Behavioral Assessment for Children with Autism Through Telehealth

University of Iowa Children's Hospital
University of Iowa Health Care

Jennifer Kuhle, BS; **Yaniz Padilla Dalmau**, BA; **David Wacker**, PhD; **Scott Lindgren**, PhD; **Todd Kopelman**, PhD; **John Lee**, BA

University of Iowa Children's Hospital, Center for Disabilities and Development

Introduction

Wacker et al. (1998) demonstrated that parents of children with developmental disabilities who displayed destructive behavior could be coached to conduct functional analyses (FA) in their homes. Parents that participated in this in-home project were coached on FA procedures in their homes by a behavioral specialist from the University of Iowa Children's Hospital. In the current project, we evaluated a telehealth service delivery model with parents conducting the functional analyses. We compared the outcomes of functional analyses conducted previously through the in-home project (Wacker, Berg, Harding, 2004) with those conducted in the current telehealth project (Lindgren & Wacker, 2009).

Participants

Participants were 20 children between two and six years old, diagnosed with an autism spectrum disorder (ASD) who displayed problem behavior. Seven participants had been enrolled in the in-home project and thirteen participants were enrolled in the current telehealth project. The participants engaged in problem behavior included aggression, self-injury, property destruction, stereotypic movements, non-compliance, and screaming.

In-Home Setting

The participants enrolled in the in-home project received one hour of weekly in-home behavioral assessment. The parent conducted the behavioral assessment with assistance and direction from an on-site behavioral specialist. Those participants lived an average of 113 miles roundtrip from the research site and the behavioral specialist traveled this distance weekly for each participant.

Telehealth Setting

The participants enrolled in the telehealth project received one hour of weekly behavioral assessment at one of five regional Child Health Specialty Clinics (CHSC). The behavioral assessment was conducted by the parents, assisted by an onsite trained parent coach, and directed by a behavioral specialist via telehealth. On average, the telehealth participants lived 22 miles roundtrip from their local CHSC and 454 miles roundtrip from the research site. The onsite parent coaches were individuals whose children received health care services at the CHSC and had applied for the position. They had no previous experience in behavioral assessment and were trained with two one-hour sessions on behavioral principles and assessment. Table one depicts the roles of each individual during the assessment procedures for the telehealth project.

	Prepare room for behavioral assessment	Meet with behavioral specialist before and after assessment	Conduct the behavioral assessment	Direct the parents on assessment procedures	Physical assistance during assessment
Parent			X		
Onsite Parent Coach	X	X			X
Behavioral Specialist				X	

Table One. Individual Roles During Telehealth Assessment

Response Definition & IOA

A 6-second partial interval recording system was used to code target behavior from digital recordings. *Target problem behaviors* were defined as aggression, self-injury, property destruction, stereotypic movement, non-compliance, and screaming. Inter-observer agreement (IOA) was assessed across 30% of the session and averaged over 90%. *Function* was identified by researchers through visual inspection of the functional analysis graph. The *number of sessions in FA* was defined as the number of sessions conducted before the researcher completed the FA by either identifying a function or deciding the FA was undifferentiated. The *number of visits needed to complete the FA* was defined as the number of visits by a behavioral specialist to the in-home project participants or the number of visits by the telehealth participants to their local CHSC. Interobserver agreement on these measures was assessed on 100% of the measures via visual inspection of graphs by two independent observers and was 100%.

Procedures

Within both projects, the functional analyses were based on procedures described by Iwata et al. (1982/1994). Each functional analysis included demand, attention, and tangible test conditions, and free play as a control condition. The test conditions were five minutes in length and problem behavior resulted in 20-30 seconds of reinforcement. For example, if a participant engaged in problem behavior during an attention condition, they were given 20-30 seconds of attention from their parent. Each telehealth participant had additional free play sessions added to the beginning of their assessment as they were in a new environment with unfamiliar equipment. These sessions were to ensure that the participant had become acclimated to the new setting.

