

The Butler University Audio-Video Spoken Language Corpus

Carolyn Richie^a,
Sarah Warburton, and
Megan Carter

Communication Disorders

Butler University
4600 Sunset Avenue
Indianapolis, IN 46208

^a Requests for information on this database should be sent to the first author; email: criche@butler.edu

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Purpose

The purpose of this project was to create an audio-video database of spoken language materials that could be used to evaluate speech production and speech recognition, by a variety of researchers.

Participants

The fourteen participants recorded in this project were between 19 and 61 years of age (mean age = 30 years) and native speakers of American English. Talkers were from the North Midland dialect region, roughly defined as Indianapolis and north within the state of Indiana (Garofalo *et al.*, 1990). All participants lived in that region for the majority of the time from their birth to 18 years of age. Table 1 below provides some brief biographical data on each talker in the corpus.

Table 1: Biographical data for all talkers in the Butler University Audio-Video Spoken Language Corpus.

Participant	Age	Gender	Birthplace	Highest Level of Education Achieved
F02	53	Female	Middlebury	Some college
F03	22	Female	Bluffton	Junior year of college
F04	22	Female	Carmel	Junior year of college
F05	23	Female	Indianapolis	Bachelor degree
F06	21	Female	Indianapolis	Junior year of college
F07	21	Female	Rochester	Junior year of college
F08	28	Female	Monticello	Bachelor degree

F09	18	Female	Indianapolis	High school
F10	22	Female	South Bend	Junior year of college
F11	20	Female	Indianapolis	Sophomore year college
M01	19	Male	Gary	Freshman year of college
M02	44	Male	Michigan City	High school
M03	61	Male	Crawfordsville	Bachelor degree
M04	49	Male	Gary	Medical school

Methods

Participants were recorded individually during a single session. Participants completed the following paperwork during their appointment: a statement of informed consent and a questionnaire to gather biographical data. The experimenter also had each participant mark their Indiana hometown on a state map (see Appendix A). This paperwork took approximately 15 minutes. Then the experimenter and participant moved to a small, sound treated studio where the participant was seated in front of three navy blue baffles. A laptop computer was elevated to eye-level on a speaker stand and placed approximately 50-60 cm in front of the participant. Prompts were presented to the participant in a Microsoft PowerPoint presentation. The experimenter was seated directly next to the participant, but outside the camera angle, and advanced the PowerPoint slides at a comfortable pace. Each participant was given the following instructions:

- You will be asked to say a total of 238 different words, and 166 different sentences.
- Please read these words and sentences in a natural voice.
- Please start/end each item with 'neutral' facial expression.
- Please ask the experimenter if you have any questions, or if you need a break at any time...

Participants read the prompts aloud and were recorded with a Panasonic DVC-80 digital video camera to miniDV digital video cassette tapes. All participants wore a Sennheiser MKE-2060 directional/cardioid lapel microphone throughout the recordings.

Participants began by reading ten practice words aloud, and then were given feedback by the experimenter regarding the pitch, loudness, and rate of their speech. This practice allowed the camera man to monitor and adjust the lighting, angles, and audio to desired levels. Practice also allowed participants to adjust to and become comfortable with the recording setup and procedures. Following this practice, the results of which were not included in the corpus, recording began. The experimenter asked participants to repeat a prompt for any of the following reasons: an unusual facial expression was apparent, an unusual tone was used, a word was misplaced/inserted/deleted, or a word was mispronounced. The experimenter offered the participant a break two-thirds of the way through the recording. The recording portion lasted approximately 30 minutes. The total time commitment for each participant, including paperwork and recording, was thus approximately 45 minutes. The prompts and the order in which they were recorded can be seen in Appendix B. Prompts included a) American English vowels in /hVd/ context (two repetitions); b) the Northwestern University Auditory Test No. 6 (Davis & Silverman, 1970); c) the Central Institute for the Deaf (CID) Everyday Sentences (Davis & Silverman, 1970); and d) a subset of the Texas Instruments/Massachusetts Institute for Technology (TIMIT) sentences (Garofolo *et al.*, 1990). The order of subsets of the prompts was varied somewhat, so that the recording process was less tedious for the talkers.

