The Butler University Audio-Video Spoken Language Corpus

Carolyn Richie\textsuperscript{a},

Sarah Warburton, and

Megan Carter

Communication Disorders

Butler University

4600 Sunset Avenue

Indianapolis, IN 46208

\textsuperscript{a} Requests for information on this database should be sent to the first author; email: crichie@butler.edu
The Butler University Audio-Video Spoken Language Corpus

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.
<table>
<thead>
<tr>
<th>Participant</th>
<th>Age</th>
<th>Gender</th>
<th>Birthplace</th>
<th>Highest Level of Education Achieved</th>
</tr>
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<tbody>
<tr>
<td>F02</td>
<td>53</td>
<td>Female</td>
<td>Middlebury</td>
<td>Some college</td>
</tr>
<tr>
<td>F03</td>
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<td>Bluffton</td>
<td>Junior year of college</td>
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<td>F04</td>
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<td>Carmel</td>
<td>Junior year of college</td>
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<td>F05</td>
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<td>Bachelor degree</td>
</tr>
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<td>Indianapolis</td>
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<td>Rochester</td>
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<tr>
<td>F08</td>
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<td>Monticello</td>
<td>Bachelor degree</td>
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<tr>
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<td>Female</td>
<td>Indianapolis</td>
<td>High school</td>
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<td>F10</td>
<td>22</td>
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<td>Sophomore year college</td>
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<td>High school</td>
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</tr>
<tr>
<td>M04</td>
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<td>Gary</td>
<td>Medical school</td>
</tr>
</tbody>
</table>

**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

Acknowledgements
“The Butler University Audio-Video Spoken Language Corpus” was supported and funded by a Holcomb Awards Committee grant (026959) from Butler University to the first author. The authors wish to thank Mark Harris and Chris Jacek for their support and technical expertise in audio and video recording throughout this study.
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, squishy 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
• 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.

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<thead>
<tr>
<th>Talker</th>
<th>Files Sequenced</th>
</tr>
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<td>F02</td>
<td>CID Sentences Lists D, F, G, I</td>
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<tr>
<td>F03</td>
<td>CID Sentences List G</td>
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<td>F04</td>
<td>CID Sentences Lists A, E and Northwestern University Auditory Test No.6 Lists I, II</td>
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<td>F05</td>
<td>CID Sentences List F, and Northwestern University Auditory Test No.6 List III</td>
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<tr>
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<td>CID Sentences Lists A, B, D, E, and Northwestern University Auditory Test No.6 Lists I, II</td>
</tr>
<tr>
<td>F07</td>
<td>CID Sentences Lists B, F, G, and Northwestern University Auditory Test No.6 List II</td>
</tr>
<tr>
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<td>CID Sentences Lists D, H</td>
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<tr>
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<td>CID Sentences Lists A, B, C, D, E, G, H, I, J, and Northwestern University Auditory Test No.6 Lists II, III, IV</td>
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<td>F10</td>
<td>CID Sentences Lists A, B, E, F, H, I, and Northwestern University Auditory Test No.6 List IV</td>
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<td>CID Sentences List F, and Northwestern University Auditory Test No.6 List IV</td>
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