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How to Calculate Speech Intelligibility

These instructions will guide you through a speech intelligibility assessment. This assessment is typically used by a speech pathologist in the early stages of determining whether or not a child's language is developmentally appropriate for their age. Intelligibility, in this context, refers to how easily a child is understood by non-relatives or strangers in every day conversation. Children who are highly intelligible are generally well understood and have little to no problem communicating with others; children who exhibit low intelligibility will often require speech services to increase their conversational skills and avoid further delays once in school. An individual who has had minimal prior contact with the child being tested would be best suited for performing the assessment in order to eliminate potential bias.

Materials needed:
1. Pen and paper
2. 10x10 Grid
3. Recording device (optional)
4. Playback device (optional)

DIRECTIONS

1. Engage in spontaneous conversation with the child. Make sure to use a recording device if planning on evaluating intelligibility at a later time.

2. Select a random connected-speech sample from the conversation. Once a starting point is established, begin to mark on the grid whether or not the subsequent words are understandable. Every box on the grid correlates to one spoken word.

+	+	+	-	+	+	-	+	+	-
+	+	+	+	-	+	+	-	-	+
+	-	+	-	+	+	-	+	-	+
+	+	-	+	-	+	+	-	+	+
-	+	+	-	+	-	+	+	+	+
+	+	-	+	-	+	-	+	+	-
+	-	+	-	+	-	+	-	-	+
-	-	-	+	+	+	+	+	-	-
+	+	-	+	+	+	-	+	-	+
-	+	-	+	+	-	-	+	+	+

TOTAL: 63/100

Figure 1 – A completed intelligibility assessment of a three-year-old girl.

3. For every word the child says that is understood, place a "+" in the box. If a word is not understood, place a "-" in the box.

4. Repeat this process until the grid is completely filled in.

5. To calculate intelligibility, count the number of "+" signs on the grid and divide this number by 100. This number gives you the intelligibility level in percent form.

6. Compare your calculated intelligibility level to the general expectations (shown below in Table 1) to determine if further evaluation is necessary.

INTERPRETING RESULTS

Expected Intelligibility Guidelines	
Age	**Intelligibility Level**
1 years	25%
2 years	50%
3 years	75%
4+ years	100%

Table 1

To determine whether or not a child's level of speech intelligibility is age-appropriate, clinicians will often refer to the general guidelines that were established in 1988 by Caplan and Gleason (Hodson, 2011). These guidelines state that a child's expected intelligibility levels are found by dividing the child's age divided by four, then converting that number into a percentage (see Table 1). If you refer back to the child's sample shown in Figure 1, you can see that the clinician was able to understand 63 words out of 100; this makes the child 63% intelligible at the age of three years. Because you would like to see the intelligibility level of a three year old sitting closer to 75%, it is likely that this young girl would be recommended for further testing or speech services.

TROUBLESHOOTING

1. **What if the child's calculated intelligibility level sits close to a threshold (such as a three-year-old scoring at 73-74%) and I am unsure if I should refer the client for services or not?**
One way to remedy this is to repeat the intelligibility test two more times using two additional samples, then average the three scores together. If still questioning treatment after acquiring an averaged score, it's always best to err on the side of caution and refer for further testing.

2. **What if the child keeps repeating words or isn't making much sense?**
The main goal with this particular assessment is to determine whether words are being articulated clearly or not. It doesn't matter much if a child repeats words frequently or seems to be making up a nonsensical story as little to no focus is being placed on content. If a word is clearly produced, then it should be recorded as understood.

Works Cited

Hodson, B.W. (2011, April 5). Enhancing Phonological Patterns of Young
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