

Verbal Response Time and Intersyllable Interval in the Imitative  
Speech of Non-Brain-Injured, Aphasic and Apraxic Adults  
(Abstract)

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This study extends the previous research on temporal characteristics in the imitative speech of non-brain-injured (NBI), aphasic (APH) and apraxic (APX) adults. The imitative response mode was used to provide a systematic, objective, replicable manner of quantitatively analyzing the speech and silent characteristics produced within gradually-increasing lengths of closely-controlled utterances.

Verbal response times (VRT) were measured for single syllable, two syllable and three syllable segments. Intersyllable intervals (ISI) were measured within two and three syllable segments. The four meaningful syllables used in the experiment were /tək/, /dək/, /bit/ and /bid/. Stimulus forms for the dyad included: same-same, same-different. Stimulus forms for the triad task included: same-same-same and same-different-same. Three NBI, three APH and four APX adults were selected for participation. Traditional clinical criteria were used to establish the presence and degree of aphasia and apraxia. Each subjects' imitative productions of 198 items were tape-recorded, spectrographically displayed and measured.

Apraxic adults differed from non-brain-injured and aphasic adults on both verbal response time and intersyllable intervals. As the length and complexity of response were increased beyond the single syllable level, the apraxic subjects showed greater differences on both measures. Results support the concept of apraxia of speech as a primary motor programming disorder and highlight the need for additional research using oral reading and spontaneous production modes. Speculations were made on the possible effects of context on these results.

#### DISCUSSION

Q: I was wondering whether you found any differences in your three syllable triads. Whether the units were same-same-same or same-different-same, because I think it would have implications about your unit by unit program.

A: We looked at those differences and the differences we observed didn't seem to be very significant. In a longer utterance we may be able to tease some of those things out.

Q: You mentioned that there might be a difference between spontaneous speech and imitative speech because of context. Would you care to speculate on the possibility of those two types of responses might be different because of neuromotor control?

A: I'm not really sure yet what I'd find. I think I'd like to go forward from this study to increasing the number of syllables in an imitation task. I'm not really quite sure what I'd find in terms of spontaneous speech. I would expect much more variability to begin with.

- Q: Do you ever worry that we might be contaminating what we believe about apraxia of speech or any other disorder by studying it so often with imitative methodology and with reasonably short stimuli?
- A: I think that's a danger. It's also important to try and precisely measure speech characteristics in very small segments to begin with and then increase the complexity and length.
- Q: You have the same problem we all do and that is trying to make some sense out of responses--are they compensation or are they somehow primary deficits?
- A: Whether they're compensating or whether it's a primary motor control deficit, I'm still not sure. I'd love to talk to some of the people at the motor control laboratories about that. I do think we have a long way to go before we can answer that one.

I think that some of the risks of studying single word responses are exemplified in our data. Because if we look at the single word responses and verbal response time we really don't find very impressive differences. And as we increase length and complexity of response those apraxic subjects really start to pull apart from everybody else. So I think that that highlights the need to look at more than one word responses. I think there's information there that we've never gotten to in our single word imitative task studies. The effect of linguistic content on data like this -- I think we can only speculate about now.