Symposium Title: A Continuum of Technology Use in Parent Mediated Interventions

Chair: Lauren Little[1]

Discussant: Brian Boyd[2]

Overview: Parent mediated intervention models are used to target various adaptive behavior skills among children with developmental conditions (for review see Nevill, Lecavalier, & Stratis, 2018). Given the increase in availability of technology, parent mediated interventions have incorporated diverse methods of technology use (e.g., Parson, Cordier, Vaz, & Less, 2017). In this symposium, we present a continuum of technology use across parent mediated interventions with an emphasis on how technology may support parent self-efficacy through an intervention. The first presentation describes an evaluation of a parent mediated mealtime behavior intervention for young children with autism; this presentation focuses on how parents reported that more involvement of technology would be effective in increasing a sense of self-efficacy in delivering the intervention strategies. The second presentation serves as an example of technology embedded within an intervention; the researchers show how parents are using speech generating devices (SGD) for young children with Fragile X Syndrome. The third presentation demonstrates how technology can be used to both deliver a parent-mediated intervention via telehealth as well as how parent self-efficacy outcomes may be continuously evaluated using ecological momentary assessment gathered via text messaging. The fourth presentation demonstrates the feasibility and preliminary efficacy of providing access to technology and internet among underserved families of children that qualify for early intervention to access a coaching intervention during COVID-19. The presentations in this proposed symposium are diverse; however, we have positioned each to show how technology may be used across a continuum from the least intrusive to the most vital method of intervention and evaluation.

References/citations

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Paper 1 of 4

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Paper Title: Effectiveness of a pilot parent-mediated intervention to address feeding challenges for children with autism and intervention adaptations based on parent stakeholders feedback

Authors: Brittany St. John[3], MS, OTR/L & Karla Ausderau[3], PhD, OTR/L

Introduction: Feeding challenges in children with autism can significantly impact the development of positive family mealtime interactions (Curtin et al., 2015; Thullen & Bonsall, 2017). Parent-mediated interventions have been shown to be successful at addressing a variety of functional skills with children with ASD while intervening in an ecologically valid family context (Althoff, Dammann, Hope, & Ausderau, 2019). The purpose of this pilot study was to assess the feasibility and effectiveness of an in-home parent-mediated feeding intervention for families with children with autism at achieving child and family mealtime goals.

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Methods: Seventeen children diagnosed with ASD (ages 2-7 years) with parent reported feeding problems participated in a 6-month pilot in-home parent-mediated feeding intervention (combination of parent-training, direct intervention, and parent coaching). Goal Attainment Scaling (GAS) was used to measure progress on child and family goals. GAS T-scores were calculated to assess intervention effectiveness. Exit interviews were collected from all parents to identify family-centered intervention modifications to integrate into the next phase of the intervention study.

Results: Participants who completed the parent-mediated in-home feeding intervention had an average GAS T-score of 61.80 (SD = 10.85). GAS T-scores ranged from 45.59 to 76.44. Twelve of the 17 participants had intervention outcomes at or above expectations (50-76.44) with seven more than one standard deviation above the mean. Two participants had GAS T-scores below 50, indicating intervention outcomes lower than expected. The Participants' mean T-score was significantly higher than the accepted mean of population GAS T-scores (50; Kiresuk & Sherman, 1968), $t(13) = 4.07$, $p = .001$. During exit interviews families were satisfied with the intervention in general. Families identified that the intervention would be improved by providing access to parent training information through different modalities including online modules, and gentle reminders, such as a short text message, to integrate strategies and address goals would have been beneficial.

Discussion: These findings provide preliminary support for the use of in-home parent-mediated interventions for improving eating skills and mealtime behaviors in children with autism. Parent feedback will be integrated into the intervention design for future applications. Parent training materials will be available in a digital format, and regular text message reminders will be included. In addition, parents of children with autism experience an increased level of parenting stress and report further increased stress during mealtime (Curtin et al., 2015). The use of physiological stress measures including hair cortisol sampling and dyadic wireless heart rate variability measurement on both the parent and child simultaneously will be used to assess changes in physiological stress experiences of parents and children during mealtime activities pre-, midpoint, and post-intervention. The data will provide an objective measure to assess how stress may be influencing both parent and child behavior during mealtime and intervention activities.

