



PHONEME DELETION TASK

Norms Tables

Longitudinal Norms for British English Children

These norms are based on repeated testing of a cohort of children at two time points: the end of Year 1 and the middle of Year 2. Notably, in Year 1, we report norms only for performance accuracy because phoneme deletion speed was not measured. By mid-Year 2, higher accuracy levels warranted the measurement of performance speed, in particular for the ~ 30% - 45% of the sample who had reached mastery. Therefore, norms for accuracy and speed are reported for Year 2; moreover, the speed data are reported for the whole sample as well as for those children who had reached mastery ($\geq 80\%$) in accuracy. The normative data are presented in three sections: Norms for Onset Phoneme Deletion, Norms for Coda Phoneme Deletion, Norms for Total Phoneme Deletion.

Norms for Onset Phoneme Deletion

Table 1

Descriptive statistics for Onset Phoneme Deletion Accuracy (Maximum 20 Points) and Speed (s) over Two Time Points: End-Year 1 and Mid-Year 2.

	<i>n</i>	Mean age months	Mean onset deletion accuracy	SD	Min - Max	Reliability Alpha
End- Year 1	165	74.98	11.59	5.57	0 -- 20	.88
Mid-Year 2	170	79.92	11.89	5.29	0 -- 20	.89
	<i>n</i>	Mean age months	Mean onset deletion speed	SD	Min - Max	Reliability ICC (bl.1,2) ^b
Mid-Year 2	169	79.92	53.92	24.62	24 -- 157	.82
Mid-Year 2 ^a	51	79.92	47.25	14.33	24 -- 84	.80

Note: a = Onset deletion speed data for children attaining 80% or more in onset phoneme deletion accuracy. b = reliability is estimated from the intraclass correlation between the time taken to complete block 1 (CVC) and block 2 (CCVC).

Table 2

Percentile Ranks Corresponding to Raw Scores for Onset Phoneme Deletion Accuracy and Speed at Each Time Point.

	5 th	10 th	25 th	50 th	75 th	90 th	95 th	99 th
Percentiles for Onset Phoneme Deletion Accuracy								
End-Year 1	0	1	10	12	16	18	18	20
Mid-Year 2	0	4	10	11	16	19	20	--
	5 th	10 th	25 th	50 th	75 th	90 th	95 th	99 th
Percentiles for Onset Phoneme Deletion Speed								
Mid-Year 2	113	81	63	47	38	32	29	25
Mid-Year 2 ^a	73	70	55	45	35	30	28	24

Note: Percentiles are derived from observed sample estimations. The 50th percentile is the median score. a = Onset deletion speed data for children attaining 80% or more in onset phoneme deletion accuracy.

Table 3

Standard Score Conversion Table with Confidence Intervals (bottom of Table) for Onset Phoneme Deletion Accuracy (Years 1 and 2) and Speed (Year 2).

The standard scores have a mean of 100, and a standard deviation of 15. Standard scores falling between 85 and 115 points are within the average range. Find the child's raw Onset Phoneme Deletion accuracy/speed score in the relevant column and read across to the left-most column to obtain the corresponding standard score.

Standard Score Conversion Table for Onset Phoneme Deletion				
Standard Score	End-Year 1 Accuracy	Mid-Year 2 Accuracy	Mid-Year 2 Speed	Mid-Year 2 Speed (≥ 80% accuracy)^a
65			146	
66			145-4	≥ 84
67			143-2	83-2
68			141-0	81-0
69			139-8	79-8
70			137-6	77-6
71			135-125	75
72		0	124	74
73			123	
74		1	122-117	
75	0		116-105	
76			104-3	73
77		2	102-95	
78	1		94-88	72
79		3	87-5	
80			84-2	71
81		4	81-77	70-69
82	2	5	76-5	68
83	3	6	74	67-6
84	4-5	7	73	65

Standard Score Conversion Table for Onset Phoneme Deletion (cont'd)				
Standard Score	End-Year 1 Accuracy	Mid-Year 2 Accuracy	Mid-Year 2 Speed	Mid-Year 2 Speed (≥ 80% accuracy)^a
85	6	8	72	64-3
86	7		71-0	62-0
87	8		69-8	59-8
88	9	9	67	57
89			66-5	56
90			64-1	55
91			60-58	
92			57	54
93	10		56	
94		10	55	53
95			54	
96			53-2	52-0
97	11		51	49
98			50-49	
99		11	48	48-6
100	12		47	45
101			46	44
102	13	12	45	43
103			44	42
104		13	43	
105	14	14		41
106			42	40
107	15	15	41	39
108			40	38-6
109			39	35
110	16	16	38	
111			37	34
112		17	36	
113			35	33
114	17			
115		18	34	32
116			33	
117				
118			32	31
119	18	19		
120				30
121			31	
122				29
123			30	
124	19			
125		20	29	
126				28
127				
128			28	27
129				
130	20			26

Standard Score Conversion Table for Onset Phoneme Deletion (cont'd)				
Standard Score	End-Year 1 Accuracy	Mid-Year 2 Accuracy	Mid-Year 2 Speed	Mid-Year 2 Speed ($\geq 80\%$ accuracy)^a
131				
132			27	25
133				
134				≤ 24
135			≤ 25	
Confidence Intervals (SEMs) for the standard scores. Add/subtract the CI value to/from the standard score value in the left-most column to obtain the confidence range.				
CI 68% +/-	5	5	6	7
CI 95% +/-	10	10	12	13

Note: a = standard score equivalents for children (n = 51) who scored $\geq 80\%$ on Onset Phoneme Deletion Accuracy.

