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Training discrete trials teaching skills using videoconference☆

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ABSTRACT

This study investigated the effect of videoconferencing in training staff to implement discrete trial teaching in real life settings with children with autism. Fourteen participants were randomly assigned to two groups. One group received training on-site and the other group received training via videoconference. The participants in both groups received 3× 15 min of training on three different teaching programs: matching, receptive and expressive labeling. The results showed no significant differences between the groups in the post-test whilst both groups improved significantly following training. Although preliminary, these results suggest that videoconferencing can be a cost-saving way to train staff in how to implement discrete trial teaching.

Early intensive behavior intervention (EIBI) is offered as a service in some specialist health services in Norway. These services are typically offered to families with children diagnosed with autism specter disorders (ASD) in pre-school age and provided in the child's pre-school (Eikeseth, Smith, Jahr, & Eldevik, 2002; Eikeseth, Smith, Jahr, & Eldevik, 2007; Eldevik, Hastings, Jahr, & Hughes, 2012). One of the key teaching methods within EIBI is discrete trials teaching (DTT). DTT has been shown to be an efficient approach for teaching children with ASD new and difficult skills in important areas such as language, social and academic skills (Leaf & McEachin, 1999; Lovaas & Smith, 2003; Smith, 2001; Sturmey & Fitzer, 2007). DTT consists of a series of discrete learning units. When teaching a new skill, the skill is broken down into smaller more manageable steps that can be more easily taught. DTT is based on the three-term contingency: the presentation of a distinct defined instruction from the teacher (the discriminative stimulus), the child's response to this instruction (the response), and then the teachers' consequence to the child's response (the reinforcer) (e.g., Lovaas, 1982). Each trial is separated by an inter-trial interval of about 5 s. In this way many trials may be conducted over a short period of time, which is often required for establishing new skills in children with autism (Lovaas & Smith, 2003).

The efficiency of DTT can be reduced significantly if the teachers is not properly trained and/or supervised (Allen & Warzak, 2000; Eikeseth, 2010; Symes, Remington, Browns, & Hastings, 2006). In spite of this and the fact that the proper implementation of a comprehensive early intervention program requires training of a large number of therapists, the literature investigating methods on how to most efficiently train staff and parents to implement DTT is rather limited (Sarokoff & Sturmey, 2004; Thomson, Martin, Anral, Fazzio, & Yu, 2009).

When EIBI is requested from the specialist health services in Norway, this is usually granted regardless of location and driving distances. The proper implementation of EIBI normally requires close supervision. It is recommended that team meeting are conducted every week, or at least every second week (Eikeseth, 2010; Smith, Donahoe, & Davis, 2001). Norway is a country with low population density and often long travel distances even within the catchment area of a service provider,

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resulting in considerable amount of travel time if cases are to be followed up locally. Time used for traveling could be reduced if supervision and training could be done using videoconference equipment.

Videoconferencing is increasingly used in health services, and the quality of sound and picture has increased while the costs for setting it up have dropped significantly. Videoconferencing is widely used today within healthcare, i.e., in surgical telementoring, trauma and acute medicine, post-operative follow-up of patients, multidisciplinary evaluations of patients and in education (Augestad & Lindsetmo, 2009). Videoconferencing is also used in psychotherapy and training of psychotherapists (Gammon, Bergvik, Bergmo, & Pedersen, 1996; Sorlie, Gammon, Bergvik, & Sexton, 1999), psychiatric assessments (Elford et al., 2000; Zarate, Weinstock, & Baer, 1997), and follow-up of patients discharged from hospital (Tousignant, Boissy, Corriveau, & Moffet, 2006). Videoconferencing through the Norwegian Health Network (NHN) is also in extensive use within healthcare and rehabilitation in Norway and the National centers use videoconferencing for admissions, discharges, follow-up after rehabilitation periods, and multidisciplinary team evaluations (Augestad & Lindsetmo, 2009; Bach, Sørli, & Driveklepp, 2010). NHN provides a nation-wide network connecting hospitals and other health care providers an encrypted electronic network, enabling a secure exchange of sensitive patient information.

