

# Responsivity in Children with Hearing Loss

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## Background

- Responses from adults encourage children with developing speech skills to continue producing vocalizations, positively impacting speech development<sup>1</sup>.
- For children with hearing loss (HL), the level of adult responsivity to a child may vary from children with typical hearing (TH), affecting speech development.

## Methods

- Data were collected from three successive cohorts (2017, 2017-2018, 2018-2019) of children in an oral language inclusion classroom.
- Each cohort contained seven children with HL and 2-3 TH children between the ages of 2.5 and 3.5 years old.
- The children with HL had cochlear implants or hearing aids.
- All data were collected using Language Environment Analysis (LENA) audio recorders once every 1-5 weeks for the entirety of the school day.
- LENA pattern recognition software was used to detect children and adults' speech related vocalizations.



Figure 1: Each child wore a vest with a pocket for the recorder.

## Measuring Responsivity

- Approximately 50% of all adult responses occurred within 2 seconds of the child's vocalization, leading us to define responsivity as vocalizations between children and adults where responses occur within 2 seconds.

|                       |                                  |                 |
|-----------------------|----------------------------------|-----------------|
| End: 602.78 s         | Start: 603.58 s<br>End: 606.12 s | Start: 610.27 s |
| CHN_CHF<br>SegmentUtt | FAN SegmentUtt                   | CHN_CHF Cry     |

