Simon Fraser University
Language and Brain Lab

Stimuli & Tasks

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Stimuli: Pardo (2017)

- Minimal pairs
- Low vs. high frequency
- Bi vs. monosyllabic

Stimuli: Pardo (2010)

- Pretest: *heed, hid, head, had, hut, hot, caught, hood, hoot*
- Target sentences (see right)
- Map task

Instructions		Female Pair 1	Female Pair 2	Female Pair 3
Givers instructed to imitate	Receivers repeat givers	east lake walled city winter garden	flowing river green bay walled city	blacksmith cattle ranch
	Givers repeat receivers	baboons farmed land old truck	baboons east lake tall pine	graveyard wishing well
		Female Pair 4	**Female Pair 5**	**Female Pair 6**
Receivers instructed to imitate	Receivers repeat givers	east lake green bay parked van	camera shop green bay monastery	large cottage farmed land remote village
	Givers repeat receivers	flowing river walled city west lake	east lake farmed land pyramid	east lake marshland winter garden
		Male Pair 1	**Male Pair 2**	**Male Pair 3**
Givers instructed to imitate	Receivers repeat givers	blacksmith meadow wheat field	large cottage fallen rocks winter garden	crest falls east lake walled city
	Givers repeat receivers	country road east lake fallen rocks	dead tree sandy shore walled city	diamond mine picket fence teepees
		Male Pair 4	**Male Pair 5**	**Male Pair 6**
Receivers instructed to imitate	Receivers repeat givers	east lake marsh land old truck	east lake fallen rocks graveyard	camera shop east lake monastery
	Givers repeat receivers	baboons dead tree telephone booth	dead tree meadow wheat field	farmed land golf course

(Manuscript received September 8, 2009;
revision accepted for publication June 10, 2010.)

Pardo (2010)

Appendix A: Word sets

Bisyllabic		Monosyllabic	
Low Frequency	High Frequency	Low Frequency	High Frequency
active	basis	babe	bad
balance	become	bathe	bag
beacon	before	beak	beach
bicep	better	bean	beam
captain	between	boot	beat
career	beyond	cage	bet
careful	city	cake	bone
cavern	common	cop	check
coffee	country	cot	death
cousin	father	dab	dock
deport	figure	dad	foot
dozen	final	dame	gain
fashion	later	deaf	game
favor	market	debt	gave
forage	matter	dome	get
forget	music	dot	got
garden	nature	fad	half
garter	never	gene	known
gusto	number	hoof	laugh
handle	order	hook	loan
hazel	party	hoot	lock
jelly	people	keen	mean
listen	person	knock	moon
master	picture	leach	note
mingle	police	mash	pot
nectar	power	moan	put
novel	program	moat	rock
nugget	public	mop	room
parcel	rather	nape	rose
patron	recent	pep	sad
permit	report	pet	sang
pigeon	river	rash	save
portal	second	roam	scene
rustic	single	robe	shape
staple	social	rope	suit
symbol	spirit	sag	tape
title	system	siege	team
venom	table	sock	top
vision	value	tune	wrote
wedlock	water	womb	youth

Pardo (2017)

Stimuli: Biro, Toscano, Viswanathan (2022)

- Study on task engagement + phonetic convergence
- Minimal pairs
- POA
- Voiced vs. voiceless
- Tasks: Word matching puzzles in high engagement task (Minecraft) vs. low engagement task finding words in a list

Table 2
Complete list of stimuli.

Place of articulation	Voiced Stimulus	Voiceless Stimulus	Kučera-Francis frequency for voiced stimulus	Kučera-Francis frequency for voiceless stimulus
Alveolar	die	tie	73	23
Alveolar	dime	time	4	1599
Alveolar	down	town	895	212
Alveolar	dry	try	68	140
Alveolar	dent	tent	2	20
Alveolar	den	ten	2	165
Alveolar	doe	toe	1	9
Alveolar	duck	tuck	9	9
Alveolar	done	ton	320	13
Alveolar	dart	tart	–	7
Bilabial	big	pig	360	8
Bilabial	bet	pet	20	8
Bilabial	bark	park	14	94
Bilabial	bad	pad	142	8
Bilabial	bat	pat	18	35
Bilabial	bath	path	26	44
Bilabial	beg	peg	11	4
Bilabial	bear	pear	57	6
Bilabial	bay	pay	57	172
Bilabial	batch	patch	5	13
Velar	got	cot	482	–
Velar	ghost	coast	11	61
Velar	grew	crew	64	36
Velar	gap	cap	17	27
Velar	game	came	123	622
Velar	goat	coat	6	43
Velar	guard	card	48	26
Velar	gold	cold	52	171
Velar	glass	class	99	207
Velar	gut	cut	1	192

Stimuli: Munson & Solomon (2004)

- High and low frequency/density
- Monosyllabic words
- CVC word set
- Target words read aloud individually, no conversation

Table 2

Stimulus words for Experiment 2.

