

Teaching Staff who Work with Children with Autism Spectrum Disorders to Evaluate the
Treatment Integrity of Discrete-Trials Teaching Sessions

By

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Abstract

Treatment integrity is an important component of behavioural interventions, however few studies have examined methods to teach supervisors to evaluate the treatment integrity of such interventions applied by front-line staff. The purpose of the current study was to evaluate the effectiveness of a self-instructional package to teach individuals to evaluate the treatment integrity of discrete-trials teaching (DTT) sessions using the *Discrete-Trials Teaching Evaluation Form* (DTTEF). Participants consisted of six staff from the St. Amant Autism Programs. In a modified multiple-baseline design across a pair of participants, and replicated across two more pairs, at Baseline, a participant observed a confederate who role-played an instructor teaching three tasks to a confederate who role-played a child with autism spectrum disorder (ASD). Each participant was required to evaluate sessions taught with (a) low integrity, (b) moderate integrity, or (c) high integrity. During training, participants studied a self-instructional package. At Post-training, participants were assessed on the same tasks as during Baseline. During Generalization, participants were assessed evaluating the treatment integrity of three videos of an Autism Tutor administering DTT to a child with ASD. Finally, during a seven-month Follow-up, four participants were available and were assessed evaluating the treatment integrity of a confederate instructor teach a confederate child with low, moderate, and high integrity. Results demonstrated that after an average of 1 hour and 16 minutes of training, there was an immediate increase in accuracy across all participants. Specifically, mean accuracy increased from 47.6% in Baseline to 84.7% at the Post-training assessment (a 37.1% increase). All participants showed excellent generalization results, and three of the four participants who were available at the Follow-up assessment

performed at a high level. These results suggest that the training package has potential to be used as an effective method to train staff who work with children with ASD to evaluate the treatment integrity of DTT sessions.

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Teaching Staff who Work with Children with Autism Spectrum Disorders to Evaluate the Treatment Integrity of Discrete-Trials Teaching Sessions

Introduction

Autism Spectrum Disorder (ASD) is a developmental disability in which individuals demonstrate a range of deficits in social interaction and communication, and exhibit repetitive or stereotypic behaviours (Centers for Disease Control and Prevention, 2015). The most common method to treat individuals with ASD is Early Intensive Behaviour Intervention (EIBI), which is based on the principles and procedures of applied behaviour analysis (ABA). This method has been recognized as the treatment of choice for children with ASD and is the most commonly requested treatment method (Matson & Sturmey, 2011). An effective component of EIBI is discrete-trials teaching (DTT). In this teaching method, an instructor presents approximately 10-20 teaching trials with brief inter-trial intervals before pausing for a break. The three components of a single discrete-trial are an antecedent provided by the instructor (e.g., an instruction), a response emitted from the child (e.g., following the instruction presented by the instructor), and a consequence provided by the instructor (e.g., praise and a small edible; Smith, 2001). Numerous researchers have evaluated methods to train individuals to conduct DTT, however across the previous research, the DTT components that were assessed as the dependent variable were inconsistent and there was minimal consensus on what components comprise DTT (Thomson, Martin, Arnal, Fazzio, & Yu 2009). To address this issue, Fazzio, Arnal, and Martin (2007) created the *Discrete-Trials Teaching Evaluation Form* (DTTEF), the only treatment-integrity assessment for DTT that has

been proven reliable and valid (Babel, Martin, , Fazzio, Arnal & Thomson, 2008; Jeanson et al., 2010).

Unfortunately, there is a lack of published literature on instructor behaviour in EIBI programs, and specifically in DTT. Researchers have suggested that little is known about the interaction between the instructor and child on a day-to-day basis, and that some EIBI programs do not receive adequate or quality supervision (e.g., Symes, Remington, Brown, & Hastings, 2006). This finding is problematic as recipients of EIBI services typically receive several hours of DTT daily, and the quality of instructor performance accounts for variability in outcomes in EIBI (e.g., Carroll, Kodak, & Fisher, 2013; Gresham, Gansle, & Noell, 1993; Hastings & Symes, 2002). Therefore, it is of great importance that instructors administer DTT with high treatment integrity.

To assist staff of EIBI programs to learn about the treatment integrity of DTT sessions using the DTTEF (Fazzio, Arnal, & Martin, revised 2012), Wightman, Martin, Fazzio, and Arnal (2014) created *A Self-Instructional Manual for the Discrete-Trials Teaching Evaluation Form* (DTTEF-SIM). The purpose of the current study was to evaluate the effectiveness of the DTTEF-SIM for teaching staff working in an EIBI program to evaluate the treatment integrity of DTT sessions with children with ASD.

Autism Spectrum Disorders

Autism Spectrum Disorders (ASDs) are a group of developmental disabilities including autistic disorder, Asperger's syndrome, and pervasive developmental disorder not otherwise specified. The 'spectrum' refers to a continuum of developmental severity with an inverse relationship between severity of symptoms and level of intellectual functioning (Perry & Condillac, 2003). According to the Diagnostic and Statistical

Manual of Mental Disorders (DSM-V; American Psychiatric Association, 2014), an individual must meet four criteria to be diagnosed with ASD. The first criterion is persistent deficits in social communication and social interaction across multiple contexts, as manifested by: (a) deficits in social-emotional reciprocity, (b) deficits in nonverbal communicative behaviours used for social interaction, and (c) deficits in developing, maintaining, and understanding relationships. The second criterion is restricted, repetitive patterns of behaviour, interests, or activities, as manifested by: (a) stereotyped or repetitive motor movements, use of objects, or speech, (b) insistence on sameness, inflexible adherence to routines, or ritualized patterns of verbal or nonverbal behaviour, (c) highly restricted, fixated interests that are abnormal in intensity or focus, and (d) hyper-or hyporeactivity to sensory input or unusual interest in sensory aspects of the environment. The third criterion is that symptoms must be present in the early developmental period. The fourth criterion is that symptoms cause clinically significant impairment in social, occupational, or other important areas of functioning. The fifth criterion is that the previous symptoms are not better explained by intellectual disability or global developmental delay (Centers for Disease Control and Prevention, 2015). The previous diagnostic symptoms are commonly observed in children with ASD. In comparison to their typically developing counterparts, children with ASD often demonstrate deficits in joint attention (e.g., Chiang, Soon, Lin & Rogers, 2008; Naber et al., 2008), social and peer relations (e.g., Hauck, & Dewey, 2001), general language acquisition, expressive and receptive language abilities, (e.g., Charman, Drew, Baird, Baird, 2003; Fodstad, Matson, Hess, & Neal, 2009), obsessive-compulsive behaviours (e.g., Lord, 2007; Richler, Bishop, Klienke, & Lord, 2007), compliance to complete

everyday tasks (e.g., Ducharme & Drain, 2004), and adaptive behaviour (e.g., Weiss, Perry, & Wells, 2010). The overall prevalence of ASD cited in the literature varies. For example, higher prevalence estimates reported are 1/38 (Kim et al., 2011) and 1/68 (Center of Disease Control and Prevention, 2015), and lower prevalence estimates reported are 1/102 (Brugha et al., 2011) and 1/152 (Hill & Fombonne, 2014). This range is likely due to factors such as the changing diagnostic criteria used in studies (Taheri, Perry, & Factor, 2014), how the prevalence data are analyzed and interpreted, and changes in awareness. It has been observed that the prevalence of ASD is increasing, but it remains unclear as to whether this observation is a result of an incidence increase or the factors contributing to varying prevalence estimates (Hill & Fombonne, 2014).

The Behavioural Treatment of Children with ASD

Behavioural treatment consists of a range of teaching methods that are based on learning theories and focuses on observable events that maintain desirable behaviour (Perry & Condillac, 2003). Behavioural treatment is the preferred and most common intervention for children with ASD (e.g., Matson & Smith, 2008; Matson & Sturmey, 2011; Department of Health, 1999). It emerged approximately 20 years after the date that American physician, Leo Kanner (1943), first described 'early infantile autism'. Kanner's observations included a failure to use verbal language, detachment from human relationships, a fascination with objects, and repetitive behaviours. Subsequently, physicians and researchers began to apply behavioural principles and procedures in attempts to treat the symptoms previously described. For example, researchers used operant conditioning principles such as reinforcement and punishment to teach matching-to-sample tasks (e.g., Ferster & DeMyer, 1961a), verbal behaviour (e.g., Hewett, 1965),

attending (e.g., Hintgen & Coulter, 1967), functional speech (e.g., Risley & Wolf, 1967), controlled rate of responding (e.g., Ferster & DeMyer, 1961b), and to reduce temper tantrums (e.g., Wolf, Risley, & Mees, 1964).

