Voice Recognition Data Collection

Operating Protocol
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This manual contains information pertaining to using voice recognition for data collection.

**Equipment**

- IBM ViaVoice Millennium Pro Edition voice recognition software
- Pentium III, 500 Mhz IBM-compatible computer
- Microsoft Windows 98.
- Telex WT 150 solid-state, wireless, omni-directional lapel microphone or directional headband microphone
- Telex FMR 150 receiver system
- Microsoft Word 2000 word processing software
- 4th Dimension v. 6.5.1; ACI Inc. Database
- NiCad, or NiHyd 9v rechargeable battery

**Installation**

- Install and set up microphone as per instructions. Read ViaVoice manual thoroughly.
- Install MS word support option in ViaVoice.
- Remove screen saver and programs that are constantly active such as crash guards.

**Enrollment (in lab)**

- Complete 1st enrollment as per instructions to create a new user. Complete as many other enrollments as is tolerable. (At least two recommended).
- Open Word, change security options to LOW. Tools, Macro, Security. (fig.1)
- Change following options in Word: remove automatic spell and grammar check, remove autosave and background save. All under Tools, Options. (fig. 2)
- Close Word, open ViaVoice. Pulldown menu to User Options, ViaVoice options. Open command sets, remove all options except inline dictation, text editing, word natural commands. Enable attention word required. Apply changes before exiting. (fig.3)
Figure 1. Changing security options in Word

Figure 2. Turning off autosave
Figure 3. Command sets

Figure 4. Manage My Vocabulary
Recording Bands

Band acronyms can be recorded by dictating directly into Word and using the correction window to correct mistakes. Once corrected, bands will be added into Vocabulary Manager. Note: Record split bands without the backslash. E.g. FGB/Y should be recorded as FGBY.

Vocabulary Manager. (fig 4)

To view Vocabulary Manager, pulldown speechbar menu to Tools, Manage My Vocabulary. The list of recorded new words will be displayed. New bands can be entered here, and consistently misrecognized bands can be retrained here. To retrain a band, highlight it and press the train button. To remove old recordings, make a new recording with Use Only New Pronunciation enabled. To add more recordings (up to 5) without removing old ones, record with Use All Pronunciations enabled. (fig. 5)

To add new bands with vocabulary manager, select train without a band selected. It will give a message that this is not possible. Ignore message, type in band acronym and then record it. Change Sounds Like Spelling if recording a band differently than it is spelled.

Other terms that need recording are: Locations (RTG1, RTG2, RTG3, RTG4, LSA, LNA). Some actions (precop, headdown), 1 weather label (PCLOUD - for partly cloudy).

Data format

Data are entered in a standardized manner in Word and saved as a text-only-with-line-breaks file. This file is then entered into a 4D database where the bands are checked for errors based on the location in which the data were collected. Data from the text file get organized into columns in 4D by making the text comma delimited.

Because all errors are automatically checked based on the aviary in which the data were collected, it is imperative to ensure that the first line of each data collection trial (where the location information is kept) is correct. This first line, the Block Data Line specifies the aviary location where the data is being collected, the initials of the observer, the time, date, temperature, weather conditions, and the block type (type of observations being made).

Acceptable locations are: RTG1, RTG2, RTG3, RTG4, LSA, LNA
Acceptable weather conditions are: cloudy, sun, PCLOUD, rain, snow, fog
Acceptable block types are: scan, near neighbor, focal (see rules for description)
Figure 5. Recording in My Vocabulary

Figure 6. Example of data format in Word
Since data organization in 4D is based on comma delimiters, **commas** must be dictated correctly. They can be dictated manually by saying the word comma or they can be added automatically by creating macro shortcuts (note, some commas will still be required to be entered manually). (examples of data format in fig. 6)

**Macros** (fig. 7)

Navigation macros can be created for automating various commands. E.g. adding time to NEW-LINE. From Speechbar, pulldown to **Tools, Work With Dictation Macros**. Select **Edit, Create Macros**. Enter macro in editing field. Press buttons at bottom for automatic entry of time and date (shown in <brackets> below). When complete **Save** changes. Most common macros:

