, kontzeptu lexiko posibleak aktibatzen dira.
2. Aukeraketa Lexikoa: Hitz abstraktu edo *lemma* bat aukeratzen da, bere ezaugarri sintaktikoekin batera; lemma jakin bat aukeratuko da beste lemmak baino aktibatuago dagoelako.
3. Kodetze Morfologikoa: Aukeratu den lemmaren oinarrizko forma aktibatzen da.
4. Kodetze Fonologikoa: Maila honetan, hitzaren silabak konputatzen dira, hau da, silabifikazioa.
5. Kodetze Fonetikoa: Hizketako soinuak prestatzen dira silabarioa erabiliz.
6. Artikulazioa: Hitzaren ekoizpena gauzatzen da hizketarako giharreen bidez

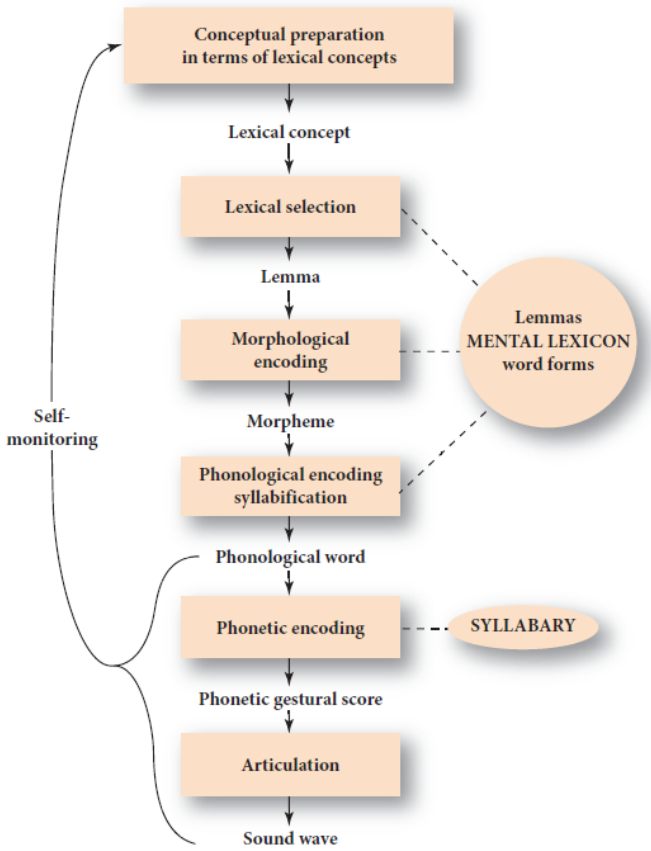


Figure 2.1 A schematic of Levelt and colleagues' speech production model (Levelt et al., 1999, p. 3)

Aktibazio-hedatzearen teoria (Spreading-activation theory)

Dell (1986) eta Dell eta O'Seaghdha (1991).

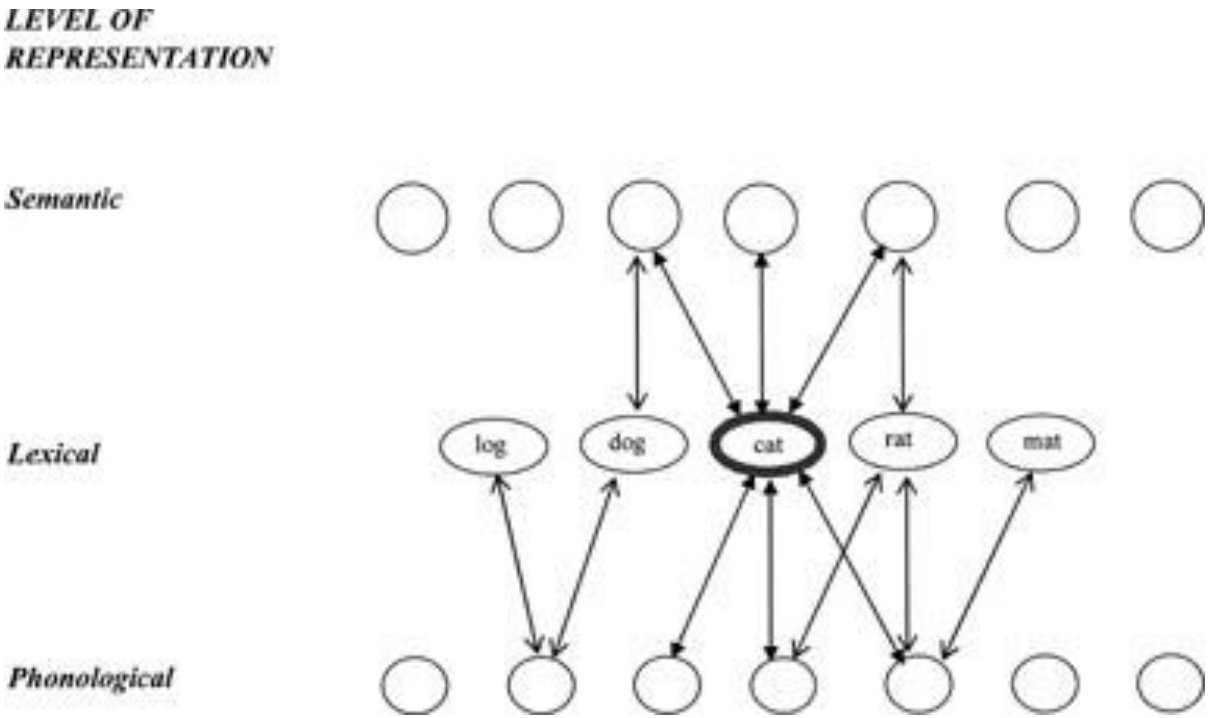
Teoria honek lau maila bereizten ditu:

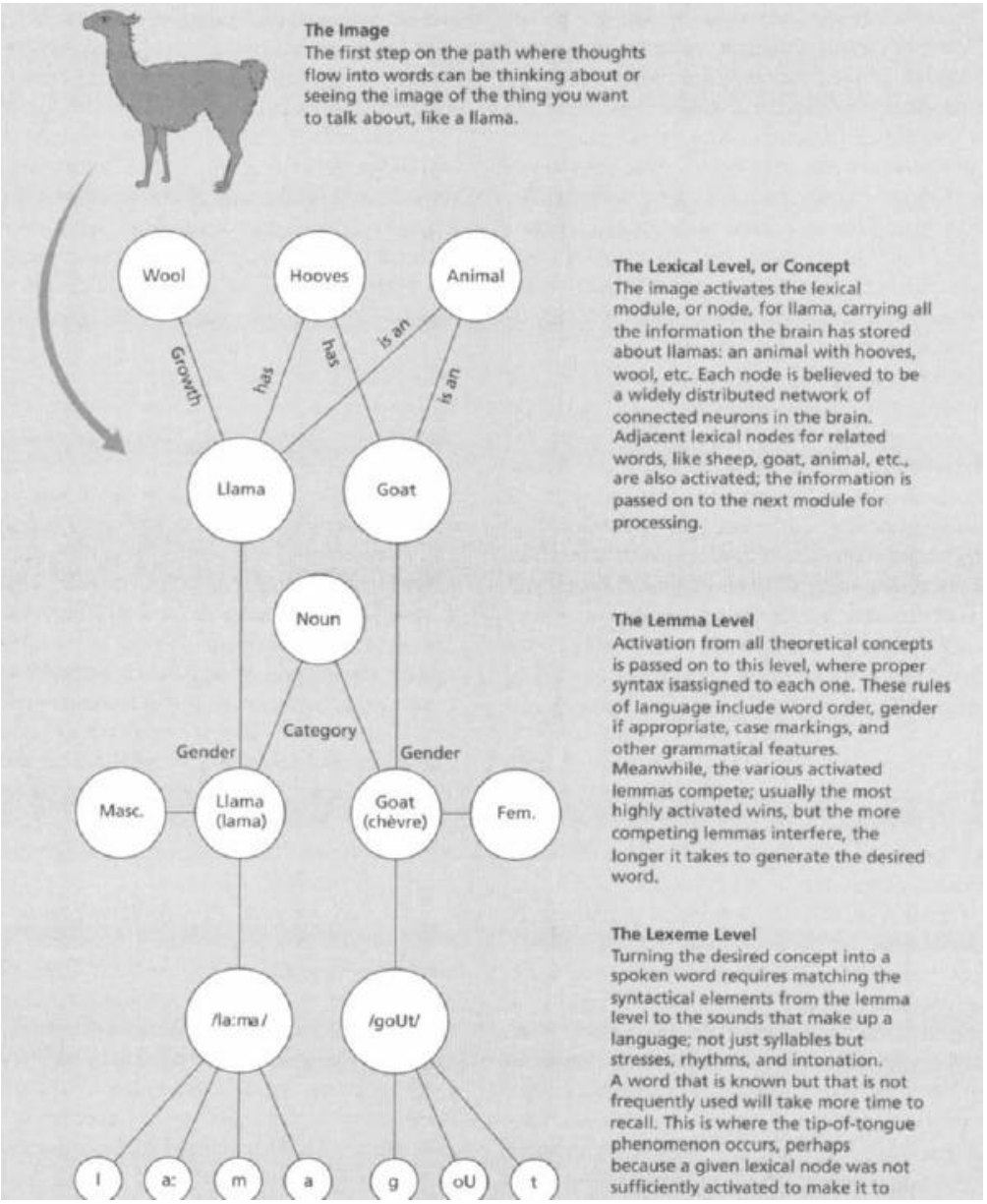
- **Maila Semantikoa**: esan nahi denaren esanahaia. Maila hau ez da xehetasunez azaltzen teoria hoetan.
- **Maila Sintaktikoa**: esaldiaren parte izango diren hitzen egitura gramatikoa.
- **Maila Morfologikoa**: gauzatu nahi den esaldiaren morfemak.
- **Maila Fonologikoa**: esaldiaren fonemak (*basic units of sound within the sentence*.)

Aktibazio-hedatzearen teoria

Teoria honen baieztapenak:

- Maila bakoitzean errepresentazio bat garatzen da.
- Hizketa ekoizpena planeatzerakoan gertatzen diren prozesuak lau mailatan gertatzen dira, eta paraleloak eta interaktiboak dira.





