

## Parents' Perspectives about Tele-Intervention Services for their Children who are Deaf or Hard of Hearing

Lauri H. Nelson, PhD<sup>1</sup>

Amanda M. Rudge, PhD<sup>2</sup>

Pamela Dawson, MEd<sup>3</sup>

Demi Culianos, MS<sup>1</sup>

Cheryl Broekelmann, MA<sup>4</sup>

Arlene Stredler-Brown, PhD<sup>5</sup>

Meredith Berger, MEd<sup>6</sup>

<sup>1</sup>Utah State University, Logan, UT

<sup>2</sup>Moog Center for Deaf Education, St. Louis, MO

<sup>3</sup>hear ME now, Portland, ME

<sup>4</sup>St. Joseph Institute for the Deaf, St. Louis, MO

<sup>5</sup>Colorado Department of Human Services, Boulder, CO

<sup>6</sup>Clarke Schools for Hearing and Speech, New York, NY

### Abstract

**Purpose:** In the first of a two-part survey series, this cross-sectional survey study explored parent perceptions of tele-intervention (TI) services for their young children who are deaf or hard of hearing. Using Likert rating scales, the survey queried parent confidence in understanding their child's language development, perceptions of the coaching and support they received, the parent-professional partnership, and overall views and recommendations. Data were collected March-May 2020, not realizing the survey release would coincide with the Covid-19 pandemic and the influx of unexpected virtual services. For this reason, data were stratified between those who had received TI services for more than versus less than three months. Responses for in-person services were also evaluated for additional context.

**Method:** Responses from 48 participants who received TI and 18 participants who received in-person services ( $n = 66$ ) were analyzed using descriptive statistics. Cronbach's alpha showed high internal consistency for all Likert scales; items of each subscale were sum-scored to examine relationships across queried areas of service delivery.

**Results:** Ninety-six percent of all respondents were highly or mostly satisfied with their TI services and 90% would definitely or probably recommend TI to other families. Overall positive findings were found across Likert scale queries, with no differences between parent perceptions of TI and in-person services, nor between TI for more than versus less than three months. However, findings also highlighted areas in which TI and in-person providers could improve intervention effectiveness, including coaching and supports to optimize parent confidence in understanding and facilitating their child's language and communication goals.

**Conclusions:** Parent perceptions of the TI delivery model were favorable. Implications and recommendations for both TI and in-person providers are discussed.

**Keywords:** Tele-Intervention, Deaf or Hard of Hearing, Early Intervention, Family-Centered Care

**Acronyms:** ASL = American Sign Language; DHH = deaf or hard of hearing; LSL = Listening and Spoken Language; TI = tele-intervention

**Correspondence concerning this article should be addressed to:** Lauri H. Nelson, PhD, Department of Communicative Disorders and Deaf Education, Utah State University, 2620 Old Main Hill, Logan, UT 84322.  
E-mail: [lauri.nelson@usu.edu](mailto:lauri.nelson@usu.edu)

The diagnosis of hearing loss in an infant or young child is a time of uncertainty for most parents and families, prompting a myriad of questions, introduction to new vocabulary, and engagement in previously unfamiliar services. The journey through the initial diagnosis and the determinations of intervention services to meet the needs of children who are deaf or hard of hearing (DHH) and their families are best supported through a team approach, with professionals who have the skills and expertise aligned with the priorities of parents, caregivers, and

families<sup>1</sup>. As each team member plays a critical part in their respective disciplines, the role of the early interventionist, deaf educator, or speech-language pathologist (hereafter referred to as *providers*) constitutes an essential ongoing partnership with parents to support their child's language, academic, and social-emotional growth.

<sup>1</sup>The definition of parents, caregivers, and families encompasses a rich variety of circumstances, cultures, and individual details. To improve readability, the term "parents" is used throughout the article, but is inclusive of all caregivers and family constructs.

Early intervention in the United States is typically defined as children birth to three years of age, consistent with Part C services under the Individuals with Disabilities Education Act (IDEA, 2004). Children who are identified early and promptly begin appropriate early intervention have better language skills compared with children who were later-identified or who did not receive effective intervention (Ching et al., 2017; Decker & Vallotton, 2016; Sahli, 2019). Children eligible under IDEA when they transition from Part C to preschool continue to benefit from home and/or center-based services from qualified professionals (Division for Early Childhood, 2014; JCIH, 2013).

Parents play a critical role in the success of their child's early language acquisition outcomes in early childhood and during their preschool years. Under a family-centered service delivery model, parents and professionals form partnerships and collaborate to meet the families' goals for their children (Rush & Shelden, 2019). Parents who actively participate in sessions, engage in goal development and decision-making for their child, advocate for their needs, and display confidence in promoting their child's development within the family's daily routines can facilitate the best outcomes (DesJardin, 2009; JCIH, 2013; Moeller et al., 2013; Nelson et al., 2020; Scarinci et al., 2018; Turan, 2012; Weiber, 2015). When serving families of children who are DHH, it is particularly important the provider has the skills and expertise to support the parents in their desired mode of communication and the method for establishing their child's first language, whether using Listening and Spoken Language (LSL), American Sign Language (ASL), or simultaneous communication (i.e., speaking with sign support). Some families may experience limited service delivery options within their region, resulting in services by a provider who does not have specialized skills or expertise to effectively guide LSL or ASL development. Similarly, some families have access to a provider less frequently than needed to ensure timely implementation of intervention goals. These barriers lead many families to seek alternative options that may require additional time, expense, and inconvenience that negatively impacts other facets of the family's routines, obligations, and overall quality of life.

Telehealth equipment and techniques have been used for several decades to provide health care from a distance. Referred to as tele-intervention (TI), this is becoming a more frequent mode of delivery to provide specialized care to children who are DHH and their families. Other terms for TI services may include tele-therapy, tele-habilitation, tele-practice, tele-services, telehealth, and tele-education. In the TI model, video conferencing technology is used to deliver services by linking professionals and families regardless of their respective locations as long as they have access to the internet and to a computer with a camera. This can be particularly valuable for families who live in rural areas, who may have limited local early intervention service options, or who may have other transportation or personal family barriers. Most importantly, TI has shown to be a service delivery model with outcomes similar to those of in-person models (Behl et al., 2017; Havenga et al., 2017; McCarthy et al., 2019, 2020).

As TI services have become more accessible, it is important to understand current issues from both the parent and provider perspectives. Although studies have demonstrated the efficacy of TI services to child and family outcomes, few studies have explored parent perceptions of TI services. It is central to a family-centered model of intervention for parents to have a voice in driving policies and program improvements. Parents must feel supported in the goals and priorities they have for their children and gain confidence in implementing those goals using evidence-based strategies within their daily routines. The purpose of this survey study was to learn more about parent perceptions of their TI services, including confidence in understanding their child's language development, perceptions of the coaching and support they received from their TI provider, their views of establishing a parent-professional partnership with their provider, and other experiences and recommendations related to their TI services. The survey also queried similar responses from parents who received in-person services to provide additional service-delivery context.

## Method

A cross-sectional survey was developed to explore the perceptions of parents concerning services for children who are DHH delivered through a TI model, as well as the perceptions of parents who received in-person services or a combination of both. The survey also queried perceptions of professionals who provided TI services, in-person services, or both. Survey findings from professionals are reported in a companion article within this monograph (Nelson, 2022). The Utah State University Institutional Review Board approved the survey study and there were no financial or other conflicts of interest.