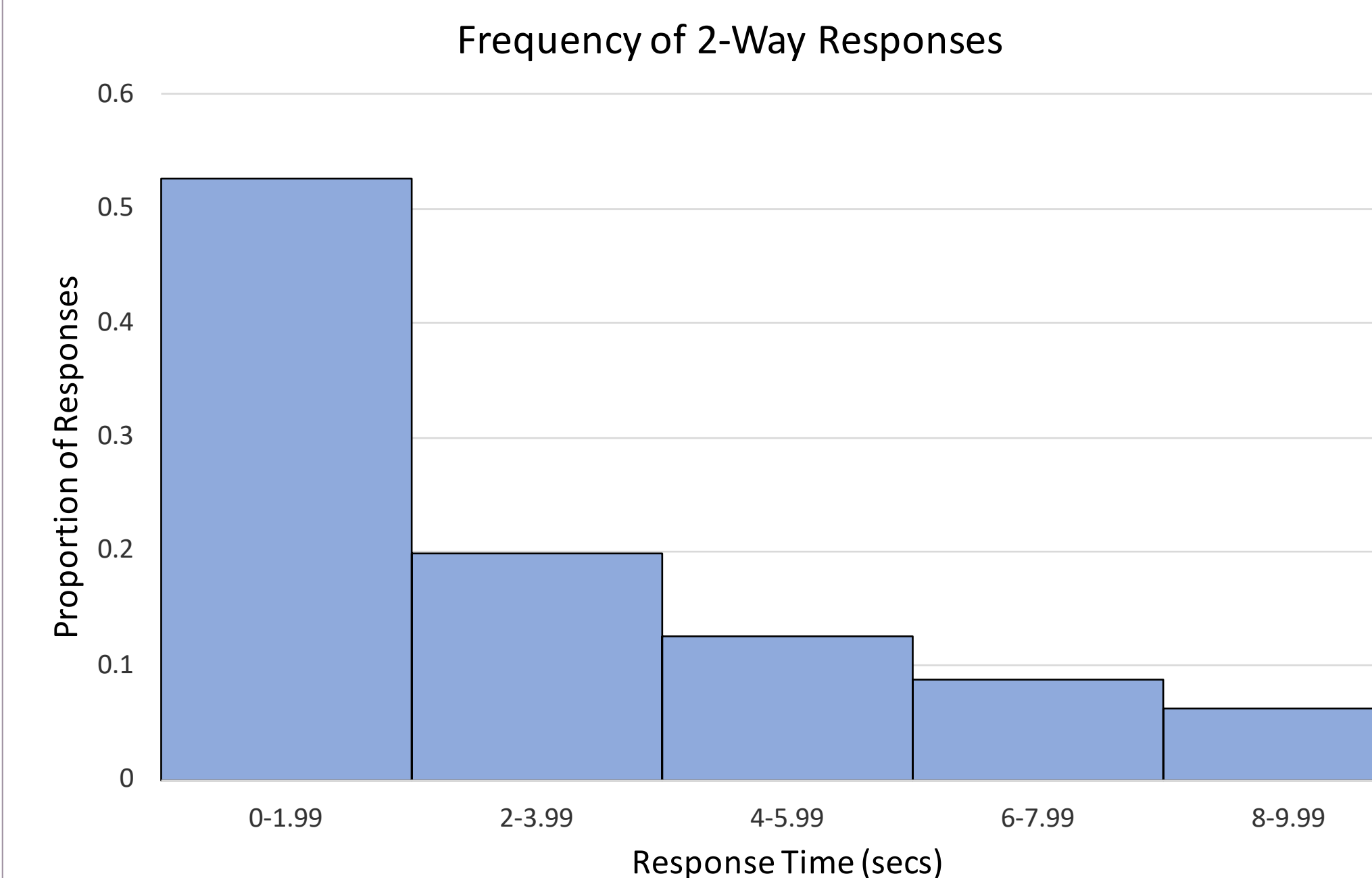
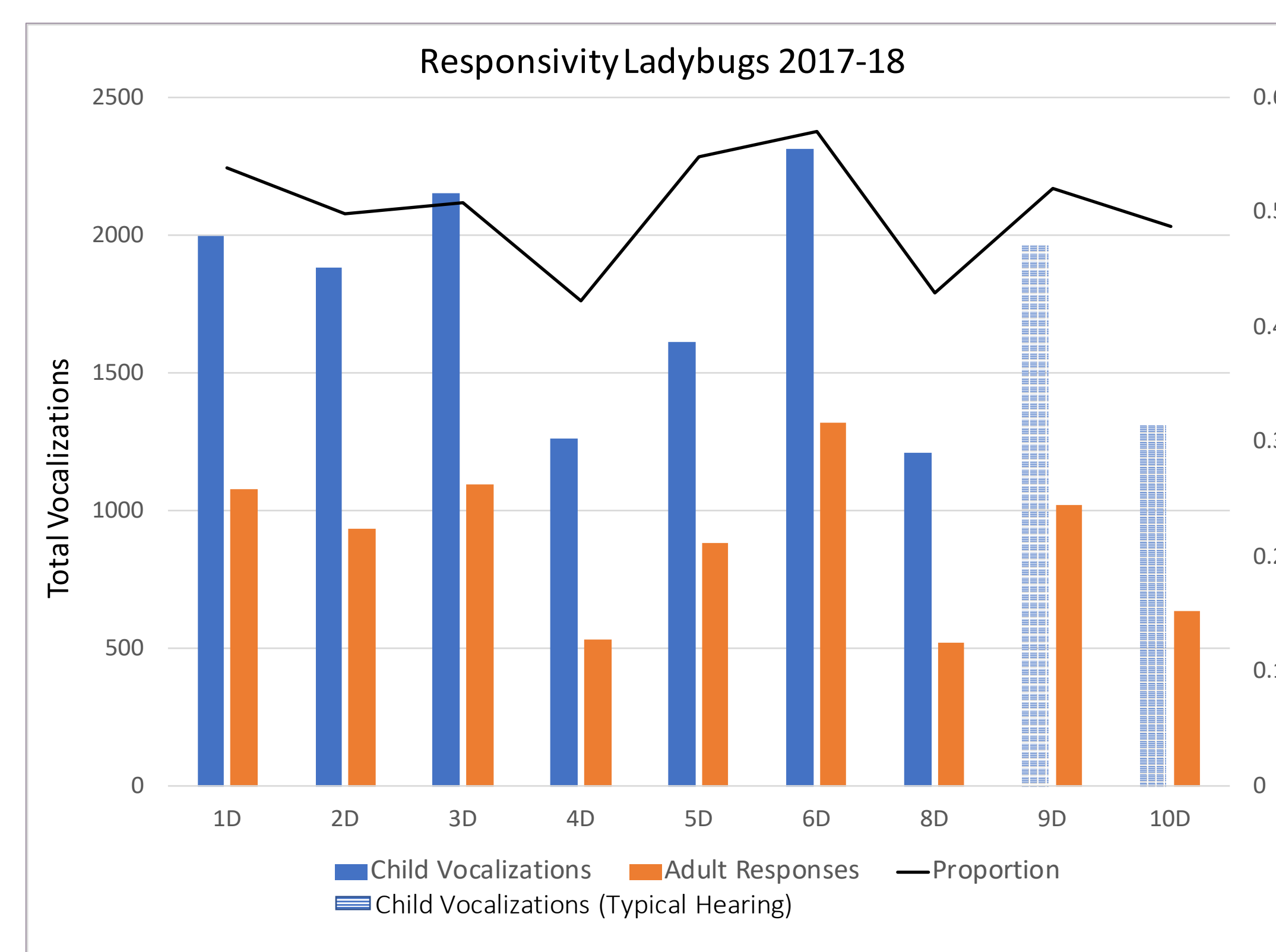
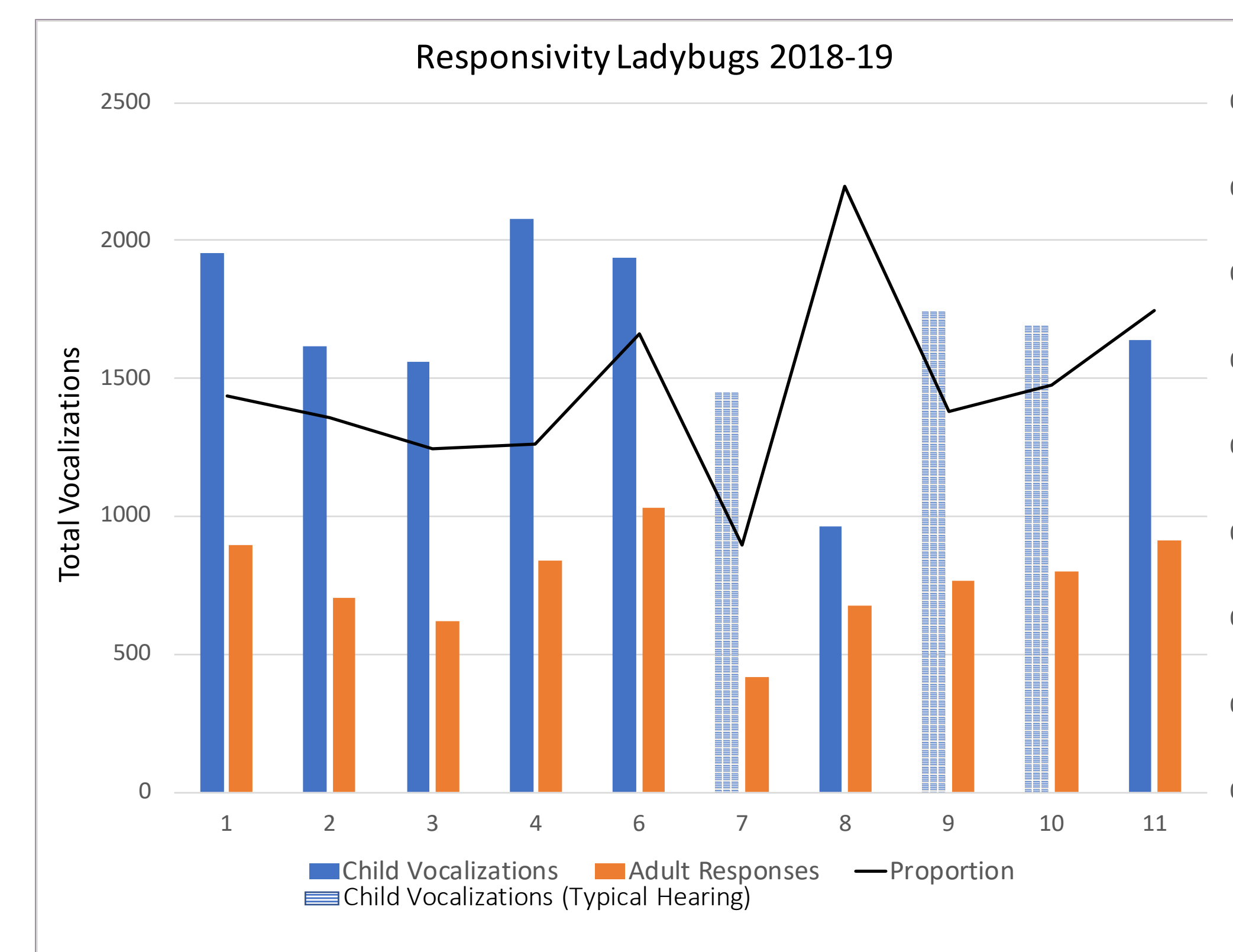
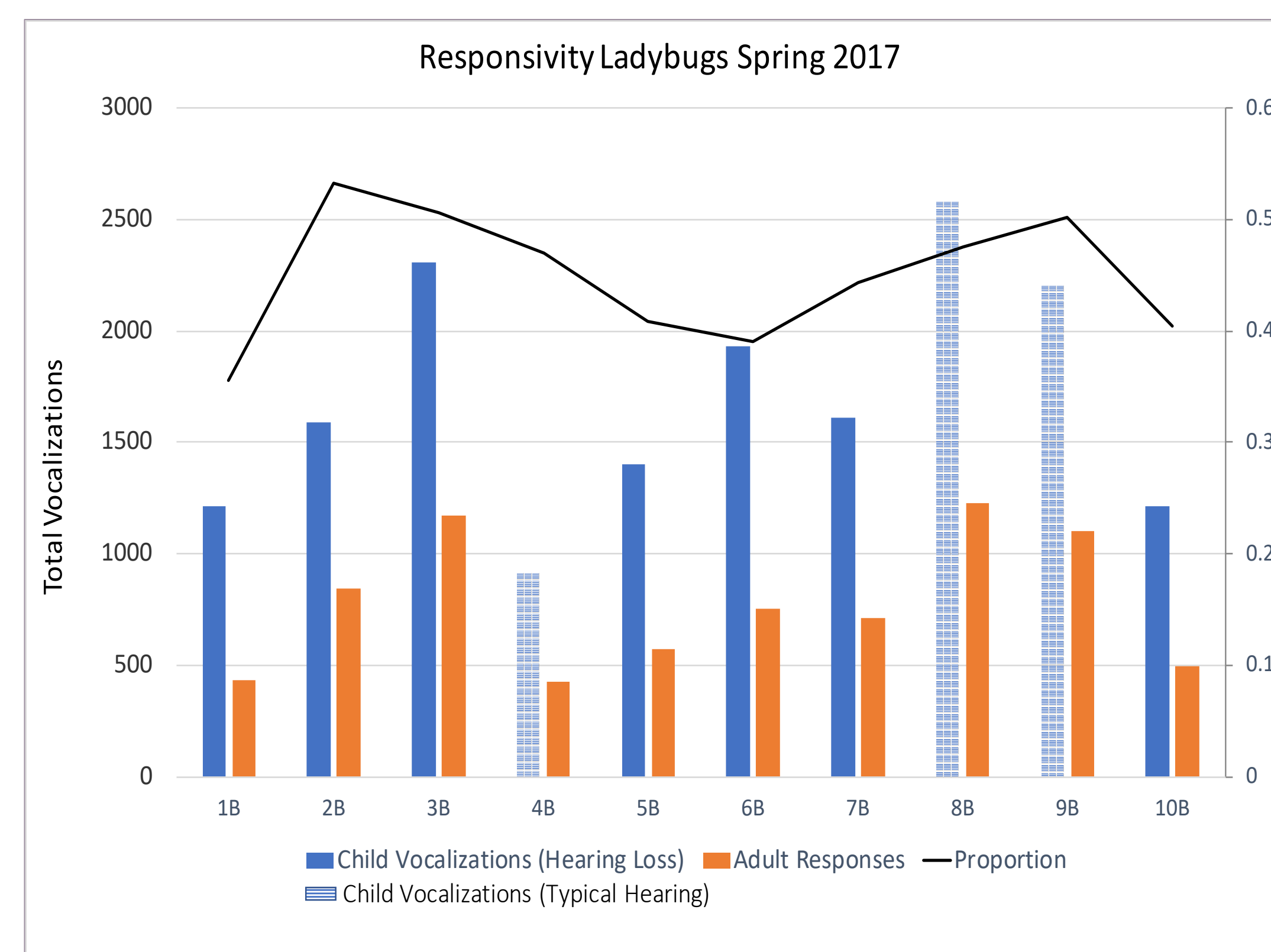


Figure 2: The frequency of adult responses to children with HL versus TH children was approximately the same.

## Results



- The proportion of child vocalizations with an adult response did not differ between HL children ( $m = 0.478$ ,  $sd = 0.08$ ) and TH children ( $m = 0.457$ ,  $sd = 0.07$ ),  $t(27) = 0.69$ ,  $p = 0.523$ .

## Conclusions

- We used a data driven approach to defining responses between adults and children with HL and TH.
- There was no apparent difference between adult responsivity to HL and TH children in the distribution of adult response time.
- There was not a significant difference between the proportion of child vocalizations that received an adult response for HL and TH children.
- Our study makes an initial contribution to understanding the benefits of being enrolled in programs tailored toward enhancing children's communicative development, where teachers are trained and receive support in the best practices for enhancing children's spoken language abilities.

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## References

- [1] Warlaumont, A. S., Richards, J. A., Gilkerson, J. , Oller, D.K. (2014). A Social Feedback Loop for Speech Development and Its Reduction in Autism. *Association for Psychological Science*, 25(7) 1314-1324.