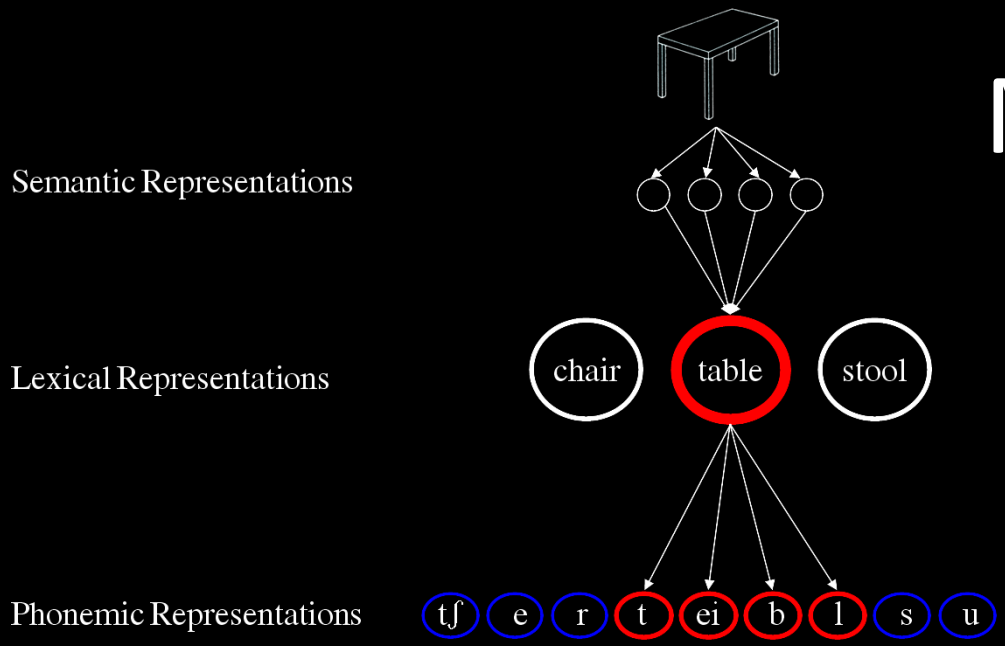
The Image
The first step on the path where thoughts flow into words can be thinking about or seeing the image of the thing you want to talk about, like a llama.

The Lexical Level, or Concept
The image activates the lexical module, or node, for llama, carrying all the information the brain has stored about llamas: an animal with hooves, wool, etc. Each node is believed to be a widely distributed network of connected neurons in the brain. Adjacent lexical nodes for related words, like sheep, goat, animal, etc., are also activated; the information is passed on to the next module for processing.

The Lemma Level
Activation from all theoretical concepts is passed on to this level, where proper syntax isassigned to each one. These rules of language include word order, gender if appropriate, case markings, and other grammatical features. Meanwhile, the various activated lemmas compete; usually the most highly activated wins, but the more competing lemmas interfere, the longer it takes to generate the desired word.

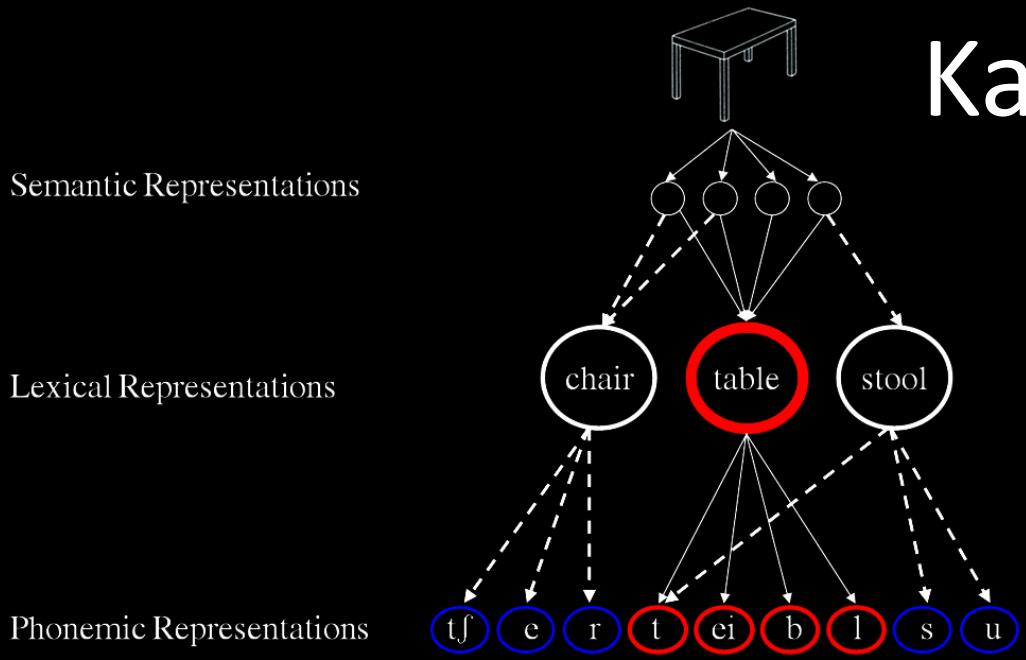
The Lexeme Level
Turning the desired concept into a spoken word requires matching the syntactical elements from the lemma level to the sounds that make up a language; not just syllables but stresses, rhythms, and intonation. A word that is known but that is not frequently used will take more time to recall. This is where the tip-of-tongue phenomenon occurs, perhaps because a given lexical node was not sufficiently activated to make it to

Modelo seriala

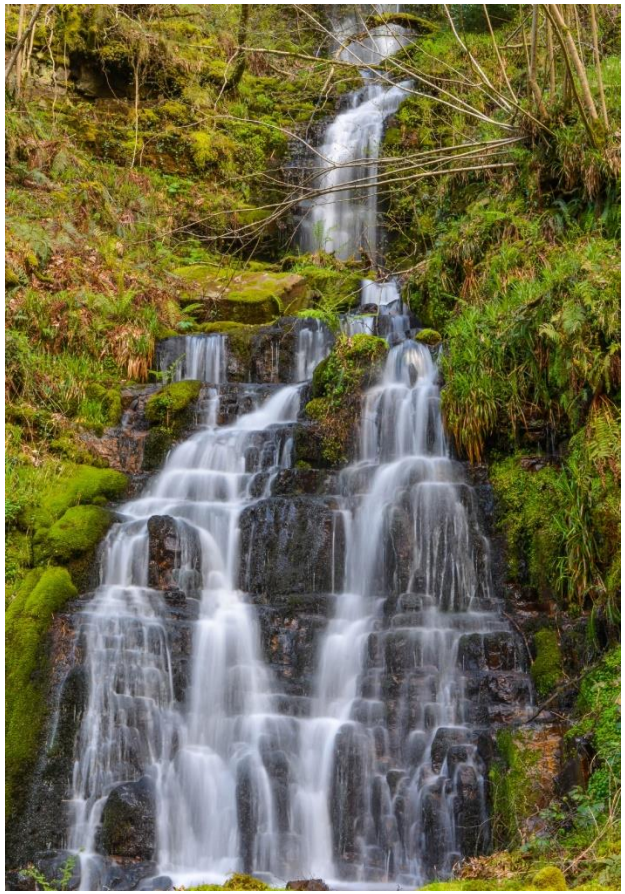


vs

Kaskada modeloa



Modelo seriala vs kaskada modeloa



Modelo seriala vs. Kaskada modeloa

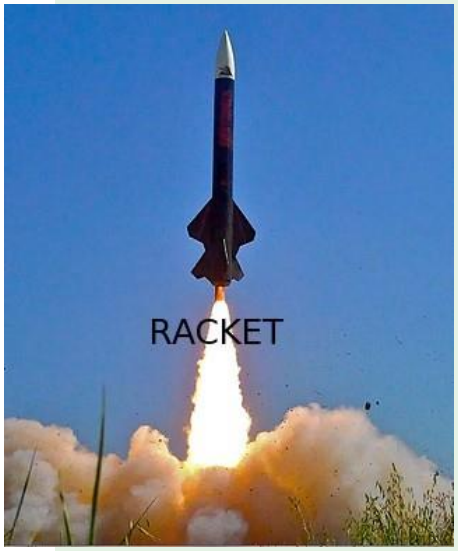
Imagina dezagun esperimentu bat:

- Partaideek irudiak izendatu behar dituzte ahalik eta azkarren (*Picture Naming Task*).
- Irudiak izendatzeko izen dominante bat eta izen ez-dominante bat daude.
- Lemma aukeraketa mailan, izen dominantea hautatuko da.
- Prozesamendu serialeko modelo batean, izen ez-dominantearen prozesatze fonologikoa ez da apenas gertatuko.
- Kaskada modeloaren arabera, aldiz, aktibazio fonologikoa handiagoa izan daiteke.

Modelo seriala vs. Kaskada modeloa

Peterson & Savoy (1998)

Partaideek hitza irakurri behar zuten irudiari kasurik egin gabe.

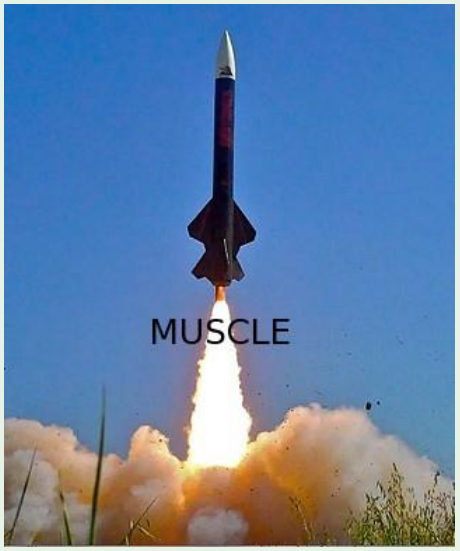


- Bi modeloek aurreikusten dute hitza azkarrago esango dela (primeatua izango dela) hitza fonologikoki erlazionatuta dagoenean irudiaren izen dominantearekin (*racket*)

Modelo seriala vs. Kaskada modeloa

Peterson & Savoy (1998)

Partaideek hitza irakurri behar zuten irudiari kasurik egin gabe.



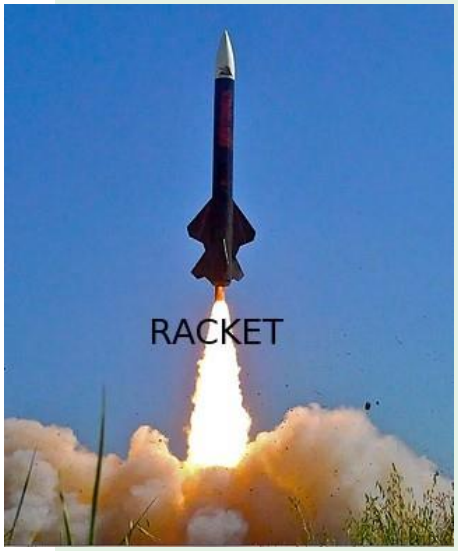
- Bi modeloek aurreikusten dute hitza azkarrago esango dela (primeatua izango dela) hitza fonologikoki erlazionatuta dagoenean irudiaren izen dominantearekin (*racket*)

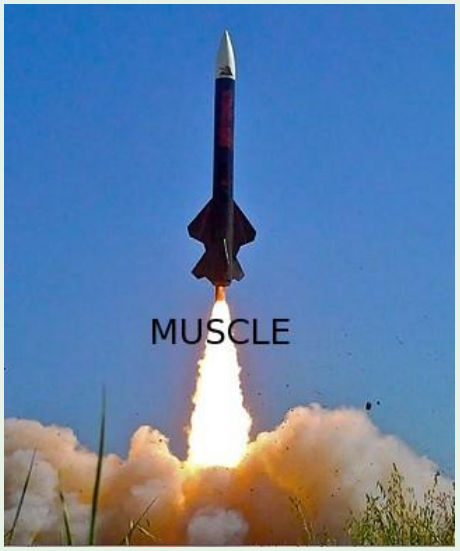
Teorikoki interesgarriagoa dena, esan beharreko hitza azkarrago esaten zen irudiaren izen ez-dominantearekin fonologikoki erlazionatuta zegoenean (**muscle**)

Modelo seriala vs. Kaskada modeloa

Peterson & Savoy (1998)

Partaideek hitza irakurri behar zuten irudiari kasurik egin gabe.