## Survey Instrument

An electronic survey using the Qualtrics platform was distributed to families of children who are DHH, as well as professionals who serve children who are DHH. Respondents who identified as both a parent of a child who is DHH as well as a professional in the field had the option of completing the survey two times—once as a parent and once as a professional.

Survey participants were recruited using several dissemination methods. An email flyer describing the survey was sent to the marketing and communication representatives at OPTION Schools, Inc., and to the American Speech and Hearing Association with a request to disseminate the survey link to their professional membership and to forward the link to families they served. Additionally, flyers were handed out at the March 2020 annual Early Hearing Detection and Intervention national conference. The survey was posted on the [infanthearing.org](http://infanthearing.org) and [heartolearn.org](http://heartolearn.org) websites that provide resources for parents of children who are DHH and professionals who serve them.

Whether receiving in-person or TI services, the survey used questions in three Likert-scale categories to explore parent perceptions of (a) confidence in understanding their

child's language development, (b) coaching and support, and (c) establishing a parent-professional partnership with their provider. The survey also queried demographic data and general satisfaction ratings with their TI or in-person services.

## Results

The electronic survey software recorded 117 initial parent survey activations. Of those, 35 activations contained no data and 16 contained responses to only the first question. These unusable responses were omitted from analysis, resulting in 66 survey participants. Of the 66 survey participants, 73% ( $n = 48$ ) reported they were currently receiving TI services, with 27% ( $n = 18$ ) who reported they were not receiving TI and were currently receiving in-person services. Of the 48 respondents receiving TI services, eight respondents reported they also received additional in-person services, and 40 respondents reported they received TI only and did not receive additional in-person services.

Of the 48 participants receiving TI, data were further stratified by those who had been receiving TI services for more than three months (31%;  $n = 15$ ) with those who had been receiving TI services for less than three months (69%;  $n = 33$ ). The data analysis decision to stratify between more than or less than three months of TI experience was made due to the timing of the survey release with the Covid-19 pandemic. The survey was released in early March 2020, not realizing the following months of data collection (March–May 2020) would be during a large-scale pandemic and the resulting influx of emergency virtual services. Although unintentional, this timing offered an intriguing opportunity to explore perceptions of parents who unexpectedly shifted into receiving emergency virtual services as compared with parents who participated in an established TI program with a provider experienced in delivering TI services prior to the onset of the Covid-19 pandemic. Participant responses for TI and in-person services are reported, as well as the stratified TI data for respondents who had engaged in TI services for more than or less than three months.

The internal consistency for each of the three Likert scales was assessed using Cronbach's alpha. The internal consistency was high for all three, with the scales that queried parent confidence in understanding their child's language development and the scales that queried parent perceptions of coaching and support reaching an alpha of .91. The internal consistency for the scale that queried perceptions in establishing a parent-professional partnership was .88. Due to the high internal consistency of the three scales, the items of each subscale were summed and each was used as an outcome to examine the relationship between TI and in-person services and TI services for more than or less than three months in areas of (a) parent confidence in understanding and supporting their child's language development, (b) coaching and support, and (c) establishing a parent-professional partnership with their provider.

## Participant Demographics

As shown in Table 1, the majority of parent respondents were female (95%,  $n = 63$ ), between 30–39 years of age (58%,  $n = 38$ ), and Caucasian (67%,  $n = 44$ ). Heavier geographic representation was seen for respondents who lived in the West and Midwest than in the Eastern area of the United States, with a relatively equal representation of those who described their residence as rural, urban, or a mix of both.

**Table 1**  
*Participant Demographics ( $n = 66$ )*

|                         |  |                  |
|-------------------------|--|------------------|
| Gender                  |  |                  |
| Female                  |  | 95% ( $n = 63$ ) |
| Male                    |  | 3% ( $n = 2$ )   |
| Prefer not to answer    |  | 2% ( $n = 1$ )   |
| Age                     |  |                  |
| Under 20 years          |  | 0% ( $n = 0$ )   |
| 20–29 years             |  | 17% ( $n = 11$ ) |
| 30–39 years             |  | 58% ( $n = 38$ ) |
| 40–49 years             |  | 23% ( $n = 15$ ) |
| 50+ years               |  | 1% ( $n = 2$ )   |
| Ethnicity               |  |                  |
| Asian                   |  | 12% ( $n = 8$ )  |
| African American        |  | 6% ( $n = 4$ )   |
| Hispanic or Latino      |  | 6% ( $n = 4$ )   |
| White                   |  | 67% ( $n = 44$ ) |
| Other not listed        |  | 3% ( $n = 2$ )   |
| Prefer not to answer    |  | 6% ( $n = 4$ )   |
| Geographic Region       |  |                  |
| West                    |  | 39% ( $n = 26$ ) |
| Mid-West                |  | 32% ( $n = 21$ ) |
| South and South-East    |  | 17% ( $n = 11$ ) |
| East and North-East     |  | 9% ( $n = 6$ )   |
| Outside United States   |  | 3% ( $n = 2$ )   |
| Service Delivery Region |  |                  |
| Urban                   |  | 36% ( $n = 24$ ) |
| Rural                   |  | 34% ( $n = 22$ ) |
| Mix of Both             |  | 30% ( $n = 20$ ) |

Of parents who engaged in TI services, 8% ( $n = 4$ ) reported having one TI session per month, 21% ( $n = 10$ ) having two or three TI sessions per month, and 71% ( $n = 34$ ) reported having four or more TI sessions per month. Ninety percent ( $n = 43$ ) reported no concerns with the quality of the internet connection during their TI session. Of parents who received in-person sessions, 55% ( $n = 10$ ) reported having one in-person session per month, 17% ( $n = 3$ ) having two or three in-person sessions per month, and 28% ( $n = 5$ ) reported having four or more in-person sessions per month. See Table 1 for all demographic data.