Based on the successes of the previous applications of behavioural procedures, Ivar Lovaas (1987) created an early intensive behavioural intervention (EIBI) for children with ASD. His research was the first published outcome study evaluating the effectiveness of EIBI. His intervention, based on the principles and procedures of applied behaviour analysis (ABA), contained several central components: (a) an individualized and comprehensive intervention, (b) building new skill repertoires, (c) decreasing problem behaviours, (d) an active-parent role, (e) one-on-one intervention sessions, (f) generalization of skills, (g) intensive programming (i.e., 30-40 hours a week of instruction for two or more years), and (h) beginning at an early age for the most beneficial gains (Green, Brennan, & Fein, 2002). In Lovaas' initial outcome study evaluating the effectiveness of EIBI, he compared three groups of children with autism who were under the age of four. The groups consisted of: (a) a control group who received one-on-one training for 10 hours a week or less ($N = 19$); (b) a second control group who received no treatment ($N = 21$); and (c) an ABA intensive group who received EIBI for 40 hours a week ($N = 19$). After two years, those in the EIBI group demonstrated stronger and lasting developmental gains compared to those in the control groups. Forty-seven percent of these children achieved normal functioning, first grade placement, average IQ scores, and were deemed as 'best-outcome', whereas only 2% of the children in the control groups achieved such gains. Furthermore, the EIBI group sustained their gains several years later. Specifically, eight out of the nine children who

made the most gains were indistinguishable from their typically developing peers on measures such as IQ, educational placement, personality, and adaptive behaviour, and nine of the 19 children were placed in regular classrooms (McEachin, Smith, & Lovaas, 1993). These exciting results paved the way for numerous other researchers to replicate the positive effects of EIBI with children with ASD (e.g., Anderson, Avery, DiPietro, Edwards, & Christian, 1987; Ben-Itzhak & Zachor, 2007; Eikeseth, Smith, & Eldevik, 2002; Eikeseth, 2009; Eldevik et al., 2009; Granpeesheh, Tarbox, & Dixon, 2009; Howard, Sparkman, Cohen, Green, & Stanislaw, 2005; Reichow, 2011; Perry et al., 2008; Sheinkopf & Siegel, 1998; Smith, Eikeseth, Klevstrand, & Lovaas, 1997) and apply other behaviourally-based interventions such as errorless compliance training (e.g., Ducharme & Drain, 2004; Ducharme & Ng, 2012), behavioural momentum (e.g., Mace & Belfiore, 1990), and functional communication training (e.g., Shirley, Iwata, Kahng, Mazaleski, & Lerman, 1997; Worsdell, Iwata, Hanley, Thompson, Kahng, 2000) to treat symptoms of autism. Furthermore, behaviourally-based interventions are commonly applied to treat problem behaviours with typically developing individuals. Common examples include the use of instructions, goals, and reinforcement to teach skills (e.g., St. Peter Pipkin, Winters, & Diller, 2007), and the use of differential reinforcement to decrease inappropriate classroom behaviour (e.g., Auld, Belfiore, & Scheeler, 2010).

Overall, the previous research evaluating the effectiveness of EIBI has demonstrated that many children with ASD can obtain scores of average intelligence, normal functioning and language skills, and reduced problem behaviours after receiving this intervention. EIBI is considered to be a best practice approach founded on evidence-based interventions (Perry, Condillac, & Freeman, 2002). It continues to be consistently

implemented as a treatment for children with ASD (Irwin, MacSween, & Kerns, 2011) and is the most requested and recommended treatment approach for such children (Green, et al., 2006; Matson & Smith, 2008; Matson & Sturmey, 2011).

Discrete-Trials Teaching

A main teaching procedure used in EIBI is discrete-trials teaching (DTT). In this teaching method, an instructor administers a series of approximately 10-20 teaching trials, with brief inter-trial intervals, before providing a brief break. There are three components of a single discrete-trial: (a) an antecedent (e.g., an instructor tells a child to “match” a sample picture to its respective comparison out of an array of three pictures on a table); (b) a behaviour (i.e. response) made by the child who may be prompted to reduce responding errors (e.g., placing the sample picture on top of the correct comparison); and (c) a consequence such as a reinforcer (e.g., praise or candy) contingent on a correct response or a neutral expression contingent on an incorrect response (e.g., no facial expression or social attention). DTT has been effective for teaching a variety of behaviours to children with ASD such as expressive and receptive language, and motor, academic, and adaptive skills (Smith, 2001).

Teaching individuals to conduct discrete-trials teaching. Due to the fact that DTT is frequently used during EIBI sessions, there is a need to train staff and parents to conduct DTT so that EIBI is applied consistently and accurately. In a review of the research that has been conducted on teaching individuals to administer DTT, Thomson, et al., (2009) found a total of 20 experiments conducted between 1974 and 2008. A study was included in the review if it met the following criteria: (a) it had to focus on an evaluation of the effectiveness of training packages for teaching DTT, (b) the dependent

variable had to include a measure of the participants' ability to administer DTT skills after training, and (c) studies were included only if they reported an acceptable level of inter-observer reliability of greater than 80%. Thomson et al. found that across the studies examined, the most common teaching methods consisted of instruction (e.g., verbal or written), demonstration or modeling, performance feedback, and role-playing and practice. Reported changes in DTT accuracy from Baseline to Post-training ranged from 9.67% to 98%. There were several limitations in the studies noted in the review: (a) changes in DTT accuracy were not always reported; (b) many of the descriptions of the training procedures were not detailed; (c) there was a lack of procedural reliability measures and generalization assessments; (d) training duration was not always stated; and (e) the dependent variables (e.g., what components constituted DTT performance) were not consistent across the studies.

Discrete-trials teaching with children with autism: A self-instructional manual. To address several of the limitations noted in the Thomson et al. review and the need for an efficient and effective instructional training method, Fazzio and Martin (2006) developed the *Discrete-trials Teaching with Children with Autism: A Self-Instructional Manual*. It has been revised three times (2007, 2009, 2011), and the most recent and published version now includes detailed descriptions of 20 main components of DTT. Numerous researchers have evaluated the manual and its revisions. Training components that have been evaluated include the manual-alone (e.g., Arnal et al., 2007; Thiessen et al., 2009; Thomson, Martin, Arnal, Fazzio, & Yu, 2009), the manual with video demonstrations (e.g., Salem et al., 2009; Thomson et al., 2012; Wightman et al., 2012; Young, Boris, Thomson, Martin, & Yu, 2012), the manual and receiving feedback

from the experimenter (e.g., Boris et al., in press; Fazzio, Martin, Arnal, & Yu, 2009; Young et al., 2012), and the manual plus video demonstrations with practice activities (e.g., Wightman et al., 2012). The most recent version of the manual consists of 65-pages of instruction, which includes study questions and four manual-prompts to watch video demonstrations of an expert administering DTT to a confederate role-playing a child with ASD. Wightman et al. most recently evaluated the manual in accompaniment with four video demonstrations of DTT and four practice activities. In this study, training duration was found to be efficient, averaging less than four hours across 13 participants. Furthermore, when teaching a confederate who role-played a child with ASD, mean DTT accuracy improved from 45% (range: 38%-58%) at Baseline to 85% (range: 59%-94%), and one participant who participated in a generalization phase with a child with ASD implemented DTT with an average of 80% accuracy.

Across the numerous evaluations of the training packages that have included Fazzio and Martin's DTT manual, results have been very positive, with individuals mastering the written material as demonstrated by written knowledge tests, implementing DTT with high accuracy with a confederate role-playing a child with ASD, and being trained in a timely manner, typically under four hours. Studies that included a generalization assessment have also demonstrated positive results (e.g., Boris et al., in press; Fazzio et al., 2009; Young et al., 2012; Wightman et al., 2012), and social validity assessments have suggested that the goals, procedures, and the training included in the studies were socially significant (e.g., Salem et al., 2009; Wightman et al., 2012; Young et al., 2012).

Numerous other researchers have continued to evaluate a variety of instructional methods to teach individuals to implement DTT (e.g., Catania, Almedia, Liu-Constant, & Reed, 2009; Downs & Downs, 2013; Eldevik et al., 2013; Hay-Hansson & Eldevik, 2013; Ward-Horner, & Sturmey, 2008; Vladescum, Carroll, Paden, & Kodak, 2012; Leaf et al., 2013; Lerman, Hawkins, Hoffman, & Caccavale, 2013; Nosik & Williams, 2011; Nosik, Williams, Garrido, & Lee, 2013; Thomas, 2013; Williams & Gallinat, 2011). The previous research has also demonstrated that there are a number of effective components included in DTT training studies. These include written instruction (e.g., a manual), video demonstrations of DTT, computer-mediated training, practice and feedback, modeling, study questions, role-play, and other practice activities. However, an important difference across the previous experiments is the method of evaluating the treatment integrity of a DTT session.

