

Supplementary Appendix

This appendix has been provided by the authors to give readers additional information about their work.

Supplement to: Kennedy CR, McCann DC, Campbell MJ, et al. Language ability after early detection of permanent childhood hearing impairment. *N Engl J Med* 2006;354:2131-41.

WEB-ONLY Table 1: Timing of confirmation of permanent childhood hearing impairment and language scores in children in the Wessex controlled trial of Universal Newborn Screening

Measure	n confirmation		mean ⁺ z score (SD) confirmation		unadjusted mean difference (a-b) and 95% CI	P	adjusted* mean difference (a-b) and 95% CI	P
	≤ 9 months	> 9 months	a ≤ 9 months	b > 9 months				
<i>Receptive Language</i>								
TROG	15	26	-1.53 (1.78)	-2.21 (1.98)	0.68 (-0.57 to 1.93)	0.278	1.07 (0.06 to 2.08)	0.039
BPVS	15	26	-1.80 (1.73)	-2.08 (1.53)	0.29 (-0.76 to 1.34)	0.582	0.69 (-0.16 to 1.54)	0.108
Aggregate score	15	26	-1.66 (1.68)	-2.15 (1.69)	0.48 (-0.62 to 1.59)	0.381	0.88 (0.02 to 1.74)	0.046
Aggregate minus non-verbal	15	26	-1.15 (1.64)	-1.62 (1.65)	0.47 (-0.61 to 1.55)	0.384	0.92 (0.06 to 1.77)	0.037
<i>Expressive Language</i>								
Bus Story: Sentence information	13	23	-0.39 (1.46)	-1.16 (1.29)	0.77 (-0.19 to 1.72)	0.111	0.92 (0.18 to 1.65)	0.016
Bus Story: 5 longest sentences	13	23	-0.20 (1.85)	-0.76 (1.41)	0.56 (-0.56 to 1.67)	0.320	0.76 (-0.23 to 1.76)	0.127
Aggregate score	13	23	-0.30 (1.61)	-0.96 (1.24)	0.66 (-0.31 to 1.63)	0.178	0.84 (0.04 to 1.64)	0.041
Aggregate minus non-verbal	13	23	-0.003 (1.80)	-0.44 (1.27)	0.44 (-0.61 to 1.47)	0.406	0.83 (-0.02 to 1.67)	0.055

The group mean score and standard deviations (SD_N) scores in children with normal hearing were used to derive z-scores for the children with PCHI, equal to the number of SD_N by which their age-adjusted score differed from the mean score in children with normal hearing. Negative group mean z-scores indicate that scores were lower than those seen in the normally hearing comparison group (see Methods). TROG = Test of Reception of Grammar; BPVS = British Picture Vocabulary Scale.

⁺ Mean scores are adjusted for age at assessment.

* Difference between mean scores adjusted, in a linear regression model, for severity of PCHI, maternal educational qualifications and, except in the case of mean difference scores (see Methods), age-adjusted total Ravens Colored Progressive Matrices scores.

controlled trial of Universal Newborn Screening

	n		mean ⁺ z score		unadjusted mean difference (a-b) and 95% CI	P	adjusted* mean difference (a-b) and 95% CI	P
	No UNS	UNS	a No UNS	b UNS				
<i>Receptive Language</i>								
TROG	20	21	-2.29 (1.87)	-1.65 (1.95)	0.64 (-0.57 to 1.85)	0.291	0.87 (-0.17 to 1.91)	0.098
BPVS	20	21	-2.26 (1.41)	-1.71 (1.73)	0.55 (-0.45 to 1.55)	0.275	0.64 (-0.22 to 1.50)	0.141
Aggregate score	20	21	-2.27 (1.57)	-1.68 (1.77)	0.59 (-0.47 to 1.65)	0.264	0.76 (-0.13 to 1.64)	0.092
Aggregate minus non-verbal	20	21	-1.96 (1.46)	-0.96 (1.69)	1.00 (0.001 to 2.00)	0.050	0.79 (-0.08 to 1.67)	0.075
<i>Expressive Language</i>								
Bus Story: Sentence information	17	19	-0.91 (1.36)	-0.85 (1.43)	0.06 (-0.89 to 1.01)	0.894	-0.02 (-0.83 to 0.79)	0.966
Bus Story: 5 longest sentences	17	19	-0.81 (1.68)	-0.33 (1.49)	0.48 (-0.60 to 1.55)	0.376	0.43 (-0.59 to 1.45)	0.394
Aggregate score	17	19	-0.86 (1.50)	-0.59 (1.33)	0.27 (-0.69 to 1.23)	0.573	0.21 (-0.65 to 1.06)	0.625
Aggregate minus non-verbal	17	19	-0.54 (1.19)	-0.04 (1.68)	0.50 (-0.50 to 1.50)	0.319	0.28 (-0.61 to 1.16)	0.525

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