Vowel	High frequency/high density	High frequency/low density	Low frequency/high density	Low frequency/low density
ɑ	got	dock	dot	mop
ɑ	lock	rock	knock	sock
ɑ	pot	top	cot	cop
æ	bad	bag	dad	dab
æ	sad	sang	fad	sag
æ	half	laugh	mash	rash
ɛ	get	death	debt	deaf
ɛ	bet	check	pet	pep
eɪ	save	gave	cage	bathe
eɪ	game	gain	dame	babe
eɪ	tape	shape	cake	nape
i	beat	beach	beak	leach
i	team	scene	keen	siege
i	mean	beam	bean	gene
oʊ	note	wrote	moat	rope
oʊ	rose	known	moan	robe
oʊ	bone	loan	roam	dome
u	youth	suit	boot	hoot
u	moon	room	womb	tune
ʊ	foot	put	hook	hoof

Stimuli: Minimal Pairs / Quasi-Minimal Pairs / Objects

- Pug / bug / pig / fig /
- Pea / bee / tea / key /
- Peach / beach
- Pearl / girl / curl /
- Pan / van / can / fan
- Pest / vest / test /
- Pink / sink / mink / link
- Pan / man / fan / van
- Pail / nail / rail / sail / mail
- Bat / rat / vat / hat
- Bun / sun / gun / nun
- Beet / feet / wheat / meat
- Box / fox / lox /
- Bell / shell / gel / well
- Bid, bead, bit, beat
- Rock/ lock / sock / dock

Stimuli Resources

- http://www.iphod.com/
  - Used in Dias & Rosenblum (2016)
- Collins Birmingham University International Language Database - COBUILD
  - Used in Mukherjee et al. (2018) for word frequencies

Task: Kim, Horton & Bradlow (2011) Lewandowski & Jilka (2019)

- Adopted Pardo (2006) map task - diapix elicitation task
- Spot 10 differences from picture pairs A & B (shop scene)
  - Target words such as cheese soup vs beef soup
- Natural speech (no fixed talker roles)
- Participants had 1 picture each, seated facing opposite walls in soundproof room with headphones

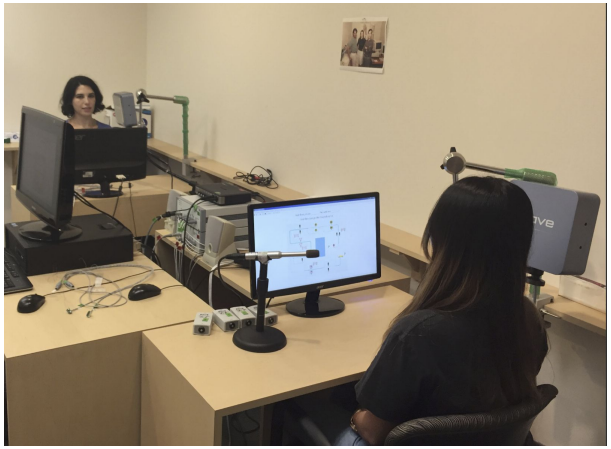
Task: Bailly & Lelong (2010)

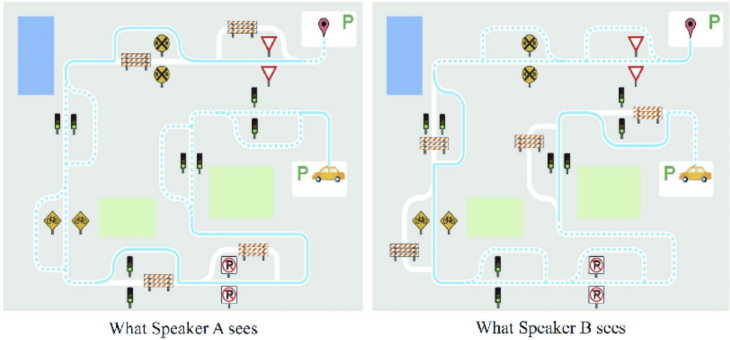
- Speech dominoes game
- Asked to select the word in the word list which begins with the same syllable as the word previously pronounced by the partner ie. bateau [bato], taudis [todi], diffus [dify], furie [fyri]
    - 1. Experiment I “unknowns” is performed by pairs of subjects that have been never talked to each other.
    - 2. Experiment II “friends” is performed in contrast by pairs who are good friends, knowing and working together for years.
    - 3. Experiment III “face-to-face” friends sat across a table where two screens are placed back-to-back for displaying alternatives. Clicks on one unique moose used alternatively by each subject forward turns.

Figure 2: Face-to-face interaction. The scene is captured by a unique camera thanks to a mirror positioned at the left hand side of one interlocutor. Head movements were monitored during this experiment.

