
Speech Recognition Threshold SRT and Word Recognition Score WRS For Detection Of Hearing Ability

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Abstract --The SRT is the most frequently used speech threshold test. Speech Detection Threshold (SDT), Speech Recognition Threshold (SRT), (Speech Discrimination Test SDT) or (Word Recognition Score WRS) are commonly used for detection of hearing loss. Speech audiometry tests are presented either as "monitored live-voice" or by using pre-recorded test materials. It is a measure of the intensity level at which the listener is able to correctly repeat 50% of words presented. When the pure tone audiogram is steeply sloping (high frequency hearing loss), the SRT corresponds better with either the best two of three pure tone average (PTA) frequencies (500, 1000 & 2000 Hz) or the best one of these three frequencies. The SRT is generally conducted using spondee words i.e. single words that comprise two syllables with equal emphasis placed on each syllable.

There is no standard or guideline that stipulates which words should be used to obtain the SRT. In this paper SRT is carried out for old age persons to detect hearing loss

Introduction

Sound vibration can range from very low intensity to high intensity. This is perceived as loudness or volume. The frequency of these vibrations can also vary from low to high, and this is perceived as pitch. Complex sounds such as speech and music contain a range of frequencies at various levels of intensity. In order to detect a sound, it must be of sufficient loudness and within a frequency range that is audible to the listener. Detecting sounds in the presence of noise is more difficult than detecting sounds in isolation. For example, hearing a phone conversation in a crowded restaurant or hearing a phone ring while the television is on require the ability to distinguish sounds from background noise. Most real world tasks take place with some level of ambient noise.

Human ability to discriminate speech is an important consideration when designing products that facilitate verbal communication or use speech output. Speech output can be prerecorded and replayed or speech can be synthesised. Synthesised speech is more difficult for older people to understand. Speech can become difficult to understand if it is recorded, played back or synthesised at high speed. An Audiometry evaluation is painless, non-invasive hearing test that measures person's ability to hear different sounds, pitches or frequencies. Audiometry test can

detect whether you have sensorineural hearing loss occurs due to damage to the nerve or cochlea, or conductive hearing loss occurs due to damage to the ear drum or tiny ossicles bones. Three tests Speech Detection Threshold (SDT), Speech Recognition Threshold (SRT) (Speech Discrimination Test SDT) or (Word Recognition Score WRS)are most important test used for detection of hearing loss.

Materials:

Spondaic Words: which are 2-syllable words that have equal stress on both syllables "can be divided into 2 monosyllables"Speech audiometry tests are presented either as "monitored live-voice" or by using *pre-recorded test materials*.

The test administrator presents speech materials through a microphone that is connected to a VU meter which measures the intensity level of the voice .

The *advantages* of monitored live-voice testing are that it is easy to administer, and allows flexibility of the test procedure.Monosyllabic words that are presented in an open set format/ or close set.These monosyllabic should be *Phonetically balance PB* words (sets of words that contain speech sounds with the same frequency of occurrence as in everyday conversation).Pre-recorded speech materials are recorded in an ideal acoustic environment, digitally edited, and presented via a CD-player or personal computer through the auxiliary input of the audiometer. *Advantages* include test-retest reliability of the materials, as well as a greater degree of control of signal inten- sity

Observation table

1) Observation For Decreasing Intensity To Find SRT In db—YOUNG age group

OBJECT	MASKING	INITIAL INTENSITY	DECREASING INTENSITY TO FIND SRT IN DB			
		OF SOUND IN db	DECREASING DB			
		STARTING				
1	LEFT	50	50	45	40	35
	RIGHT	55	55	50	45	40
2	LEFT	50	50	45	40	35
	RIGHT	45	45	40	35	30
3	LEFT	35	35	30	25	20
	RIGHT	30	30	25	20	15
4	LEFT	60	60	55	50	HEARING DISCRIMINATION
	RIGHT	65	65	60	55	50
5	LEFT	40	40	35	30	25
	RIGHT	50	50	45	40	HEARING DISCRIMINATION

2) Observation for SRT and WRT—YOUNG Age Group

FOR SRT NUMBER OF GIVEN WORDS AND UPTO WHICH THEY ARE RESPONDE	SPEECH RECOGNITION THRESHOLD db	FOR WRT GIVEN WORDS AND RESPONSE		WORD RECOGNITION THRESHOLD IN %
	GOOD SRT	GIVEN FOR WRT	RESPONDED FOR WRT	WRT IN %
OBJECT 1				
up to 35 correct all words below it hearing discrimination	35	10	7	70
up to 40 correct all words below it hearing discrimination	40	10	6	60
OBJECT 2				
up to 35 correct all words below it hearing discrimination	35	10	7	70
up to 30 correct all words below it hearing discrimination	30	10	7	70
OBJECT 3				
up to 20 correct all words below it hearing discrimination	20	10	8	80
up to 15 correct all words below it hearing discrimination	15	10	9	90
OBJECT 4				
up to 50 correct all words below it hearing discrimination	50	10	5	50
up to 50 correct all words below it hearing discrimination	50	10	5	50
OBJECT 5				
up to 25 correct all words below it hearing discrimination	25	10	8	80
up to 40 correct all words below it hearing discrimination	40	10	7	70

