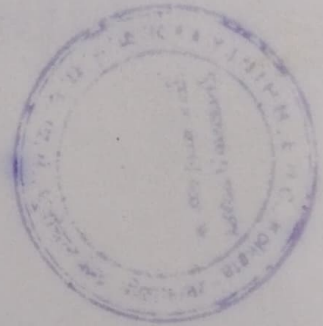


**DEVELOPMENT AND STANDARDIZATION OF
STAGGERED SPONDAIC WORD (SSW) LIST IN
BANGLA**

By

Sayani Bari

Registration No.-0288 of 2007-2008



**A DISSERTATION SUBMITTED TO THE WEST BENGAL
UNIVERSITY OF HEALTH SCIENCES, KOLKATA, IN PART
FULFILLMENT FOR THE DEGREE OF MASTER OF AUDIOLOGY
AND SPEECH LANGUAGE PATHOLOGY**

**ALI YAVAR JUNG NATIONAL INSTITUTE FOR THE HEARING
HANDICAPPED, EASTERN REGIONAL CENTRE, KOLKATA- 700090**

APPENDIX-I

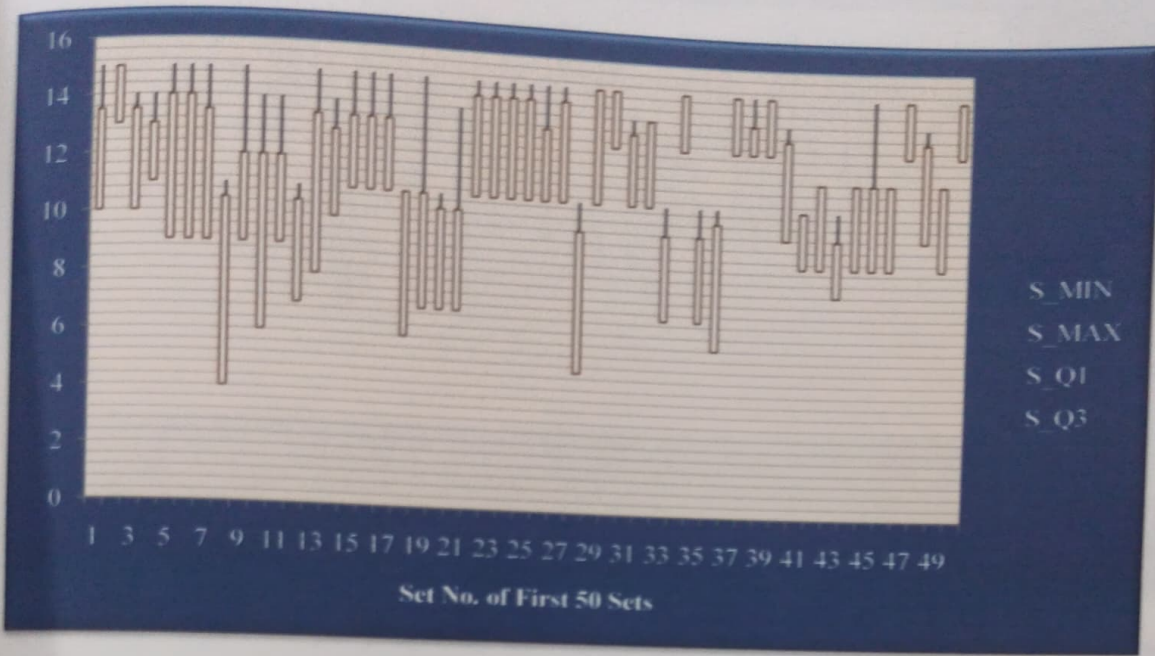


Figure- A.1: 'Box Plot' for the frequency distribution of First 50 sets based upon each sets minimum, maximum, 1st quartile and 3rd quartile value. 'X' Axis represents frequency distributions in average by means of Sets Minimum (S_MIN), Maximum (S_MAX), 1st Quartile (S_Q1) and Third Quartile ((S_Q3) Values with respect to Set No.'s in 'Y' Axis.