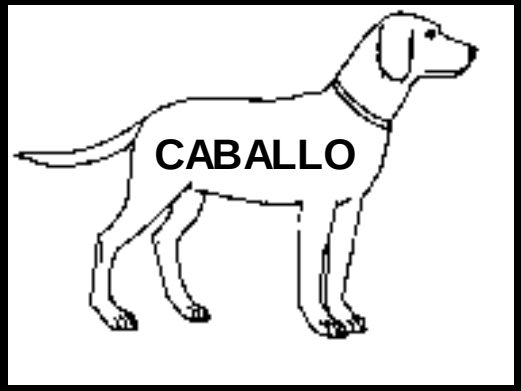
- Bi modeloek aurreikusten dute hitza azkarrago esango dela (primeatua izango dela) hitza fonologikoki erlazionatuta dagoenean irudiaren izen dominantearekin (*racket*)

Teorikoki interesgarriagoa dena, esan beharreko hitza azkarrago esaten zen irudiaren izen ez-dominantearekin fonologikoki erlazionatuta zegoenean (**muscle**)

We obtained clear evidence for phonological activation of both dominant and secondary picture names during early moments of picture lexicalisation. Thus, in contrast to the serial model's central claim, it appears that multiple lexical candidates do undergo phonological encoding ...we reject the serial processing view and argue, instead, that ***the cascade model provides the best account****.* (p. 552)

Irudi-hitz interferentzia ariketa

Izenda ezazu irudia hitzari kasurik egin gabe



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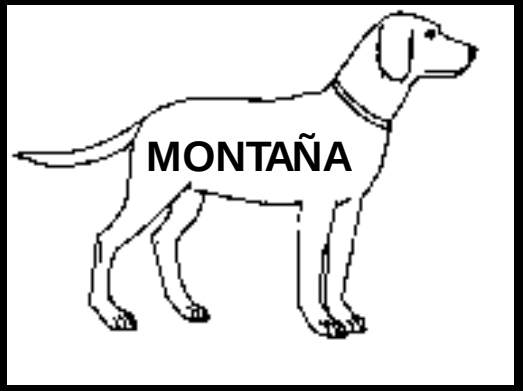
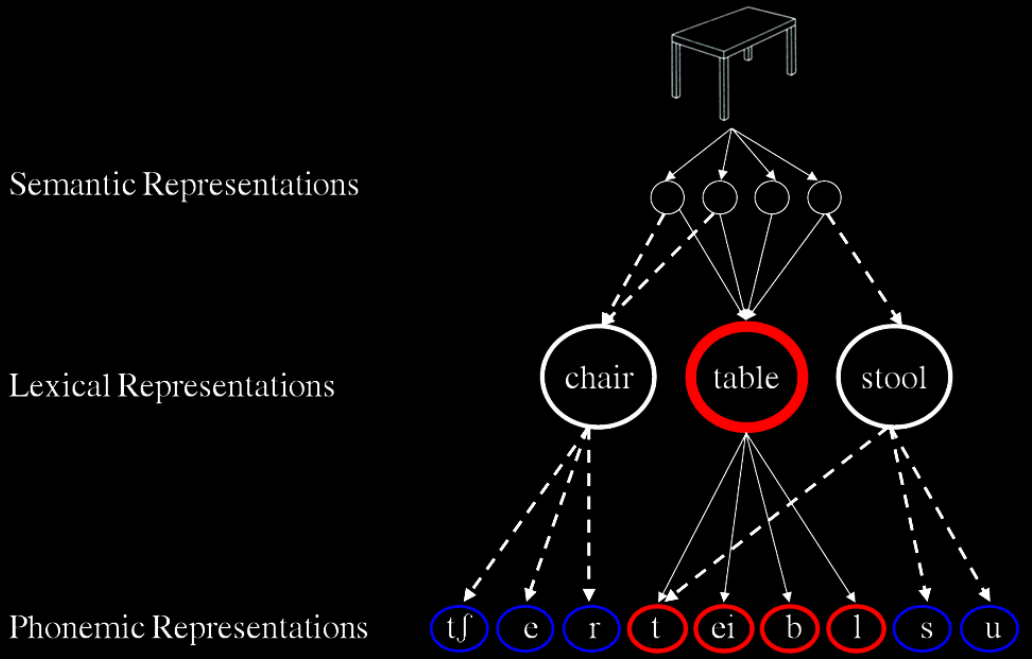
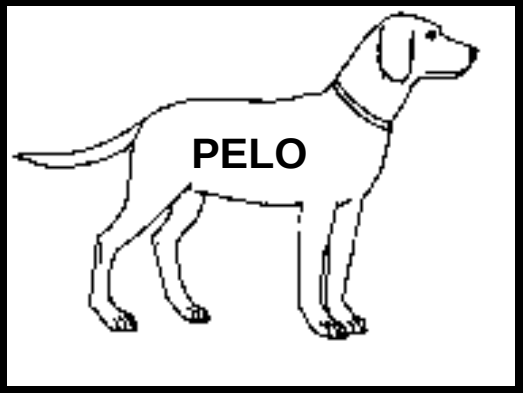


INTERFERENTZIA SEMANTIKOKO EFEKTUAK



Irudi-hitz interferentzia ariketa

Izenda ezazu irudia hitzari kasurik egin gabe



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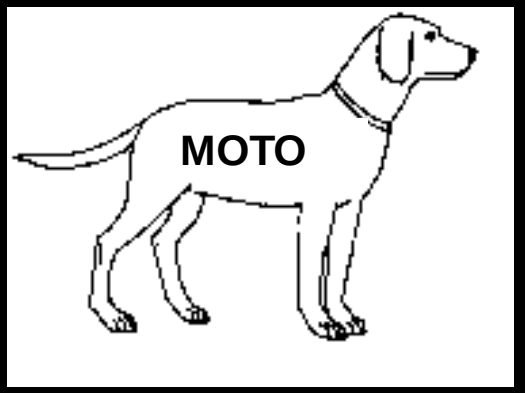
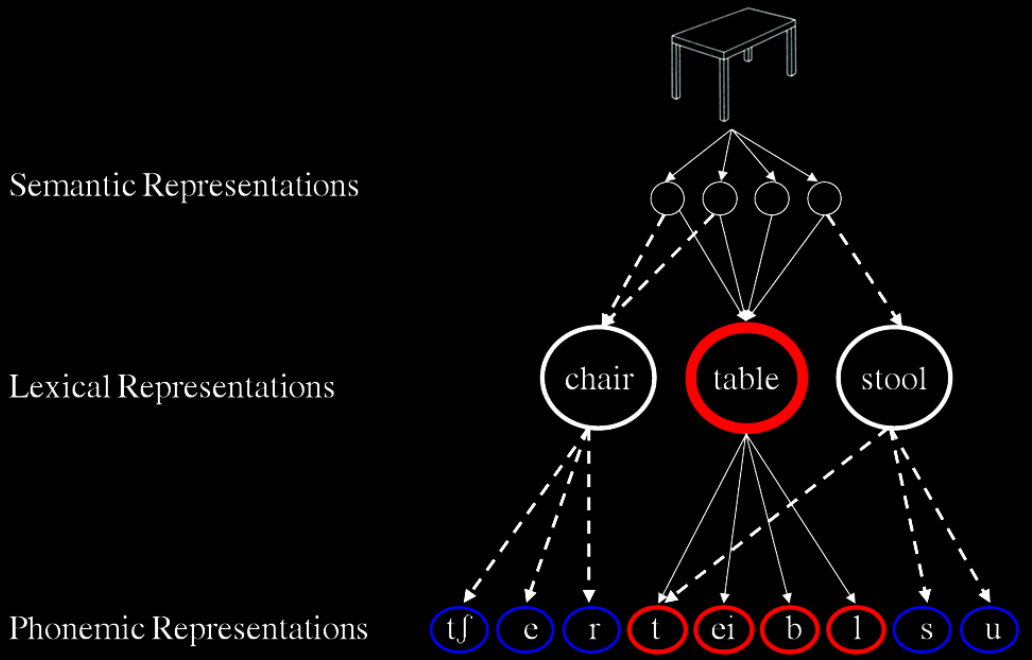
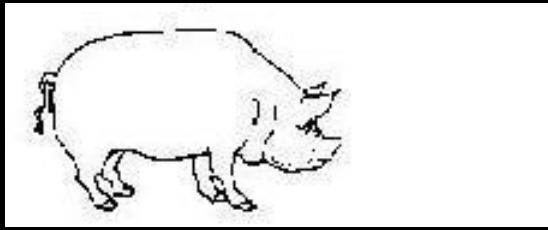


