Speech Recognition Tests
Sue Westhorp

Several speech recognition tests have been designed for use with adults and young children. The Manchester Junior word list (MJ) is commonly used with children and the Arthur Boothroyd (AB) list with adults and older children.

The MJ lists are considered appropriate for a child with a developmental age of six plus. The AB lists may be used if it is judged that the child has the maturity for that vocabulary. The Manchester Junior list is available as standard lists (25 words) and short lists (10 words). See Figure 1 for examples of the AB and MJ short word lists.

Purpose of the test
The test should be one of a battery of tests designed to assess hearing sensitivity with and without hearing aids as applicable.

Rationale
These tests provide information on the child’s ability to hear and comprehend speech. The choice of test will be a function of language level and not necessarily chronological age.

Criteria
The child should be able to repeat the words spoken by the tester or presented through headphones without lip-reading.

Figure 1:

<table>
<thead>
<tr>
<th>Manchester Junior (MJ) Short Lists</th>
<th>Arthur Boothroyd (AB) Short Word Lists</th>
</tr>
</thead>
<tbody>
<tr>
<td>red</td>
<td>ship</td>
</tr>
<tr>
<td>snow</td>
<td>rug</td>
</tr>
<tr>
<td>wood</td>
<td>fan</td>
</tr>
<tr>
<td>lid</td>
<td>cheek</td>
</tr>
<tr>
<td>cat</td>
<td>haze</td>
</tr>
<tr>
<td>sweet</td>
<td>dice</td>
</tr>
<tr>
<td>dig</td>
<td>both</td>
</tr>
<tr>
<td>night</td>
<td>well</td>
</tr>
<tr>
<td>pond</td>
<td>jot</td>
</tr>
<tr>
<td>push</td>
<td>move</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NAME: A Smith   DATE: 02/01/00   HA: 2 x PPCLA
LR + / – Volume: 3   LR + / – Volume 3   LR + / – Volume .........
Settings          Settings          Settings
Voice   60dBA   Voice   50dBA   Voice  ...............dBA
Ship     3 of 10%   Fish     3      Thud  ...............  24/30+80% 17/30=56%
Rug      3 of 10%   Duck     3      Witch  ..................
Fan      3 of 10%   Gap      1      Wrap  ...................
Cheek    2 of 07%   Cheese    2      Jail  ..................  17/30=56%
Haze     2 of 07%   Rail      1      Keys  ...................
Dice     2 of 07%   Hive      1      Vice  ..................
Both     3 of 10%   Bone      2      Get  ...................
Well     3 of 10%   Wedge     0      Shown ..................
Jot      1 of 03%   Moss      2      Hoof  ..................
Move     2 of 07%   Tooth     2      Bomb  ..................

Figure 2: AB WORD LISTS
Procedure

The MJ word lists are monosyllabic. There are 25 words in each standard list, scoring is by whole word and a percentage determined. There is also a series of Manchester Junior short lists with ten words in each list (see figure 1). These are scored by phoneme in the same way as the AB word lists.

The AB word lists have 10 words in each list. Scoring is by phoneme; three phonemes in each word. Each list is scored out of thirty and a percentage determined.

For example the word given is ship. It has three phonemes: sh-i-p
Response is ship score 3 points or 10%
Response is tip score 2 points or 7%
Response is pit score 1 point or 3%
Some testers prefer to give a score of 10% to each word and convert directly to a percentage.

- The test can be presented by live voice or by tape to each ear separately, through headphones.
- If the words are presented by a live voice, the tester sits opposite the child, about a meter away. The child is asked to listen for the word and then to repeat what they have heard. They are encouraged to make a guess if they are not sure. The first list can be read at a conversational voice level with lip-reading to give confidence to the child.
- The voice level is constantly monitored with a sound level indicator placed level with and alongside the child’s ear.
- The first list presented without lip-reading is presented at a voice level where it is expected the child should achieve at least 80%.
- The responses are recorded by the tester, scoring whole word for the MJ lists and by phoneme for the AB lists and short MJ lists. The voice level is also recorded.
- The voice level is then decreased in approximately 10dB steps for each subsequent word list until the child scores approximately 50%.
- 40dBA is considered a minimal voice level for the discrimination of speech.
- Words presented by tape via a headphone allow for uniformity of presentation of voice level. The first list is presented at a level where the child might be expected to achieve a maximum score and the test is continued in the same way as for live voice testing. Each ear can be assessed separately.
- When hearing aids are worn, these tests can be presented by live voice to each ear separately or binaurally.

A speech audiogram can be plotted and compared with a normal response (Figure 3). The speech audiogram of a person with a hearing impairment will differ from that of a person whose hearing is within the normal range. Figure 3 curve N shows a speech audiogram for a person with normal hearing. 100% accuracy can be achieved at a quiet voice level, in this example 40dB.

The speech audiogram of a person with a hearing impairment would be shifted to the right ie they need voice to be louder in order to achieve their maximum discrimination. This shift to the right

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![THE SPEECH AUDIOGRAM](image-url)
corresponds to the degree of hearing impairment. For a person with a conductive hearing loss the curve would be shifted to the right and a score of 100% can be achieved (figure 3 curve X).

For a person with a sensori-neural hearing loss a score of 100% may not be achieved. Their curve would be shifted to the right, they would achieve their highest score but increasing the loudness level of the word lists above this level would result in a decrease in discrimination of speech and a falling off of the score (figure 3 curve Y).

It may be appropriate for peripatetic teachers to do a quick assessment in school. Figure 4 gives an example that teachers may find helpful.

This quick test can be done with the MJ short lists or the AB lists, with or without hearing aids and with and without lipreading. It can be used with any child seen in school. The procedure would be to present a list at conversational voice (60dBA) with lip-reading. Note this level and the score achieved on the form. Present the next list at quiet voice (40dBA), record the results, then continue, using the next list and assessing without lip-reading at conversational and quiet voice.

<table>
<thead>
<tr>
<th>Test used</th>
<th>Conversational voice</th>
<th>Quiet voice</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Level</td>
<td>Score %</td>
</tr>
<tr>
<td>Aided + lipreading</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aided – lipreading</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unaided + lipreading</td>
<td></td>
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