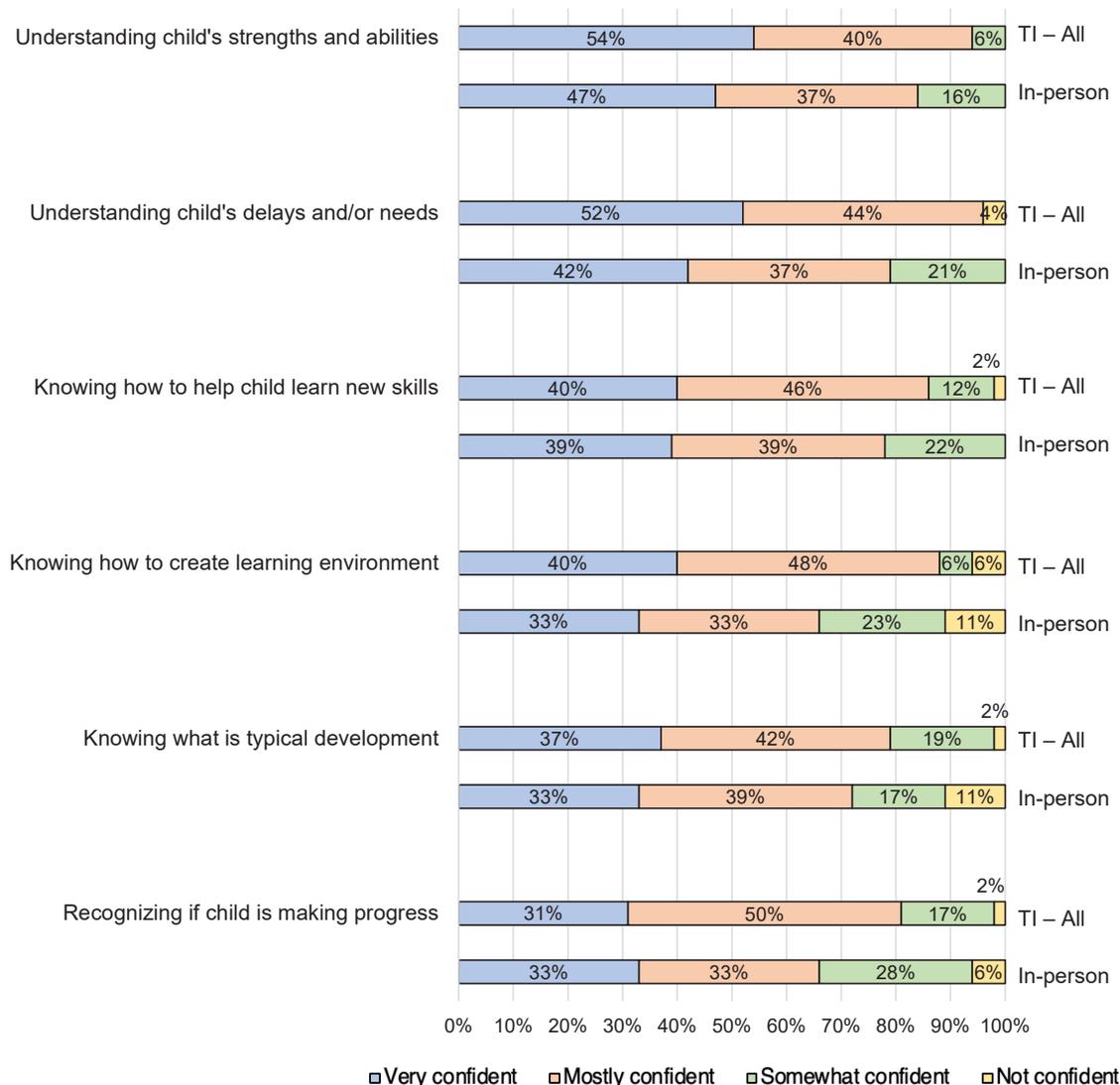
### Parent Confidence in Understanding Their Child's Language Development

To explore understanding of their child's language development, the survey queried parent confidence in (a) understanding their child's strengths and abilities, (b) understanding their child's delays and/or needs, (c) knowing how to help their child progress and learn new skills, (d) creating a learning environment, (e) recognizing if their child was or was not making expected progress, and (f) understanding what was considered typical

development. Response options were *very confident*, *mostly confident*, *somewhat confident*, and *not confident*.

As shown in Figure 1, the percentage of respondents receiving TI who were *very confident* in these topic areas ranged from 54% ( $n = 26$ ) to 31% ( $n = 15$ ). The topic with the highest number of *very confident* respondents was in understanding their child's strengths and abilities. The topic with the lowest number of *very confident* respondents was in recognizing if their child was or was not making expected progress. Confidence patterns were similar for parents receiving in-person services with the percentage of respondents receiving in-person services who were *very confident* in these topic areas ranging from 47% ( $n = 9$ ) to 33% ( $n = 6$ ). The highest percentage of respondents who were *very confident* was in understanding their child's strengths and abilities and the lowest percentage of respondents who were *very confident* was in two topics, including knowing what was considered typical development and recognizing if their child was or was not making expected progress. See Figure 1 for all confidence ratings for families receiving TI services or in-person services.

