

# Articulation Test Norms: To Whom are we Comparing our Clients?

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**Rationale**  
The use of standardized articulation tests has been a component of articulation assessment for decades. Given the number of articulation tests on the commercial market, with the addition of more over the years, the use of standardized articulation tests appears to be a consistent practice. However, there are both positive and negative aspects to process when using standardized articulation tests:

Use of Standardized Tests	
Pros	Cons
<ul style="list-style-type: none"> <li>Clinician and client time involvement in the assessment process</li> <li>Data obtained may be reliable and valid depending on chosen assessment tool</li> </ul>	<ul style="list-style-type: none"> <li>Efficient and valid interpretation of data</li> </ul>

**Method and Results**  
Review of the age-of-acquisition data for individual speech sounds was performed on four (4) commonly used standardized articulation tests. Variability in the ages provided was observed. This information is provided in **Table 1**. Due to the variability in this data, **an individual's score may differ depending on which assessment tool is utilized**; thus resulting in *questionable reliability of scores between tools and questionable validity of the results obtained from the raw data*.

As can be seen from Table 2, the total number of subjects tested as well as the ages tested varies immensely. It is important to consider that a clinician may be comparing his or her client to the subjects that are the *same age as the client* versus comparing the client to the **total number of subjects**. Given the great range in ages of subjects tested, this lowers the number of individuals to whom a clinician is comparing the client's score, resulting in less accurate depictions of the client's performance.  
An important variable to consider is the number of elicitations of each phoneme required. Most tests utilized one production per position (initial, medial and final) to determine acquisition. This statement is true for a majority of articulation tests; excluding the CAPP. This criterion is considered very strict, especially when we know that **children are variable** in their production of the same sound in different words and even when producing the *same word*. *Utilizing just one production of a phoneme in just one word does NOT reflect what we know about variability in production and acquisition/mastery of phoneme production over time.*

**Discussion**  
The use of age-of-acquisition data provided by commercially available, standardized articulation tests in determining the presence, or absence of an articulation impairment is **questionable at best**. Due to variability in the comparison data utilized between tests, an individual's scores, and a clinician's interpretation of the results, variation depending on which tool is utilized may occur. Some clinicians believe that this variability and lack of validity can be overcome by utilizing standard scores when reporting results. However, it is important to understand that the **standard scores are based on raw scores** and, if the raw scores are not reliable or valid, the standard scores derived from them will *also* not be valid.

This is particularly evident in the **age-of-acquisition** data provided by tests for comparison purposes.

**Table 1: Comparison of Age Assignments for Phoneme Mastery from Standardized Tests**

Target Sound	AAPS 90%	SPAT-D II 85%	GFTA-2 85%	Target Sound	AAPS 90%	SPAT-D II 85%	GFTA-2 85%	Target Sound	CAAP 90%
P	2	3	2	P	3	3	2	P	2
b	2	3	2	b	3	3	3	b	3
t	3	3	3	t	4	3	3	t	3
d	3	3	2	d	3	3	3	d	2
k	3	3	3	k	3	3	3	k	3
g	3	3	3	g	3	3	3	g	3
m	2	3	2	m	2	3	2	m	2
n	2	3	2	n	2 ½	3	3	n	2
A				A	4	3 1/2	5	A	4
w	2 ½	3	3	w				w	2
j	4	4,6	5	j				j	4
h	2	3	2	h				h	2
f	3	3	3	f	3	3	4	f	4
v	5	5	6	v	5	3	5	v	5
s	6	5	5	s	6	5	5	s	5
z	6	5	7	z	6	5	5	z	5
c	5	4	5	c	5	4	5	c	5
l	5	4 ½	5	l	5 ½	3 ½	5	l	6
'	6 ½	6,6	7	'	6 ½	7 ½	7	'	8
;	5 ½	5	7	;				;	7
.	5	4	5	.	6 ½	4	5	.	5
J	5	3 ½	5	J		3 ½	5	J	5
r	6	5,6	6	r				r	6

Initial Position                      Final Position                      All Positions

Sources of variability in this data include variations across the following: the normative sample used, number of subjects in the normative sample, the number of elicitations of each phoneme, and criteria for placement of a phoneme at a particular age of acquisition, in addition to a variety of other factors. **Table 2** illustrates the comparison of some of these variables across the tests reviewed.

Table 2: Comparison of normative data between assessment tools						
Assessment Tool	Date of Norms	Number of Subjects	Ages of Subjects	Composition of Sample	Criteria for age-placement	Number of elicitations of phonemes
Goldman-Fristoe Test of Articulation (GFTA-2)	1999	2,350 # of subjects within an age range ranged from 118 to 238	2 yrs. through 21,11 yrs.	North Central = 23% Northeast = 18% South = 34% West = 24%	85% of subjects correctly produced phoneme once. Data provided for initial, medial and final positions separately	once in each position
Structured Photographic Articulation Test II (SPAT-D II)	2000--2001	2,270 # of subjects within an age range ranged from 236 to 411	3 years through 9,11 yrs.	Midwest=61% Northeast = 5 % South = 20% West = 12%	85% of subjects correctly produced phoneme once. Data provided for initial, medial and final positions separately	once in each position
Arizona Articulation Proficiency Scale (AAPS)	1986	5, 515 # of subjects within an age range ranged from 248 to 378	18 mos. through 18,11 yrs.	Midwest = 23% East = 20% South = 35% West = 22%	Age at which 90% of subjects produced phoneme once in one position	once in each position
Clinical Assessment of Articulation and Phonology (CAAP)	2002	1,707 # of subjects within an age range ranged from 140 to 253	2,6 yrs. through 8,11 yrs.	Midwest = 24% Northeast = 20% South = 30% West = 25%	Age at which 75% AND 95% of subjects produced phoneme correctly in <b>both</b> initial and final positions I: /b, k, r, w, j, h/ F: /g, m, a, f, s/	once in each position except:

**Conclusion**  
The use of scores obtained from the administration of standardized articulation tests to determine the existence of an impairment and/or eligibility for services is **questionable**. While it is not suggested that these tests are of no value if used, *they should only be used in combination with other assessment and analysis procedures*. Other procedures that should be utilized in a complete, valid assessment would include: determination of the developmental appropriateness of the error, stimulability testing of errors, consistency of error analyses, intelligibility ratings, etc.

