

University of Louisville

## ThinkIR: The University of Louisville's Institutional Repository

---

Undergraduate Arts and Research Showcase

Undergraduate Research

---

2020

### Attention in Children with Hearing Loss during Telepractice and In-person Speech Language Therapy

Rahaf Alrefai  
rahaf.alrefai@louisville.edu

Kaelin Kinney  
kaelin.kinney@louisville.edu

Maria Kondaurova  
maria.kondaurova@louisville.edu

Cara Cashon  
cara.cashon@louisville.edu

Follow this and additional works at: <https://ir.library.louisville.edu/uars>



Part of the [Psychology Commons](#)

---

#### Recommended Citation

Alrefai, Rahaf; Kinney, Kaelin; Kondaurova, Maria; and Cashon, Cara, "Attention in Children with Hearing Loss during Telepractice and In-person Speech Language Therapy" (2020). *Undergraduate Arts and Research Showcase*. 34.

<https://ir.library.louisville.edu/uars/34>

This Book is brought to you for free and open access by the Undergraduate Research at ThinkIR: The University of Louisville's Institutional Repository. It has been accepted for inclusion in Undergraduate Arts and Research Showcase by an authorized administrator of ThinkIR: The University of Louisville's Institutional Repository. For more information, please contact [thinkir@louisville.edu](mailto:thinkir@louisville.edu).



# Attention in Children with Hearing Loss during Telepractice and In-person Speech Language Therapy



Rahaf Alrefai<sup>1</sup>, Kaelin Kinney<sup>1</sup>, Maria Kondourova<sup>1</sup>, Cara Cashon<sup>1</sup>



<sup>1</sup>Department of Psychological and Brain Sciences, University of Louisville, Louisville, KY

## Background

- Telepractice is a 2-way video conferencing used to provide speech language therapy to children with hearing loss (McCarthy, et al., 2018; Snodgrass et al., 2017).
- Telepractice provides effective care, allows for increased access, reduces time and expenses for the patient and increases patient access to a service provider, intervention approach and communication mode (e.g. the COVID-19 pandemic) (Anderson, et al., 2014; Cason, et al., 2012; Grogan-Johnson, Alvares, Rowan, & Creaghead, 2010; Grogan-Johnson et al., 2013; McCarthy, Leigh, & Arthur-Kelly, 2018).
- Challenges in telepractice include technological issues (e.g. poor audio and video quality), lack of parent and clinician experience with technology, and child variables (e.g. child attention) (Anderson et al., 2014; Gibson, et al., 2010; Grogan-Johnson et al., 2013; 2010; Snodgrass et al., 2017).
- Children with hearing loss have poorer attention span than their normal-hearing peers (Prezbindowski et al., 1998; Chen et al., 2019).

## Aims of the Study

- To examine the attention of children with hearing loss who received cochlear implants in two types of intervention, the telepractice and the in-person speech language therapy.

## Methodology

### Participants

Participant	Device (L: left ear, R: right ear, HA: hearing aids)	Etiology	Communication Method	PLS -5 Auditory	PLS -5 Verbal	Total
1	MED-EL (L,R)	Unknown	OC suppl. With ASL	26	28	50
2	N6 Cochlear Americas, Nucleus (L,R)	Usher Syndrome 1B	OC	119	120	121
3	N6 Cochlear Americas, Nucleus (L,R-HA)	Unknown	OC	67	72	68
4	N7 Cochlear Americas, Nucleus (L,R-HA)	Unknown	OC suppl. With ASL	59	59	56
5	N7 Cochlear Americas, Nucleus (L,R)	Unknown	OC	65	75	68

Participant	Sex	Age (months)	Age at CI activation (months)	Hearing Age (months) 12-month visit
1	F	73	60	13
2	M	81	14	67
3	M	49	38	11
4	F	58	37	21
5	M	47	21	26