**Figure 1**  
Parent Confidence Ratings: In-Person ( $n = 18$ ), Tele-Intervention (TI) All Data ( $n = 48$ )

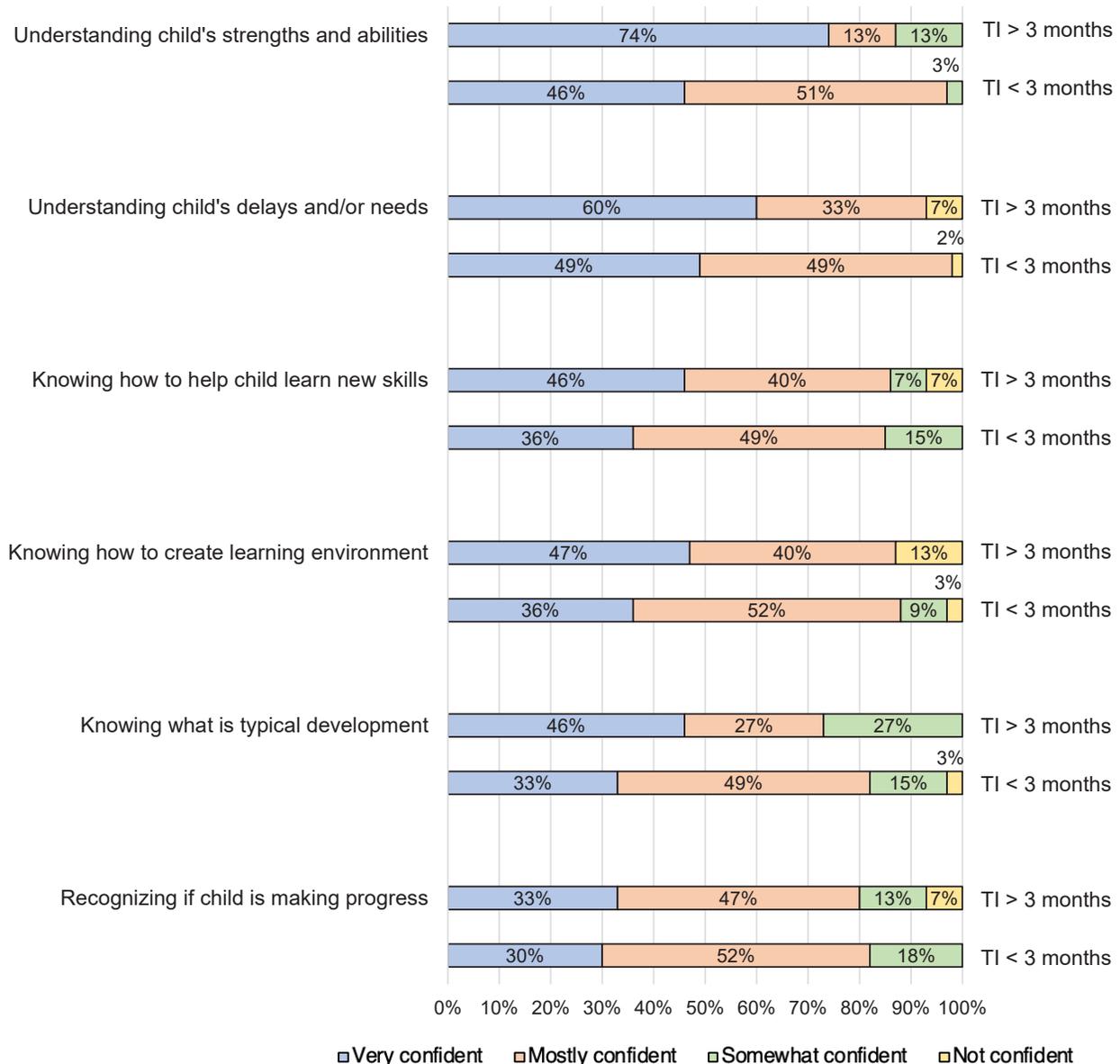


When data were stratified according to those who had been receiving TI services for more than or less than three months, findings showed descriptive differences in parent confidence. Of parents who had been engaged in TI services for more than three months, the percentage of those who were *very confident* ranged from 74% ( $n = 11$ ) to 33% ( $n = 5$ ) across topic areas, whereas the percentage of those who had been engaged in TI for less than three months had *very confident* ratings that ranged from 49% ( $n = 16$ ) to 30% ( $n = 10$ ). The strongest topic area for

parents with more than three months of TI experience was confidence in knowing their child's strengths and abilities; and for parents with less than three months of TI experience, it was confidence in knowing their child's delays or areas of need. The topic area with the lowest percentage of respondents who were *very confident* for both groups was in recognizing how to tell if their child was or was not making progress. See Figure 2 for all confidence ratings for families receiving TI services for more than or less than three months.

**Figure 2**

Parent Confidence Ratings: TI > 3 Months ( $n = 15$ ), TI < 3 Months ( $n = 33$ )



Note. TI = tele-intervention

Independent sample *t*-tests were performed to analyze how confident parents felt with TI services versus in-person services and whether the length of time using TI-services affected that confidence. Results showed there were no significant differences in confidence between those who received TI services compared to those who received in-person services ( $t = 0.80, p = 0.43$ ); and no significant differences in confidence between those who

received TI services for more than three months compared to those who received TI services for less than three months ( $t = 0.21, p = 0.83$ ).

### Parent Perceptions of Coaching and Support

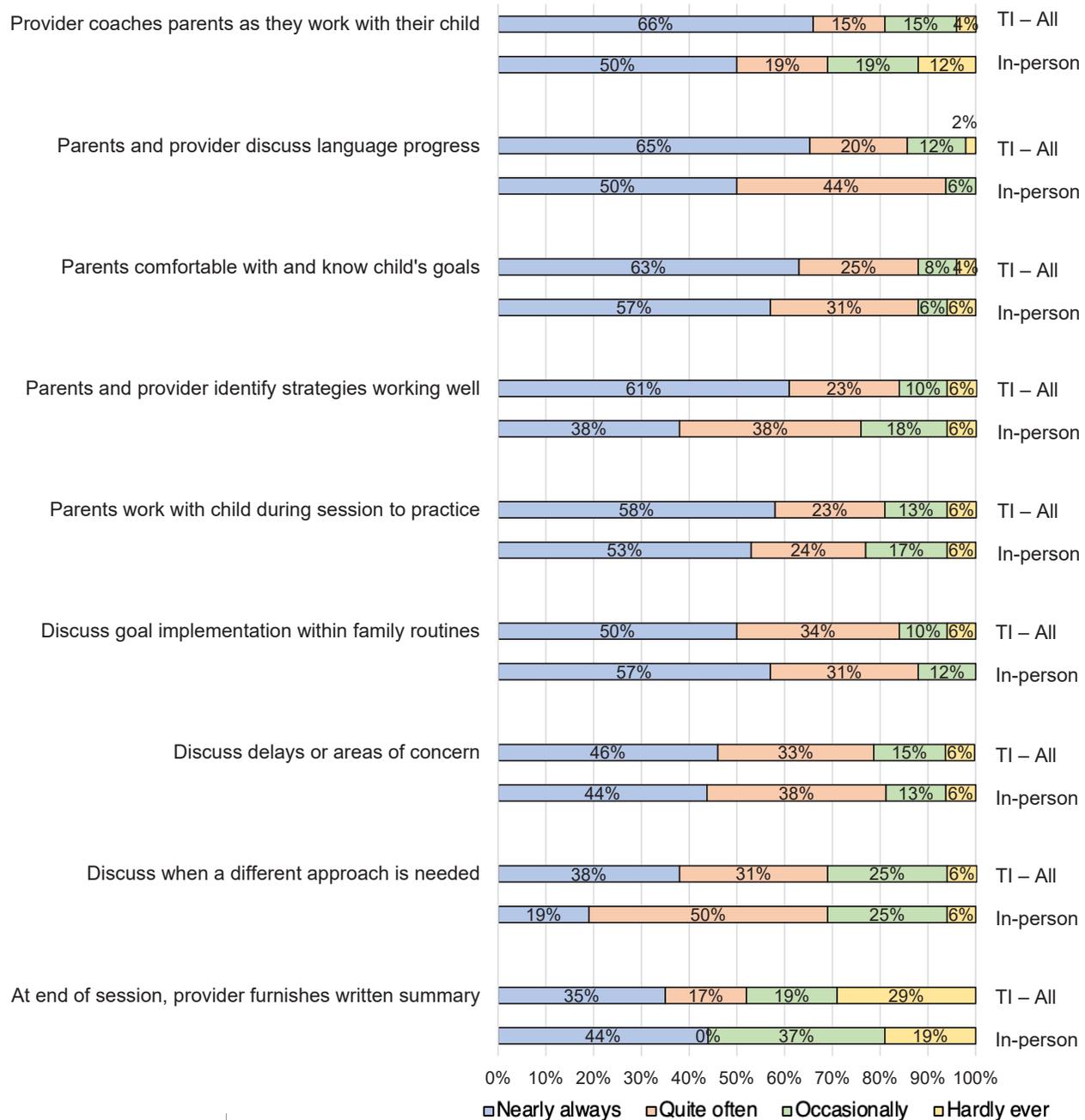
To explore parent perceptions of the coaching and support they received from their provider during their TI or in-person sessions, the survey queried how often

sessions included (a) discussion of the child’s growth and progress in language and communication, (b) discussion of the child’s delays or areas of need in language and communication, (c) coaching from the provider as parents worked directly with their child during their session, (d) practice opportunities for parents to gain additional practice during the session, (e) discussion of activities and strategies that were working well for parents, (f) discussion of activities that seemed not as effective or may need a different approach, (g) discussion to assure parents were comfortable and confident in knowing their child’s goals, (h) discussion of ideas for how to work on the goals within the family’s daily routines, and (i) how often the provider

furnished a written summary or feedback from the session for parents to refer to until the next session. Response options were *nearly always*, *quite often*, *occasionally*, and *hardly ever*.

As shown in Figure 3, the percentage of respondents receiving TI services who reported these activities occurred *nearly always* ranged from 66% ( $n = 32$ ) to 35% ( $n = 17$ ). The topic with the highest percentage of *nearly always* responses was in the provider coaching parents as they worked directly with their child during their session. The topic with the lowest percentage of *nearly always* responses was in the provider furnishing a written summary of the session for parents’ future reference.