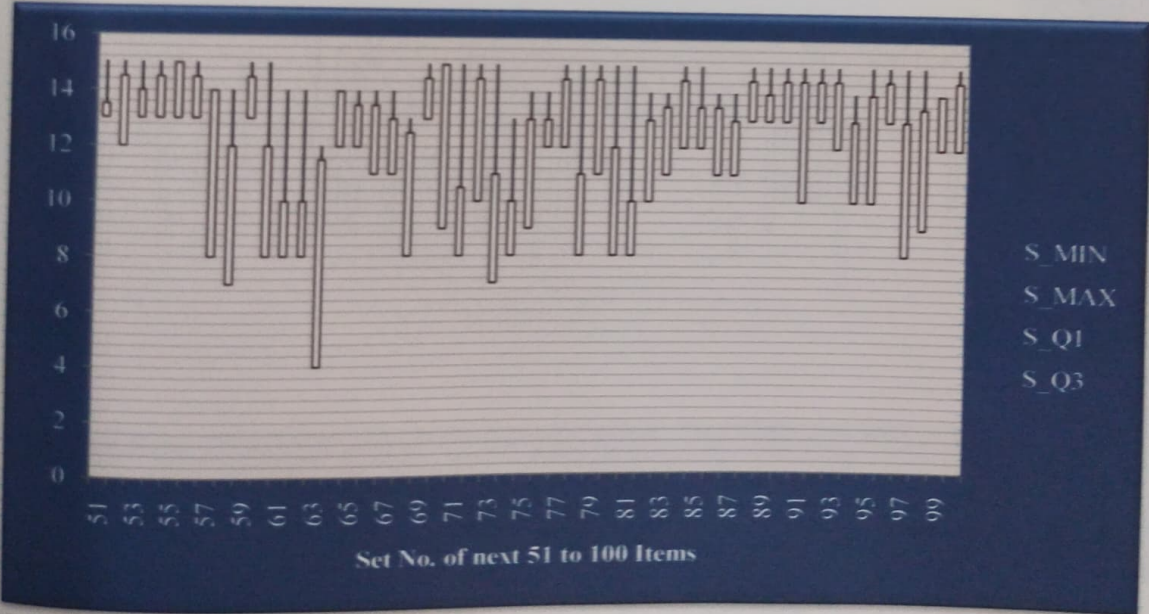


Figure-A.2: 'Box Plot' for the frequency distribution of next 51- 100 sets based upon each sets minimum, maximum, 1st quartile and 3rd quartile value. 'X' Axis represents frequency distributions in average by means of Sets Minimum (S_MIN), Maximum (S_MAX), 1st Quartile (S_Q1) and Third Quartile ((S_Q3) Values with respect to Set No.'s in 'Y' Axis.