Treatment Integrity of Behavioural Interventions

Treatment integrity is the degree to which an independent variable is implemented as intended (Martin & Pear, 2015). If an intervention is administered with low treatment integrity, then the outcome of an intervention cannot be interpreted with confidence (Cooper, Heron, & Heward, 2007; DiGennaro Reed & Coddling, 2014). According to Cautilli, Rosenwasser, and Clarke (2000), staff who are poorly trained in implementing behavioural services is one of the greatest challenges facing treatment providers and receivers. This is problematic because clients have an ethical right to receive the intervention that was consented for, and when staff are not administering behavioural procedures with accuracy, client learning is compromised (Cook et al., 2015).

Researchers who have experimentally manipulated the level of treatment integrity during teaching sessions have found that treatment effects are compromised with decreased treatment integrity. In one study by Vollmer, Roane, Ringdalh and Marcus (1999), instructors emitted omission and commission errors during the application of differential reinforcement of alternative behaviour (DRA) in the treatment of problem behaviour for three participants with developmental disabilities. The conditions that were assessed were 100% integrity, 75% integrity (one of four correct responses was not reinforced), 50% integrity (two of four correct responses were not reinforced), and 25% integrity (three of four correct responses were not reinforced). The researchers found that the effects of the treatment were increased when DRA was implemented with higher accuracy than lower accuracy (i.e., a higher rate of reinforcement was administered). In another study, St. Peter Pipkin, Vollmer, and Sloman (2010) systematically manipulated errors during DRA for the treatment of off-task behaviour with one individual with ASD. Four conditions were assessed; 80%, 60%, 40%, and 20% integrity. Treatment consisted of providing praise statements for on-task behaviour (completing school work on a work sheet), and errors consisted of failure to reinforce on-task behaviour and reinforcing off-task behaviour. These researchers also found that the level of treatment integrity affected participant responding during a session. That is, the participant engaged in a higher frequency of on-task behaviour during the 80% integrity and 60% integrity conditions and a higher frequency of off-task behaviour during the 40% integrity and 20% integrity conditions. DiGennaro Reed, Reed, Baez, and Maguire (2011) systematically manipulated levels of treatment integrity by examining errors of commission with three children with ASD. They taught participants receptive nonsense shapes, and found that

those who were taught with perfect treatment implementation exhibited higher levels of performance than those who were taught with 50% or 100% errors of commission. The errors consisted of reinforcing an incorrect response before the correction procedure was implemented. Interestingly, for two of the participants, there was no difference in performance across the 50% and 100% error conditions, suggesting that 50% errors of commission can have as great of an effect as 100%. Other researchers who have manipulated treatment integrity have also found that when a treatment is not implemented with high accuracy, participant behaviour is compromised (e.g., Worsdell et al., 2000).

The studies in this subsection indicate that it is of great importance that staff administer behavioural interventions with high integrity, and that there is a standard evaluation method to assess it. However, it is common that treatment integrity is overlooked as a primary measure of training packages in the published literature (DiGennaro Reed & Coddling, 2014). A number of reviews have demonstrated the paucity of reported treatment integrity in the behavioural literature. For example, researchers reviewed all the experimental studies in the *Journal of Applied Behavior Analysis* (JABA) between 1968 and 1980. They found a total of 539 experiments, in which only 20% reported a treatment integrity assessment (e.g., Peterson, Homer, & Wonderlich, 1982). Gresham et al. (1993) extended this review, and evaluated articles published in JABA since Peterson et al. (1982) from 1980 to 1990. In this review, only experiments with children participants (under 19 years of age) were examined. They found that only 32% reported a treatment integrity assessment, and treatment integrity averaged 93%, ranging from 54% to 100% ($SD = 11.63\%$). Furthermore, they found a strong, negative correlation between intervention effect and percent integrity. Wheeler,

Baggett, Fox, and Blevins (2006) extended the review by Greshman et al. (1993) and conducted a review on intervention studies of children with autism from articles published in *JABA*, *Research in Developmental Disabilities*, and *Journal of Autism and Developmental Disorders* between 1993 and 2003. They found that only 18% included a treatment integrity assessment. Finally, McIntyre, Gresham, DiGennaro, and Reed (2007) examined articles published in *JABA* between 1991 and 2005 with child participants and found that only 30% reported a treatment integrity assessment. These researchers also reported that half of the studies were deemed to be “high risk” for treatment inaccuracies. Numerous other researchers have also reported the lack of treatment integrity assessments in the published literature (e.g., Dane & Schneider, 1998; Gansle, 2005; Gresham, MacMillan, Beebe-Frankenberger, & Bocian, 2000; Snell, Chen, & Hoover, 2006).

Treatment integrity of discrete-trials teaching sessions. As previously indicated, DTT has been demonstrated to be effective in teaching a variety of skills to children with ASD. However, staff who are inadequately trained to administer DTT can have a negative impact on the child’s learning process and progress (Gresham et al., 2000). For example, in a study conducted by Carroll et al. (2013), it was observed that teachers working with children with ASD do not consistently apply components of effective instruction with high integrity (i.e., over 90%). Unfortunately, there is a paucity of published information on instructor treatment integrity in EIBI and DTT (Symes et al., 2006; Matson & Konst, 2013), thus it is often unclear if staff and parents are evaluated on their treatment integrity, and what methods are used in accomplishing this task.

In the review by Thomson et al. (2009) evaluating DTT instructional methods,

one of the inclusion criteria was that a study had to include an objective and reliable measurement of the DTT skills that were being taught by the respective instructional package. This is an important standard of DTT instructional studies as it allows for the evaluation of the treatment integrity of the instructor. In addition to evaluating the types of DTT teaching methods used, Thomson et al. also evaluated the type and number of DTT components that were used to measure instructor performance. Results indicated that across the 20 studies reviewed, the number of DTT components varied, and the DTT components used to evaluate participants were not always stated and were very brief in description. In my review of recent literature evaluating DTT training procedures and the corresponding DTT treatment integrity evaluation methods, this finding is still evident. A summary of studies that have used a measure of DTT performance as the dependent variable can be found in Table 1.

Table 1

Studies That Have Measured Discrete-Trials Teaching Skills

Experiment	No. of DTT items	Categories (Number of items)
Koegel, Russo, & Rincover (1977, Exp. 1)	14	Teacher Instructions to Child (5); Prompts (2); Shaping (1); Consequences (5); Discrete-Trials (1)
Koegel et al. (1977, Exp. 2)	14	Teacher Instructions to Child (5); Prompts (2); Shaping (1); Consequences (5); Discrete-Trials (1)
Koegel, Glahn, & Nieminen (1978)	13	Teacher Instructions to Child (5); Prompts (1); Shaping (1); Consequences (5); Discrete-Trials (1)
Arco (1997, Exp. 1)	4	Verbal Instruction (1); Prompts (1); Positive Consequence (1); Negative Consequence (1)
Arco (1997, Exp. 2)	4	Verbal Instruction (1); Prompts (1); Positive Consequence (1); Negative Consequence (1)
McBride & Schwartz (2003)	5	Discrete Instructional Trials (1); Obligatory Instructions (1); Nonobligatory Instructions (1); Other Behaviour (1); Physical