- **Time** = <time>
- **Date** = <month>/<day>/<year>  *
- **Go down** = (enter)
- **NEW-LINE** = ,time (ENTER)  (Note that comma is part of macro)
  
  e.g. MMRM ,8:30:00 AM

- **COMMENT** = ,time,,,  
  (Used to add text comments (see rules))
  e.g. MMRM FWL copulation ,7:30:00 AM,,, 1 song female posture,7:30:05 AM

- **RTG1** = RTG1, initials, time,date,  
  (Note initials would be personalized to observer)
  e.g. RTG1, DJW, 7:00:00 AM, 10/15/2000, 65,SUN, scan

Similar macros for other locations: RTG2, RTG3, RTG4, LSA, LNA

* Note: 4D requires date in format Month/Day/Year-in-full (i.e. mm/dd/yyyy). This is not an option in the macro list. Therefore select **Month/Day/Year-in-short** (i.e. mm/dd/yy) from the macro list and then remove ‘short’ from the macro text: shows as <yearshort> change to <year>. (fig. 8)
Figure 7. Working with Dictation Macros

Figure 8. Using Macro short forms
4th Dimension Database Procedure

In Word, save file in Text only with line breaks format. 4D will refuse to open a file if it is already open in Word. Thus resave the file in Word 2000 document format – this allows the file to be open in Word and 4D at the same time.

4D protocol:

• Select user name and type (case sensitive) password.

• Import data (File, Import Data) (fig. 9)
  o Select Form, change delimiters, end of field from tab to comma
  o Import

• Look over data, ensure everything is in the correct fields

• Execute Check Block Data Method (Special, Execute Method) (fig. 10)
  o Correct errors in block data line.
    Repeat Check Block Data till no errors.

• Execute Create Records Method (Special, Execute Method) (fig. 11)
  o Correct band errors in 4D and in word file.
    Repeat Create Records till no errors are left.

• Go into Block Data table (Ctrl-Spacebar, Block Data Table) (fig. 12)
  Ensure all data blocks were entered correctly.

Notes: To enter correction mode in 4D, use ctrl-, (comma) and then click on fields with errors in them. Get out of editing mode with ctrl-, once corrections are complete.

Query, Show all will display all records in Block Data. Double clicking on a block data line displays all data in that record. Once all errors are corrected and all data are entered, return to Import Table (Ctrl-Spacebar, Import Table), select and delete remaining files (copies of block data lines remain in Import Table even after they have been created in the Block Data Table and thus need to be deleted when all data are entered).

To analyze data, execute Special, Method, Tabulation. Follow instructions for tabulating near neighbor or song data.

Making corrections

Correct errors in Word by using the correction window to either select the correct word from the list of options in the correction window or by typing in the correct word. If an error is made in NEW-LINE, correct it, but do not leave the new, corrected time on the line. Either delete the time from the data line, or enter a time between the times of the preceding and following lines.
Figure 9. Importing data file into 4D.

Figure 10. Test Block Data.
Figure 11. Creating records and correcting errors

![Image of a database interface showing the creation and correction of records.](image)

Figure 12. Confirming data was entered correctly

![Image of a database interface showing data entry confirmation.](image)
Training

Training Phase 1 (in Lab)

Start ViaVoice and Word.

Note audio levels on Telex receiver and on ViaVoice speechbar. If levels are consistently beyond -10 db on Telex receiver, reduce gain on microphone. If levels are in red on speechbar, reset audio levels from pulldown menu on speechbar.

Train bands repeatedly in Word, using the correction window to correct each error. Correct one band at a time. If accuracy does not improve for a particular band, retrain the band in the vocabulary manager. If that does not work, or if accuracy is poor overall, try another enrollment. If nothing seems to help, keep training. Training can take many hours before accuracy is acceptable. Once you feel you are finished training all the bands, train them some more. (fig. 13)

Occasionally ViaVoice will offer to analyze voice and documents. Allow this. It improves accuracy.

Once accuracy reaches approximately 90% begin training phase 2.

Training Phase 2 (in aviaries)

Take the list of band acronyms to the aviary and begin dictating band combinations seated in data-taking position. Return to the lab and correct all errors. Repeat process until accuracy exceeds 95% in all aviaries.