Results and Discussion

Figure 1 shows the results of the functional analyses from the in-home project and the telehealth project. The shaded bar on the graph denotes the telehealth group. A behavioral function was identified for 71% of the in-home participants and 85% of the telehealth participants. Figure 2 displays the mean number of sessions/ visits needed to complete the FA. Mean number of sessions necessary to complete the FA was 13.7 for the in-home group and 18.8 for the telehealth group. Mean number of visits from an in-home behavioral specialist before completing the FA was 4.2 and mean number of visits to the CHSC before completing the FA was 4.9.

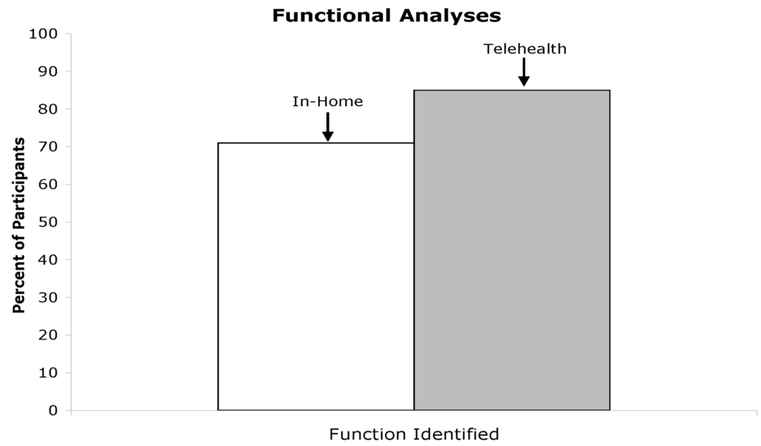

Figure One. Percent of Participants with Identified Function

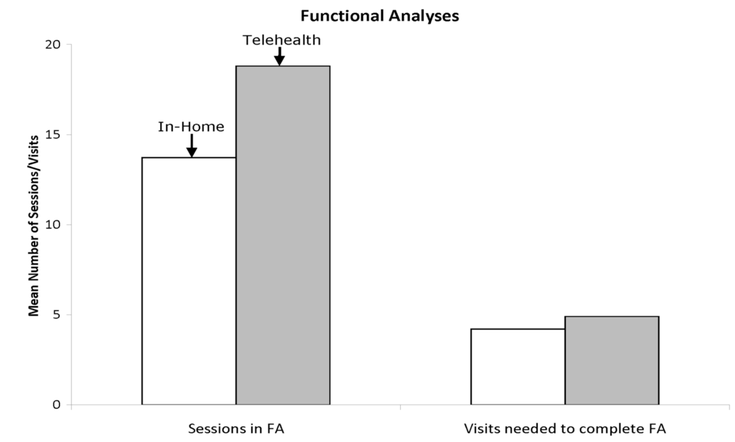

Figure Two. Mean Number of Sessions/Visits to Complete FA

Table Two illustrates a comparison between projected travel distance and costs per week per child for telehealth service delivery and in-home service delivery models. Projections were based on the data from the 13 telehealth participants. Based on this projection, parents would travel an average of 0 miles a week for in-home services and 22.38 miles for teleheath services. The behavioral specialists would travel 458 miles a week to provide in-home services and 0 miles a week to provide telehealth services. Weekly in-home services would cost parents $332.13 and weekly telehealth services would cost the parents $55.85

	Weekly distance traveled by parents	Weekly distance traveled by behavioral specialist	Weekly cost to parents
In-Home	0	454.38 miles	$332.13
Telehealth	22.38 miles	0	$55.85

Table Two. Projected Travel Distance and Cost Comparison

On average, conducting behavioral assessments through telehealth required more sessions to complete the overall FA when compared to in-home behavioral assessment. As previously noted there was an increased number of free play sessions at the beginning to give the participants a chance to become acclimated to the CHSC and the teleheath equipment. However, the increased number of sessions was not indicative of increased visits. The mean number of visits required to complete the FA in the telehealth group only differed by 0.7 sessions when compared to the in-home group. The travel/cost comparison suggests that telehealth servive delivery was more cost effective than if services were delivered in the home. Also, behavioral specialists were able to deliver services to more participants due to reductions in travel distance. The overall results of this study suggest that a telehealth service delivery model is an efficient and cost effective way to deliver behavioral services to children with ASD.