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Althoff, C. E., Dammann, C. P., Hope, S. J., & Ausderau, K. K. (2019). Parent-Mediated Interventions for Children With Autism Spectrum Disorder: A Systematic Review. *American Journal of Occupational Therapy*, *73*(3), 7303205010p1-7303205010p13. https://doi.org/10.5014/ajot.2019.030015

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Paper 2 of 4

Paper Title: Effects of Caregiver-Responsivity training on Caregiver Use of Speech-Generating Devices During Play-Based Interactions with Young Children with Fragile X Syndrome.

Authors: Anne Hoffmann[1], PhD, CCC-SLP and Andrea McDuffie[2], PhD, CCC-SLP

Introduction: Fragile X Syndrome (FXS) is a developmental disorder resulting from a mutation in the FMRI gene on the X chromosome. FXS is the most common inherited cause of intellectual disability (Coffee, 2009). Both males and females with FXS frequently have delayed language development, with many of them remaining minimally verbal far longer than their typically developing peers (Brady et al., 2006). This delay in language acquisition sometimes results in the use of Augmentative Alternative Communication (AAC) including speech-generating devices (SGD). Research has indicated that caregivers sometimes have difficulty integrating AAC into interactions with their children, limiting generalizability of these communication systems (Johnson et al., 2006; Parette & Angelo, 1996). This study examines the effects of a general caregiver responsivity training protocol on caregiver use of SGD while interacting with young children with FXS.

Methods: Participants were families already enrolled in a clinical trial examining the effects of a novel pharmaceutical agent paired with caregiver responsivity training. Inclusionary criteria for the children were a diagnosis of FXS, age between 33 months and 6 years, English as the primary language in the home, and the use of at least 3 intentional communication acts by the child during a 25 minute communication sample. Caregivers were enrolled in an intensive language intervention protocol for four months that involved monthly caregiver education sessions, weekly Skype coaching sessions (a speech-language pathologist would provide real-time suggestions via Bluetooth), weekly homework sessions (caregivers recorded themselves implementing intervention techniques while interacting with their child), and weekly feedback sessions (SLPs provided feedback to caregiver based on homework sessions). After four months, caregivers transitioned to monthly coaching, homework, and feedback sessions. Four families enrolled in this study were identified as using a SGD. Homework sessions were analyzed to limit the effect of immediate coaching on use of strategies in order to gain a better understanding of how caregivers were generalizing techniques. The first homework session of each month during the intensive portion and the single monthly homework sessions will be rated using the Responsive Alternative and Augmentative Communicative Style scale-Third Edition (RAACS-3; Broberg, Ferm, & Thunberg, 2012) which codes each minute of a ten minute interaction period for caregiver behaviors such as caregiver clarification of their own communication, caregiver expansion of child communication, and caregiver use of SGD. These behaviors are scored on a scale of 0 (absent) to two (often present). In addition to this, two behaviors were also scored for the incorporation of SGD: 1) The caregiver supplements his or her own communication and 2) The caregiver expands on the child's communication.

Results: An initial analysis of a limited number of sessions (one family, 4 homework sessions) was performed. Mean scores for observations of 1) Caregiver clarification of their own communication, 2) Caregiver expansion of child communication and 3) Caregiver use of SGD are shown in Figure 1. These data show a trend for caregivers to more consistently clarify their own communication (i.e., repeat their own utterances, use simple language, etc.) than to either expand their child's utterances or use SGD.

Both observations (1) and (2) were also coded for whether the caregiver used SGD to supplement their own communication or expand their child's communication. These results are shown in Table 1, and reflect a tendency for the caregiver to use SGD more frequently to clarify their own communication than to expand the child's communication.