Norms for Coda Phoneme Deletion

Table 4

Descriptive statistics for Coda Phoneme Deletion Accuracy (Maximum 20 Points) and Speed (s) over Two Time Points: End-Year 1 and Mid-Year 2.

	n	Mean age months	Mean coda deletion accuracy	SD	Min - Max	Reliability Alpha
End- Year 1	165	74.98	11.55	6.73	0 -- 20	.91
Mid-Year 2	170	79.97	13.03	6.18	0 -- 20	.90
	n	Mean age months	Mean coda deletion speed	SD	Min - Max	Reliability ICC_(bl.3,4)^b
Mid-Year 2	168	79.92	66.29	28.80	25 -- 173	.89
Mid-Year 2 ^a	78	79.91	54.73	21.74	25 -- 125	.84

Note: a = Coda deletion speed data for children attaining 80% or more in Coda Phoneme Deletion accuracy. b = reliability is estimated from the intraclass correlation between the time taken to complete block 3 (CVC) and block 4 (CVCC).

Table 5

Percentile Ranks Corresponding to Raw Scores for Coda Phoneme Deletion Accuracy and Speed at Each Time Point.

	5 th	10 th	25 th	50 th	75 th	90 th	95 th	99 th
Percentiles for Coda Phoneme Deletion Accuracy								
End-Year 1	--	0	6	14	17	20	--	--
Mid-Year 2	0	2	10	14	18	20	--	--
Percentiles for Coda Phoneme Deletion Speed								
Mid-Year 2	123	107	82	60	45	37	31	26
Mid-Year 2 ^a	102	82	65	51	40	32	26	25

Note: Percentiles are derived from observed sample estimations. The 50th percentile is the median score. a = Coda deletion speed data for children attaining 80% or more in Coda Phoneme Deletion accuracy.

Table 6

Standard Score Conversion Table with Confidence Intervals (bottom of Table) for Coda Phoneme Deletion Accuracy (Years 1 and 2) and Speed (Year 2).

The standard scores have a mean of 100, and a standard deviation of 15. Standard scores falling between 85 and 115 points are within the average range. Find the child's raw Coda Phoneme Deletion accuracy/speed score in the relevant column and read across to the left-most column to obtain the corresponding standard score.

Standard Score Conversion Table for Coda Phoneme Deletion				
Standard Score	End-Year 1 Accuracy	Mid-Year 2 Accuracy	Mid-Year 2 Speed	Mid-Year 2 Speed (≥ 80% accuracy)^a
65			≥ 168	≥ 124
66				
67				
68			149	
69				119
70			139	
71			138	
72			137-5	
73			134-126	114
74		0	125-4	
75			123-2	101
76			121-0	
77			119-8	99
78	0		117-5	90
79		1	114-2	84
80			111-107	
81			106-4	82
82		2	103-2	
83		3	101-0	80
84	1	4	99	76

Standard Score Conversion Table for Coda Phoneme Deletion (cont'd)				
Standard Score	End-Year 1 Accuracy	Mid-Year 2 Accuracy	Mid-Year 2 Speed	Mid-Year 2 Speed (≥ 80% accuracy)^a
85		5	98-3	
86	2	6	92-89	75
87	3	7	88	71-0
88	4	8-9	87-5	
89	5		84-3	66
90	6	10	82-1	65
91	7-8	11	80	64-3
92	9		79-5	62
93		12	74-2	61
94	10		71-0	60-58
95	11	13	69-7	57-6
96			66	55
97	12		65-4	54
98		14	63-2	
99	13		61	53
100			60-59	49
101		15	58-7	48
102	14		56-5	47
103		16	54	
104	15		53	45
105			52-1	44
106			50	
107	16	17	49	42
108			48	
109			47-6	41
110	17		45	
111		18	44	40
112			43	39
113	18			37
114			42	35
115			41	34
116		19		33
117	19		40	
118				32
119			39-7	
120			36-5	
121			34	30
122		20	33	
123				29
124	20		32	
125			31	
126			30	
127				≤ 26
128				
129			29	
130			28	
131			27	

132			≤ 26	
133				
134				
135				
Confidence Intervals (SEMs) for the standard scores. Add/subtract the CI value to/from the standard score value in the left-most column to obtain the confidence range.				
CI 68% +/-	5	5	5	6
CI 95% +/-	9	9	10	12

Note: a = standard score equivalents for children ($n = 78$) who scored $\geq 80\%$ on Coda Phoneme Deletion Accuracy.