### Procedure

- Two 30-minute counterbalanced sessions (Tele, In-Person) per person
- Tele: Speech-Language Pathologist (SLP) provided speech language therapy to the child using Doxy.me software via computer with the mother and her child in a separate room.
- In-Person: SLP provided speech language therapy to the child in the same room with the mother and her child

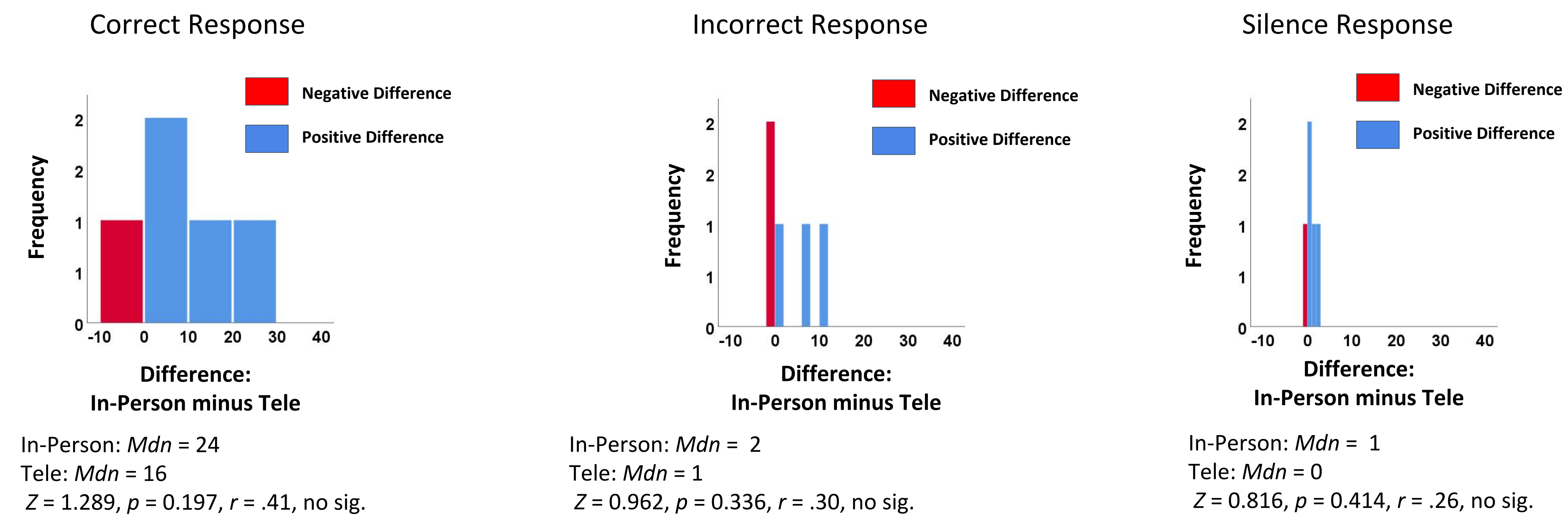
### Coding

- **Speech Production**: child verbal response within 3 seconds of the clinician/mother speech
- **Response Types**:
  - Correct: a correct reproduction of the clinician's target utterance
  - Incorrect: any other utterance following the clinician's target utterance
  - Off-task: the child was distracted
  - Silence: the child was silent
- **Speech Comprehension**: child action within 3 seconds of the clinician/mother speech
- **Response Types**:
  - Incorrect: gesturing or looking at the something other than the target object
  - Correct: gesturing or looking at the target object
  - Off-task: the child was distracted
  - Silence: child did nothing following the command