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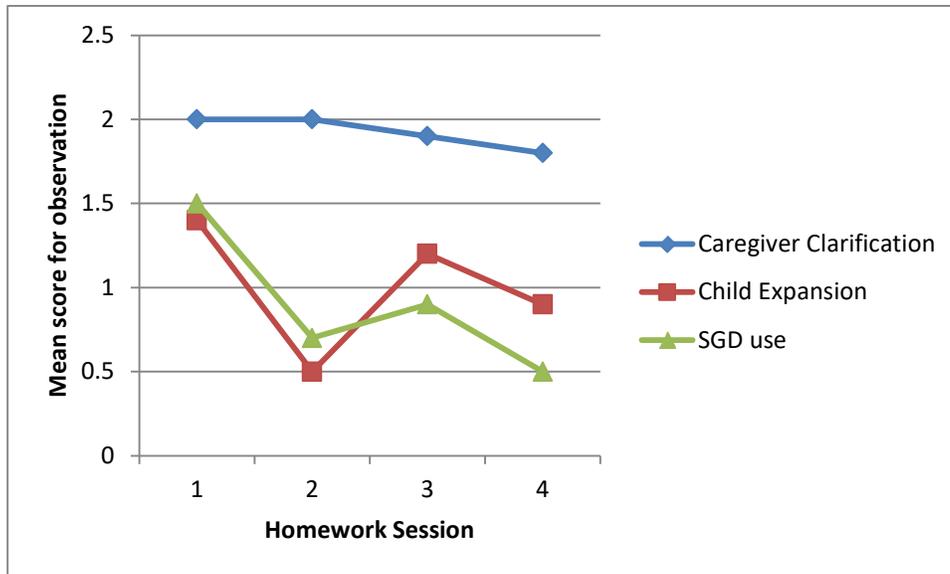
Homework Session	Number of intervals with caregiver SGD use	
	Caregiver Clarification	Child Expansion
1	8/10	4/10
2	4/10	0/10
3	4/10	0/10
4	4/10	0/10

Discussion: These pilot data show a tendency for caregivers to show greater consistency in clarification of their own communication as opposed to expansion of their child's communication or use of SGD. This may reflect the difficulty in caregiver's interpreting their nonverbal child's communication and then using SGD to expand upon it. This may also explain the tendency for this caregiver to use SGD more frequently to supplement their own communication instead of expanding their child's communication. Final data analysis will include several more participants, as well as more homework sessions for this particular family. This will allow for more conclusions to be drawn regarding caregiver use of SGD during interactions with their child.

References/citations

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Paper 3 of 4

Paper Title: How do we measure outcomes via telehealth? The feasibility of ecological momentary assessment during a telehealth intervention for families of children with ASD

Authors: Anna Wallisch[1], Winnie Dunn[2,] & Lauren M. Little[3]

Introduction: Families of young children with autism spectrum disorders (ASD) often face barriers in accessing intervention services (Boyd, Odom, Humphreys, & Sam, 2010). Telehealth has the potential to reduce various accessibility issues (e.g., provider shortages), and preliminary research suggests coaching via telehealth, a family-centered intervention, generates improved outcomes for child participation and parent self-efficacy. However, research is needed on how to measure outcomes of coaching interventions delivered via telehealth. Ecological momentary assessment (EMA) is a method used to collect real time information and across natural contexts (Shiffman, Stone, & Hufford, 2008). Given the measurement challenges associated with telehealth delivered interventions (i.e., never seeing the families 'in-person'), EMA may help measure changes in parent factors that occur in real time and offer complementary approaches to current ways of measuring outcomes in telehealth interventions. Therefore, this study examined the feasibility of using EMA to measure parental self-efficacy and stress over a 9 session telehealth coaching intervention.

Methods: This study used a quasi-experimental, pretest-post-test design with n=9 families (n=7 of these families completed the 9-week intervention). Our team met with participants over 9 sessions, which occurred across 9-12 weeks; each coaching session lasted approximately 60 minutes. Once a week at a random time, participants were sent a link to a survey (via email or text), with one reminder email sent 24 hours later. Surveys consisted of questions from 3 domains: self-efficacy, parental stress, and general stress. To evaluate the feasibility of using EMA, we calculated the percentage of response rates for each survey attempt and the amount of time it took for parents to complete the survey. We used exact Wilcoxon Signed Rank Tests to test pre to post intervention differences in EMA scores in 1) parental self-efficacy; 2) parenting stress; and 3) general stress.