		Prompt (1)
Sarakoff & Sturmey (2004)	10	Eye Contact (1); Attention (1); Instruction (2); Correction Procedure (1); Reinforcement (2); Praise (1); Recording Data (1); Inter-trial Interval (1)
LeBlanc, Ricciardi, & Luiselli (2005)	10	Arrange the Environment (1); Direct Student to the Session (1); Orient the Student (1); Secure the Student's Attention (1); Present the Discriminative Stimulus (1); Deliver Prompts (1); Reinforcement (1); Error Correction (1); Inter-trial Interval (1); Record Data (1)
Ryan & Hemmes (2005)	12	Distraction Free (1); Materials (1); Attending (1); Verbal Direction (1); Voice Tones (1); Wait (1); Praise Statements (1); Contingent Reinforcers (1); Prompting and Correction Procedure (1); Pause for Inter-trial Interval (1); Incidental or Additional Teaching (1); Data Recorded (1)
Arnal et al. (2007 Exp. 1)	19	Before Starting Teaching Trials (3); Provide Discriminative Stimuli (3); Provide Necessary Prompts (2); Provide Consequences for Correct Response (2); Provide Consequence for Incorrect Response (9)
Arnal et al. (2007 Exp 2.)	19	Before Starting Teaching Trials (3); Provide Discriminative Stimuli (3); Provide Necessary Prompts (2); Provide Consequences for Correct Response (2); Provide Consequence for Incorrect Response (9)
Crockett, Fleming, Doepke, & Stevens (2007)	8	Presenting Antecedents (2); Delivering Consequences (3); Inter-trial Interval (2); Recording the Child's Behaviour (1)
Dib & Sturmey (2007)	14	Task Presentation (5); Prompting for Task Presentation (2); Prompting for Problem Behaviour (5); Reinforcement (2)
Downs, Downs, Johansen, & Fossum (2007)	5	Discriminative Stimuli (1); Prompt (1); Response (1); Consequence (1); Inter-trial Interval (1)
Gilligan, Luiselli, & Pace (2007)	10	Eye Contact (1); Attention (1); Instruction (2); Correction Procedure (1); Reinforcement (2); Praise (1); Recording Data (1); Inter-trial Interval (1);
Lafasakis & Sturmey (2007)	10	Eye Contact (1); Attention (1); Instruction (2); Correction Procedure (1); Reinforcement (2); Praise (1); Recording Data (1); Inter-trial Interval (1)
Belfiore, Fritzt, & Herman (2008)	5	Presentation of a Clear Discriminative Stimulus (1); Waiting Approximately Five Seconds for the Child to Respond (1); Delivery of Feedback (1); Immediacy of Feedback (1); Inter-trial Interval (1)
Bolton & Mayer (2008)	7	Materials Ready (1); Gaining Attention of the Child (1); Presenting the Discriminative Stimulus (1); Prompting (1); Use of Reinforcement (1); Implementation of Correction Procedure when Necessary (1); Data Collection (1)

Downs, Downs, & Rau (2008)	30	<i>Checklist not provided</i>
Ward-Horner & Sturmey (2008)	10	Eye Contact (1); Readiness Response (1); Delivers Instruction Once (1); Correction Procedure (1); Appropriate Reinforcement (1); Specific Praise (1); Immediacy of Reinforcement (1); Data Collection (1); Inter-trial Interval (1)
Catania et al. (2009)	10	Establish Ready Behaviour (1); Wait for Ready Behaviour (1); Present Choices or Stimuli as Specified in the Lesson Plan (1); State the Discriminative Stimulus (1); Provide Prompt Level Consistent with Lesson Plan (1); Deliver Reinforcer as Specified in the Lesson Plan (1); Do Not Reinforce Incorrect Responses (1); Conduct a Correction Trial (1); Accurately Record Data (1); Remove Stimuli Prior to the Start of the Next Trial (1)
Fazio et al. (2009)	19	Before Starting Teaching Trials (3); Provide Discriminative Stimuli (3); Provide Necessary Prompts (2); Provide Consequences for Correct Response (2); Provide Consequence for Incorrect Response (9)
Salem et al. (2009)	21	Before Starting a Teaching Task (5); Managing Antecedents (5); Manage Consequences for Correct Responses (2); Manage Consequences for Incorrect Responses (7); Inter-trial Interval (1); Fade Prompts Across Trials (1)
Thiessen et al. (2009)	21	Before Starting a Teaching Task (5); Manage Antecedents (5); Manage Consequences for Correct Responses (2); Manage Consequences for Incorrect Responses (7); Inter-trial Interval (1); Fade Prompts Across Trials (1)
Boris et al. (in press)	21	Before Starting a Teaching Task (5); Managing Antecedents (5); Manage Consequences for Correct Responses (2); Manage Consequences for Incorrect Responses (7); Inter-trial Interval (1); Fade Prompts Across Trials (1)
Nosik & Williams (2011)	8	Have Appropriate Materials Ready (1); Make Eye Contact with the Learner (1); Deliver the Instruction (1); Wait at Least 3 Seconds for a Response (1); Prompting (1); Provide Appropriate Reinforcement for the Response (1); Record Data (1); Inter-trial Interval (1)
Williams & Gallinat (2011)	4	Preparation (1); Instruction (1); Prompt Hierarchy (1); Reinforcement (1)
Severtson & Carr (2012)	38	Organize the Datasheet Prior to Session (2); Materials Presented Correctly (6); Materials Presented Correctly (Probe sessions only; 2); Appropriately Secure Child's Attention (6); Delivered Appropriate Instruction (4); Waited 3 Seconds for a Response (probe trials; 2); Provided Immediate and Correct Prompt Level (2); Correct Use/Non-use of Reinforcers (3); Removed Cards Following an Error (1); Represented Materials (following an error; 3); Represent Instruction (following an error; 1); Correctly Recorded Data (2); Did not Provide Tangible reinforcers (1); Conducted Probes of Targets (1); Did Not

		Present the Same Target Across Three Consecutive Teaching Trials (1); Conducted all Three Teaching Trials of All Three Targets (1)
Thomson et al. (2012)	21	Before Starting a Teaching Task (5); Managing Antecedents (5); Manage Consequences for Correct Responses (2); Manage Consequences for Incorrect Responses (7); Inter-trial Interval (1); Fade Prompts Across Trials (1)
Vladescu et al. (2012)	not stated	<i>Checklist not provided</i>
Wightman et al. (2012)	20	Prepare to Conduct a Teaching Session (6); On Standard Trials, Manage Antecedents (5); On Standard Trials, Manage Consequences (3); An Error Correction Trial Following an Error (5); Fade Prompts (1)
Young et al. (2012)	21	Before Starting a Teaching Task (5); Managing Antecedents (5); Manage Consequences for Correct Responses (2); Manage Consequences for Incorrect Responses (7); Inter-trial Interval (1); Fade Prompts Across Trials (1)
Downs & Downs (2013)	35	Work Session Preparation/Conclusion (10); Technical Skills (5); Student Engagement/Management (20)
Eldevik et al. (2013)	14	Teacher Instructions to Child (5); Prompts (2); Shaping (1); Consequences (5); Discrete-Trials (1)
Hay-Hansson & Eldevik (2013)	22	Discriminative Stimuli (5); Prompts (3); Shaping (1); Consequences (8); Structure (5)
Leaf et al. (2013)	9	Correct Instruction (1); Allow Five Seconds to Respond (1); Praise Following a Correct Response (1); Provide Two Tokens for Correct Response (1); Provide Corrective Feedback for an Incorrect Response (1); Error Correction Trial (4)
Lerman, et al. (2013)	10	Obtained Attention (1); Gave the Confederate at Least One Second of Eye Contact While Delivering Instruction (1); Used Correct Instruction (1); Said Instruction Clearly without Repeating It (1); Used the Correct Form, Sequence, and Timing of Prompts (1); Delivered the Correct Form of Reinforcement (1); Remove Instructional Materials Within Five seconds (1); Provide 7-30 Seconds of Access (1); Withheld Reinforcement for No Responses/Incorrect Response/Physically Guided Response (1); Collect Data Correctly (1)
Nosik et al. (2013)	10	Have Appropriate Materials Ready (1); Make Eye Contact with the Learner (1); Deliver the Instruction (1); Present Materials (1); Wait at Least 3 seconds for a Response (1); Prompting (1); Provide Appropriate Reinforcement for the Response (1); Record Data (1); Record Prompt (1); Five Second Interval Between Trial (1)
Thomas (2013)	9	Correct Materials (1); Instructions (2); Prompts (1); Praise (1); Non-target Item (2); Recording Data (1); Inter-trial Interval (1)
Pollard, Higbee, Akers, &	13	Data Collection and Program Overview (3); Managing Antecedents (4); Prompting Strategies (3); Managing

Brodhead (2014)		Consequences (3)
Cook et al. (2015)	18	Attention (2); Materials (1); Instruction (1); Prompt (1); Praise (1); Tangible Reinforcer (2); Error Correction (7); Record Data (2); Inter-trial Interval (1)
Radley, Dart, Furlow, & Ness (2015)	11	Place Bin of Toys/Snacks Out of the Student's Reach (1); Places Task Specific Teaching Materials in Front of Student (1); Stopped the Student From Playing with Preferred Items (1); Got Student's Attention by Patting Lap (1); Said "Get Ready" (1); Presented the Correct Instruction (1); Provided Appropriate Prompt (1); Provided Appropriate Reinforcement (1); Accurately Recorded Data for Each Trial (1); Attempted to Fade Prompts Appropriately (1); Attempted to Correct Any Errors (1)