**Figure 3**  
Parent Perception of Coaching and Support: In-Person ( $n = 18$ ), TI All Data ( $n = 48$ )



Note. TI = tele-intervention

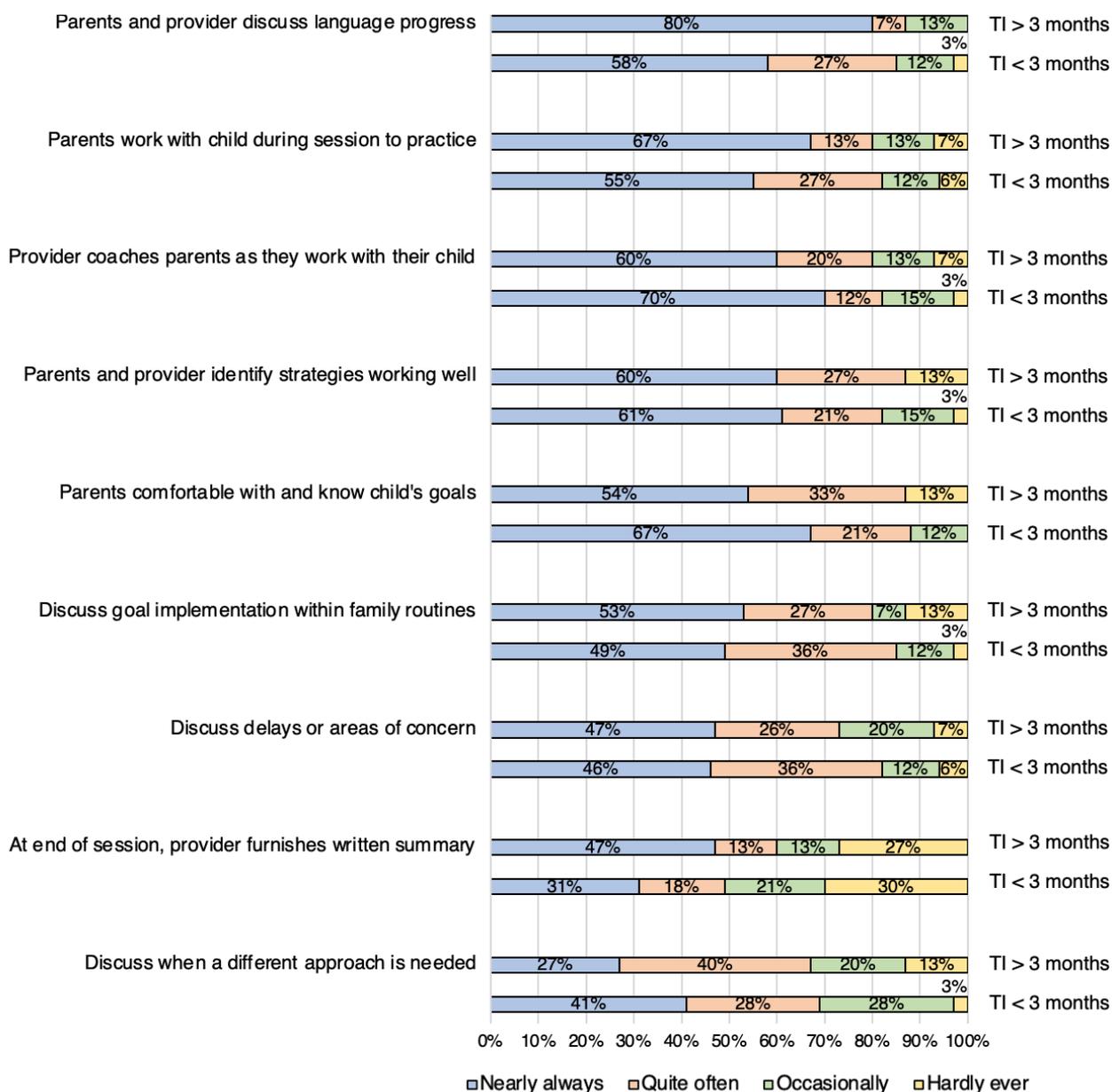
The range for respondents receiving in-person services who reported these activities occurred *nearly always* was 57% ( $n = 9$ ) to 19% ( $n = 3$ ). For in-person services, the two topics with the highest percentage of *nearly always* responses (57% each) were the parents being comfortable with and knowing their child's goals, and parents and providers discussing child goals and providing suggestions for implementation within the family's daily routines. The topic with the lowest percentage of *nearly always* responses was the provider helping parents identify strategies that did not work well or those needing a different approach. See Figure 3 for all provider coaching and support ratings for families receiving TI services or in-person services.

As shown in Figure 4, in the group of respondents who had been engaged in TI services for more than three months, percentages of those who reported coaching and support occurred *nearly always* ranged from 80% ( $n = 12$ )

to 27% ( $n = 4$ ) across topics. The topic with the highest percentage of *nearly always* responses was in the parent and provider discussing the child's progress in language and communication. The topic with the lowest percentage of *nearly always* responses was in the parent and provider discussing when a different approach or strategy was needed. Of parents who had been engaged in TI for less than three months, percentages of those who reported coaching and support occurred *nearly always* ranged from 70% ( $n = 23$ ) to 31% ( $n = 10$ ) across topic areas. The topic with the highest percentage of *nearly always* responses was in the provider coaching the parent as they worked with their child. The topic with the lowest percentage of *nearly always* responses was in the provider furnishing a written summary of the session for parents' future reference. See Figure 4 for all provider coaching and support ratings for families receiving TI services for more than or less than three months.

**Figure 4**

*Parent Tele-Intervention (TI) Perceptions of Coaching and Support: TI > 3 Months (n = 15), TI < 3 Months (n = 33)*



Independent sample *t*-tests were performed to analyze how parent perception of how frequently coaching and support was provided during TI services versus in-person services and whether the length of time using TI services affected that perception of coaching and support. The independent sample *t*-tests revealed there were no significant differences in parent perception of support between those who received TI services compared to those who received in-person services ( $t = 0.13, p = .90$ ). Similarly, there were no significant differences in support between those who had been receiving TI services for more than three months compared to those who had been receiving TI for less than three months ( $t = -0.13, p = 0.90$ ).