After the recording process was complete, the miniDV tapes were archived from cassette tapes to digital files using Final Cut Express on a Macintosh computer. The miniDV tapes of each talker were broken into smaller segments for the purpose of archiving. Each tape was segmented into the following:

- CID Sentences Lists A-J
- Northwestern University Auditory Test No.6 Lists I-IV

- Vowels in /hVd/ context – 14 separate words
- TIMIT sentences – all sentences individually

For each talker a total of 94 segmented files were converted from Final Cut Express to Quicktime (.mov) files, and then saved in the appropriately marked folder.

If a talker mispronounced a sentence or word during the recording process, the mispronunciations were edited out of the segments to be archived. The remaining parts of the recording, including the correct repetition of each prompt, were then sequenced together to create a continuous and complete segment. A list of sequenced files can be found in Appendix C.

References

- Davis, H., and Silverman, S. (1970). Hearing and Deafness (3rd ed.). NY: Holt, Rinehart, and Winston. pp. 492 – 495.
- Garofolo, J., Lamel, L., Fisher, W., Fiscus, J., Pallet, D., and Dahlgren, N. (1993). DARPA TIMIT: Acoustic-Phonetic Continuous Speech Corpus.

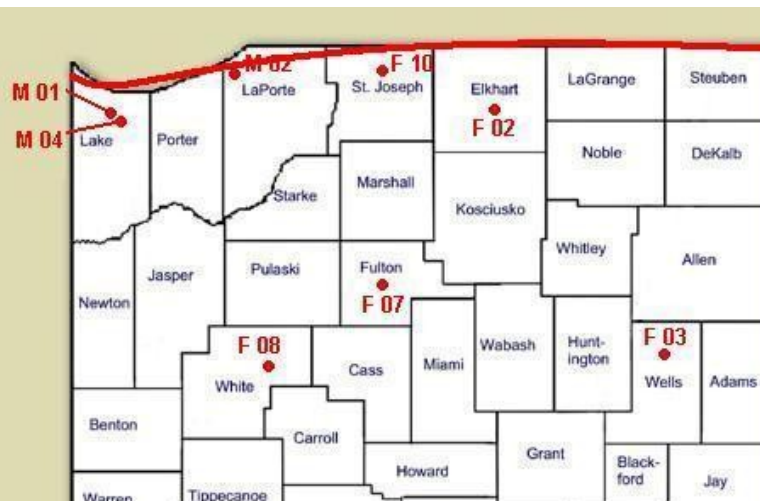
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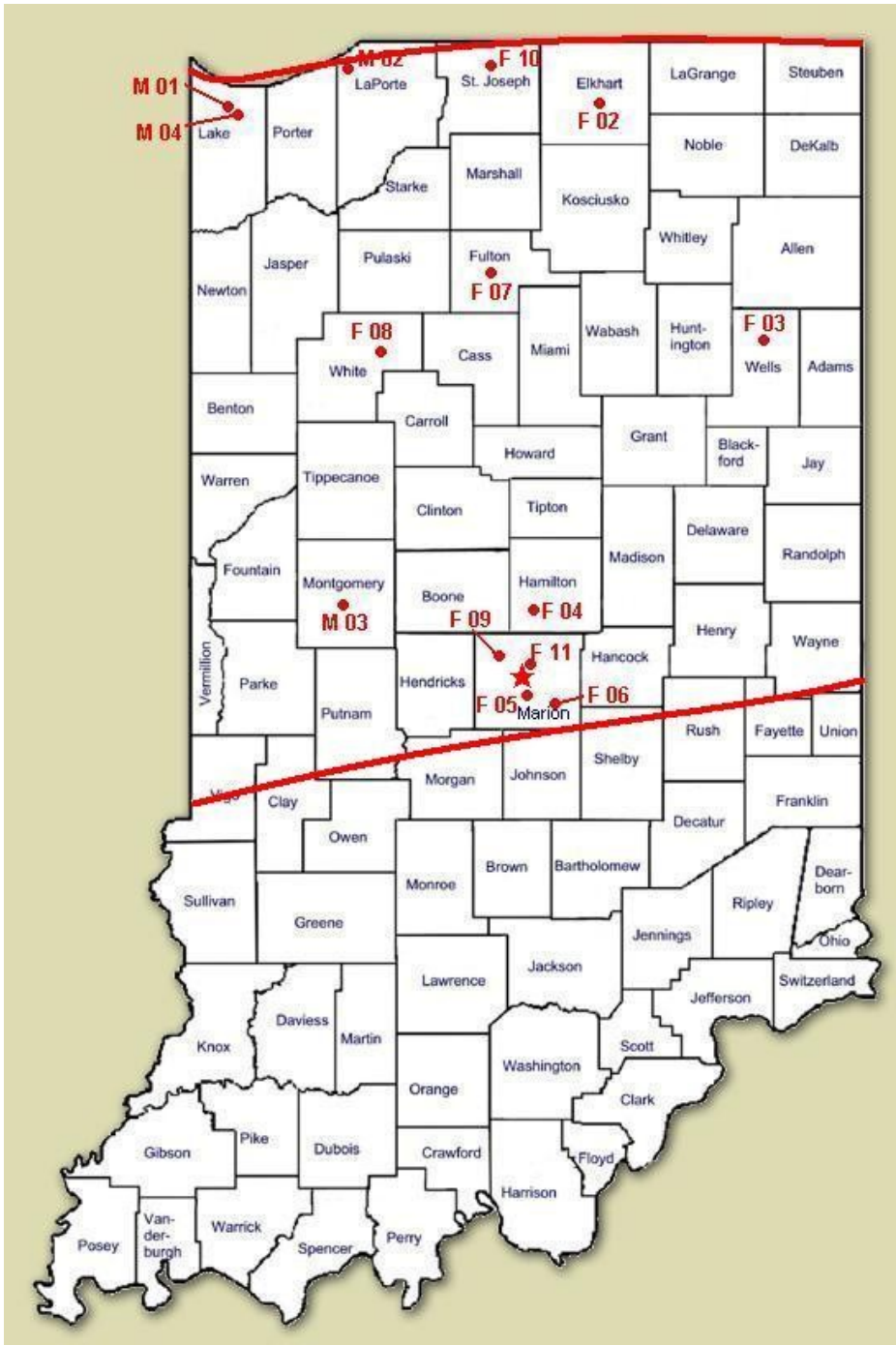
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Appendix A.