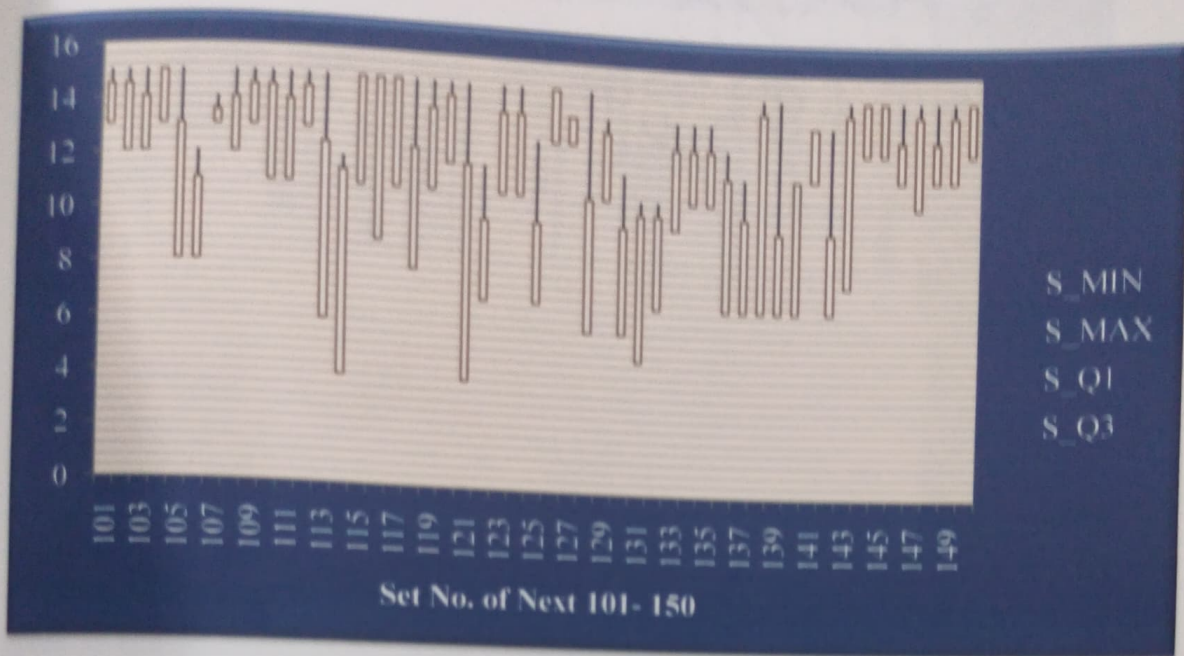


Figure-A.3: 'Box Plot' for frequency distribution of next 101-150 sets based upon each sets minimum, maximum, 1st quartile and 3rd quartile value. 'X' Axis represents frequency distributions in average by means of Sets Minimum (S_MIN), Maximum (S_MAX), 1st Quartile (S_Q1) and Third Quartile ((S_Q3) Values with respect to Set No.'s in 'Y' Axis.

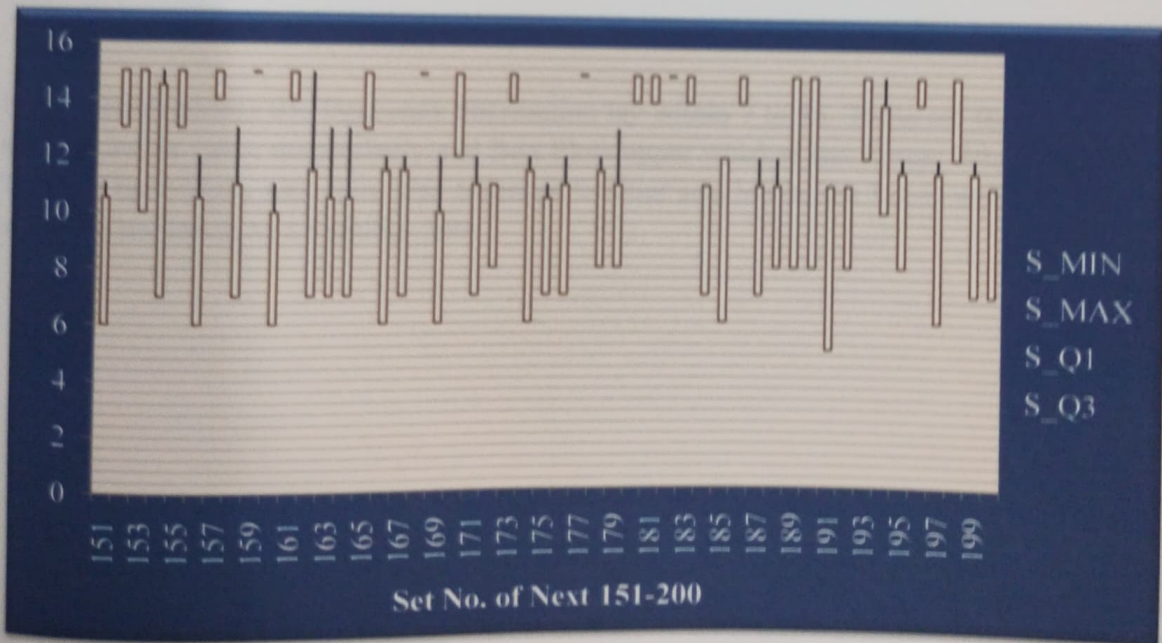


Figure-A.4: Box Plot of frequency distribution of next 151-200 sets based upon each sets minimum, maximum, 1st quartile and 3rd quartile value. 'X' Axis represents frequency distributions in average by means of Sets Minimum (S_MIN), Maximum (S_MAX), 1st Quartile (S_Q1) and Third Quartile ((S_Q3) Values with respect to Set No.'s in 'Y' Axis.