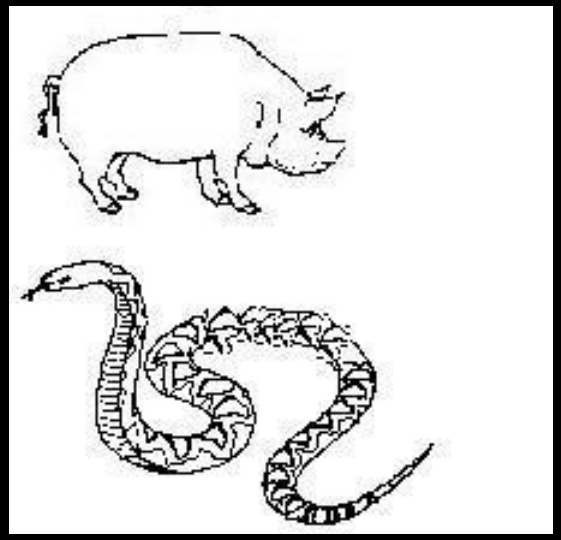
ERRAZTE FONOLOGIKOKO EFEKTUAK

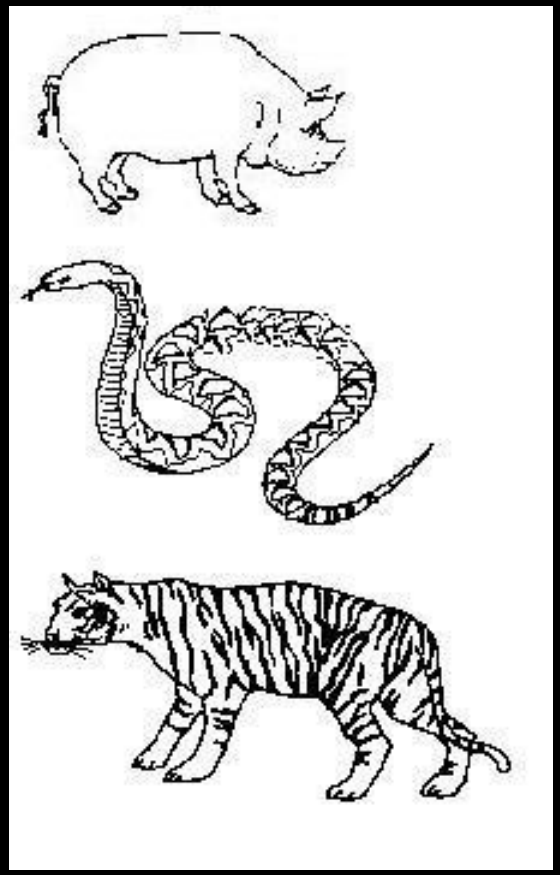


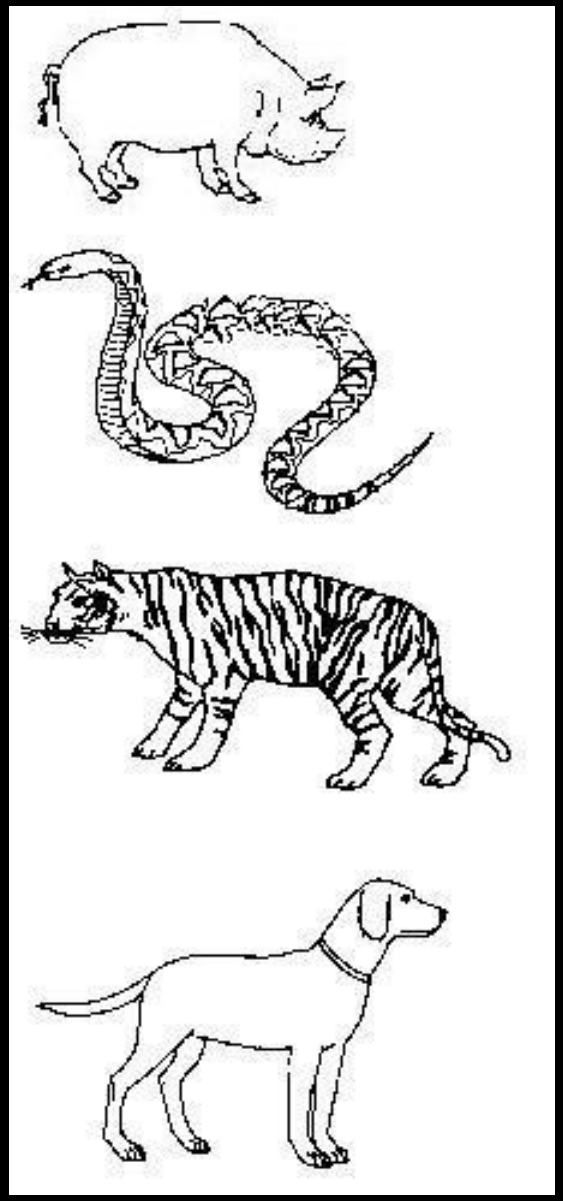
Irudi izendatze ariketak

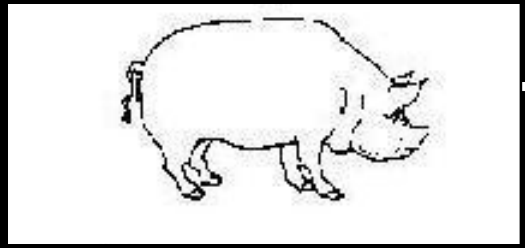
Izenda itzazu irudiak bata bestearen ondoren:

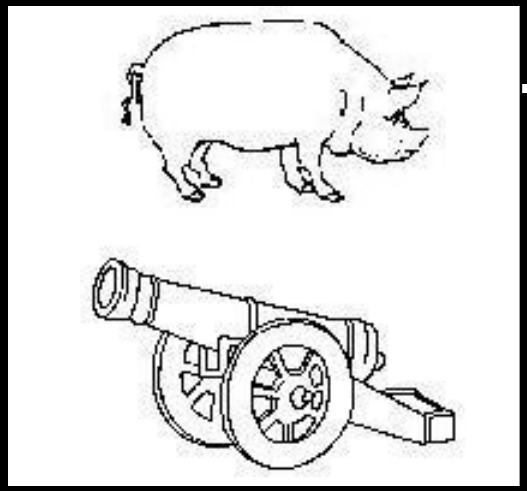


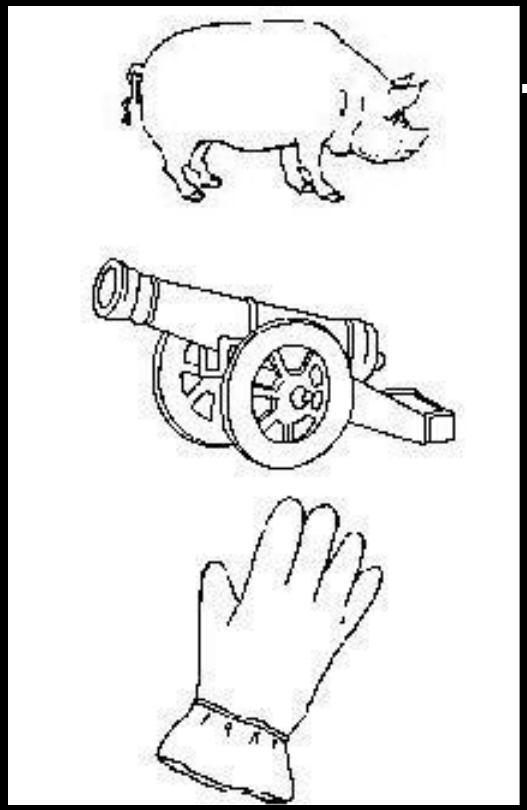


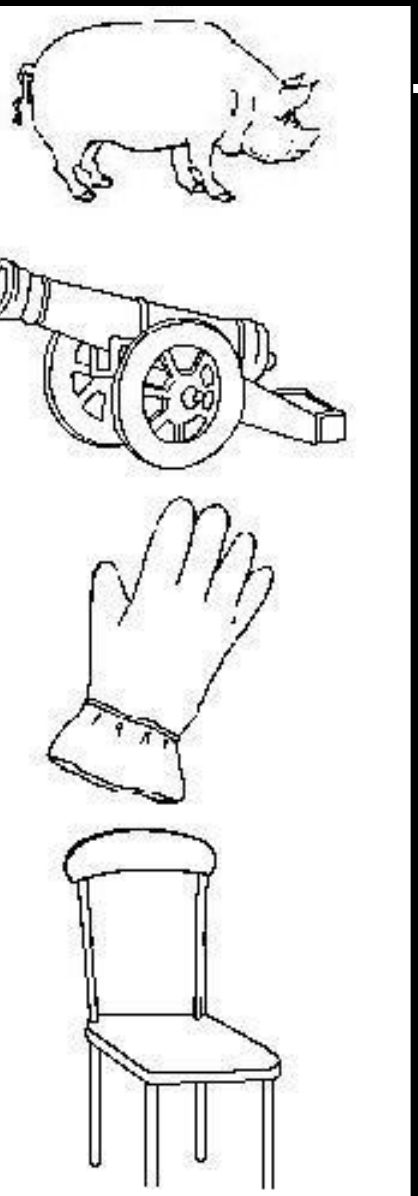


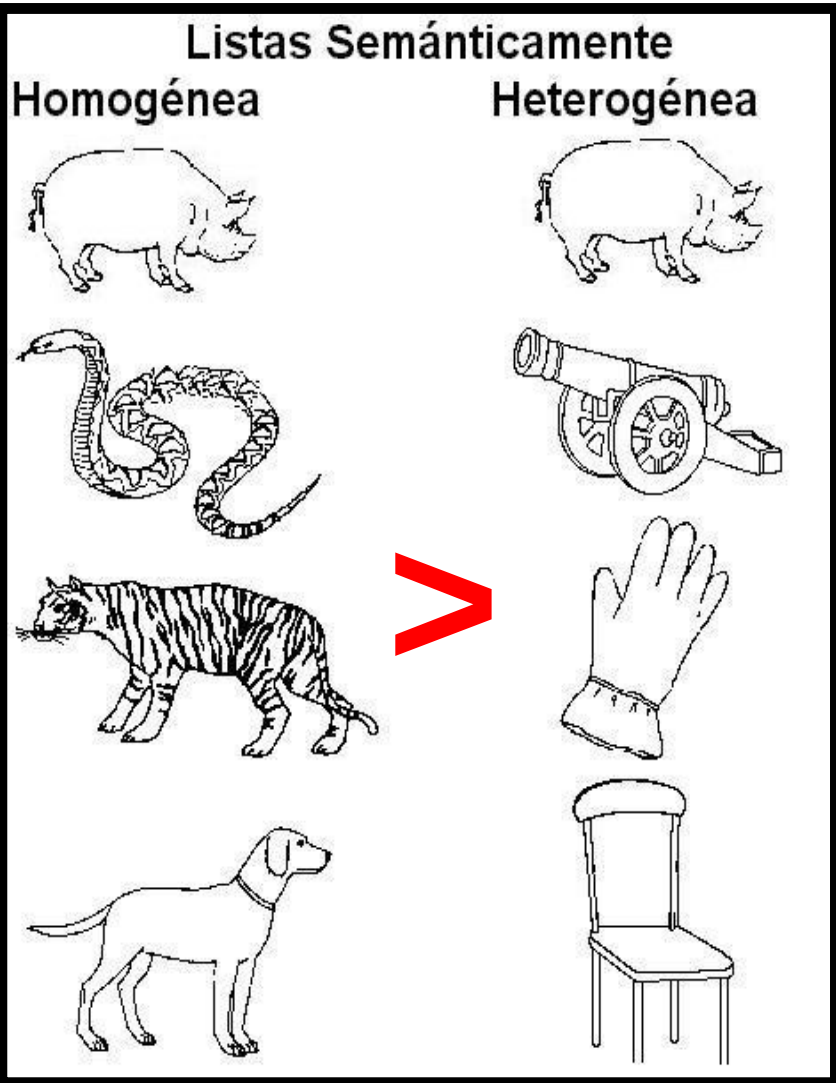




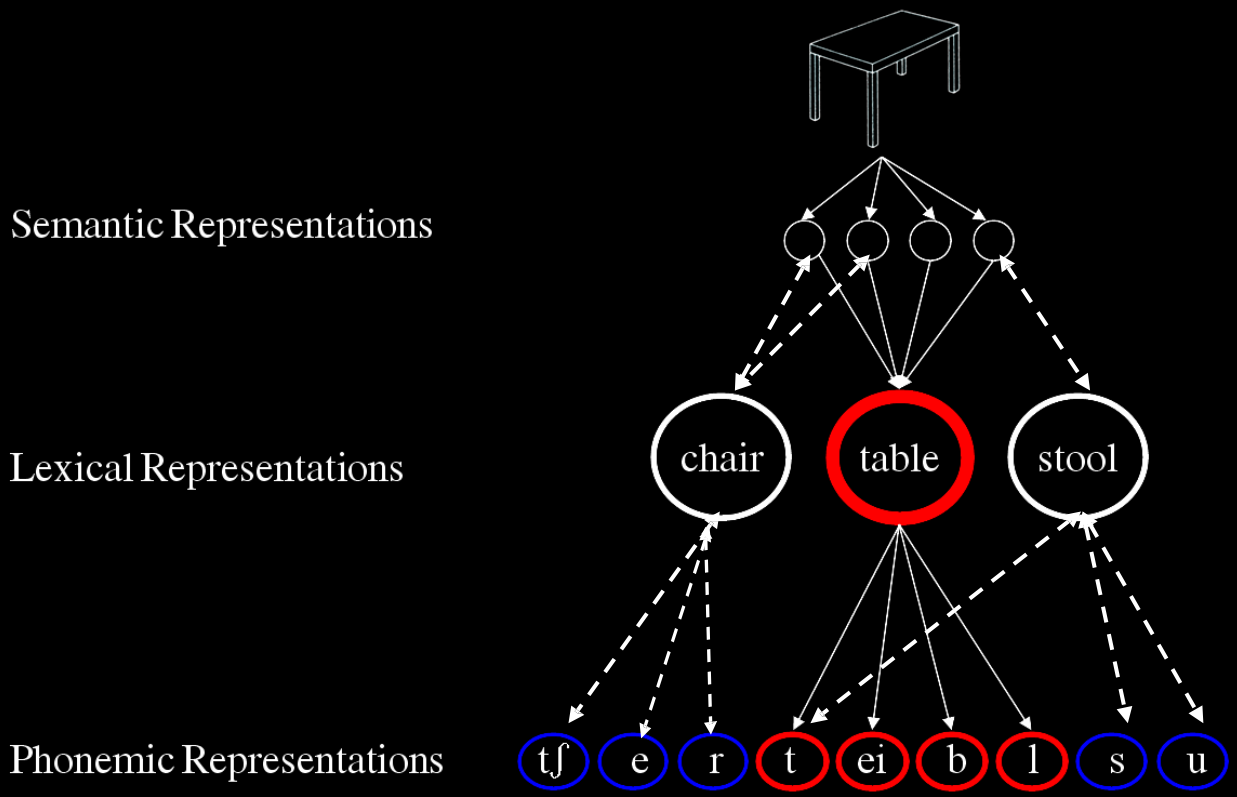






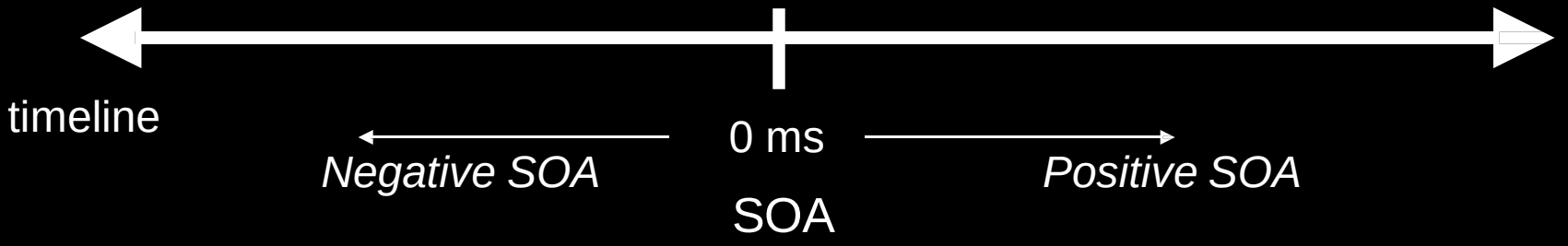

Listas Semánticamente
Homogénea
Heterogénea
>

Modelo interaktiboak



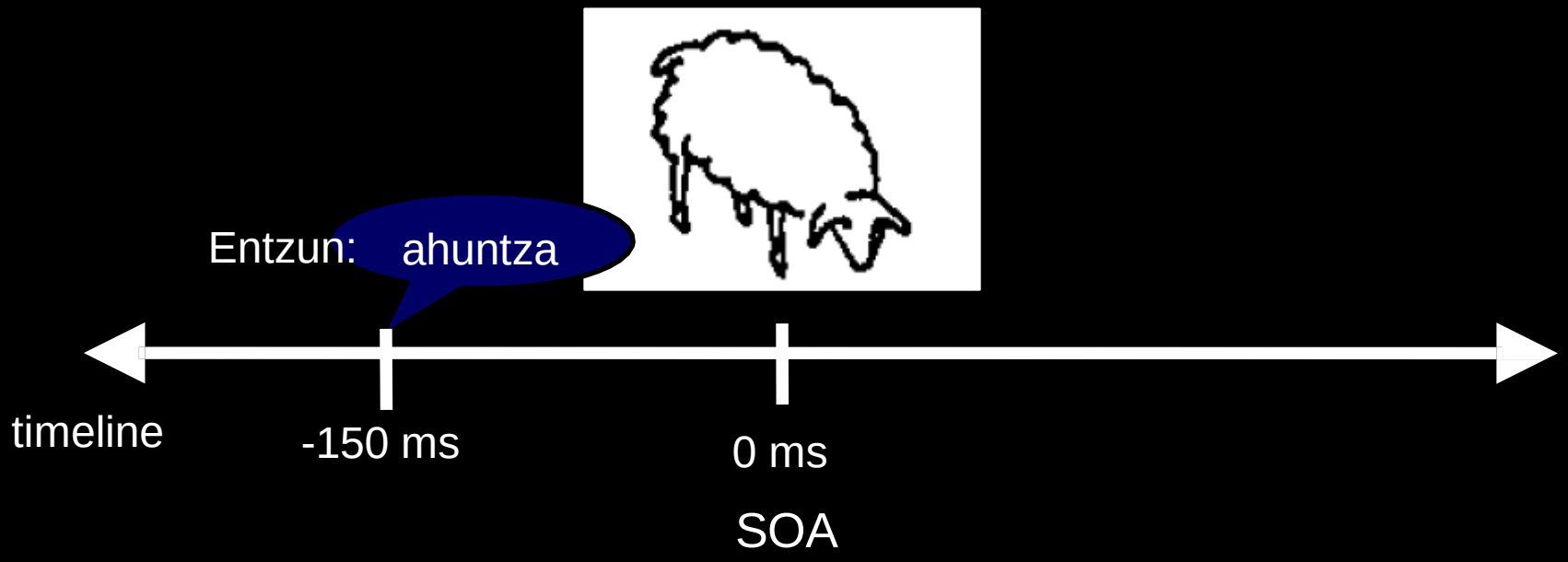
Irudi-distraktore ariketak

- Izendatu irudia
- Batzuetan distraktore idatzia edo auditiboa
- Irudia eta distraktorearen agerpenaren manipulazioa: Stimulus Onset Assynchrony (SOA)



Picture Naming Task

- Izendatu irudia
- Batzuetan distraktore idatzia edo auditiboa
- Irudia eta distraktorearen agerpenaren manipulazioa: Stimulus Onset Assynchrony (SOA)



Picture Naming Task

- Izendatu irudia
- Batzuetan distraktore idatzia edo auditiboa
- Irudia eta distraktorearen agerpenaren manipulazioa: Stimulus Onset Assynchrony (SOA)

Entzun: ahuntza

timeline

0 ms

150 ms

SOA

Schriefer, Meyer, & Levelt (1990)

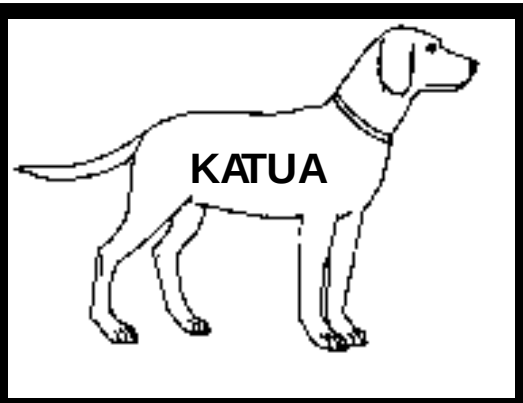
- Distraktore semantikoa: (e.g. *goat* distraktorea *sheep* izendatzeko)
  Erantzunak moteldu (inhibizioa) -150 SOA erabilita (distraktorea irudia baino lehen)

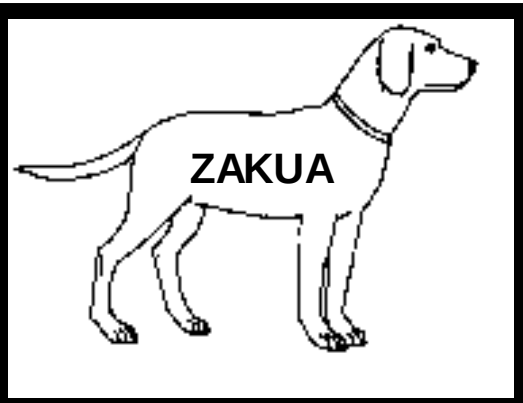
- Distraktore fonologikoa: (e.g. *sheet* distraktorea *sheep* izendatzeko)
  Erantzunak erraztu 0 eta +150 SOA erabilita (distraktorea irudiaren ondoren)
  Errazterik ez -150 SOArekin

"goat" activates Goat Lemma competes with Sheep Lemma for selection, causing inhibition.
"sheet" activates sounds and is similar in sound to "sheep", facilitating production.

ONDORIOA: kodetze fonologikoa aukeraketa lexikoaren ondoren gertatu

Efektu semantikoak fonologikoak baino lehenago gertatzen dira (Damian & Martin, 1999)





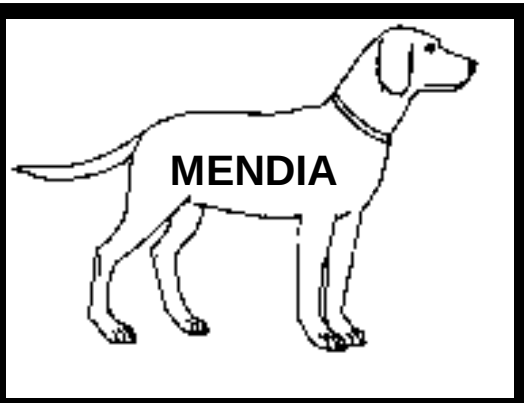


Table 1
Experiment 1: Mean Response Latencies (in Milliseconds), varied by Distractor Type (Visual vs. Auditory), Relatedness (Unrelated vs. Semantic vs. Phonological) and Picture-Word Onset Asynchrony (SOA)

Distractor type	SOA (in ms)				
	-200	-100	0	+100	+200
Visual					
Unrelated	700	714	744	693	620
Semantic	698	725	786	716	640
Phonological	666	687	693	643	608
Auditory					
Unrelated	695	706	707	637	605
Semantic	723	730	734	641	606
Phonological	690	683	671	591	581

Stimulus Onset Asynchrony (SOA) baldintza ezberdinak:

Hitz distraigarria eta helburu irudiaren aurkezpenaren arteko asinkronia

SOA negatiboa = hitza irudia baino lehen
SOA positiboa = irudia hitza baino lehen

Efektu semantikoak fonologikoak baino lehenago gertatzen dira (Damian & Martin, 1999)

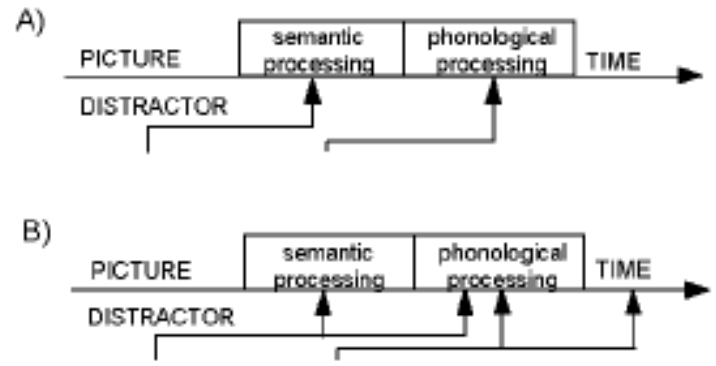


Figure 2. Processing of target pictures and distractors with fixed (A) or unlimited (B) presentation duration.