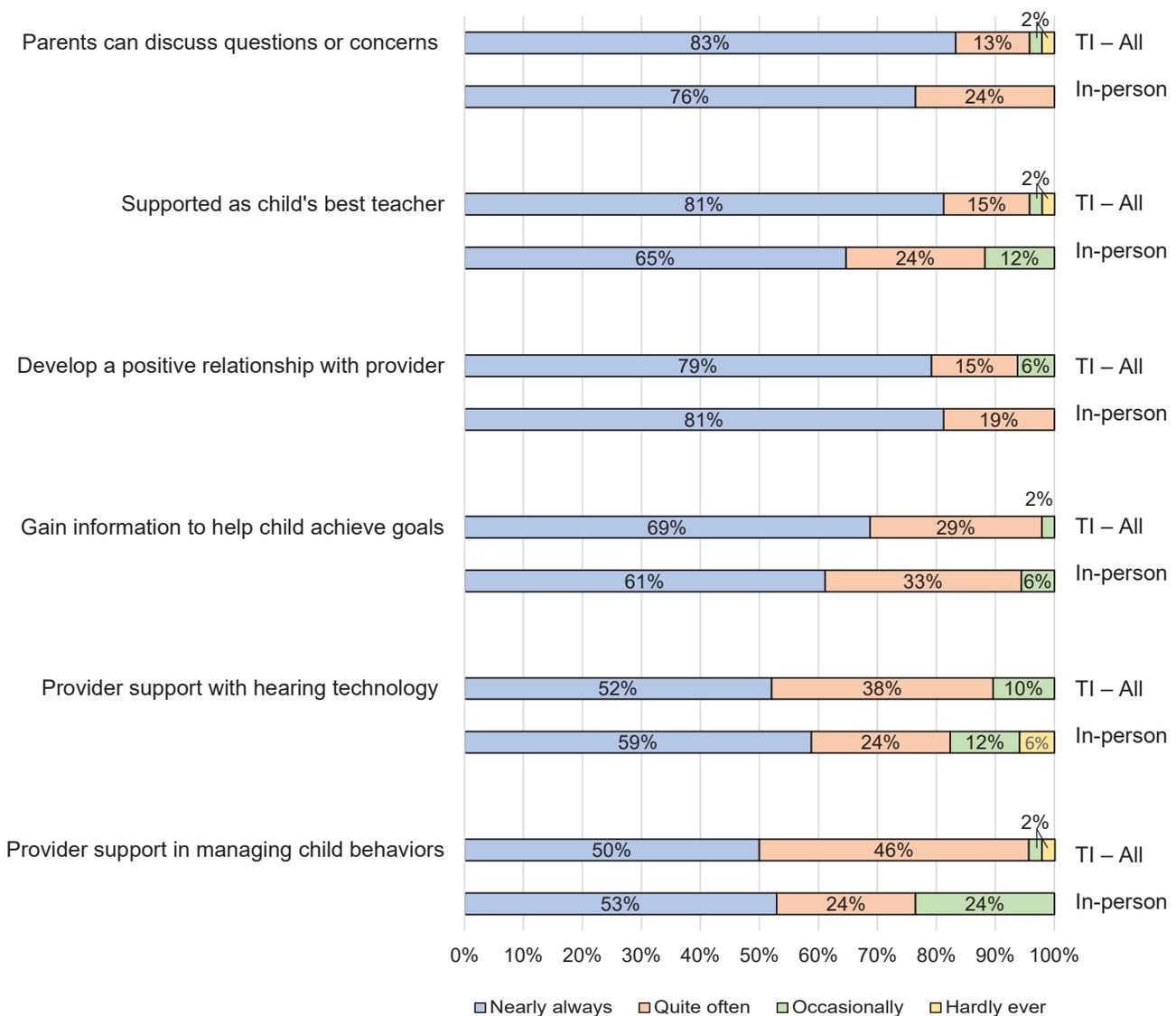
### Parent Perceptions of Establishing a Parent-Professional Partnership

To explore perceptions of the effectiveness of TI in establishing a parent-professional partnership, the survey queried parent views of (a) the ability to develop a positive relationship with their provider through a TI connection, (b)

having the breadth of information needed to help their child achieve their goals, (c) feeling supported in their role as their child's first and best teacher, (d) feeling comfortable in engaging in meaningful discussions, asking questions, or raising concerns even though the provider was not in the same room, (e) feeling supported in managing session logistics and child behaviors, and (f) receiving appropriate information and supports in managing and troubleshooting their child's hearing technology. Response options were *strongly agree*, *agree*, *disagree*, and *strongly disagree*.

As shown in Figure 5, the percentage of respondents receiving TI services who indicated *strongly agree* ranged from 83% ( $n = 40$ ) to 50% ( $n = 23$ ) across topics. The topic with the highest percentage of *strongly agree* responses was parents feeling comfortable in discussing their questions or concerns even though the provider was not in the same room. The topic with the lowest percentage of *strongly agree* responses was the provider adequately supporting parents in managing child behaviors.

**Figure 5**  
Establishing a Parent-Professional Partnership: In-Person ( $n = 18$ ), TI All Data ( $n = 48$ )



Note. TI = tele-intervention

Respondents who received in-person services who indicated *strongly agree* ranged from 81% ( $n = 13$ ) to 53% ( $n = 9$ ) across topics. For in-person services, the highest percentage of *strongly agree* responses was parents feeling they could develop a positive relationship with their provider. The topic with the lowest percentage of *strongly agree* responses was in the provider adequately supporting parents in managing child behaviors. See Figure 5 for all parent-professional partnership ratings for families receiving TI services or in-person services.

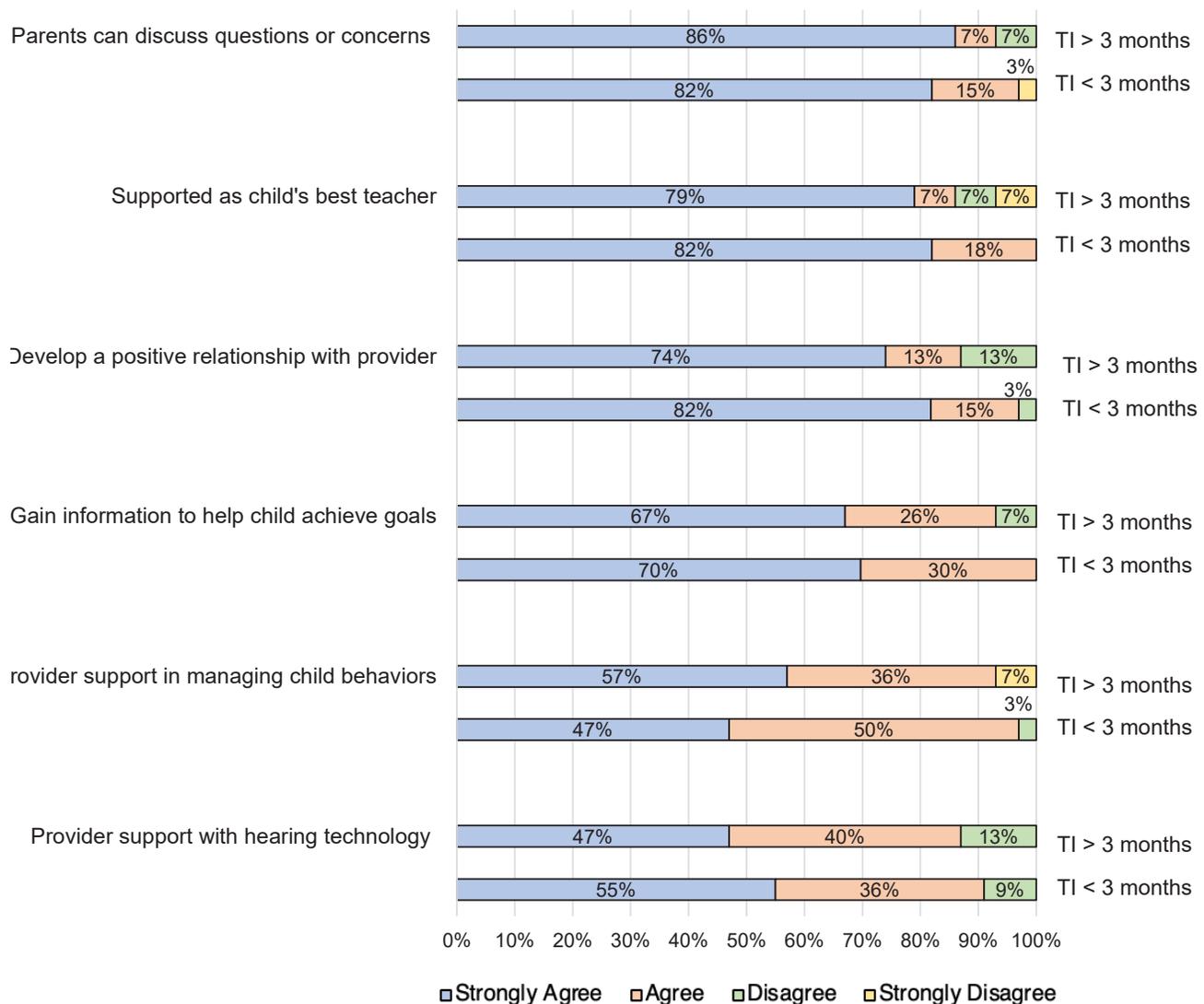
Of respondents who had been engaged in TI services for more than three months, percentages of those who *strongly agreed* ranged from 86% ( $n = 13$ ) to 47% ( $n = 7$ ) across parent-provider relationship topics. The topic with the highest percentage of *strongly agree* responses was parents feeling they could discuss questions or concerns. The topic with the lowest percentage of *strongly agree* responses was parents feeling supported in managing their child's hearing technology. Of parents who had been engaged in TI for less than three months, percentages