Results: Overall, participants completed 78.57% of EMA data collection. Without a follow up reminder, parents completed the link within a mean time of 5 hours, 10 minutes, 2 seconds. We sent 12 follow up reminders to parents who did not respond within 24 hours, with 3/12 reminders receiving responses. The mean survey completion time after receiving a reminder was 2 hours 23 minutes 45 seconds. Results of the EMA data collection, while preliminary, showed a non-significant increase in parent self-efficacy (Wilcoxon $Z = - 1.761$, *p=.078, Cohen's d=0.56*); a significant decrease in parental stress (Wilcoxon $Z = 2.070$, *p<.05*, Cohen's d=0.65); and a non-significant decrease in generalized stress (Wilcoxon $Z=-0.677$, *p=.498*, Cohen's d=.21).

Discussion: Novel findings from the current study suggest that EMA may be a feasible method to gather data on the outcomes of a short-term telehealth intervention for families of young children with ASD. Overall, findings showed that parents responded to the majority of EMA bids by text messaging or email. EMA findings showed that parents experienced a decrease in parenting stress (e.g., stress directly related to child's behavior) but not generalized stress (e.g., difficulty coping with responsibilities). More research is needed to understand how coaching may impact parenting stress for families of children with ASD over time.

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Paper 4 of 4

Paper Title: A telehealth intervention to address early intervention access disparities

Authors: Lauren M. Little[1], PhD, OTR/L, & Anne Hoffmann[1], PhD, CCC-SLP

Introduction: Decades of research shows that EI services (occupational, speech-language therapies), positively influence children's developmental trajectories[1,2], reduce parent stress[3,4], and result in decreased special education costs throughout the lifespan[5]. There are clear disparities in access and utilization of EI services; underserved families (racial/ethnic minorities, low-income) are less likely to receive EI services, more likely to experience long wait times for services, and are less satisfied with EI services due to providers' lack of collaboration in the decision-making process. All in-person EI services across the country were suspended during COVID-19 and EI systems made a rapid shift to telehealth service delivery. The shift to telehealth delivery of EI services has *exacerbated the disparities* in EI service provision among underserved families due to a lack of technology, internet access, and trained providers. The purpose of this study was to evaluate the feasibility of providing technology and internet to families of children that qualified for EI services but were on waitlists due to a lack of technology and/or internet access during COVID-19. We also evaluated the acceptability of the intervention.

Methods: This study used a quasi-experimental, pretest-post-test design with n=30 families. We measured the feasibility of providing a tablet and internet access for families; we tracked components of feasibility studies (i.e., process, management, resources, and scientific basis). Our team met with participants 2x/week for 12-16 weeks; each coaching session lasted approximately 30 minutes. We assessed acceptability using the Telehealth Acceptability Questionnaire (adapted from Vismara et al., 2012) and tracked costs of providing tablets and 6 months of data. We also used the COVID-19 Impact Scale to understand how families' ratings of acceptability of a telehealth intervention may be related to the secondary effects of COVID-19.

Results: While we are still analyzing data, preliminary results show that approximately 60% of families that were sent an enrollment packet returned the information and subsequently enrolled in the study. Families expressed concerns with the content of the consent form, and implications of health and digital literacy will be discussed. Additionally, our team created materials and guidelines for families to set up hotspots, which posed multiple challenges. Families completed approximately 80% of sessions, with follow up reminders and interventionist flexibility in scheduling.

Discussion: Findings from the current study may serve as a 'road-map' to understand how to provide technology and internet so families can access telehealth interventions, which is vital during COVID-19. We present lessons learned on the feasibility of recruiting families that lack such access, the importance of working with stakeholders (including early intervention systems), and modifications to the intervention that were necessary to meet the needs of underserved families.

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