Table 1
Experiment 1: Mean Response Latencies (in Milliseconds), varied by Distractor Type (Visual vs. Auditory), Relatedness (Unrelated vs. Semantic vs. Phonological) and Picture-Word Onset Asynchrony (SOA)

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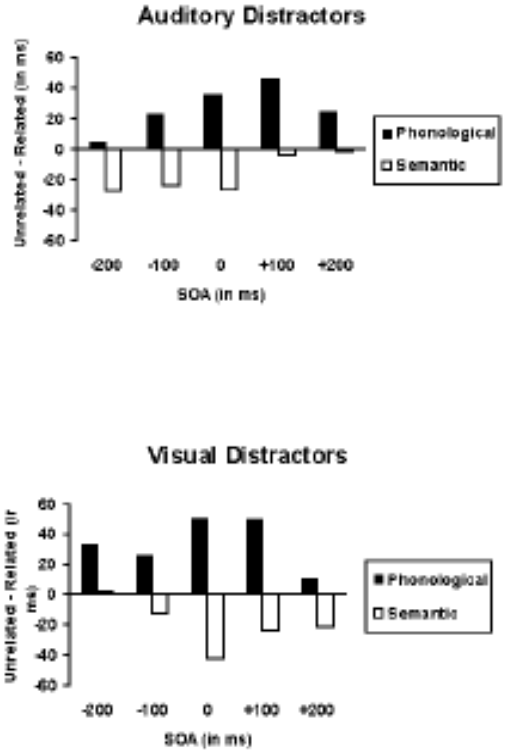


Figure 1. Experiment 1: Effects of semantically and phonologically related distractors (unrelated minus related condition) varied by distractor modality (visual vs. auditory) and stimulus-onset asynchrony (SOA: -200 ms, -100 ms, 0 ms, +100 ms, +200 ms).

Efektu semantikoak fonologikoak baino lehenago gertatzen dira (Damian & Martin, 1999)

Design and Procedure. Only distractors in the visual modality were used. The conditions were the same as in Experiment 1. Thus, the experimental design included SOA with five levels (-200 ms, -100 ms, 0 ms, +100 ms, and +200 ms) and Target-Distractor Relation with three levels (Unrelated, Semantically Related, and Phonologically Related) as within-subjects factors.

The procedure was identical to the one employed in Experiment 1, with one exception. Within each trial, the distractor word was displayed for only 200 ms and then replaced by a string of "X" letters that served as a mask and stayed on the screen for 500 ms. All other temporal parameters remained identical to Experiment 1. In particular, the picture remained on the screen until the voice key triggered.

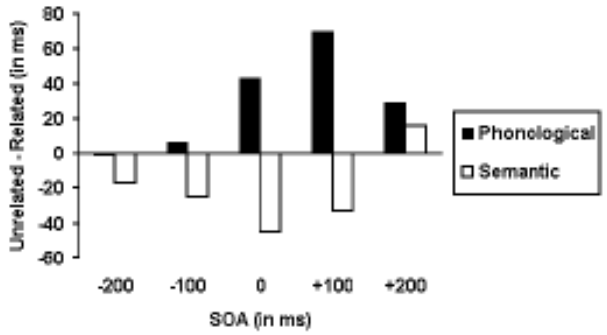
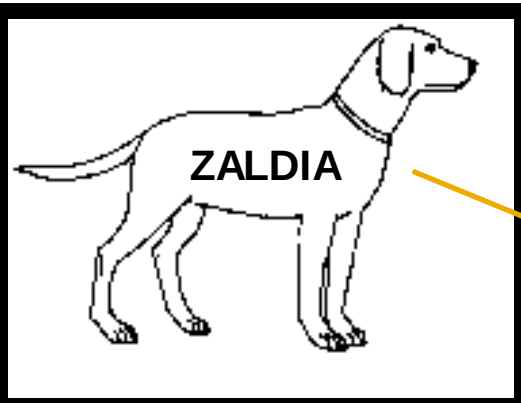


Figure 3. Experiment 2: Effects of semantically and phonologically related distractors (unrelated minus related condition) varied by stimulus-onset asynchrony (SOA; 200 ms, -100 ms, 0 ms, +100 ms, +200 ms).

Table 2
Experiment 2: Mean Response Latencies (in Milliseconds), Varied by Relatedness (Unrelated vs. Semantic vs. Phonological) and Picture–Word Stimulus Onset Asynchrony (SOA)

	SOA (in ms)				
Relatedness	−200	−100	0	+100	+200
Unrelated	714	710	738	741	689
Semantic	731	735	782	774	673
Phonological	715	704	695	671	660

Efektu semantikoak fonologikoak baino lehenago gertatzen dira (Damian & Martin, 1999)



Erlazio semantikoa eta fonologikoa

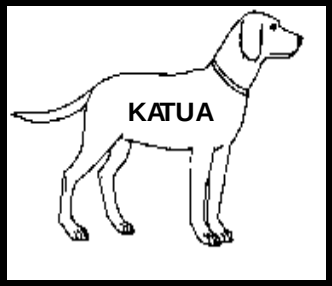
MAILAKAKO PROZESAMENDUA (discrete processing) modeloaren aurreikuspenak:

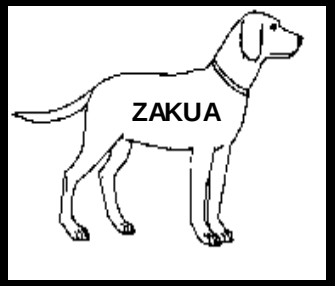
Semantika fonologiaren ondoren prozesatzen bada, eta elkarreraginik ez badago bi mailen artean, orduan bi efektuen batuketa esperoko genuke

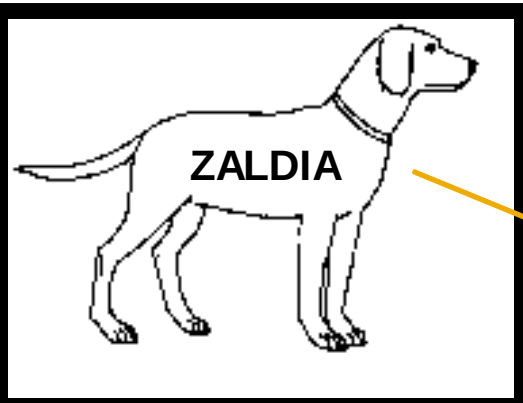
ELKARRERAGINA (interactive) modeloaren aurreikuspenak:

Prozesu semantikoak eta fonologikoak aldi berean gerta daitezke, eta maila fonologikoko prozesamenduak semantikakoan eragina izan dezake. Ondorioz, elkareragina esperoko genuke

Efektu semantikoak fonologikoak baino lehenago gertatzen dira (Damian & Martin, 1999)







Erlazio semantikoa eta fonologikoa

Table 3
Experiment 3: Mean Response Latencies (in Milliseconds), varied by Relatedness (Control vs. Unrelated vs. Semantic vs. Phonological vs. Semantic & Phonological) and Picture-Word Onset Asynchrony (SOA)

Relatedness	SOA (in ms)		
	-150	0	+150
Control	630	643	635
Unrelated	670	702	691
Semantic	702	733	697
Phonological	665	683	646
Semantic & Phonological	679	676	654

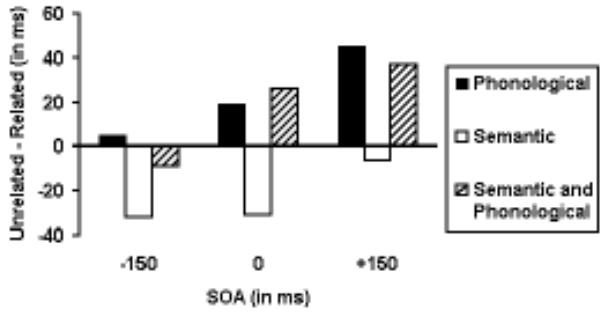


Figure 4. Experiment 3: Effects of semantically related, phonologically related, and semantically and phonologically related distractors (unrelated minus related condition) varied by stimulus-onset asynchrony (-150 ms, 0 ms, +150 ms).

Efektu semantikoak fonologikoak baino lehenago gertatzen dira (Damian & Martin, 1999)

SOA 0 baldintzan bi efektuen elkarreragin argia: efektu semantikoa desagertzen da erabat distraktoreak erlazio fonologikoa eta semantikoa duenean irudiarekin.

Hortaz: modelo interaktiboen alde

The fact that semantic interference was substantially reduced in the simultaneous presence of a form relationship replicates both Rayner and Springer's (1986) and Starreveld and La Heij's (1995, 1996b) findings obtained with visually presented distractor words. These findings appear to contradict the predictions made from the discrete two-step model of speaking. Such a model hypothesizes complete independence of lemma and lexeme stages and as a result would predict an additive relationship among the two experimental factors of semantic and phonological relatedness. Be-

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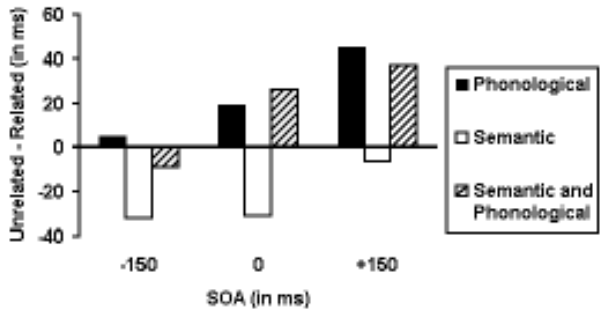

Figure 4. Experiment 3: Effects of semantically related, phonologically related, and semantically and phonologically related distractors (unrelated minus related condition) varied by stimulus-onset asynchrony (-150 ms, 0 ms, +150 ms).