Across the previous literature using a DTT treatment integrity assessment, there is minimal consensus concerning the number of DTT components to be used in the assessment and what those components should be. This is evident by the wide range of components included in the studies in Table 1 (e.g., 4-38). Numerous studies did not evaluate: (a) the arrangement of the teaching materials (e.g., Downs et al., 2007); (b) the instructor's use of prompt fading (e.g., Crockett et al., 2007; Dib & Sturmey, 2007; Gilligan et al., 2007; Lafasakis & Sturmey, 2007; Ryan & Hemmes, 2005; Sarakoff & Sturmey, 2004); (c) the consequences provided to the child for responding (e.g., McBride & Schwartz, 2003); (d) data recording (e.g., Dib & Sturmey, 2008; Downs et al., 2008; Belfiore et al., 2008); and (e) error correction trials (e.g., Arco, 1997, Crockett et al., 2007; Downs et al., 2008), all of which are important components of a DTT session (Babel et al., 2008; Jeanson et al., 2010). Many of the DTT components described in the studies lacked operational definitions and details. For example, Koegel et al. (1977) stated that the instructor should ensure that prompts are effective and to record data. However, it is unclear what would constitute an 'effective' prompt, and what type of data to record and how to do so (e.g., the level of the prompt and/or the immediacy of the

prompt). Pollard et al. (2014) included the components of environmental arrangement, session pacing, and gaining attention, none of which were defined or described. This was also evident in Radley et al. (2015) where none of the DTT components were operationally defined. Additionally, two studies did not report on the components that were assessed in the evaluation of the instructor's treatment integrity (e.g., Downs et al., 2008; Vladescu et al., 2012).

The previous review indicates that there are a number of DTT components that researchers have used to evaluate the integrity of DTT sessions with a child with ASD, and there is minimal consensus on what these components should be. This finding is problematic, as it would be desirable to have a standardized method to assess the treatment integrity of DTT sessions. However, there have only been two studies that have attempted to validate a DTT behavioural-checklist to assess the integrity of DTT.

The Discrete-Trials Teaching Evaluation Form

To address the need for a valid and reliable method to evaluate the treatment integrity of a DTT session with a child with autism, Fazzio et al., (2007) developed the *Discrete-Trials Teaching Evaluation Form* (DTTEF). To accomplish this task, the authors observed a large number of training sessions administered by staff of the St. Amant Autism Programs in Manitoba, Canada, a government-funded program that provides EIBI services to children with ASD. Based on Fazzio et al.'s observations, the researchers developed a 19-item checklist (the DTTEF) and the *Discrete-Trials Teaching Evaluation Form Scoring Manual* (Fazzio, Arnal, & Martin, 2007). The scoring manual provides a brief description on how to use the DTTEF by providing information on correct and incorrect responses of the instructor for each of the DTT components. The

checklist has recently been modified to include 20 DTT items (e.g., Fazzio, Arnal, & Martin, 2012, see Figure 1).

Figure 1. The Discrete-Trials Teaching Evaluation Form (Fazzio, Arnal, & Martin, revised 2012).

DTTEF

SCORING: = ✓ performed correctly; X = performed incorrectly; / = did not apply

Part II: On Standard Trials, Manage Antecedents	1	2	3	4	5	6	7	8	9	10	11	12
Part I: Prepare to Conduct a Teaching Session												
7. Check the data sheet for the arrangement of teaching materials or response to be modeled.												
1. Determine the Teaching Task(s).												
2. Gather the Teaching Materials												
3. Secure the child's attention												
3. Select at Least 3 Reinforcers												
9. Present the teaching materials and/or model response												
4. Arrange the teaching Setting												
5. Determine the Prompt-Fading Procedure and the Initial Fading Step												
10. Present the correct instruction												
6. Invite the Child to the Table and Give a Reinforcer choice												

COMPONENT

SCORE

11. Present Prompts																				
Part III: On Standard Trials, Manage Consequences & Record Data																				
Score 12 or 13, NOT both	12. Following a correct response , praise & present an additional reinforcer																			
	13. Following an incorrect response , block gently if possible, remove materials or stop gesturing & show a neutral expression for 2 or 3 seconds																			
14a. Record the response immediately/accurately																				
15a. Allow brief intertrial interval of 3-10 seconds																				
Part IV: An Error Correction Trial Following An Error																				
16. Secure the child's attention																				
17. Re-present the materials																				
18. Re-present the instruction & prompt immediately to guarantee correct response																				
19. Praise only																				
14b. Record the response immediately/accurately																				
15b. Allow brief intertrial interval of 3-10 seconds																				
Part V: Fade Prompts																				
20. Fade prompts across trials																				

Evaluations of the reliability and validity of the Discrete-Trials Teaching

Evaluation Form. Babel et al. (2008) evaluated the reliability and the validity of the DTTEF as a method to assess the treatment integrity of a DTT session. The study consisted of three phases. In Phase 1, three DTT experts (Autism Consultants) assessed the face validity of each component of the DTTEF. Face validity is an assessment of the subjective judgment on whether a test measures the construct that it is intended to measure (Drost, 2006). The experts were asked to rate each of the 21 DTTEF items using a seven-point scale where 1 = *not important*, 4 = *somewhat important*, and 7 = *very important*. Additionally, the experts were asked if they believed that there were any items that should be added to the DTTEF. Results of Phase 1 indicated that the DTTEF components possessed high face validity, with an average score of six or higher out of

seven on each component. One expert suggested including information on fading and prompts.

Phase 2a of the study assessed interobserver agreement (IOA), the degree to which two or more independent observers report the same observed values after measuring the same events (Cooper et al., 2007). To obtain IOA, the first and fourth authors of the paper studied the *DTTEF Scoring Manual* (Fazzia et al., 2007), which provided information on how to score each of the DTT components. They also practiced scoring a video demonstration of an expert administering DTT to a confederate role-playing a child with autism until 90% accuracy was obtained. Next, during two Baseline sessions, the two observers watched live sessions of seven university students attempting to administer DTT to a confederate role-playing a child with autism. The seven university students were then trained to administer DTT using the DTT Manual and were assessed on their DTT accuracy at Post-training. The students' DTT accuracy at Post-training was also scored live by the two observers (first and fourth authors). The IOA score between the two observers for a given session was calculated by dividing the number of agreements by the number of agreements plus the number of disagreements and then multiplying by 100% (Martin & Pear, 2015). The results of Phase 2a demonstrated that high IOA was obtained (e.g., 90% or greater was achieved for 42/44 of the sessions for live scoring of DTT sessions using the DTTEF).

The purpose of Phase 2b was to determine if the DTTEF could be used to distinguish the DTT performance between untrained versus trained instructors. In order to determine if there was a difference, the DTTEF scores of the participants during Baseline and Post-training were compared using a Wilcoxon signed-rank test. The

Wilcoxon signed-rank test indicated that DTT performance was significantly different from Baseline to Post-training, suggesting that differences in performance can be detected by the DTTEF.

The purpose of Phase 3 was to assess concurrent validity, how well a particular test correlates with a previously validated measure (Drost, 2006). This was accomplished by comparing the DTTEF scores of the student participants from Phase 2 to a rating of their performance by the three experts (Autism Consultants from Phase 1). The experts were required to watch a total of 14, four-minute video clips (from Baseline and Post-training sessions). Each expert rated the videos on a scale of 1 to 7 where 1 = *poor quality, comparable to DTT instructors prior to receiving training*, 4 = *average quality, comparable to DTT instructors who have received limited training in DTT and have minimal experience*, and 7 = *high quality, comparable to well-trained DTT instructors*.

Results of Phase 3 indicated that there was a high level of agreement between the DTTEF scores and the experts' ratings of the student participants' DTT accuracy during Baseline and Post-training phases. This finding suggests that the DTTEF has concurrent validity.

The results of the Babel et al. (2008) study suggested that the DTTEF is a reliable and valid tool to assess DTT accuracy. Limitations of the study included that there were only three experts from the same agency (St.Amant Autism Programs) involved in the face validity and concurrent validity assessments, and the participants who were observed administering DTT were university students and not staff members such as Autism Tutors.

In a systematic replication and extension of the previous study, Jeanson et al. (2010) evaluated the validity and reliability of the DTTEF with Autism Consultants,

parents, and newly-hired Tutors. The study consisted of five phases. Phase 1 of the study was identical to the Phase 1 procedure of Babel et al. (2008) described previously. Six experts (Autism Consultants) were given the questionnaire to assess the face validity of the components of the DTTEF. The results of Phase 1 indicated that the components of the DTTEF possessed high face validity as the experts rated the 21 DTT items with an average rating of 6.2 out of 7 points. One of the six experts provided a suggestion, and stated that that he/she would hesitate to include the error correction procedure following an incorrect response because it is not always effective for higher functioning children with autism. No other comments were provided.