This map of Indiana indicates hometown for the fourteen talkers in this study. Talkers were from the North Midland dialect region, roughly defined as Indianapolis and north within the

state of Indiana as shown by isoglosses below. (Garifolo *et al*, 1990).





Appendix B. Prompts and the order in which they were recorded in this study.

- Vowels in /hVd/ context
 - heed
 - hid
 - head
 - had
 - hawed

- hud
- hood
- who'd
- heard
- hide
- how'd
- hayed
- hoed
- hoyd

- CID Sentences, List A
 1. Walking's my favorite exercise.
 2. Here's a nice quiet place to rest.
 3. Our janitor sweeps the floors every night.
 4. It would be much easier if everyone would help.
 5. Good morning.
 6. Open your window before you go to bed!
 7. Do you think that she should stay out so late?
 8. How do you feel about changing the time when we begin work?
 9. Here we go.
 10. Move out of the way!

- CID Sentences, List B
 1. The water's too cold for swimming.
 2. Why should I get up so early in the morning?
 3. Here are your shoes.
 4. It's raining.
 5. Where are you going?
 6. Come here when I call you!
 7. Don't try to get out of it this time!
 8. Should we let little children go to the movies by themselves?
 9. There isn't enough paint to finish the room.
 10. Do you want an egg for breakfast?

- CID Sentences, List C
 1. Everybody should brush his teeth after meals.
 2. Everything's all right.
 3. Don't use up all the paper when you write your letter.
 4. That's right.
 5. People ought to see a doctor once a year.
 6. Those windows are so dirty I can't see anything outside.
 7. Pass the bread and butter please!
 8. Don't forget to pay your bill before the first of the month.
 9. Don't let the dog out of the house!
 10. There's a good ballgame this afternoon.

- Northwestern University Auditory Test No. 6, List I

bean met

boat	mode
burn	moon
chalk	nag
choice	page
death	pool
dime	puff
door	rag
fall	raid
fat	raise
gap	reach
goose	sell
hash	shout
home	size
hurl	sub
jail	sure
jar	take third
keen	tip
king	tough
kite	vine
knock	week
laud	which
limb	whip
lot	yes
love	

- CID Sentences, List D

1. It's time to go.
2. If you don't want these old magazines, throw them out.
3. Do you want to wash up?
4. It's a real dark night, so watch your driving.
5. I'll carry the package for you.
6. Did you forget to shut off the water?
7. Fishing in a mountain stream is my idea of a good time.
8. Fathers spend more time with their children than they used to.
9. Be careful not to break your glasses!
10. I'm sorry.