Hitzen ekoizpena ERP bidez

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Tracking Lexical Access in Speech Production: Electrophysiological Correlates of Word Frequency and Cognate Effects

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Hitzen ekoizpena ERP bidez

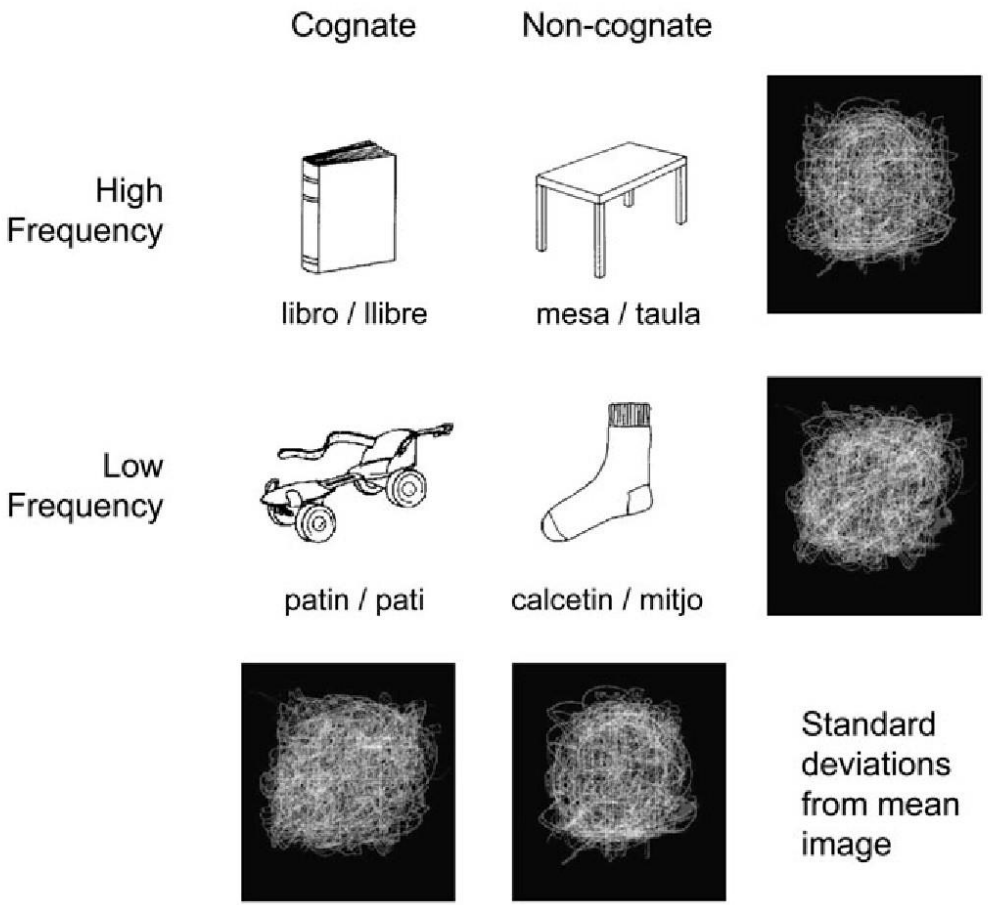


Figure 1. Exemplars of picture stimuli used in the 4 experimental conditions and their names in Spanish and Catalan. The images on the right hand side and the bottom depict the standard deviation of each individual picture in a series from the mean image in that series. Black shows no difference with the mean, white shows maximal difference from the mean. There is no differential pattern emerging from these standard deviation images, which indicates no systematic bias in interstimulus variability between experimental conditions.

Hitzen ekoizpena ERP bidez

1. esperimentua:
H1 gaztelania, esperimentua gaztelaniaz

Table 1
Mean naming latencies (ms) in the 4 experimental conditions for Experiment 1 and Experiment 2

	Low-frequency noncognates (ms)	Low-frequency cognates (ms)	High-frequency noncognates (ms)	High-frequency cognates (ms)
Experiment 1 (naming in L1)	730	718	702	661

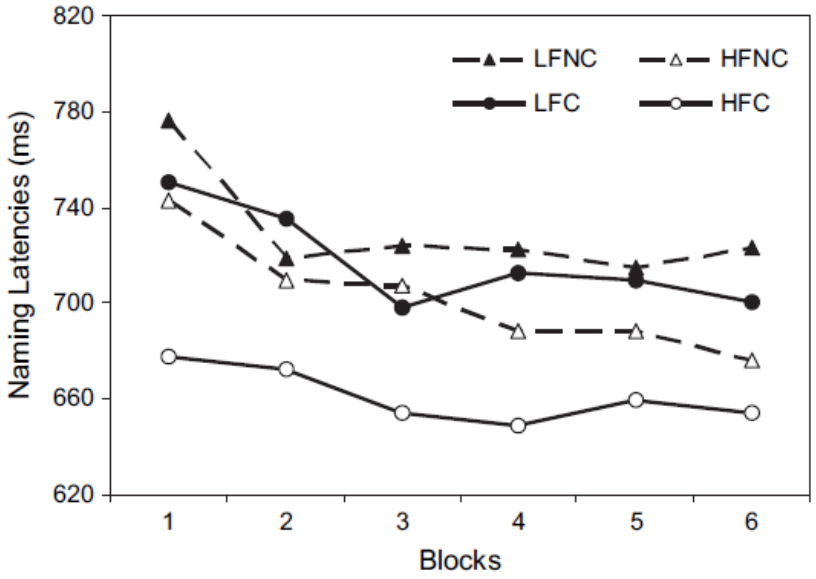
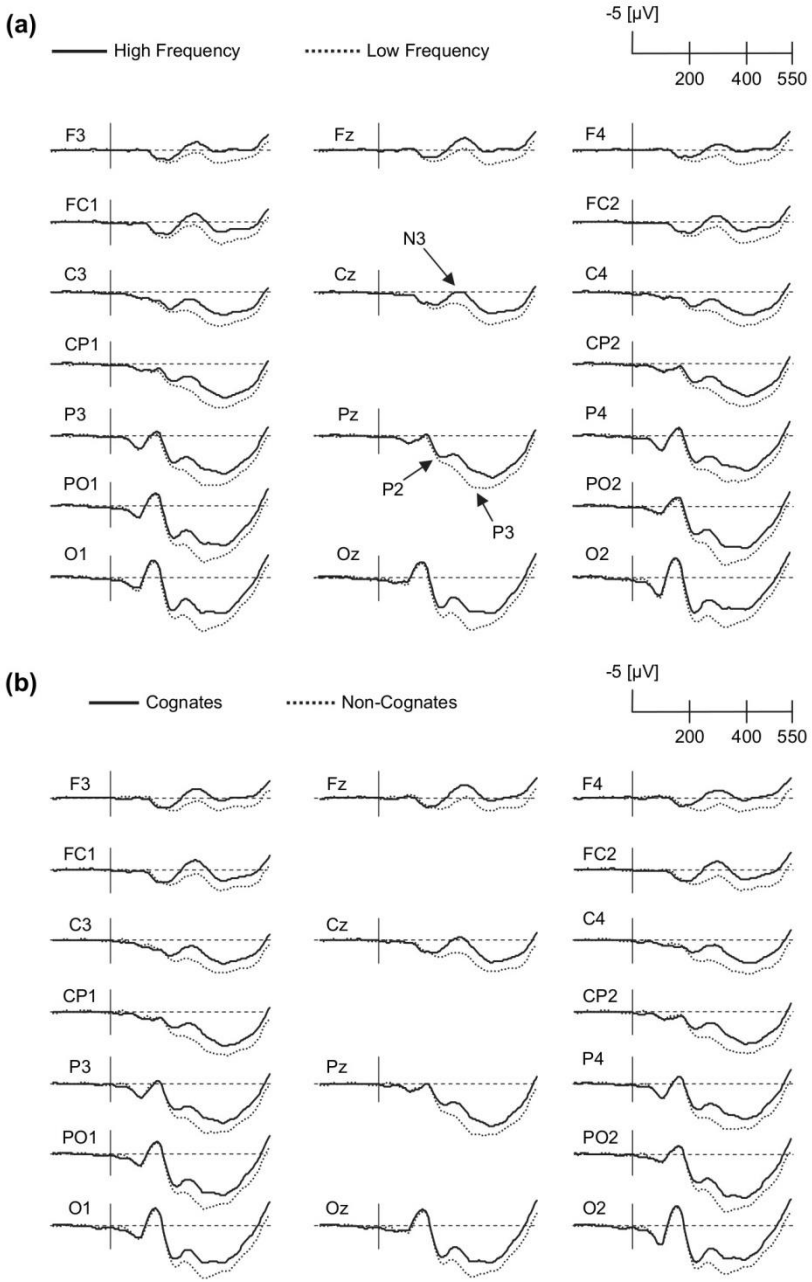


Figure 2. Mean naming latencies in Experiment 1 (LFNC = low-frequency noncognate; LFC = low-frequency cognate; HFNC = high-frequency noncognate; HFC = high-frequency cognate) over repetitions.



Hitzen ekoizpena ERP bidez

1. esperimentua:
H1 gaztelania, esperimentua gaztelaniaz

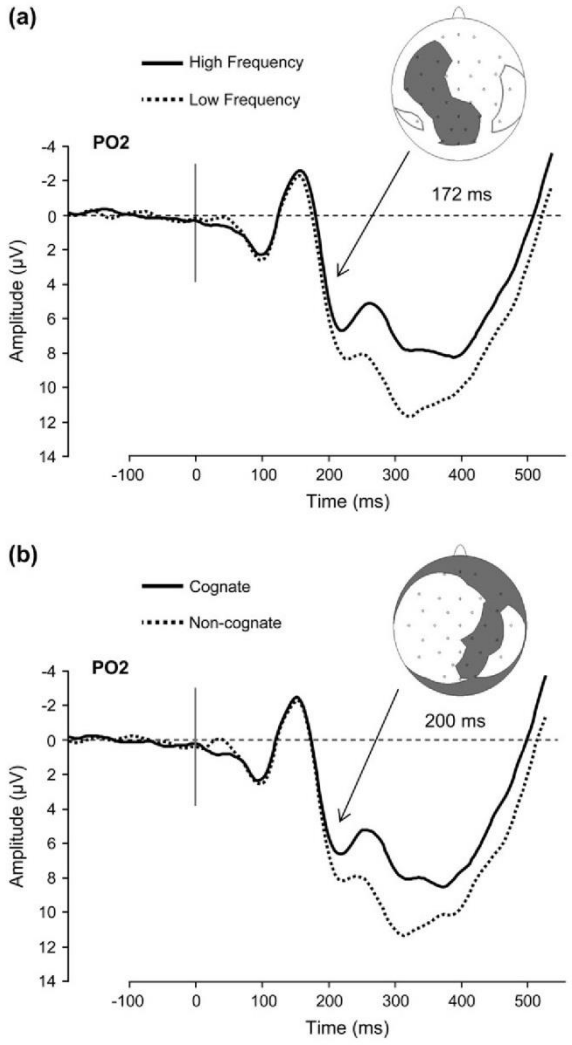


Figure 4. (*a*) Low-frequency ERPs compared with high-frequency ERPs in Experiment 1 at PO2 and topographic distribution of electrodes showing a significant effect at 172 ms after picture presentation (gray area). (*b*) Noncognate ERPs compared with cognate ERPs in Experiment 1 at PO2 and topographic distribution of electrodes showing a significant effect at 200 ms after picture presentation (gray area).