Phase 2 of the Jeanson et al. (2010) study was like Phase 2a of the Babel et al. (2008) study described previously, except that it assessed the IOA of two observers using the DTTEF to score live Baseline and Post-training DTT sessions of parents of children with ASD and Autism Tutors conducting DTT. Results provided a high mean IOA score for the live scoring. Specifically, IOA scores for parent sessions averaged 89.9% at Baseline and 91.1% at Post-training, and IOA scores for Autism Tutor sessions averaged 87.7% at Baseline and 80% at Post-training.

Phase 3 of Jeanson et al. (2010) was like Phase 2b of Babel et al. (2008) and assessed whether the DTTEF could distinguish between good quality (Post-training) and poor quality (Baseline) DTT performance. The mean DTT performance of parents and Autism Tutors during Baseline, according to the DTTEF, were compared to their mean performances during the Post-training assessment. DTTEF scores before and after training were compared using the Wilcoxon signed-rank test. Both of the Wilcoxon signed-rank tests were significant. These results suggest that the DTTEF can differentiate

between good and poor DTT performance of parents and tutors, and between individuals who have and have not been trained in DTT.

Phase 4 of Jeanson et al. (2010) assessed the social validity of the experiment. Social validity is the extent to which target behaviours are appropriate, intervention procedures are acceptable, and important and significant changes in target and collateral behaviours are produced (Cooper et al., 2007). The parents from the previous phases were asked to complete a questionnaire that inquired how they felt about the goals of the research, the procedures that were used, and the results. The results suggested that the DTTEF was high in social validity. Participants scored all items between 4 and 5 on a 5-point scale. Two parents did not complete the questionnaire due to language barriers.

Phase 5 of Jeanson et al. (2010), like Phase 3 of Babel et al. (2008), assessed the concurrent validity of the DTTEF. The DTTEF scores of parents' were compared to ratings given to the parents by the experts. A three and a half minute video clip was used for before and after DTT training sessions. The experts were asked to rate each of the clips that they were assigned without knowing whether the parent's performance was videoed before or after training. The six experts each viewed six video clips and were asked to score each of the video clips using a 9-point scale where 1–3 = *poor quality DTT performance*, 4–6 = *moderate quality DTT performance*, and 7–9 = *good to very good quality DTT performance*. Once the experts completed their ratings, a researcher independently scored the same 36 video clips using the DTTEF. A third of the video clips were independently scored using the DTTEF by a second researcher. IOA scores for each of those video clips were calculated as described for Phase 2, and IOA scores averaged 94.8%. In order to determine the concurrent validity of the DTTEF,

concordance between the expert ratings and the DTTEF scores of the parent video clips was measured using an intraclass correlation. The intraclass correlation between parent DTT performance as assessed using the DTTEF and clinical judgments made by the experts was .643, which suggests high concurrent validity. Limitations included that all Autism Consultants were from the same agency, and the concurrent validity assessment was not conducted with Tutors.

Statement of the Problem

The studies by Babel et al. (2008) and Jeanson et al. (2010) were the first to examine the reliability and validity of a method to assess treatment integrity of DTT sessions, and those studies demonstrated that the DTTEF is a reliable and valid behavioural checklist. In order to maximize the effectiveness of DTT training sessions conducted by staff who work with children with ASD, it is very important that the staff are evaluated regularly to ensure that they are administering DTT accurately and consistently. Currently, the DTTEF is the only researched tool available for assessing that possibility. In order to increase the use of the DTTEF by supervisors of staff who work with children with ASD, Wightman et al. (2014) prepared a self-instructional manual called the *Discrete-Trials Teaching Evaluation Form Self-Instructional Manual* (DTTEF-SIM; see Appendix A) for teaching readers to use the DTTEF to reliably assess treatment integrity of DTT sessions. The manual builds on the content in Fazzio et al.'s (2007) *DTT Scoring Manual*, elaborating on correct and incorrect instructor behaviors during DTT sessions, and including study questions and practice activities with the goal of helping the reader master the material in the self-instructional manual.

The purpose of the current study was to evaluate the effectiveness of the DTTEF-SIM with staff from the St. Amant Autism Programs. That program consists of one-on-one teaching sessions with children with ASD. Trained Autism Tutors, Autism Senior Tutors, and Autism Consultants conduct the teaching sessions. Autism Tutors work with one or two children with ASD approximately five days a week for approximately 15-35 hours a week. Autism Senior Tutors supervise a number of Autism Tutors during individual, six-hour overlap sessions, approximately once every two to six weeks. Autism Senior Tutors provide the Autism Tutors with training, feedback, and IOA assessments, and they train parents, and work with each child one-on-one. Autism Consultants supervise and train a number of Autism Senior Tutors and Autism Tutors for six hours every one to three months, create learning and behaviour programs for each child, and provide parent training and supervision. Thus, as a component of their jobs, Autism Senior Tutors supervise the treatment integrity of DTT sessions conducted by the Autism Tutors, and Autism Consultants supervise the treatment integrity of DTT sessions conducted by both the Autism Senior Tutors and the Autism Tutors.

In the current study, treatment integrity was evaluated during Baseline, Post-training, Generalization, and Follow-up sessions. During Baseline sessions, participants used the DTTEF to evaluate a confederate role-playing an instructor who taught another confederate role-playing a child with ASD three different tasks (matching pictures, pointing-to-named pictures, and motor imitation) using DTT. The teaching tasks were taught with either low (40%) DTT treatment accuracy, moderate (70%) DTT treatment accuracy, or high (90%) DTT treatment accuracy. During training, participants studied the DTTEF-SIM, practiced scoring four videos of a confederate instructor teaching a

confederate child, and took a mastery test of the material studied. During Post-training sessions, participants evaluated the treatment integrity of the same three teaching tasks, like in Baseline. During a Generalization session approximately one week later, participants scored three videos of an Autism Tutor teach the same three tasks as in Baseline and Post-training to a child with ASD. Finally, during Follow-up sessions, participants evaluated a confederate instructor teach each of the three teaching tasks with a different level of integrity to a confederate role-playing a child with ASD.

Method

Participants and Setting

Autism Consultants and Senior Tutors. Six staff members from the St.Amant Autism Programs participated in the study. Four participants were Autism Senior Tutors and two participants were Autism Consultants. Participant characteristics are listed in Table 2. Autism Senior Tutors were given a recruitment package at an administration

Table 2

Participant Characteristics

No.	Position	Age	Gender	Experience as Autism Consultant	Experience as Senior Tutor	Experience as Tutor	Education Level
P01	Senior Tutor	27	M	NA	3 months	1 year	B.A. Psychology
P02	Senior Tutor	24	F	NA	2.5 years	2 years	B.A. Honours Psychology
P03	Senior Tutor	27	F	NA	2 years	2 years	B.A. Psychology
P04	Senior Tutor	29	F	NA	2 years	4 years	B.A. Psychology
P05	Consultant	26	F	1 month	0	0	M.A. Psychology (ABA)
P06	Consultant	30	M	2 years	2 years	2.5 years	M.A. Psychology (ABA)

meeting. Autism Consultants were mailed a recruitment letter from an administrative assistant at St.Amant. The recruitment letter described the nature of the study and invited the staff member to participate. An accompanying consent form was also provided. It emphasized that participation was voluntary and would not affect a participant's job status or any services that he/she would be receiving now or in the future from any St.Amant organization. If the individual wished to participate in the study, then he/she was instructed to return the consent form by mail in a pre-addressed envelope that was provided. All participants received an honorarium of a \$20.00 coffee gift card.

Autism Tutor and child with ASD. An Autism Tutor and a child with ASD from the St.Amant Autism Programs were recruited for the purposes of creating three DTT videos for participants (Autism Senior Tutors and Autism Consultants) to evaluate during the Generalization sessions. The administrative assistant mailed recruitment packages to Autism Tutors and children and their parents receiving services from the St. Amant Autism Programs. The recruitment letter described the nature of the study and invited the Autism Tutor or child with ASD to participate. In an accompanying letter, a consent form was provided. It emphasized that participation was voluntary and would not affect job status or any services that he/she would be receiving now or in the future from any St.Amant organization. If an Autism Tutor or child with ASD with parental approval wanted to participate in this part of the study, then he/she was instructed to return the consent form by mail in a pre-addressed envelope provided. The Autism Tutor and child with ASD who replied first participated. The Autism Tutor was 24 years of age, had a B.A. Honours degree in Psychology, and had been working as an Autism Tutor for 1.5 years. The child with ASD was a seven-year-old male.