The cost effectiveness of videoconferencing has been investigated with patients with diabetes. It was reported that videoconferencing maintained quality of care while producing cost savings (Verhoeven et al., 2007). Morrison, Bergauer, Jacques, Coleman, and Stanziano (2001) consulted and monitored women that had been diagnosed with pre-term labor. The results suggests that videoconferencing might be a cost-effective method for frequent monitoring and consultation, as the videoconference group was approximately one third of the cost of the control group.

We were not able to find any literature on the use of videoconferencing for training staff to implement DTT. But, some researchers report on the successful use of videoconference for implementing other behavior analytic techniques. Barretto, Wacker, Harding, Lee, and Berg (2006) investigated the use of videoconferencing while conducting short functional analysis on two children referred to the clinic at the Biobehavioral Service (BBS) at the University of Iowa for evaluation of severe behavior problems. The supervising clinicians were situated in a telemedicine studio (host site) at the clinic, and the evaluations were conducted by the children's primary caretakers in studios situated at the remote sites. The functional analysis was based on the procedures described in Iwata, Dorsey, Slifer, Bauman, and Richman (1982), Iwata, Dorsey, Slifer, Bauman, and Richman (1994) and Northup et al. (1991) and was evaluated within a multiple element design. The children's primary care providers, novices to conducting functional analysis, carried out the sessions at the remote site. Data collection was done at the host site by the supervisors during the videoconference, and the primary caretakers at the remote site received guidance on how to conduct the functional analysis. Barretto et al. (2006) also describe a project at BBS where 75 videoconference consultations were conducted with the same analytic methods as used in their study, and as many as 200 videoconference consultations were conducted, mainly being descriptive assessments and initial screenings. They conclude that videoconferencing used by an experienced behavior analyst can be an efficient method for conducting brief functional analysis, follow-up consultations, and descriptive screenings to assess severe behavior disorders.

Machalicek et al. (2009a) did a two-phased study using videoconference from laptop to laptop while supervising novice teachers how to conduct functional analysis on two children with ASD. In the first phase of the study functional analysis was conducted at the children's local schools. The children and teachers were in the child's classroom, and the observers were in a different room at the same school from where they carried out their observations, registrations and supervision of the therapists conducting the analysis. In the second phase of the study they initiated interventions based on the results from the functional analysis in the first phase. The results showed that it was possible to both collect reliable data via videoconference, and to develop efficient interventions based on the results from these analyses.

Machalicek et al. (2009b) conducted a study in two phases training three novice graduate students to carry out preference assessments with three students with ASD and developmental disabilities through videoconferences. The videoconference was broadcasted on a wireless connection from a laptop located at the remote school-premises with the participants and the students, and the desktop was placed at the university (host site) where the supervisors were located. In the first phase the participants were taught to carry out preference assessments, and the supervisors instructed them when to, and with which items to start. Data collection was done by the supervisors during the videoconference, and the participants received instant feedback on their performance during the sessions. In the second phase of the study videoconferencing was not used. While the participants implemented an instructional intervention for the students based on the results from preference assessments, they now received guidance from the supervisors attending on-site. The results showed that it was possible to collect reliable data using videoconference on preference assessments and to give immediate feedback on procedures. In the second phase, it was demonstrated that the items selected from the preference assessments in the first phase were preferred over other items, and did function as reinforcers for task demands.

Vismara, Young, Stahmer, Griffith, and Rogers (2009) conducted a quasi-experimental group study to compare training using video links with traditional instruction while teaching local therapists to implement the Early Start Denver Model (ESDM). Ten participants received training in two phases, each lasting for 5 months. Each training phase consisted of self-instruction on the ESDM manual, a didactic workshop and group supervision. The participants were divided in two groups, where one group received supervision via videoconferencing, and the other group received training with the supervisor attending on-site. The results showed no significant differences between the groups, but revealed significant effects from the interventions for both groups.

In addition to reducing time consuming traveling and costs related to EIBI for both the families and the specialist healthcare services, the use of videoconferencing could also provide better access to specialists for the local service providers and the