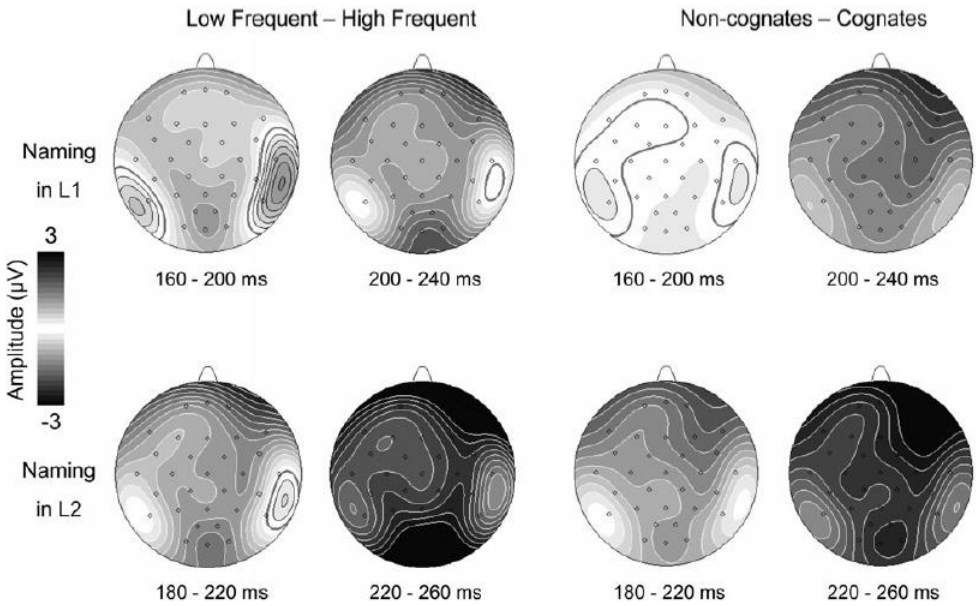


Figure 5. Spline interpolated grand mean topographies for the differences waves of the frequency (left) and cognate effects (right) at the P2 (split up in 2 time windows of 40 ms) in Experiment 1 (upper part; naming in L1) and Experiment 2 (lower part; naming in L2).

Table 1
Mean naming latencies (ms) in the 4 experimental conditions for Experiment 2

	Low-frequency noncognates (ms)	Low-frequency cognates (ms)	High-frequency noncognates (ms)	High-frequency cognates (ms)
Experiment 2 (naming in L2)	764	742	737	694

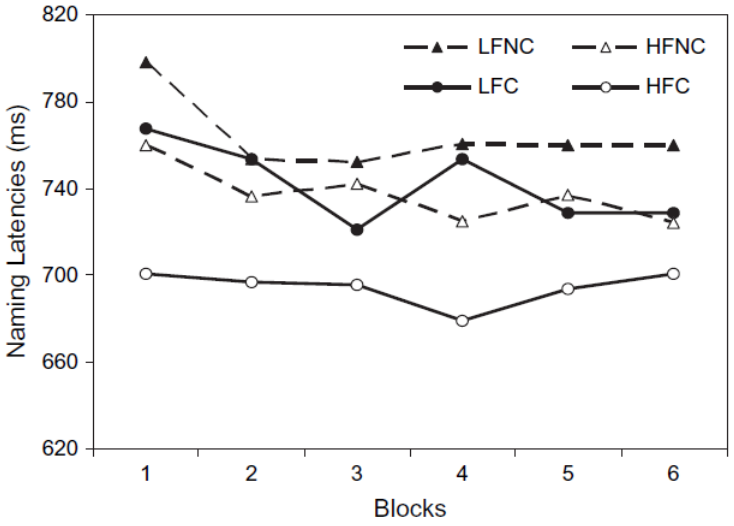


Figure 7. Mean naming latencies in Experiment 2 (LFNC = low-frequency noncognate; LFC = low-frequency cognate; HFNC = high-frequency noncognate; HFC = high-frequency cognate) over repetitions.

2. esperimentua:
H1 katalana, esperimentua gaztelaniaz

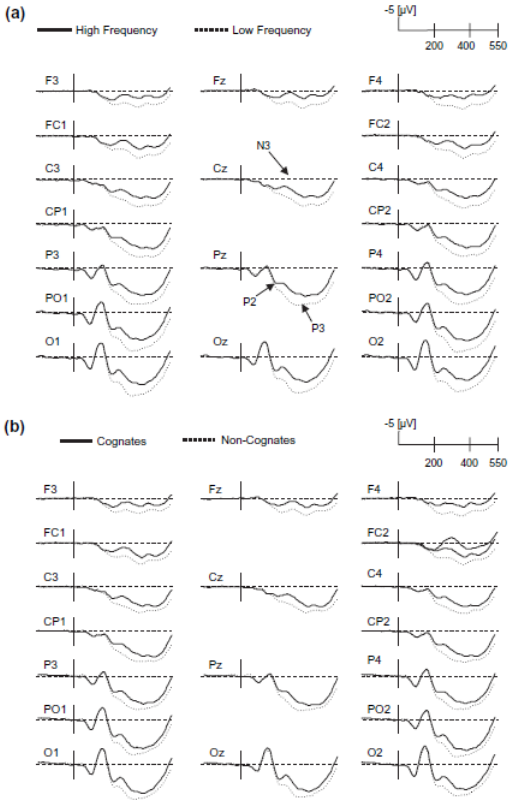


Figure 8. (a) Low-frequency ERPs compared with high-frequency ERPs in Experiment 2 at anterior, central, and posterior scalp locations. Low-frequency ERPs are represented by a dotted line and high frequency ERPs by a full line. Negativity is plotted upwards. (b) Noncognate ERPs compared with cognate ERPs in Experiment 2 at anterior, central, and posterior scalp locations. Noncognate ERPs are represented by a dotted line and Cognate ERPs by a full line. Negativity is plotted upwards.

2. esperimentua:
H1 katalana, esperimentua gaztelaniaz

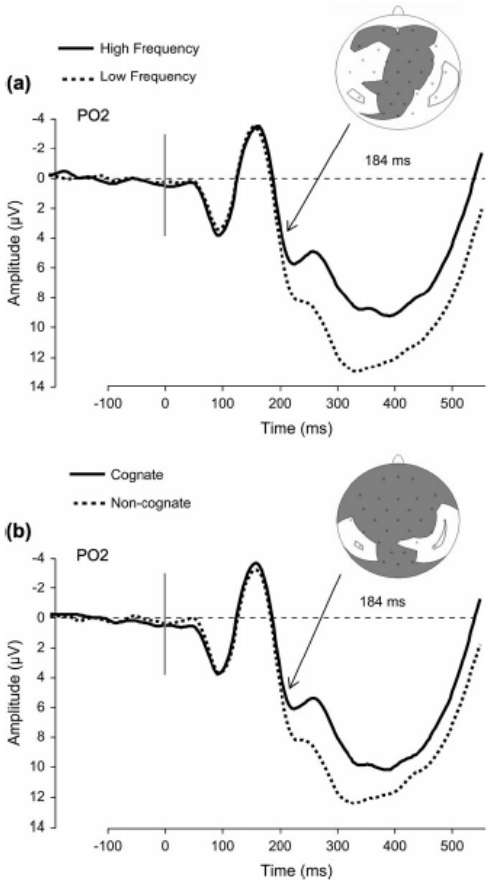


Figure 9. (*a*) Low-frequency ERPs compared with high-frequency ERPs in Experiment 2 at PO2 and topographic distribution of electrodes showing a significant effect at 184 ms after picture presentation (grey area). (*b*) Noncognate ERPs compared with cognate ERPs in Experiment 1 at PO2 and topographic distribution of electrodes showing a significant effect at 184 ms after picture presentation (grey area).

1. eta 2. esperimentuak

1. esperimentua:
H1 gaztelania, esperimentua gaztelaniaz

2. esperimentua:
H1 katalana, esperimentua gaztelaniaz

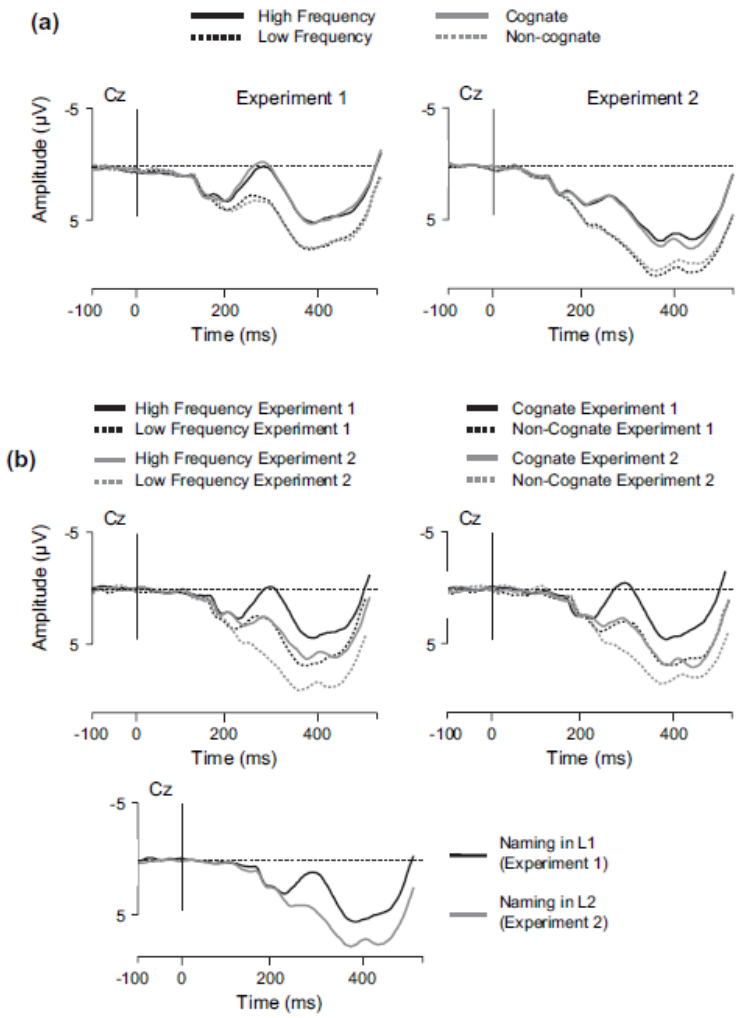


Figure 6. (*a*) Low-frequency and high-frequency ERPs compared with noncognate and cognate ERPs at Cz in Experiment 1 (right) and Experiment 2 (left). The frequency ERPs are represented by a full grey and black line. The cognate ERPs are represented by a dotted grey and black line. Negativity is plotted upwards. (*b*) Between experiments comparison of the low- and high-frequency ERPs (left), noncognate and cognate ERPs (right), and overall naming in L1 and naming in L2 ERPs (under). Negativity is plotted upwards.

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