All sessions (Baseline, Training, Post-training, Generalization, and Follow-up) took place at St.Amant in a private testing room. The Generalization videos of the Autism Tutor and child with ASD were also created in this testing room. The room furniture consisted of a table and four chairs.

Materials

Baseline. The confederate role-playing the instructor received three separate scripts that described how to teach three tasks commonly taught to children with ASD (see example in Appendix B). The three DTT tasks are: (a) matching pictures (e.g., when a picture of a dog, a house, and a tree are placed in front of a child, and the child is given a picture of the dog, the correct response is to match the pictures of the dog by placing one picture on top of the other); (b) pointing-to-named pictures (when three options are placed on the table in front of the child); and (c) motor imitation (e.g., a teacher will put his or her arms up and say “do this”). The script for each task was divided into 12 teaching trials and 20 DTT components. The scripts for each teaching tasks were programmed so that the three tasks were taught with either (a) low (40%) DTT treatment accuracy; 49/119 correct DTT components), (b) moderate (70%) DTT treatment accuracy; 83/119 correct DTT components), or (c) high (90%) DTT treatment accuracy; 107/119 correct DTT components). Specifically, the scripts indicated which DTT components to perform correctly and which DTT components to perform incorrectly. The confederate instructor was also provided with appropriate stimuli for each of the teaching tasks. These included picture flash cards for the pointing-to-named pictures and matching pictures teaching tasks, edibles for reinforcement, and three datasheets to record the responses of the confederate role-playing the child with ASD (e.g., Arnal et al., 2007;

Fazzio, et al., 2009; see Appendix C). A participant also received a timer for the observation of the length of inter-trial intervals.

The confederate role-playing the child with ASD was given a script that described how to respond to the confederate instructor (e.g., Arnal et al., 2007; Fazzio, et al., 2009; see Appendix D). Specifically, for each of 12 trials for a teaching task, the script indicated to attend or not attend to the instructor, to respond correctly or incorrectly, and what prompting level was required by the instructor in order to respond.

A participant (Autism Senior Tutor or Autism Consultant) received a background questionnaire to fill out (see Appendix E), an overview of the study (see Appendix F) and a set of abbreviated instructions for assessing three teaching tasks (See Appendix G). A participant was given three copies of the DTTEF (see Figure 1, page 20) to evaluate each of the three simulated teaching sessions, and a pen to record his/her assessment of the confederate instructor.

Materials were identical across participants. All sessions were videotaped for data collection purposes. The DTTEF was used by the primary researcher and second observer to score the performance of the confederate instructor.

Training. A participant received the DTTEF-SIM (see Appendix A), blank paper, a pen, and a highlighter. The DTTEF-SIM consisted of 18 pages of instruction, five training steps, descriptions of the 20 DTT Components, 25 study questions, and four practice activities. A participant also received a computer in order to watch the video files during the practice activities. The participant received a mastery test when he/she was finished with the training package. The test consisted of five questions taken directly from the study questions in the manual (see Appendix H).

Post-training. Materials for the confederate instructor, confederate who role-played a child with ASD, and a participant were identical to those used in Baseline with the exception of the background questionnaire. A participant also received a social validity questionnaire (see Appendix I).

Generalization. To create the generalization videos, the Autism Tutor was given three datasheets to teach 12 trials of each of three teaching tasks (matching pictures, pointing-to-named pictures, and motor imitation; see example in Appendix C) to the child with ASD. The Autism Tutor also received a pen, teaching materials (picture flash cards for the pointing-to-named pictures and matching pictures teaching tasks) and edibles for reinforcement. The child with ASD did not need any materials. A computer was used to videotape the session.

During the Generalization sessions, a participant had access to a computer to watch the three videos of the Autism Tutor teach the three tasks to a child with ASD. The participant also received a pen and three copies of the DTTEF. Because the Autism Tutor's datasheet could not be clearly observed in the video, the participant was provided with a photocopy of the datasheet so that he/she was able to score all components on the DTTEF. The Autism Tutor taught the three tasks with 100% accuracy in the videos.

Follow up. The Autism Consultants, Autism Senior tutors, and the confederate who role-played a child with ASD received the same materials as in Baseline and Post-training. The confederate instructor received three scripts like in previous phases, but in this phase, each script specified one of the three levels of treatment integrity (low, moderate, or high).

Procedure

Experimental design. To evaluate the effectiveness of the DTTEF-SIM, I used a modified-multiple baseline design across a pair of St.Amant Autism Programs staff, systematically replicated twice. The design was considered to be modified from the typical multiple baseline design because fewer baseline data points were collected. In a pair of participants, Participant A was assessed during three baseline sessions, assessing three teaching tasks (matching pictures, pointing-to-named pictures, and motor imitation), one task per session. Participant B was assessed during six baseline sessions, assessing each of three teaching tasks twice, one task per session. After each participant completed the Baseline assessment, he/she studied and mastered the training manual. Next, he/she was assessed during three Post-training sessions, assessing the three teaching tasks, one task per session. Approximately one week later, a participant was assessed during three Generalization sessions, one task per session. Finally, approximately seven months later, four of the six participants were assessed during three Follow-up sessions, one task per session.

Across the pairs of participants in the modified multiple-baseline design, each pair evaluated the treatment integrity of the DTT sessions during Baseline and Post-training with a programmed level of DTT treatment accuracy of either low (40%) accuracy, moderate (70%) accuracy, or high (90%) accuracy. That is, the confederate instructor taught all tasks across phases with the same level of DTT treatment accuracy for the pair of participants, as indicated on her script. The pairs of participants were randomly assigned to a DTT accuracy condition. Participants 1 and 2 were assigned to the low DTT accuracy condition, Participants 3 and 4 were assigned to the high DTT accuracy condition. Participants 5 and 6 were assigned to the moderate DTT accuracy condition.

Baseline. Baseline sessions were conducted in a private testing room at St. Amant and videotaped for data analysis purposes. First, a participant received a brief overview of the study (see Appendix F) and completed the background questionnaire (see Appendix E). Next, a participant was given 10 minutes to read a one-page summary of how to score one of three DTT tasks (previously described) administered to a child with ASD (see Appendix G) and was given the DTTEF to review (see Figure 1, page 20). Once a participant indicated that he/she had finished reading a summary for the teaching task and reviewing the DTTEF or ten minutes had passed, then he/she attempted to score, using the DTTEF, 12 trials of a live teaching session of the confederate instructor teaching the confederate child. After the first scoring session, a set of abbreviated instructions for a second task was introduced and a participant had 10-minutes to review the instructions and the DTTEF, followed by the attempt to score 12 trials of that session. This was repeated until a participant attempted to score each of three teaching tasks either once (the first participant of a pair in the modified-multiple baseline design) or twice (the second participant of a pair in the modified-multiple baseline design). The order of the tasks that were scored by a participant was random across participants.

Background and training of confederates. To ensure that the procedure was implemented as planned, the confederate who role-played a child with ASD and the confederate instructor videotaped role-playing sessions where they practiced using their respective set of scripts for the experiment. Each of the levels of DTT treatment accuracy, and each of the confederate “child’s” scripts were practiced until 100% integrity was obtained across all DTT treatment conditions.