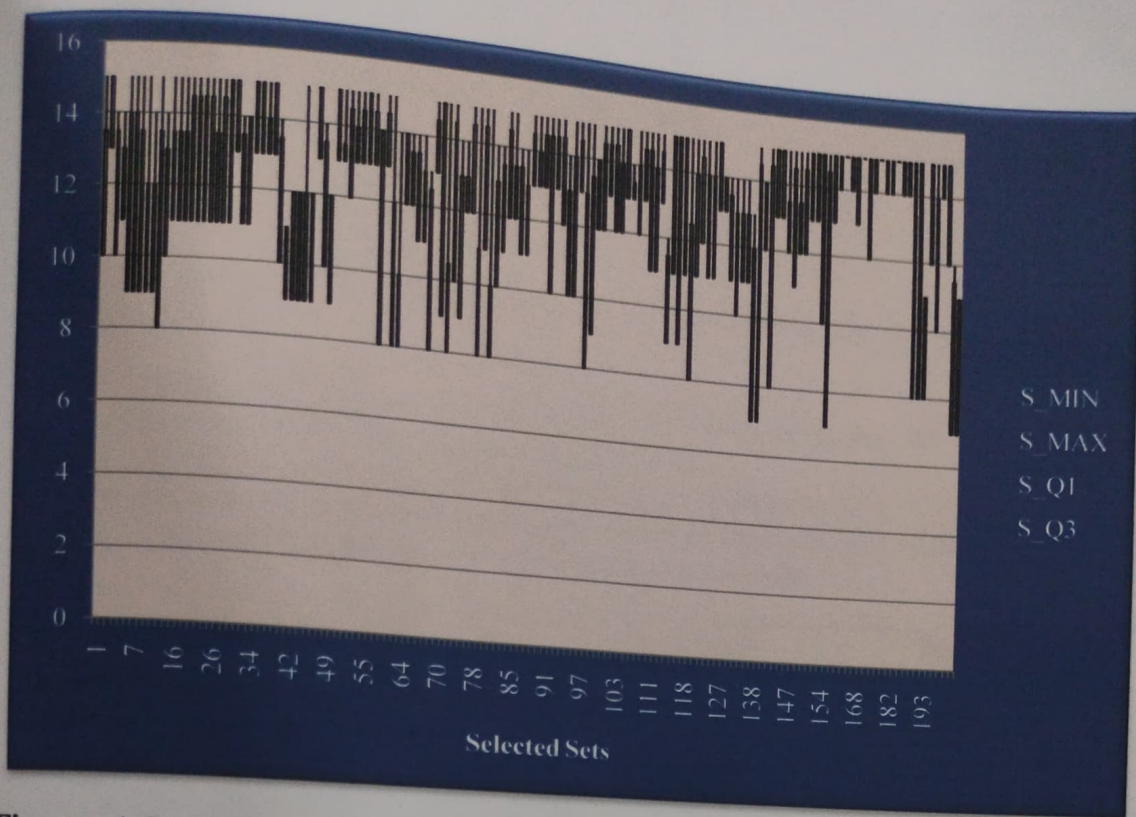


Figure- A.5: 'Box plot' of Selected Sets based upon frequency distributions. 'X' Axis represents frequency distributions in average by means of Sets Minimum (S_MIN), Maximum (S_MAX), 1st Quartile (S_Q1) and Third Quartile (S_Q3) Values with respect to Set No. 's in 'Y' Axis.

For the selected sets the frequency distribution lay within 7 to 15. These are the minimum and maximum value respectively and Box Plots upper whisker and Lower Whisker value. The Out liar values sets were also taken as familiar sets but below lower whisker values sets were not taken as a Familiar Sets.

APPENDIX-II

Edinburgh Handedness Inventory

Initials: _____

Please indicate with a check (✓) your preference in using your left or right hand in the following tasks.

- Where the preference is so strong you would never use the other hand, unless absolutely forced to, put two checks (✓✓).
 - If you are indifferent, put one check in each column (✓|✓).
- Some of the activities require both hands. In these cases, the part of the task or object for which hand preference is wanted is indicated in parentheses.

| Task / Object | Left Hand | Right Hand |
|---|----------------------|------------|
| 1. Writing | | |
| 2. Drawing | | |
| 3. Throwing | | |
| 4. Scissors | | |
| 5. Toothbrush | | |
| 6. Knife (without fork) | | |
| 7. Spoon | | |
| 8. Broom (upper hand) | | |
| 9. Striking a Match (match) | | |
| 10. Opening a Box (lid) | | |
| Total checks: | LH = | RH = |
| Cumulative Total | CT = LH + RH = | |
| Difference | D = RH - LH = | |
| Result | R = (D / CT) × 100 = | |
| Interpretation: (Left Handed: R < -40) (Ambidextrous: -40 ≤ R ≤ +40) (Right Handed: R > +40) | | |