- CID Sentences, List E

1. You can catch the bus across the street.
2. Call her on the phone and tell her the news.
3. I'll catch up with you later.
4. I'll think it over.
5. I don't want to go to the movies tonight.
6. If your tooth hurts that much you ought to see a dentist.
7. Put that cookie back in the box!
8. Stop fooling around!
9. Time's up.
10. How do you spell your name?

- CID Sentences, List F
 1. Music always cheers me up.
 2. My brother's in town for a short while on business.
 3. We live a few miles from the main road.
 4. This suit needs to go to the cleaners.
 5. They ate enough green apples to make them sick for a week.
 6. Where have you been all this time?
 7. Have you been working hard lately?
 8. There's not enough room in the kitchen for a new table.
 9. Where is he?
 10. Look out!

- Northwestern University Auditory Test No. 6, List II

bite	merge
book	mill
bought	nice
calm	numb
chair	pad
chief	pick
dab	pike
dead	rain
deep	read
fail	room
far	rot
gaze	said
gin	shack
goal	shawl
hate	soap
haze	south
hush	thought
juice	ton
keep	tool
keg	turn
learn	voice
live	wag
loaf	white
lore	witch
match	young

- CID Sentences, List G
 1. I'll see you right after lunch.
 2. See you later.
 3. White shoes are awful to keep clean.
 4. Stand there and don't move until I tell you!
 5. There's a big piece of cake left over from dinner.
 6. Wait for me at the corner in front of the drugstore.

7. It's no trouble at all.
8. Hurry up!
9. The morning paper didn't say anything about rain this afternoon or tonight.
10. The phone call's for you.

- CID Sentences, List H

1. Believe me!
2. Let's get a cup of coffee.
3. Let's get out of here before it's too late.
4. I hate driving at night.
5. There was water in the cellar after that heavy rain yesterday.
6. She'll only be gone a few minutes.
7. How do you know?
8. Children like candy.
9. If we don't get rain soon, we'll have no grass.
10. They're not listed in the new phone book.

- CID Sentences, List I

1. Where can I find a place to park?
2. I like those big red apples we always get in the fall.
3. You'll get fat eating candy.
4. The show's over.
5. Why don't they paint their walls some other color?
6. What's new?
7. What are you hiding under your coat?
8. How come I should always be the one to go first?
9. I'll take sugar and cream in my coffee.
10. Wait just a minute!

- Vowels in /hVd/ context

- heed
- hid
- head
- had
- hawed
- hud
- hood
- who'd
- heard
- hide
- how'd
- hayed
- hoed
- hoyd

- CID Sentences, List J

1. Breakfast is ready.

2. I don't know what's wrong with the car, but it won't start.
3. It sure takes a sharp knife to cut this meat.
4. I haven't read a newspaper since we bought a television set.
5. Weeds are spoiling the yard.
6. Call me a little later!
7. Do you have change for a five-dollar bill?
8. How are you?
9. I'd like some ice cream with my pie.
10. I don't think I'll have any dessert.

- Northwestern University Auditory Test No. 6, List III

bar	mouse
base	name
beg	note
cab	pain
cause	pearl
chat	phone
cheek	pole
cool	rat
date	ring
ditch	road
dodge	rush
five	search
germ	seize
good	shall
gun	sheep
half	soup
hire	talk
hit	team
jug	tell
late	thin
lid	void
life	walk
luck	when
mess	wire
mop	youth

- TIMIT Sentences

She had your dark suit in greasy wash water all year. (sa1)
 Don't ask me to carry an oily rag like that. (sa2)
 Like as if it were built of books. (si1997)
 Your leg muscles and back muscles feel weary. (si1646)
 But it did print good verse and good fiction. (si1242)
 Crooked, overlapping, twisted, or widely spaced teeth. (si935)
 Originally, the main types used were various compositions of polyesters. (si1454)
 Perhaps it was right; perhaps it was just. (si1490)
 Two other cases also were under advisement. (si456)
 Trespassing is forbidden and subject to penalty. (sx121)