of those who *strongly agreed* ranged from 82% ( $n = 27$ ) to 47% ( $n = 15$ ) across topic areas. Three topics had the highest percentage of *strongly agree* responses (82% each): parents feeling they could discuss questions or concerns, parents feeling supported as their child's best teacher, and parents' ability to develop a positive relationship with their provider. The topic with the lowest percentage of *strongly agree* responses was parents feeling supported in managing child behaviors. See Figure 6 for all parent-professional partnership ratings for families receiving TI services for more than or less than three months.

Results from independent *t*-tests showed that there was no significant difference in parent perceptions in developing a positive parent-professional partnership between those who received TI services and those who received in-person services ( $t = 0.47, p = .64$ ). There was also no difference in agreement ratings between those who had received TI services more than three months compared to those who had received TI services less than three months ( $t = -0.54, p = 0.60$ ).

**Figure 6**

*Establishing a Parent-Professional Partnership: TI > 3 Months (n = 15), TI < 3 Months (n = 33)*



Note. TI = tele-intervention

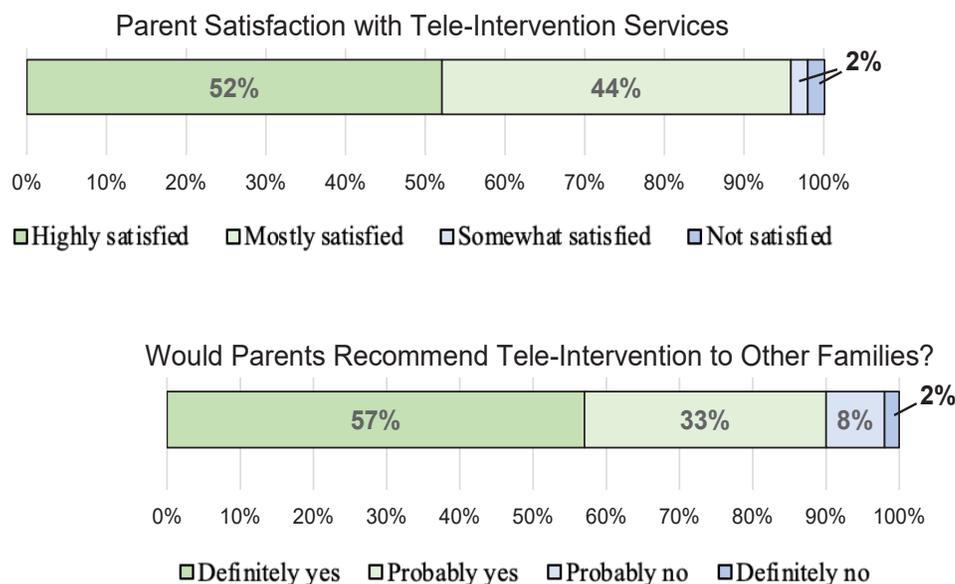
## General Satisfaction of Tele-Intervention Model of Delivery

The survey queried parent perceptions of overall satisfaction with TI as a model of service delivery. Of the 48 TI participants, 96% ( $n = 46$ ) reported they were

*highly or mostly satisfied* with their TI services and 90% ( $n = 43$ ) reported they *definitely or probably* would recommend TI to other families. See Figure 7 for all response values.

**Figure 7**

Overall Parent Satisfaction with Tele-intervention (TI) Services: TI All Data ( $n = 48$ )



## Discussion

In today's technology-focused world and compounded by the sudden implementation of virtual educational and medical services due to the Covid-19 pandemic, the establishment and longevity of TI across select aspects of education and healthcare are irrefutable. Although the effectiveness, cost and time savings, and increased convenience of TI to Part C agencies, school districts, or outpatient therapy clinics have been documented, parent experiences and feedback are vital to inform policy and to drive program improvement. Findings from the present study demonstrated positive parent experiences with TI delivery as evidenced by 96% of parent participants indicating they were *highly or mostly satisfied* with their TI services and 90% reporting they *definitely or probably* would recommend TI to other families. Furthermore, study results showed no statistically significant differences between TI and in-person services in parent perceptions of confidence in supporting their child's language development, coaching and support practices, or in developing a positive parent-professional partnership. Although study findings were overall positive in parent perceptions of TI as a mode of service delivery, they highlighted several important considerations that could improve the intervention effectiveness for both TI and in-person services.

## Parent Confidence in Understanding and Supporting Their Child's Language Development

Considering a provider is with the family just 1 to 4 hours per month, the fundamental premise of family-centered services to empower parents with the knowledge and skills to promote their child's development across daily routines has been promoted as a standard of care for years. Yet only approximately one-third ranging to slightly over one-half of study respondents, for both TI and in-person services, rated themselves as *very confident* across the Likert statements probed. Descriptively, confidence improved for TI parents who had been receiving services for more than three months compared with those who had been receiving TI services for less than three months; although, these differences were not statistically significantly different. Confidence in understanding their child's strengths, abilities, delays, and needs are paramount to parents' effectiveness in promoting optimal growth in all aspects of language acquisition. With just one-third of respondents feeling *very confident* in recognizing if their child was making expected progress and fewer than half feeling *very confident* in knowing how to create a learning environment or helping their child learn new skills, providers might consider service delivery adjustments or professional trainings that could positively impact parent confidence in these areas.

## Parent Perceptions of Coaching and Support

The coaching and support skills of the provider can have a direct impact on parents' confidence and effectiveness in supporting their child's language development across settings and within the family's daily routines (Rush and Shelden, 2019; Nelson et al., 2020). When a child is diagnosed as DHH, most parents report feelings of fear, confusion, and grief as they embark on a journey of new terms and concepts in which they likely know very little (Ealy, 2013; Scarinci et al., 2018; Weiber, 2015). A model of coaching and support in harmony with the family's culture and priorities can facilitate positive family experiences and optimal child outcomes. A TI mode of delivery is highly conducive to parent coaching as the physical separation requires parents to carry out the intervention activities. Although there is not a physical separation of the parent and provider for in-person services, a family-centered philosophy similarly advocates a coaching model.