APPENDIX-III

SSW Word List

| Serial No. | Stimuli | IPA Transcription |
|------------|----------------|-------------------|
| 1. | দিনক্ষণ-কালরাত | dɪnkʰɔn-kalraɕ |
| 2. | একগাল-ডরপেট | ækgaɭ-bʰɔrpeɕ |
| 3. | দেবদূত-রাজকূল | dɛbdʊt-radʒkʊɭ |
| 4. | তৎপর-শীতকাল | tɔtpɔr-ʃiɕkal |
| 5. | রাজপথ-নীলকর | radʒpɔtʰ-niɭkɔr |
| 6. | ডাকঘর-বদনাম | ɖakgʰɔr-bɔdnam |
| 7. | সংগুণ-লোকজন | ʃɔŋɡun-lɔkdʒɔn |
| 8. | দেবরাজ-বীরবল | dɛbradʒ-biɾbɔɭ |
| 9. | সাজগোজ-হীমঘর | ʃadʒɡɔdʒ-himɡʰɔr |
| 10. | মালকোষ-জোরদার | malkɔʃ-dʒɔrdar |
| 11. | কালঘুম-জাতসাপ | kalgʰum-dʒatʃap |
| 12. | মাঝখান-ভোররাত | madʒʰkʰan-bhorraɕ |
| 13. | রাজঘাট-যমদূত | radʒgʰat-dʒɔmdʊt |
| 14. | হাড়গোড়-মলমাস | haɾɡɔɾ-mɔɭmaʃ |
| 15. | কালঘাম-চিরকূট | kalgʰam-ɕiɾkʊt |
| 16. | পাপযোগ-রাজভোগ | papdʒɔɡ-radʒbʱɔɡ |
| 17. | সরবত-চিৎকার | ʃɔrbɔt-ɕiɕkar |
| 18. | আমবাত-রূপরস | ambaɕ-rupɾɔʃ |
| 19. | বীজধান-রাজকোষ | bɪdʒʰan-radʒkɔʃ |
| 20. | সাতখুন-পরদিন | ʃatʰkʰun-pɔrdɪn |
| 21. | দরবার-রাজবেশ | dɔrbar-radʒbeʃ |
| 22. | রোগশোক-মানহীণ | rɔɡʃɔk-manhin |
| 23. | দায়ভাগ-মনভার | dæbʰag-monbʰar |
| 24. | রাজরোগ-সাজবেশ | radʒrɔɡ-ʃadʒbeʃ |
| 25. | পরদেশ-রাতদিন | pɔrdɛʃ-raɕdɪn |
| 26. | বদমাস-ডাকনাম | bɔɕmaʃ-ɖaknam |
| 27. | দেবদাস-রাজদূত | dɛbdas-radʒdʊt |
| 28. | ভাগফল-দিনশেষ | bagʰɔɭ-dɪnʃeʃ |
| 29. | লোকসান-যোগবল | lɔksan-dʒɔɡbɔɭ |
| 30. | জলকর-দুধভাত | dʒɔɭkɔr-dʊdʰbʰat |
| 31. | গুনফল-রসহীণ | ɡunpʰɔɭ-rɔʃhin |
| 32. | ঘুরপথ-সাতপাক | gʰurpɔtʰ-ʃatpak |
| 33. | ফলমূল-সুখভোগ | pʰɔɭmul-ʃukʰbʰɔɡ |
| 34. | একরাশ-সোমবার | ækraʃ-ʃɔmbar |
| 35. | যোগফল-বরদান | dʒɔɡpʰɔɭ-bɔrdan |

| | | |
|-----|---------------|-----------------------------|
| 36. | দেশরাজ-দিনকাল | deʃradʒ- dɪnkal |
| 37. | যজকোট-লোকমান | dʒɔdʒkoʈ-lokman |
| 38. | ফুলসাজ-মতদান | ph ^u ʃadʒ-mɔdʌn |
| 39. | জলসেচ-ধুমপান | dʒɔʃeʃ-d ^h umpan |
| 40. | লোকপাল-সোমনাথ | lokpəl- sɔmnat ^h |

APPENDIX-IV
SSW SCORE SHEET

Name:

Date:

Age/Sex:

Handedness:

| AUDIOMETRIC SUMMARY | | | | |
|---------------------|-------------------------------|-----|-----|-------------------|
| | 3-Frequency Pure Tone Average | SRT | WRS | SSW Hearing Level |
| Right Ear | | | | |
| Left Ear | | | | |

| Corrected -SSW Score (C-SSW) | | | | |
|------------------------------|------------|-----|-----------|------|
| Conditions | R-NC | R-C | L-C | L-NC |
| R-SSW % Errors | | | | |
| -WDS % Errors | - | - | - | - |
| C-SSW % Error | Right Ear: | | Left Ear: | |
| | Total: | | | |

| Raw-SSW Score | | | | |
|---------------|------------|-----|-----------|------|
| Conditions | R-NC | R-C | L-C | L-NC |
| Total Errors | | | | |
| Multiplier | × | × | × | × |
| R-SSW % Error | | | | |
| R-SSW % Error | Right Ear: | | Left Ear: | |
| | Total: | | | |

| SSW Qualitative Response Summary | | |
|----------------------------------|-----------------|-----------------------------|
| | Response Biases | Significant/Not Significant |
| 1. | Reversal | _____ |
| 2. | Order Effect | _____ (High/Low; Low/High) |
| 3. | Order Effect | _____ (High/Low; Low/High) |
| 4. | Pattern Effect | _____ (Right Ear/ Left Ear) |

Practice Item

| Right Ear First (REF) | R-NC | R-C | L-C | L-NC | Left Ear First (LEF) | L-NC | L-C | R-C | R-NC |
|-----------------------|------|-----|-----|------|----------------------|------|-----|-----|------|
| A. | দশ | দিক | হীণ | জন | B. | দর | বেশ | সর | কার |
| C. | ফাঁক | তাল | রস | হীন | D. | দেব | রাজ | মন | শোক |

Test Items:

| Right First | R-NC (A) | R-C (B) | L-C (C) | L-NC (D) | Review | Wrong | Left First | L-NC (E) | L-C (F) | R-C (G) | R-NC (H) | Review | Wrong |
|-------------|----------|---------|---------|----------|--------|-------|------------|----------|---------|---------|----------|--------|-------|
| 1. | দিন | ক্ষণ | কাল | রাত | R | | 2. | এক | গাল | ভর | পেট | R | |
| 3. | দেব | দূত | রাজ | কূল | R | | 4. | তৎ | পর | শীত | কাল | R | |
| 5. | রাজ | পথ | নীল | কর | R | | 6. | ডাক | ঘর | বদ | নাম | R | |
| 7. | সৎ | গুন | লোক | জন | R | | 8. | দেব | রাজ | বীর | বল | R | |
| 9. | সাজ | গোজ | হীম | ঘর | R | | 10. | মাল | কোষ | জোর | দার | R | |
| 11. | কাল | ঘুম | জাত | সাপ | R | | 12. | মাঝ | খান | ভোর | রাত | R | |
| 13. | রাজ | ঘাট | যম | দূত | R | | 14. | হাড় | গোড় | মল | মাস | R | |
| 15. | কাল | ঘাম | চির | কূট | R | | 16. | পাপ | যোগ | রাজ | ভোগ | R | |
| 17. | সর | বত | চিত্ | কার | R | | 18. | আম | বাত | রূপ | রস | R | |
| 19. | বীজ | খান | রাজ | কোষ | R | | 20. | সাত | খুন | পর | দিন | R | |

| Right First | R-NC | R-C | L-C | L-NC | Rev | Wrong | Left First | L-NC | L-C | R-C | R-NC | Rev | Wrong |
|-------------|------|-----|-----|------|-----|-------|------------|------|-----|-----|------|-----|-------|
| 21. | দর | বার | রাজ | বেশ | R | | 22. | রোগ | শোক | মান | হীণ | R | |
| 23. | দায় | ভাগ | মন | ভার | R | | 24. | রাজ | রোগ | সাজ | বেশ | R | |
| 25. | পর | দেশ | রাত | দিন | R | | 26. | বদ | মাস | ডাক | নাম | R | |
| 27. | দেব | দাস | রাজ | দূত | R | | 28. | ভাগ | ফল | দিন | শেষ | R | |
| 29. | লোক | সান | যোগ | বল | R | | 30. | জল | কর | দূধ | ভাত | R | |
| 31. | গুণ | ফল | রস | হীণ | R | | 32. | ঘুর | পথ | সাত | পাক | R | |
| 33. | ফল | মূল | সুখ | ভোগ | R | | 34. | এক | রাশ | সোম | বার | R | |
| 35. | যোগ | ফল | বর | দান | R | | 36. | দেশ | রাজ | দিন | কাল | R | |
| 37. | যজ | কেট | লোক | মান | R | | 38. | ফুল | সাজ | মত | দান | R | |
| 39. | জল | সেচ | ধূম | পান | R | | 40. | লোক | পাল | সোম | নাথ | R | |
| Total | | | | | | | Total | | | | | | |