Task: Lee et al. (2018)

- *This study uses a maze navigation task in conjunction with a quasi-scripted, prosodically controlled speech task to examine acoustic and articulatory accommodation in pairs of interacting speakers*
- Sentence reading task + target sentences
- Individual map task + target words (between/beside/lights/signs)
- Cooperative map task - 18 maps x 2 per session, 36 total maps shown to pair

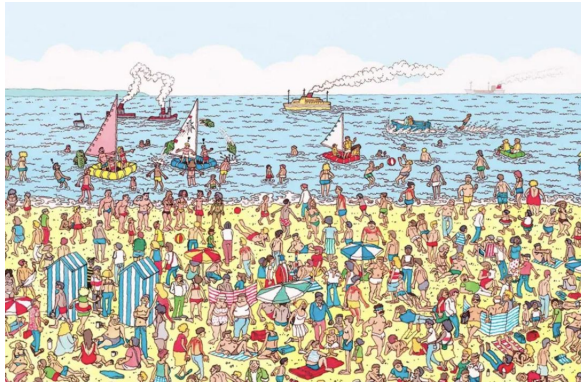




Example cooperative maze task. https://doi.org/10.1371/journal.pone.0201444.g004

Task Brainstorm

- “Guess Who” - would include scripted language, turn taking, cooperative play ie. “Does your character have blue eyes?
    - We could edit the characters for target words ie. change details of their clothing, accessories, appearance
- “Where’s Waldo?” - could include landmarks for direction (as per the Diapix/Map tasks), scripted language, could be more or less complicated
- Go Fish - Jetic mentioned creating our own cards
- Colouring page - each pair could instruct the other to colour a page according to their instructions
- Battleship - turn taking, could modify the letters/numbers on the board to our target sounds
- Two truths & a lie - must include target sounds
- Lego - one person has instructions, one person has the pieces (small set!)
- Jenga - one person has the blocks, one person giving instructions



Task Brainstorm (cont’d)

- Modified Speech Domino Game - Mukherjee et al. (2018)
  - Partners guess through sequence of quasi minimal pairs via pictures of target and non-target objects after each turn to reduce memory retrieval
- Minimal Pairs Pelmanism (Memory card game)
  - Stack of cards face down with partners working together to find matching minimal pairs
- Codenames
  - Take turns being the spymaster giving one-word clues to multiple words on the board
- The Sims - similar to Minecraft idea where target objects are options to place

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Guess Who Task - Mock Experiment

Janitta & Samantha (August 11, 2022)

This mock experiment would include:

- **Task #1:** Baseline - Each participants reads aloud all target words
- **Task #2:** Guess Who Game with both participants - repeat as needed
- **Task #3:** Participants chat - conversational context condition

Guess Who Task - Mock Experiment

Stimuli must be:

- Monosyllabic
- CVC
- High frequency
- Object (easily visualized)
- Target different vowels
- Use minimal or pseudo-minimal pairs
- Be found in a similar consonantal context

*include non-target words as well?

Speaker 1

- Bell
- Ball
- Bull
- Bill

Speaker 2

- Bead
- Beet
- Bat
- Boot

Guess Who Task - Mock Experiment

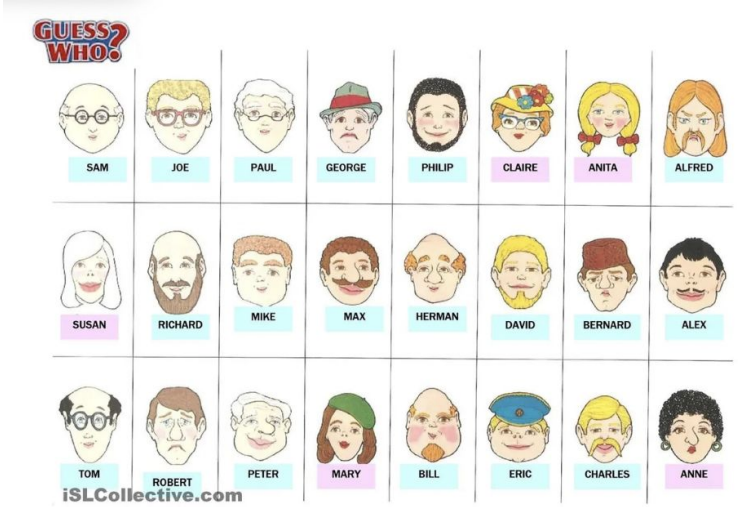
Stimuli

Carrier phrases:

#1: “Is your person holding a _____?”

#2: “Yes/no, my person is/isn’t holding a _____.”

*multiple rounds to encourage repetition



Speaker 1

Speaker 2

Guess Who Task - Mock Experiment

Questions we asked during this process:

- Do we need a learning trial / a legend of the target words to ensure participants know them? (Would a legend decrease eye contact bw participants?)
- Is our aim to create a “competitive” game or a collaborative process?
- How do we ensure participants are facing each other & engage with each other during the task?
- How do we ensure multiple repetitions of target stimuli?
- How many repetitions of the game are ideal?