

550 **FIGURE LEGENDS**551 **Figure 1.** Developmental Trajectories of RDLS Raw Scores of Comprehension and Expression  
552 Grouped by Age At Baseline

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554 Figure 1 footnote: Hearing children in gray (A) <18 months, (B) 18-36 months, and (C) >36 months; mean  
555 trajectories of sub-groups by age of enrollment in black. Children undergoing CI: (A) Implant age <18 months in  
556 orange, (B) 18-36 months in blue, (C) >36 months in green. Mean trajectories for respective age group in red dash.  
557 Mean score after 3 years designated by horizontal line, the width of which spans the age range at time of testing.  
558 Mean scores established by baseline (pre-CI) scores of children undergoing CI are shown in each plot in navy blue  
559 dash.

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561 **eFigure 1.** Nonparametric mean trajectories within the SRI of Measures of Speech Recognition

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563 eFigure 1 footnote: The nonparametric mean trajectories show growth in speech recognition from baseline to 36  
564 months. Children with normal hearing depicted with gray lines and mean scores in black; Children undergoing CI:  
565 Implant age <18 months in orange, 18-36 months in cyan, and >36 months in green.

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567 **Figure 2.** Nonparametric Fit of RDLS Raw Scores of Comprehension and Expression Stratified  
568 by Age at Baseline and Test Age

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570 Figure 2 footnote: Children with normal hearing in gray lines (categorized by age at baseline: solid gray line < 18  
571 months; short dashed gray line 18-36 months; and long dashed gray line between >36 months). Children  
572 undergoing CI: <18 months at implant age in orange, 18-36 months in cyan dash, and >36 months in green dash.  
573 Mean trajectories established by baseline scores of all normal hearing children in black. For comparative  
574 assessment, the horizontal, gray line projects the chronological age at which the mean scores of normal hearing  
575 children at baseline (30.1 for comprehension and 27.6 for expression) were obtained by sub-group of children  
576 undergoing CI at different age.

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578 The vertical drop-lines indicate ages at which this score was obtained for each group of children. On the  
579 comprehension scale, the ages were 2.3 years for hearing children; 3.4 years for CI <18 months at implant age, 4.7  
580 years for CI 18-36 months at implant age, 5.3 years for CI >36 months at implant age. On the expression scale, the  
581 ages were 2.3 years for hearing children; 3.4 years for CI <18 months at implant age, 4.5 years for CI 18-36 months  
582 at implant age, and 5.2 years for CI >36 months at implant age.

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584 **eFigure 2.** Nonparametric fit of RDLS Raw Scores of Comprehension and Expression over 3  
585 Year Follow-up by Age at Baseline

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587 eFigure 2 footnote: Hearing children in black (categorized by age at enrollment: < 18 months in solid line, 18-36  
588 months in short dash, >36-60 months in long dash). Children undergoing CI at age <18 months in orange, 18-36  
589 months in cyan, and >36 months in green).

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591 Children undergoing CI at <18 months demonstrated higher rates of oral language acquisition (12.5 points/year in  
592 comprehension [P<0.0001]; 10.2 points/y in expressive language; [P<0.0001]). Children undergoing CI >36 months  
593 achieved higher a language level at baseline (14.9 points in comprehension with [P<0.0001]; 17.8 points in  
594 expressive language with [P<0.0001] but a slower growth rate (8.9 points/year in comprehension [P<0.0001] and 7.1  
595 points/year in expressive language [P<0.0001]).

596

597 **eFigure 3.** Nonparametric Fit of RDLS Raw Scores of Comprehension and Expression in  
598 Children Undergoing CI Stratified by Implant Age and Baseline RDLS scores. Children  
599 Undergoing CI at >36 months Sub-stratified by History of Hearing Deficit

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601 eFigure 3 footnote: Normal hearing children are stratified by baseline ages and designated by black lines: solid  
602 represents hearing children < 18 months; short dashed 18-36 months; long-dashed >36 months.

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604 Children undergoing CI: Implant age <18 months in red; 18-36 months in orange dash.

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606 Children undergoing CI at >36 months of age are further stratified to demonstrate language associations with 2  
607 clinical factors: the history of hearing deficit experienced (SNHL prior to, and after amplification) and RDLS scores  
608 at baseline. Children undergoing CI >36 months with 2 years or less of hearing deficit and baseline RDLS raw  
609 scores > 10 in light green; CI >36 months with greater than 2 years of hearing deficit and baseline RDLS raw scores  
610 >10 in dark green. Children undergoing CI >36 months with 2 years or less of hearing deficit and baseline RDLS  
611 raw score of  $\leq 10$  in light blue; Children undergoing CI >36 months with greater than 2 year of hearing deficit and  
612 baseline RDLS raw score  $\leq 10$  in dark blue.