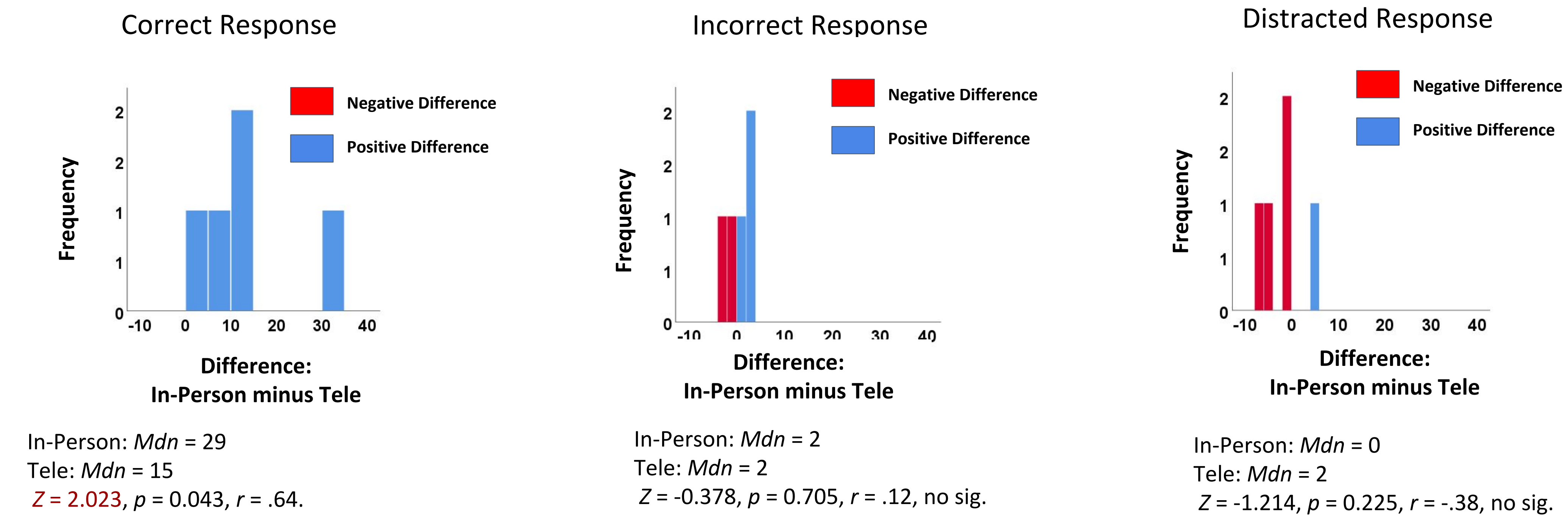
## Results: Wilcoxon Signed-Rank Sum Test