| Ear Effect | | |
|--------------|-----|-----|
| Total Errors | REF | LEF |
| | | |

| Order Effect | | | |
|---|-----|---|-----|
| 1 | 2 | 3 | 4 |
| A+E | B+F | C+G | D+H |
| Total Errors in 1 st Spondee | | Total Errors in 2 nd Spondee | |
| | | | |
| Significant/ Not Significant | | | |

| Combined Totals | | | | |
|-----------------|-----|----|----|-----|
| | RNC | RC | LC | LNC |
| A-D | | | | |
| H-E | | | | |
| Grand Totals | | | | |

APPENDIX-V

SSW SCORE SHEET

Name: x x x

Date: 19/7/13

Age/Sex: 18 Yrs / F

Handedness: R

| AUDIOMETRIC SUMMARY | | | | |
|---------------------|-------------------------------|-----|------|-------------------|
| | 3-Frequency Pure Tone Average | SRT | WRS | SSW Hearing Level |
| Right Ear | 10 | 15 | 100% | 60 |
| Left Ear | 10 | 15 | 95% | 60 |

| Corrected -SSW Score (C-SSW) | | | | |
|------------------------------|--------------|-----|---------------------|------|
| Conditions | R-NC | R-C | L-C | L-NC |
| R-SSW % Errors | 0 | 5 | 75 | 0 |
| -WDS % Errors | -0 | -0 | -5 | -5 |
| C-SSW % Error | Right Ear: 5 | | Left Ear: -2.5 ~ -3 | |
| Total: | | 2 | | |

| Raw-SSW Score | | | | |
|---------------|--------------|-------|---------------|-------|
| Conditions | R-NC | R-C | L-C | L-NC |
| Total Errors | 0 | 2 | 3 | 0 |
| Multiplier | x 2.5 | x 2.5 | x 2.5 | x 2.5 |
| R-SSW % Error | 0 | 5 | 7.5 | 0 |
| R-SSW % Error | Right Ear: 5 | | Left Ear: 7.5 | |
| Total: | | 12.5 | | |

| SSW Qualitative Response Summary | | |
|----------------------------------|--|--|
| Response Biases | Significant/Not Significant | |
| 1. Reversal | <u>2</u> (Not Significant) | |
| 2. Order Effect | <u>3/2</u> (High/Low; Low/High) (Not significant) | |
| 3. Order Effect | <u>4/1</u> (High/Low; Low/High) (Not significant) | |
| 4. Pattern Effect | <u>2/2</u> (Right Ear/ Left Ear) (Not significant) | |

Right Non-Competing (RNC), Right Competing (RC), Left Competing (LC), Left Non Competing (LNC); Left Ear First (LEF), Right Ear First (REF); Speech Recognition Threshold (SRT), Word recognition Score (WRS); Reversal (REV), Wrong (.), if present.

Practice Item

| Right Ear First (REF) | R-NC | R-C | L-C | L-NC | Left Ear First (LEF) | L-NC | L-C | R-C | R-NC |
|-----------------------|------|-----|-----|------|----------------------|------|-----|-----|------|
| A. | দশ | দিক | হীন | জন | B. | দর | বেশ | সর | কার |
| C. | ফীক | ভাল | রস | হীন | D. | দেব | রাজ | মন | শোক |