3) Observation For Decreasing Intensity To Find SRT In db—OLD age group:

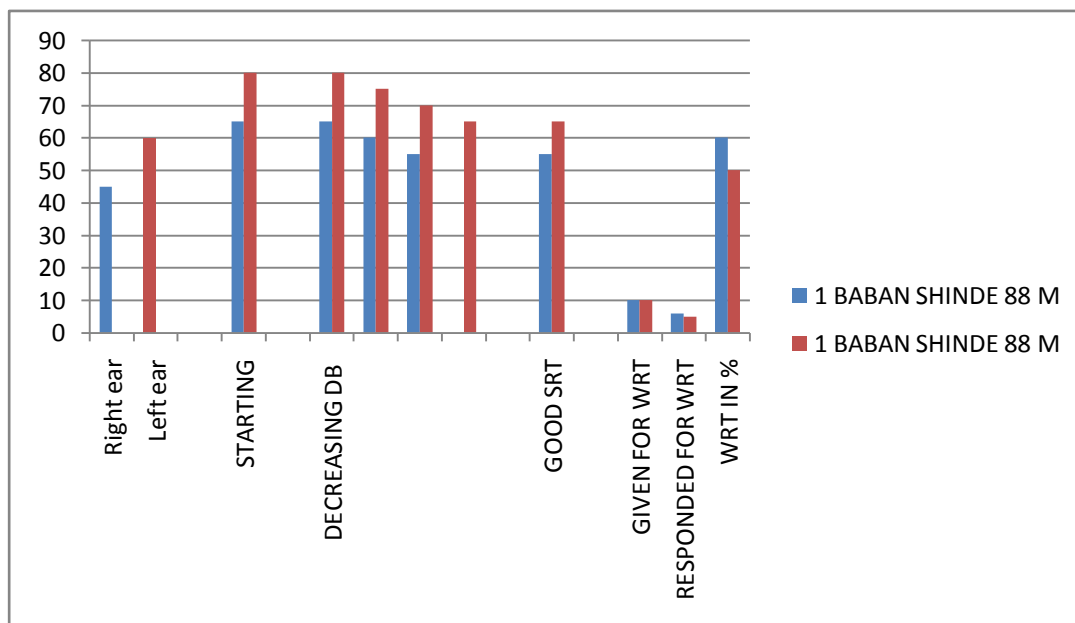
MASKING	STARTING DB	DECREASING THE DB TO FIND SRT			
	STARTING	DECREASING DB			
OBJECT 1					
LEFT	65	65	60	55	NOT PROPER
RIGHT	80	80	75	70	65
OBJECT 2					
LEFT	75	75	70	65	60
RIGHT	80	80	75	70	65
OBJECT 3					
LEFT	75	75	70	65	60
RIGHT	90	90	85	NOT PROPER	NOT PROPER
OBJECT 4					
LEFT	85	85	80	75	NOT PROPER
RIGHT	90	90	85	80	NOT PROPER
OBJECT 5					
LEFT	85	85	80	75	70
RIGHT	95	95	90	85	NOT PROPER

4) Observation for SRT and WRT—YOUNG Age Group

FOR SRT NUMBER OF GIVEN WORDS AND UPTO WHICH THEY ARE RESPONDE	SPEECH RECOGNITION THRESHOLD db	FOR WRT GIVEN WORDS AND RESPONSE		WORD RECOGNITION THRESHOLD IN %
	GOOD SRT	GIVEN FOR WRT	RESPONDED FOR WRT	WRT IN %
UP TO 55 CORRECT ALL WORDS BELOW IT NOT POSSIBLE	55	10	6	60
UP TO 65 CORRECT ALL WORDS BELOW IT NOT POSSIBLE	65	10	5	50
UP TO 60 CORRECT ALL WORDS BELOW IT NOT POSSIBLE	60	10	6	60