The descriptive survey findings showed approximately two-thirds of TI families and one-half of in-person families reported the provider *nearly always* coached them during their sessions as they worked with their child or that they discussed their child's progress in language and communication. This means one-third to one-half of families had sessions that did not *nearly always* include these components of coaching and discussion of progress. Fewer than half of both TI and in-person survey participants reported they *nearly always* felt comfortable with their child's goals, what to do until their next session, or how to implement their child's goals within the family's daily routines. Similarly, fewer than half of respondents reported their provider *nearly always* discussed their child's areas of delays or concerns or strategies to use when a different approach was needed. These findings were consistent with the survey responses of professionals, where only approximately one-half of provider respondents reported feeling *very confident* in parent coaching (see provider survey findings in Nelson et al., 2022 in this monograph).

In an evidence-based coaching model, parents can gain confidence and increase their own effectiveness in supporting their child's language development when they are supported by a knowledgeable and confident coach. Parents rely on a provider's confidence and expertise to guide joint planning to ensure child goals are consistent with the family's priorities. Providers can support parents in understanding typical developmental milestones, the scope and sequence of age-appropriate learning targets, and in offering suggestions for how those goals could be implemented within daily routines. Guided reflection can be a highly effective component of a TI or in-person session to provide clarity for parents about *why* a particular goal is important to their child's development (Rush & Shelden, 2019). Guided reflection also promotes parent confidence, an exchange of new ideas, comprehension of learning goals and targets, and ways to foster engagement during all daily environments and activities. Open-ended

questions through provider prompts can help identify if parents have misinterpretations of strategies or how to embed their child's goals within family activities. Facilitating opportunities for parents to practice using effective strategies to target their child's goals during the session is an important component of service delivery. As parents take the lead with their child during the session, their knowledge and confidence can be impacted by these direct experiences and by the type of feedback they receive from their provider. For example, a parent who receives general feedback of "*good job*" will not experience the same opportunities for increased knowledge, support, and confidence as a parent who receives specific feedback related to their child's goals, such as "*When you described what you were doing while you and your child were making the bed, you provided valuable opportunities for language and vocabulary growth, while also reinforcing our target of improving her sequencing skills.*"

Whether receiving TI or in-person services, parents' knowledge and confidence can increase when they have a strong understanding of their child's current goals and targets, areas of strength and areas of need, strategies that are working well, and those that may need a different approach. Parents can feel empowered when they can engage in joint-planning, knowing the provider will take the time to learn of their family's needs, activities, and priorities. Parents' knowledge and confidence can increase when they have opportunities to practice strategies during the session, gain ideas and expectations for managing child behaviors during the session, and obtain meaningful feedback that promotes goal implementation during the family's daily or routine activities until their next session.

## Establishing a Parent-Professional Partnership

The parent-professional partnership must be founded on trust, with an assurance the provider will learn of parents' priorities for their child and family, and then provide guidance consistent with those priorities. When the TI delivery model first emerged, a commonly expressed concern was the ability of parents and professionals to develop a positive relationship if they were not in the same room. Over time, parents and providers who engaged in TI services across a variety of educational and healthcare services largely experienced positive virtual connections. This held true in the present study, with approximately 80% of parent participants reporting they *strongly agreed* they could effectively discuss their questions or concerns, they were supported as their child's first and best teacher, and they had developed a positive relationship with their TI provider. Descriptively, a higher percentage of TI respondents reported positive parent-professional partnerships than those reported by respondents who received in-person services. These differences did not reach statistical significance, and the asymmetrical group sizes should render interpretations of TI versus in-person services with caution. However, it was clear the TI mode of delivery was not detrimental to the parent-professional relationship for the majority of

survey participants. Although a positive finding for most participants, the parent-provider relationship should always be of primary importance to all providers in their family-centered services.

### Supporting Hearing Technology

Central to the development of listening and spoken language is use of hearing technology during all waking hours. As this concept is emphasized to parents who have elected LSL for their child, it can provide an added layer of stress if they are unsure about the day-to-day management of the technology. Many children who are developing and using ASL as their first language also use hearing technology, and it can be similarly stressful for their parents to learn the details and ongoing management of their child's devices. Provider support within scope of practice to assist parents in managing and troubleshooting their child's hearing technology (e.g., hearing aids, cochlear implants, assistive listening devices) can offer invaluable reassurance and guidance (Muñoz et al., 2017). Support can include facilitating parent confidence in performing daily listening checks and visual inspections of the devices. It can also include the use of virtual tools and resources (e.g., webcams, screen-sharing, simulation videos, online device manuals) to assist parents in troubleshooting their child's hearing devices as issues occur or through forward-thinking discussions regarding common device challenges. Although audiologists are central to the child's collaborative team, TI and in-person providers can facilitate ongoing guidance in technology use, including helping parents know when to consult with their child's audiologist.

### Study Limitations

The primary study focus was to explore parent perceptions of TI services, with responses from parents receiving in-person services included for context. However, study findings would have been strengthened had there been more responses from families receiving in-person services, with greater symmetry in group sizes. Although the timing of the survey data collection period directly corresponded with the onset of the Covid-19 pandemic and the discontinuation of many in-person services, it was not possible to conclusively discern if or how the pandemic impacted participant responses. The homogeneity of responses, particularly as related to race and gender, are a potential limitation of the generalizability of results in describing parent experiences with TI or in-person services. There are many complexities associated with family-centered services for children who are DHH and their families and many issues and potential concerns were not addressed in the present study, thus highlighting the need to further explore parent perceptions, experiences, and recommendations for both TI and in-person services.

### Conclusions

With 96% of participants being highly or mostly satisfied with their TI services, study findings revealed overall positive perceptions of TI delivery for parents of young children who are DHH. Most parents perceived virtual

sessions to be effective for supporting the parent-professional partnership, promoting confidence, and strengthening skills through coaching. Findings also highlighted areas where professionals could better support parents in both TI and in-person settings, such as ensuring parents have a strong understanding of their child's goals, implementing goals within daily routines, recognizing when strategies are working well and when a different approach may be needed, and providing guidance for technology use. Providers who lack confidence in areas of TI service delivery may benefit from advanced training, which may, in turn, facilitate parents' skills and confidence in optimizing their child's language development. The results of this study are timely given the expanding role TI is playing in the field of deaf education. Tele-intervention may be an increasingly preferred mode of delivery for families with young children and can serve as a powerful platform to ensure families receive appropriate and timely services from a provider with expertise in their child's first language. The long-term impact of the Covid-19 pandemic to future service delivery patterns is unknown. However, some level of continued and expanded TI delivery appears imminent as educational agencies identify options to meet future predictable and unpredictable scenarios. As new circumstances arise and new technologies emerge, it is important to understand the implications for parents and the range of supports they may require. Providers can have a profound impact on parents' knowledge, confidence, and skill as they promote family engagement and facilitate improved child outcomes.

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