Begin taking test data in aviaries, using binoculars and calling out band combinations as per sampling rules (see below). Return to lab and correct all errors.
Figure 13. Using correction window to train bands

Figure 14. Turning off the Word Recognition Wizard
Checklist – Lab

Items in **Bold** are **extremely important** and can lead to fatal errors if not checked

- ✓ Turn on computers. Make sure the computer is not actually on and being used by someone else taking data (in which case the monitor may be off).

- ✓ Start ViaVoice speechbar and Word. **Ensure correct user name appears in top right corner of speechbar.**

- ✓ Ensure Microphone button on speechbar is enabled

- ✓ Turn on Telex receiver system.

- ✓ Ensure microphone battery is charged for approx. 24 hours.

- ✓ **Pulldown speechbar, Tools, Help Me With Recognition Problems. Deselect Start This Wizard Automatically…** (fig. 14)

- ✓ Ensure antennae are connected to Telex receiver.

- ✓ Turn off any air conditioners, air filters and lights that may be on in the lab.

- ✓ Dictate **practice block data line** in lab to ensure everything is working properly. Reception on telex receiver should be at a 4 when operating in the lab (microphone must be switched on). If it is not, there may be a problem.

- ✓ Take timer, binoculars and anything else you need in aviary.

**Checklist - Aviaries**

- ✓ When in aviary, remember to turn on microphone and to press start on timer at the beginning of a block.

- ✓ Do not sit on mic antenna

- ✓ Check microphone occasionally for red light indicating battery low. If low, exchange battery immediately.

- ✓ Call block data line before beginning to take data. Format:

  Aviary, initials, Time, date, temp, weather conditions, block type

E.g. RTG1, DJW, 7:00:00 AM, 10/15/2000, 75, PCLOUD, near neighbor
Checklist – Lab again

✅ After returning to lab save work immediately (before beginning correction).

✅ Correct text. Ensure block data lines are correct. Always listen to at least some of the recorded text to check reception. Listen to playback by selecting **Dictation, Playback**

✅ Saving speech files does not always work and causes large files to be saved. Avoid if possible by making corrections ASAP. Otherwise leave computer on with Word running.

✅ After corrections are made, save file as Text only with line breaks THEN save as word document (4D will not allow import of the text file if it is currently being used by Word). Save files somewhere within My Documents.

✅ Follow 4D protocol described above.
Rules for data collection.

Data are entered in format discussed above. The format of the block data line is the same for all types of data collection methods except for the block type (i.e. Near neighbor, scan, focal). The data collection methods are described below.

Comment fields are available for each data collection method. Comments should be used at any time to add brief details to any event. Comments should be restricted to the one line in the Word document, i.e. comments should not continue on to the next line. Comments are only mandatory in song censuses when scoring copulation behaviour.

Rule subject to change with changing experiments. Check with PI for most current rules.

Near Neighbor Associations. Block type (for block data line): Near neighbor (fig 15)

Near neighbors are birds that are perched in close (visual) association with one another. Measures of each bird’s near neighbors are used to quantify social interactivity, social organization, opportunities for learning.

7 min blocks. Quasi-random sampling.

Near Neighbor Rules:

- Sample every bird in aviary (target) and record any other bird (near neighbor) within one foot of target.

- Once a pair has been recorded, they cannot be re-recorded unless one of the pair leaves the area (moves outside of 4 feet) and then returns. When the near neighbor becomes the target, associations do not get recounted unless the birds have separated and re-associated.

- Birds must be on the same level (i.e. not one on one branch of a tree and one underneath) and must be visible to one another (i.e. not on either side of a rafter).
• If one bird’s band cannot be seen, do not take near neighbor measurement (do not use Male or Female).

• Do not take measures when birds are on the ground or at feeders.

• Call as many near neighbor associations as possible in the 7 min.

Format: Band Target Band Near Neighbor NEW-LINE

Eg:

MRYR MWD ,7:00:00 AM

**Song Census.** Block type: Scan or Focal  

All the vocalizations of males are recorded, the type of song (i.e. whether it was directed to another bird or undirected), as well as specific behaviours (see below). Used to measure song production in an aviary and related behaviours.

15 min blocks. Scan sampling or focal sampling. Procedure is similar for both.

For **focal** samples first line after block data lists the band ID of the male to be focal sampled (randomly determined, counterbalanced). Then record all songs sung by focal male as per song rules (see below).