UP TO 65 CORRECT ALL WORDS BELOW IT NOT POSSIBLE	65	10	5	50
UP TO 60 CORRECT ALL WORDS BELOW IT NOT POSSIBLE	60	10	6	60
UP TO 85 CORRECT ALL WORDS BELOW IT NOT POSSIBLE	85	10	4	40
UP TO 75 CORRECT ALL WORDS BELOW IT NOT POSSIBLE	75	10	6	60
UP TO 80 CORRECT ALL WORDS BELOW IT NOT POSSIBLE	80	10	4	40
UP TO 70 CORRECT ALL WORDS BELOW IT NOT POSSIBLE	70	10	5	50
UP TO 85 CORRECT ALL WORDS BELOW IT NOT POSSIBLE	85	10	4	40

Graphical Presentation Of SRT AND WRT -1 EXAMPLE

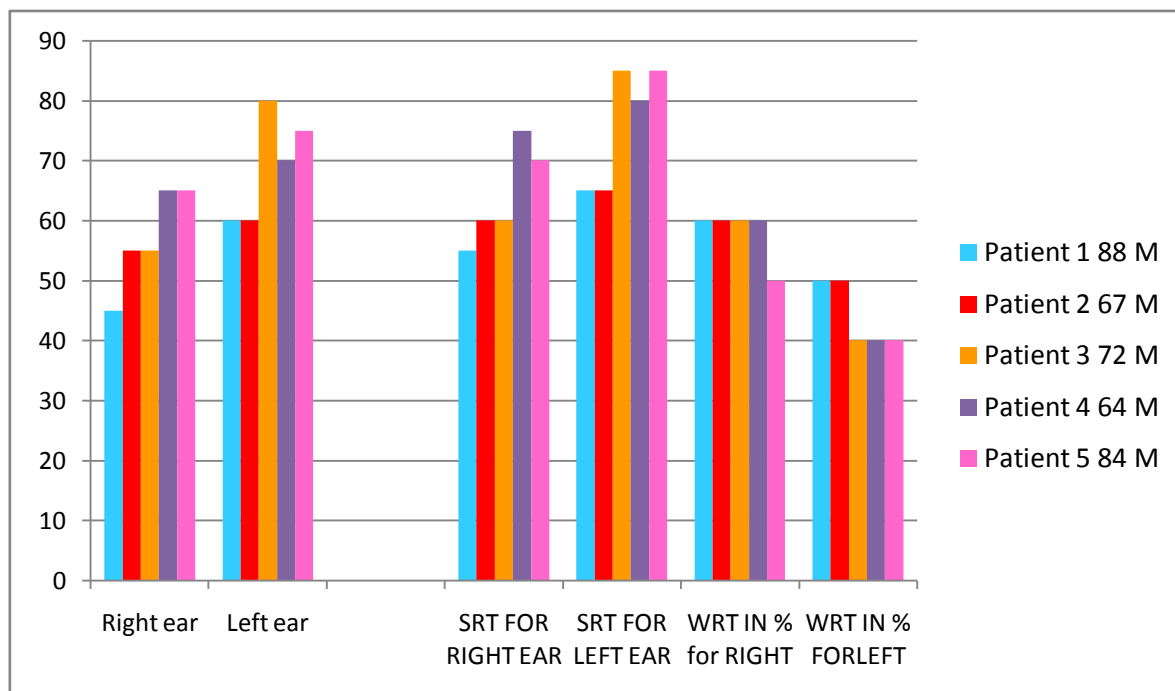


1. Comparison of right & left ear indicate threshold of both ear is different.
2. The SRT of right ear is good as compare to left ear.
3. Also WRT is also good for right ear.
4. so we can conclude the right ear is more sensitive.

CONCLUSION:

1. The both ear show the moderate hearing loss.
2. From SRT the both ear show the moderate hearing loss.
3. The WRT also shows the poor recognition.
4. We suggest the pathology to patient

RESULT --Graphical Presentation Of SRT AND WRT –OLD AGE PEOPLE



CONCLUSIONS

- In all the cases right ear slightly sensitive as compare to left ear.
- There are all patient shows the moderate & severe hearing loss above 40 dB & 70 dB.
- The PTA of 1st patient shows not good correlation with SRT and WRT, it's indicates the moderate hearing loss for both ear.
- for patient 2, the pure tone average show moderate hearing loss for both ear, & also not show good correlation with SRT and WRT .
- The 3rd patient PTA shows the moderate hearing loss in right ear and severe hearing loss in left ear, the SRT & WRT also indicates the same results .

- The 4th patient shows the mild hearing loss for right ear & left ear indicates the moderate hearing loss. SRT & WRT also shows the similar results.
- The 5th patient shows the mild hearing loss for right ear & left ear indicates the moderate hearing loss. SRT & WRT also shows the similar results.
- All this loss is conductive and sensorineural which is related to outer, middle & inner ear.

REFERNCES--

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