### SLP Speech

#### Child Production



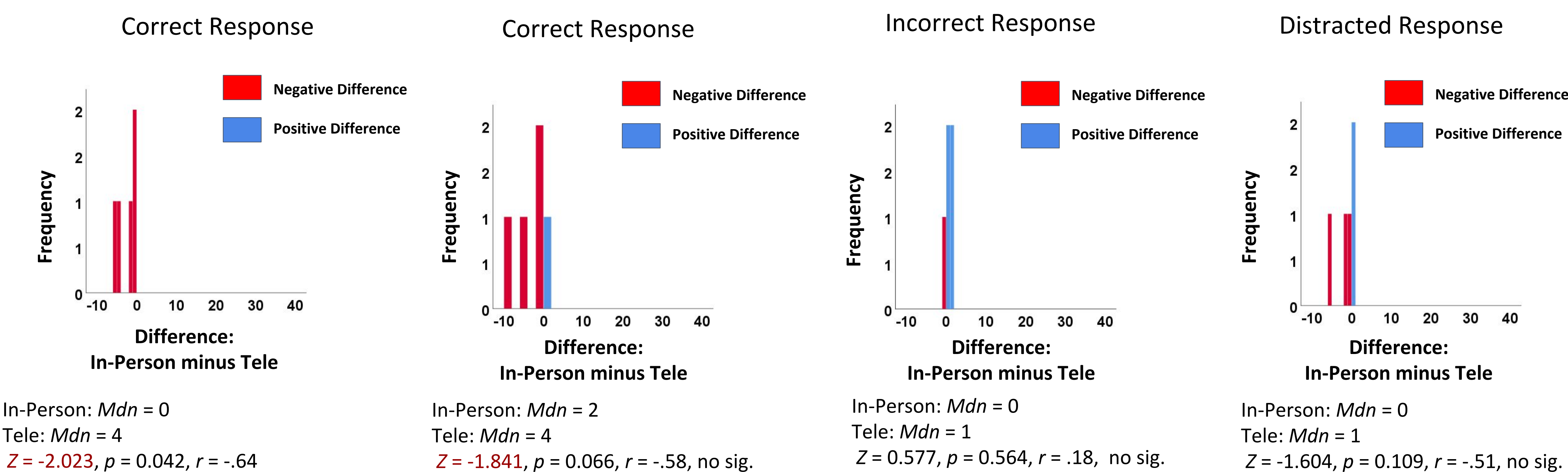
#### Child Comprehension



### Maternal Speech

#### Child Production

#### Child Comprehension



## Discussion

- As evidenced by the correct responses, the child's attention to the SLP or maternal speech directed to the child is dependent on the type of therapy (tele- vs. in-person).
- During the SLP-child interaction, there were more correct responses in the in-person than the tele-session for child comprehension.
  - The social cues (e.g. facial expression, gestures, body movement) may be important as they allow the child to have a better comprehension of what is being said. (Kuhl, 2007).
- During the mother-child interaction, there were more correct responses in tele- than in-person session in both production and comprehension.
  - The role of the mother during tele possibly becomes more important due to proximity to the child and the absence of the clinician (Snodgrass et al., 2017).
  - The mother takes over the role of clinician (Snodgrass et al., 2017).
- Future Research: more participants including children with and without hearing loss, participant (clinician and caregiver) attitudes to telemedicine needs to be examined.

## Acknowledgements

- We would like to thank the Heuser Hearing Institute and Language Academy and the families who participated in the study.

## References

- Anderson, K., Balandin, S., Stancliffe, R. J., & Layfield, C. (2014). Parents' perspectives on tele-AAC support for families with a new speech generating device: Results from an Australian pilot study. *Perspectives on Telepractice*, 5, 52-60.
- Gibson, J. L., Pennington, R. C., Stenhoff, D. M., & Hopper, J. S. (2010). Using desktop videoconferencing to deliver interventions to a preschool student with autism. *Topics in Early Childhood Special Education*, 29, 214-225.
- Grogan-Johnson, S., Schmidt, A., Schenker, J., Alvares, R., Rowan, L., & Taylor, J. (2013). A comparison of speech sound intervention delivered by telepractice and side-by-side service delivery models. *Communicative Disorders Quarterly*, 34, 210-220.
- Grogan-Johnson, S., Alvares, R., Rowan, L., & Creaghead, N. (2010). A pilot study comparing the effectiveness of speech language therapy provided by telemedicine with conventional on-site therapy. *Journal of Telemedicine and Telecare*, 16(134-139).
- Kuhl, P.K. (2007). Is speech learning "gated" by the social brain? *Developmental Science*, 10 (1), 110-120.
- McCarthy, M., Leigh, G., & Arthur-Kelly, M. (2018). Telepractice delivery of family-centered early intervention for children who are deaf or hard of hearing: A scoping review. *Journal of Telemedicine and Telecare*. doi:10.1177/1357633X18755588.
- Prezbindowski, A. K., Adamson, L. B., & Lederberg, A. R. (1998). Joint attention in deaf and hearing 22 month-old children and their hearing mothers. *Journal of Applied Developmental Psychology*, 19(3), 377-387. doi: 10.1016/S0193-3973(99)80046-x
- Snodgrass, M. R., Cheng, M. Y., Biller, M. F., Appel, K. E., Meadan, H., & Halle, J. W. (2017). Telepractice in speech-language therapy: The use of online technology for parent training and coaching. *Clinical Exchange*,