Format: Male band focal NEW-LINE.

For scan samples, scan aviary and record all songs sung as per song rules (see below).
Figure 15. Example of Near Neighbor data

```
RTG2, DJW, 7:34:38 AM, 9/18/2000, 50, sun, near neighbor
MBOB MDRY, 7:34:56 AM
MONG MROL, 7:35:17 AM
MDRY M2D, 7:35:28 AM
MROL MDRY, 7:35:28 AM
M2D MBOB, 7:35:33 AM
FDOD FDR, 7:35:41 AM
FDR FOB, 7:35:41 AM
FOB FDOD, 7:35:43 AM
FYBO FDOD, 7:35:51 AM
FBR FYBO, 7:35:53 AM
FLYL FDR, 7:36:30 AM
FLYL F2NY, 7:36:30 AM
F2NY FDR, 7:36:30 AM
FLYL FOB, 7:36:44 AM
FOB F2YL, 7:36:51 AM
FDR FOB, 7:36:56 AM
FDR FYBO, 7:37:01 AM
F2YL FRYM, 7:37:17 AM
```

Figure 16: Example of Scan song census data

```
RTG2, DJW, 8:19:26 AM, 9/18/2000, 60, sun, scan
MOMO, 8:23:23 AM
MOMO, 8:28:16 AM
MOMO, 8:28:22 AM
MOMO, 8:28:27 AM
MOMO, 8:28:30 AM
MOMO, 8:28:32 AM
MOMO, 8:28:37 AM
MOMO, 8:28:40 AM
MOMO, 8:28:44 AM
MOMO, 8:28:47 AM
MOMO, 8:28:49 AM
MOMO sabiloqy, 8:28:52 AM
MOMO M2D leave, 8:28:15 AM
MOMO MONG, 8:28:18 AM
MOMO MONG leave, 8:28:24 AM
MNRM
MOMO MNRM, 8:33:30 AM
MOMO MNRM leave 8:33:35 AM
```
Song Rules:

Undirected song. Song sung without being oriented toward any other bird. Can be with or without display. Each song recorded on separate line. Format: Singer band NEW-LINE

E.g.:

MRYR, 7:30:00 AM

Soliloquy. 10 undirected, consecutive, uninterrupted vocalizations within approximately 1 min. After a soliloquy is scored for a bird, no more undirected song is recorded for that bird in that song census block (directed songs are still recorded however, see below). The 10 undirected songs must be recorded before a soliloquy can be scored. Format: Singer band soliloquy NEW-LINE.

MRYR, 7:30:10 AM
MRYR, 7:30:15 AM
MRYR, 7:30:20 AM
MRYR, 7:30:25 AM
MRYR, 7:30:30 AM
MRYR, 7:30:35 AM
MRYR, 7:30:40 AM
MRYR, 7:30:45 AM
MRYR, 7:30:50 AM
MRYR, 7:30:55 AM
MRYR, 7:31:00 AM
MRYR soliloquy, 7:31:01 AM

Directed song. Vocalization toward a recipient, oriented on axis between 0° and 45° with axis of orientation closer to 0° as the distance between the two birds increased. The distance between vocalizing bird and recipient cannot exceed 2’. Directed songs have priority over undirected songs. Record as many as possible. Format: Singer band Recipient band NEW-LINE. If the recipient’s band cannot be determined, use Male or Female for the recipient.

MRYR MLW, 8:00:00 AM
MRYR female, 8:05:00 AM

Whistle: Males producing a discreet high frequency call not part of a song or interspersed among songs. Format: Band whistle NEW-LINE.

MRYR whistle, 8:06:00 AM
Simultaneous: Two birds sing directed songs to one another at the same time. Format: Male band 1 Male band 2 simultaneous NEW-LINE

MRYR MWNW simultaneous, 8:06:00 AM

Modifiers

A number of actions can occur in response to song that are to be scored: Leave, Depart, Follow, Chase, Lunge, Peck, Copulation, Posture, Mount, Precop, Usurp, Interfere, Approach, Rattle. Two actions (Fight, Headdown) occur that are contingent on song. Note: These modifiers are only scored in song blocks and not in Near Neighbor blocks (exceptions are copulatory behaviours).