To honor him is to honor ourselves. (si1254)
 It was exposed to a high velocity gas jet. (si1304)
 What did you mean by that rattlesnake gag? (si1923)
 In a way, he couldn't blame her. (si2003)
 Or maybe you just don't feel like a cigar? (si1922)
 A warm breeze played across it, moving it like waves. (si1901)
 But problems cling to pools, as any pool owner knows. (si789)
 They took it away, overalls or something. (si1720)
 One species of ambiguity tries to baffle by interweaving repetition. (si2276)
 This changes the formula to an equation. (si722)
 It was muscular but it wasn't symmetrical. (si703)
 Necessary retouching was put on at once. (si1416)
 It helps those people who help themselves. (si541)
 Can thermonuclear war be set off by accident? (si1056)
 However, this inaugural feast did its sponsors no good whatever. (si963)
 We always thought we would die with our boots on. (si908)
 There was a thick, squashy crack of fist on flesh. (si1782)
 It all did look very efficient and shipshape. (si2275)
 In the pity for them his loneliness was gone. (si1546)
 View takes in five counties, two bedrooms. (si2278)
 If she moved gracefully, she was clumsy at it. (si1762)
 What elements of our behavior are decisive? (si1093)
 We must be ready for any needed sacrifice. (si489)
 Her study of history was persistently pursued. (si994)

- Northwestern University Auditory Test No. 6, List IV

back	mob
bath	mood
bone	near
came	neat
chain	pass
check	peg
dip	perch
dog	red
doll	ripe
fit	rose
food	rough
gas	sail
get	shirt
hall	should
have	sour
hole	such
join	tape
judge	thumb
kick	time
kill	tire
lean	vote
lease	wash

long	wheat
lose	wife
make	yearn

- TIMIT Sentences

As such it acts as an anchor for the people. (si1352)
Satellites, sputniks, rockets, balloons; what next? (si663)
Now maybe they'd realize that life can be tough. (si2193)
His work began just six days after the flood. (si905)
No one will even suspect that it is your work. (si1530)
Yet he remains the fiercest of competitors. (si473)
You're so preoccupied that you've let your faith grow dim. (si700)
He swung up over the wheel. (si2008)
The buddies invariably took advantage of him. (si1830)
But it was a hopeful sign, he told himself. (si2146)
Ralph prepared red snapper with fresh lemon sauce for dinner. (sx449)
The blow encountered silky hair and hard bone. (si1505)
The fear of punishment just didn't bother him. (si1486)
Instead of that he was engulfed by bedlam. (si1203)
Do you always navigate like this? (si1070)
But that explanation is only partly true. (si601)
We can, however, maximize its expected value. (si1463)
Ten years ago they blew up some of our ditches. (si1911)
Any retaliatory gas attack would be airborne. (si883)
Why put such a high value on being top dog? (si2143)
Are planning and strategy development emphasized sufficiently in your company?(si842)
No other visitor inquired for her that evening. (si1765)
He kissed her also, and with deep tenderness. (si1872)
Do not draw yarn too tight. (si776)
This coat looks like a rag heap. (si1636)
It was a grotesque hen, five or six feet tall. (si1563)
He had never felt particularly close to her. (si2160)
Sometimes, although by no means always, these are indeed alkaline. (si1327)
Let him become honest, and they discard him. (si1200)
And you think you have language problems. (si502)
Watch it, big shot, a hoarse voice yelled back. (si2176)
You feel him every mile further away. (si2135)

Appendix C. Files that have been edited (sequenced) due to mispronunciations.

Talker	Files Sequenced
F02	CID Sentences Lists D, F, G, I
F03	CID Sentences List G
F04	CID Sentences Lists A, E and Northwestern University Auditory Test No.6 Lists I, II
F05	CID Sentences List F, and Northwestern University Auditory Test No.6 List III
F06	CID Sentences Lists A, B, D, E, and Northwestern University Auditory Test No.6 Lists I, II
F07	CID Sentences Lists B, F, G, and Northwestern University Auditory Test No.6 List II
F08	CID Sentences Lists D, H
F09	CID Sentences Lists A, B, C, D, E, G, H, I, J, and Northwestern University Auditory Test No.6 Lists II, III, IV
F10	CID Sentences Lists A, B, E, F, H, I, and Northwestern University Auditory Test No.6 List IV
F11	CID Sentences Lists B, E, F
M01	CID Sentences Lists A, B, C, D, E, H, and Northwestern University Auditory Test No.6 Lists I, IV
M02	CID Sentences Lists A, G, I, and Northwestern University Auditory Test No.6 List

	III
M03	CID Sentences Lists B, C, D, E, G, H, I, J, and Northwestern University Auditory Test No.6 Lists III, IV
M04	CID Sentences List F, and Northwestern University Auditory Test No.6 List IV