Norms for Total Phoneme Deletion

Table 7

Descriptive statistics for Total Phoneme Deletion Accuracy (Maximum 40 Points) and Speed (s) over Two Time Points: End-Year 1 and Mid-Year 2. Mid-Year 2 speed scores are provided for the full sample of children as well as for those children who reached mastery ($\geq 80\%$) in phoneme deletion accuracy.

	n	Mean age months	Mean total deletion accuracy	SD	Min - Max	Reliability Alpha
End- Year 1	165	74.98	23.14	10.61	0 -- 40	.93
Mid-Year 2	170	79.97	24.92	10.12	0 -- 40	.93
	n	Mean age months	Mean total deletion speed	SD	Min - Max	Reliability ICC (onset, coda) ^b
Mid-Year 2	168	79.97	119.75	45.95	51 -- 273	.71
Mid-Year 2 ^a	52	80.29	101.83	34.73	53 -- 186	.83

Note: a = Total deletion speed data for children attaining 80% or more in total phoneme deletion accuracy. b = reliability is estimated from the intraclass correlation between total scores for onsets and codas.

Table 8

Percentile Ranks Corresponding to Raw Scores for Total Phoneme Deletion Accuracy and Speed at Each Time Point.

	5 th	10 th	25 th	50 th	75 th	90 th	95 th	99 th
Percentiles for Total Phoneme Deletion Accuracy								
End-Year 1	1	7	16	26	31	36	37	39
Mid-Year 2	3	10	20	26	32	37	38	40
Percentiles for Total Phoneme Deletion Speed								
Mid-Year 2	223	180	146	108	86	75	62	52
Mid-Year 2 ^a	169	153	129	91	79	60	54	32

Notes: Percentiles are derived from observed sample estimations. The 50th percentile is the median score. a = Total deletion speed data for children attaining 80% or more in total phoneme deletion accuracy.

Table 9

Standard Score Conversion Table with Confidence Intervals (bottom of Table) for Total Phoneme Deletion Accuracy (Years 1 and 2) and Speed (Year 2).

The standard scores have a mean of 100, and a standard deviation of 15. Standard scores falling between 85 and 115 points are within the average range. Find the child's raw Total Phoneme Deletion accuracy/speed score in the relevant column and read across to the left-most column to obtain the corresponding standard score.

Standard Score Conversion Table for Total Phoneme Deletion				
Standard Score	End-Year 1 Accuracy	Mid-Year 2 Accuracy	Mid-Year 2 Speed	Mid-Year 2 Speed (≥ 80% accuracy)^a
65		0	≥ 257	≥ 187
66				186
67				185-3
68			253	182-0
69				179-7
70		1	250	176-4
71	0		248-6	173
72			245-4	172
73	1	2	243-2	171-0
74		3	241-231	169
75			230-216	168
76	2	4-5	215-202	167-0
77	3	6-7	201-198	159-5
78	4	8	197-185	154
79	5		186-5	
80	6	9	184-0	
81	7		179-3	153
82	8	10	172-169	
83	9	11	168	152-1
84	10	12	167-3	148
85		13	162-1	147
86	11	14-5	160-159	146
87	12	16	158-4	
88	13	17-8	153-2	145-138
89	14	19	151-147	137-0
90	15	20	146-3	129-6
91	16-7	21	141-139	125-115
92	18		138-6	114-108
93	19	22	135-0	107
94	20	23	129-7	106-4
95	21-2		126-3	103-2
96	23	24	122-119	101-99
97	24	25	118-5	98-5
98	25		114	94-3
99		26	113-109	92
100	26		108-6	91
101		27	104-3	90
102	27	28	102	89

Standard Score Conversion Table for Total Phoneme Deletion (cont'd)				
Standard Score	End-Year 1 Accuracy	Mid-Year 2 Accuracy	Mid-Year 2 Speed	Mid-Year 2 Speed (≥ 80% accuracy)^a
103	28		101-0	88
104		29	99-8	87-6
105	29	30	97-5	85-4
106			94	83
107	30	31	93-1	
108			90	82
109		32	89	81
110	31		88-6	80-79
111		33	85-4	78
112	32		83	77-69
113		34	82	68
114	33		81	67-6
115		35		65
116			80-79	64
117		36	78	
118	35		77-6	63
119			75	62
120	36	37	74-1	61-0
121			70-69	59
122			68-5	58
123		38	64	57
124	37		63	56
125			62	55
126			61	54
127		39	60	
128			59-8	
129	38		57-6	
130			55	
131			54	
132		40		
133				
134	≥ 39			≤ 53
135			≤ 53	
Confidence Intervals (SEMs) for the standard scores. Add/subtract the CI value to/from the standard score value in the left-most column to obtain the confidence range.				
CI 68% +/-	4	4	8	6
CI 95% +/-	8	8	15	12

Note: a = standard score equivalents for children ($n = 52$) who scored $\geq 80\%$ on Total Phoneme Deletion Accuracy.