Test Items:

| Right First | R-NC (A) | R-C (B) | L-C (C) | L-NC (D) | R e v | Wro ng | Left First | L-NC (E) | L-C (F) | R-C (G) | R-NC (H) | R e v | Wro ng |
|-------------|----------|---------|---------|----------|-------|--------|------------|----------|---------|---------|----------|-------|--------|
| 1. | দিন | ক্ষণ | কাল | রাত | R | . | 2. | এক | গাল | ডর | পেট | R | . |
| 3. | দেব | দুত | রাজ | কুল | R | . | 4. | তৎ | পর | শীত | কাল | R | . |
| 5. | রাজ | পথ | শ্রী | কর | R | ↓ | 6. | ডাক | ঘর | বদ | নাম | R | . |
| 7. | সং | গুন | লোক | জন | R | . | 8. | দেব | রাজ | বীর | বল | R | . |
| 9. | সাজ | গোজ | হাস | ঘর | R | ↓ | 10. | মাল | কোষ | জোর | দর | R | . |
| 11. | কাল | ধুম | জাত | সাপ | R | . | 12. | মাঝ | স্ব | ভোর | রাত | R | ↓ |
| 13. | রাজ | ঘাট | মম | দুত | R | . | 14. | হাড় | গোড় | মল | মাস | R | . |
| 15. | কাল | ঘান | চির | কুট | R | . | 16. | পাপ | যোগ | রাজ | ভোগ | R | . |
| 17. | সর | বত | চিৎ | কার | R | . | 18. | আম | বাত | রূপ | রস | R | . |
| 19. | বীজ | ধান | রাজ | কোষ | R | . | 20. | সাত | খুন | পর | দিন | R | . |

Right Non-Competing (RNC), Right Competing (RC), Left Competing (LC), Left Non Competing (LNC); Left Ear First (LEF), Right Ear First (REF); Speech Recognition Threshold (SRT), Word recognition Score (WRS); Reversal (REV), Wrong (.), if present.

| Right First | R-NC | R-C | L-C | L-NC | Rev | Wrong | Left First | L-NC | L-C | R-C | R-NC | Rev | Wrong |
|-------------|----------|-----------|----------|----------|-----|-------|------------|------|-----|-----|------|-----|-------|
| 21. | দর | বার | রাজ | বেশ | R | . | 22. | রোগ | শোক | মান | হীল | R | . |
| 23. | দায় | কাঁকড়া | মন | ভার | R | L | 24. | রাজ | রোগ | সাজ | বেশ | R | . |
| 25. | পর | দেশ | রাত | দিন | R | . | 26. | বদ | মাস | ডাক | নাম | R | . |
| 27. | দেব ১ | দাস ৩ | রাজ ৪ | দুত ২ | (R) | . | 28. | ভাগ | ফল | দিন | শেষ | R | . |
| 29. | লোক ১ | সাঁস ৩ | যোগ ৪ | বল ২ | (R) | L | 30. | জল | কর | দুধ | ভাত | R | . |
| 31. | গুণ | ফল | রস | হীল | R | . | 32. | ঘুর | পথ | সাত | পাক | R | . |
| 33. | ফল | দুল | সুখ | ভোগ | R | . | 34. | এক | রাশ | সোম | বার | R | . |
| 35. | যোগ | ফল | বর | দান | R | . | 36. | দেশ | রাজ | দিন | কাল | R | . |
| 37. | যজ্ঞ | কোট | লোক | মান | R | . | 38. | ফুল | সাজ | মত | দান | R | . |
| 39. | জল | সেচ | ধূম | পান | R | . | 40. | লোক | পাল | সোম | নাথ | R | . |
| Total | 0 | 2 | 2 | 0 | 4 | | Total | 0 | 1 | 0 | 0 | | 1 |

| Ear Effect | | |
|--------------|-----|-----|
| Total Errors | REF | LEF |
| 5 | 4 | 1 |

| Order Effect | | | |
|---|------------------|---|---------|
| 1 | 2 | 3 | 4 |
| A+E = 0 | B±F ₂ | C±G | D+H = 0 |
| Total Errors in 1 st Spondee | | Total Errors in 2 nd Spondee | |
| 3 | | 2 | |
| Significant/ Not Significant | | | |

| Combined Totals | | | | |
|-----------------|-----|----|----|-----|
| | RNC | RC | LC | LNC |
| A-D | 0 | 2 | 2 | 0 |
| H-E | 0 | 0 | 1 | 0 |
| Grand Totals | 0 | 2 | 3 | 0 |

Right Non-Competing (RNC), Right Competing (RC), Left Competing (LC), Left Non-Competing (LNC); Left Ear First (LEF), Right Ear First (REF); Speech Recognition Threshold (SRT), Word recognition Score (WRS); Reversal (REV), Wrong (.), if present.