Leave: the recipient flies or starts to fly away within one second of a directed song. Format: Singer band Recipient leave NEW-LINE

MRYR FDYD leave, 8:15:00 AM

Depart: The singer of the directed song flies or starts to fly away within one second of the end of a directed song. Format: Singer band Recipient depart NEW-LINE

MRYR MNLN depart, 8:16:00 AM

Follow: The recipient leaves and the singer follows the recipient, landing within or moving to within 2 feet of the recipient in the new location. Format: Singer band Recipient follow NEW-LINE

MRYR FGBY follow, 8:17:00 AM

Chase: Same as a follow, but there is a long elaborate flying routine before the birds land. Most often seen in breeding season between female and courting male. Format: Singer band Recipient chase NEW-LINE

MRYR FWL chase, 8:18:00 AM

Lunge: A recipient thrusting their beak at a male singing directed song. Format: Singer band lunger band lunge NEW-LINE

MRYR FGNG lunge, 8:18:30 AM
**Peck**: A recipient contacting or coming close to contacting another bird with their beak. Format: Singer band Pecker band peck NEW-LINE

MRYR FNO peck, 8:19:00 AM

**Copulatory behaviours**

All copulation behaviour (the next 5 modifiers) is scored no matter what type of sample is being taken: Near neighbor or Song census.

**Copulation**: Male sings to female, female goes into copulatory posture, male mounts and copulates: Format: Male band Female band copulation, TIME,,,,Comments NEW-LINE. Comments include anything relevant: another male interfering, the sequence of whistles and songs that elicited posture, etc. Note 4 commas.

MRYR FNY copulation, 8:20:00 AM,,,,whistle song posture MGYG interfere, 8:16:01 AM

**Posture**: A female goes into a copulatory posture as a result of a male’s song, but the male does not copulate. Format: Male band Female band posture NEW-LINE.

MRYR FNO posture, 8:21:00 AM

**Mount**: Male attempts to mount a female that has not gone into a posture. Format Male band Female band mount NEW-LINE

MRYR FOG mount, 8:22:00 AM

**Precop**: Males attempting to get females into posture may sing a high energy burst of songs and whistles very quickly hopping around female. Format Male band Female band Precop NEW-LINE. Need not be followed by female posture.

MRYR FBDB precop, 8:23:00 AM

**Usurp**: Male copulating with a female who went into a posture for another male’s song. Format: same as for copulation. Put singer’s band in comment section if known.

MRYR FOG usurp, 8:24:00 AM,,,,posture from MGYG, 8:24:01 AM
**Interfere**: Male or female getting between a male singing a directed song to a recipient causing them to break up the interaction. Can also occur to interfere with males attempting to copulate. Format: Singer band Recipient band NEW-LINE Interferer band Singer band interfere NEW-LINE.

MRYR FLY, 8:20:00 AM
MNLN MRYR interfere, 8:20:05 AM

**Fight**: two males come in contact with each other. Format: Male 1 band Male 2 band fight NEW-LINE. If possible, make Male 1 the instigator of the fight.

MRYR MOWO fight, 8:19:30 AM

**Headdown**: Occurs when two birds bow to one another, sometimes remaining in bowed position for extended amounts of time. Format: Band 1 Band 2 headdown NEW LINE.

FNO MRYR headdown, 8:25:00 AM

**Approach**: Females approach singing males to within one foot of the **singing male**. Format: Female band Singer band approach NEW-LINE

FWL MRYR approach, 8:26:00 AM

**Rattle**: Female chatter vocalization. Format: Female band rattle NEW-LINE

FNO rattle, 8:30:00 AM
Maintenance

- Recharge battery after every usage in aviaries.

- Back up data and Database daily. Back up speech files often. The automated backup for users is located in **Speechbar, User Options, ViaVoice options** main screen. (fig. 17).
  Backup creates a zip file of files located in C:\Viavoice\users\yourusername. Stores backup in Spch_bk in Main C: directory  (fig. 17)

- Run Norton Utilities occasionally. Defragmenting speeds up software.

- Wash sweatband.

- Disconnect antennae from Telex receiver if possibility of storm exists (leave note for others saying antennae disconnected).
Figure 17. Backup user

Figure 18. Location of important user files