Training. After Baseline, a participant was given the DTTEF-SIM to study (see Appendix A). Training was divided into five parts, corresponding to the five parts of the DTTEF (see Table 3). The training steps involved memorizing the “Dos” (correct instructor behaviour) and “Don’ts” (incorrect instructor behaviour) of each of the 20 components of the DTTEF, learning 25 study questions, watching four video demonstrations of an instructor implementing DTT, and engaging in the practice activities that corresponded to the video demonstrations. All four practice activities involved using a part of the DTTEF to evaluate the video demonstrations. The participant engaged in the practice activities sequentially as they appeared in the manual. First, Part A of the video demonstration illustrated how to prepare to conduct a teaching session where an instructor demonstrated how to correctly engage in the first six components of the DTTEF (Part I). Next, Part B of the video demonstration on managing antecedents and consequences for correct responses illustrated an instructor conducting

Table 3

Components of the DTTEF

Part of DTTEF	Title	No. of Components
Part 1	Prepare to Conduct a Teaching Session	6
Part 2	On Standard Trials, Manage Antecedents	5
Part 3	On Standard Trials, Manage Consequences and Record Data	3
Part 4	An Error Correction Trial Following an Error	5
Part 5	Fade Prompts	1

three DTT trials in which she administered both the antecedents and consequences for each teaching trial (Parts II and III of the DTTEF). Across the three trials, there were five programmed errors, which involved presenting the incorrect teaching materials or

modeled response (Component 9 of the DTTEF) and presenting an incorrect prompt (Component 11 of the DTTEF). Next, Part C of the video demonstration illustrated an instructor administering three error correction trials following an error made by the child (Part IV of the DTTEF). Across the three trials, there were three programmed errors which involved presenting the incorrect teaching materials or incorrect modeled response (Component 9 of the DTTEF), not recording the response immediately and accurately on standard trials (Component 14a) and on error correction trials (Component 14b of the DTTEF), and failing to re-present the instruction and prompt immediately to guarantee a correct response after an error (Component 18 of the DTTEF). Finally, Part D of the video demonstrated an instructor administering 12 DTT trials. Across the 12 trials, there were 13 programmed errors which involved presenting the incorrect teaching materials or incorrect modeled response (Component 9 of the DTTEF), presenting the incorrect prompt (Component 11 of the DTTEF), not recording the response immediately and accurately on standard trials (Component 14a) and on error correction trials (Component 14b of the DTTEF), and not fading prompts across trials (Component 20 of the DTTEF). The specific DTTEF Components where programmed errors occurred in the video demonstrations are those that individuals tend to deliver with moderate (e.g., 60%-79%) to poor (e.g., 0%-59%) accuracy after receiving training (e.g., Wightman, Yates, Martin, Pear, & Yu, 2013). Other researchers have also listed these components as especially important because of common integrity failures (e.g., Carroll et al., 2013; Noell, Gresham, & Gansle, 2002; Holcombe, Wolery, Snyder, 1994). Therefore, it was important to emphasize these components during staff training.

All practice activities had an answer key that was located at the back of the manual. To ensure that a participant completed the activity with accuracy, he/she was prompted by the manual to compare his/her answers to the answer key after completion of the activity. When a participant had completed studying the manual and each of the practice activities, then the mastery test was administered. The test consisted of five questions taken from the DTTEF-SIM. A participant was required to obtain 100% accuracy on the test to proceed to the Post-training phase. If a participant did not receive 100% mastery, then he/she was required to re-study the material and re-write the question(s) until 100% mastery was achieved.

Post-Training. A participant was assessed on the same three tasks following the same procedure as during Baseline. That is, the participant was asked to re-read the three, one-page summaries of how to score DTT of three teaching tasks (see Appendix G). The participant received 10 minutes to read a set of abbreviated instructions for a task. Once a participant indicated that he/she had finished reading a summary for a teaching task, then he/she attempted to score, using the DTTEF, 12 trials of a live teaching session of the confederate instructor teaching that task to the confederate who role-played a child with ASD. As in Baseline, both confederates were following a script on how to respond. After the first scoring session, the next set of abbreviated instructions was introduced, followed by the attempt to score 12 trials of that session. This was repeated until a participant attempted to score each of the three teaching tasks. The order of the tasks that were scored by the participant was random across participants. The level of treatment integrity with which the confederate instructor administered DTT remained the same as in Baseline for a pair of participants. A participant was considered to have

mastered evaluating the treatment integrity of a task if he/she obtained 80% accuracy or greater on that task. After the post-training assessment, a participant completed the social validity questionnaire (see Appendix I). The questionnaire consisted of seven items. Two items addressed the goals of the study, two items addressed the procedure, and three items addressed the effects of the study. Participants rated the importance of the items on a scale of 1 to 5 (1 = *disagree* and 5 = *agree*).

Generalization. A participant used the DTTEF to evaluate three videos of an Autism Tutor teach three tasks, one task per video, to a child with ASD. The teaching tasks were the same as those used in previous phases (matching pictures, pointing-to-named pictures, and motor imitation). The videos showed the Autism Tutor teaching the child with ASD each of the three tasks with 100% integrity. The high level of integrity was an unplanned result of recruiting an experienced Autism Tutor, and a high functioning child with ASD.

Follow-up. Approximately seven months after training, four of the six participants were available to come in for a Follow-up assessment. Participant 2 was not able to participate because she was out of the country for an extended period of time and Participant 3 was not able to participate because she had moved out of the province. The remaining participants used the DTTEF to evaluate the confederate instructor teach a confederate who role-played a child with ASD each of the three teaching tasks, one task per session, like in previous phases. Each teaching task was taught with low (40%) DTT treatment accuracy, moderate (70%) DTT treatment accuracy, or high (90%) DTT treatment accuracy. The level of treatment integrity with which a teaching task was taught varied at random across participants.

Scoring the dependent variable across phases. To determine a participant's scoring accuracy across phases (Baseline, Post-training, Generalization, and Follow-up), the primary researcher observed the videotaped sessions and scored each of the teaching sessions using the DTTEF. A participant's assessment accuracy was computed for each session by comparing the primary researcher's DTTEF score to the participant's DTTEF score. This was done by dividing the number of agreements by the number of disagreements plus agreements and multiplying by 100% (Martin & Pear, 2015).

Inter-Observer Agreement (IOA)

As described above, in all Baseline, Post-training, and Follow-up sessions in which the participant used the DTTEF to score the DTT performance of a confederate role-playing a child with ASD, and in Generalization sessions where the participant scored the performance of an Autism Tutor teaching a child with ASD, the primary researcher's DTTEF scores were used to evaluate the scoring accuracy of the participant. For 30% of the sessions across each of the Baseline, Post-training, Generalization, and Follow-up phases, an expert observer (trained graduate student) also used the DTTEF to score the confederate instructor's DTT performance. To calculate IOA, the second observer's DTTEF score was compared to the primary researcher's DTTEF score. Specifically, each of the DTTEF components for each trial were compared. An agreement occurred when both observers recorded that the confederate instructor preformed a DTTEF component correctly, when both observers recorded that the confederate instructor preformed a DTTEF component incorrectly, or when both observers recorded that a DTTEF component was not applicable for a given trial. A disagreement occurred when the observers recorded different instructor behaviour for a

DTTEF component (i.e., one observer recorded that a component was completed correctly and the other observer recorded that the same component was performed incorrectly for a given trial). IOA was calculated by dividing the number of agreements by the number of agreements plus the number of disagreements and then multiplying by 100% (Martin & Pear, 2015). IOA averaged 92.75% ($SD = 5.61\%$; range: 87% - 100%).

Procedural Integrity (PI)

To ensure the procedure was followed correctly, the primary researcher followed a script for each phase of the study (e.g., Introduction, Baseline, Post-training, Generalization, and Follow-up; see Appendix J). An observer recorded whether the procedure was followed as planned using the appropriate procedural integrity script for a given phase of the study. For a phase, PI was determined by computing the percent of steps that were administered correctly during that session. PI was completed for 78% of the sessions and averaged 100%.

PI was also assessed for the confederate instructor and confederate role-playing a child with ASD for 30% of the sessions. A trained research assistant recorded whether the confederate followed the confederate scripts as intended. Confederate PI was calculated by dividing the number of correct confederate behaviours by the number of correct confederate behaviours plus the number of incorrect confederate behaviours and then multiplying by 100%. Mean confederate instructor PI was 94.2% ($SD = 3.7\%$; range: 89.7% - 100%) and mean confederate child PI was 97.4% ($SD = 5.03\%$; range: 89.2% - 100%).

Results

Time to Study the Training Package

Participants averaged 1 hour and 16 minutes to study and master the material in the DTTEF-SIM, ranging from 40 minutes to 1 hour and 55 minutes. This time included reading the manual, watching the video files, and completing the practice activities. After studying the manual, four of the six participants met the mastery criterion of 100% on the mastery test. The remaining two participants had to restudy one question. It was observed that all participants finished the practice activities, as indicated by the completed work and notes in their personal copies of the manual.

Overall Results

Data from Baseline, Post-training, Generalization, and Follow-up sessions were analyzed by visual inspection (Cooper et al., 2007; Martin & Pear, 2015). Baseline scores were low across the six participants and there were no overlapping data points across Baseline, Post-training, and Generalization assessments. For all participants, assessment accuracy increased immediately and sizably after training with the DTTEF-SIM and remained high during the Generalization sessions with a child with ASD. These findings provide strong evidence that the improvement was due to the training package. Additionally, three of the four individuals who participated in the Follow-up sessions were able to evaluate the treatment integrity of the DTT sessions with high accuracy approximately seven months after training.

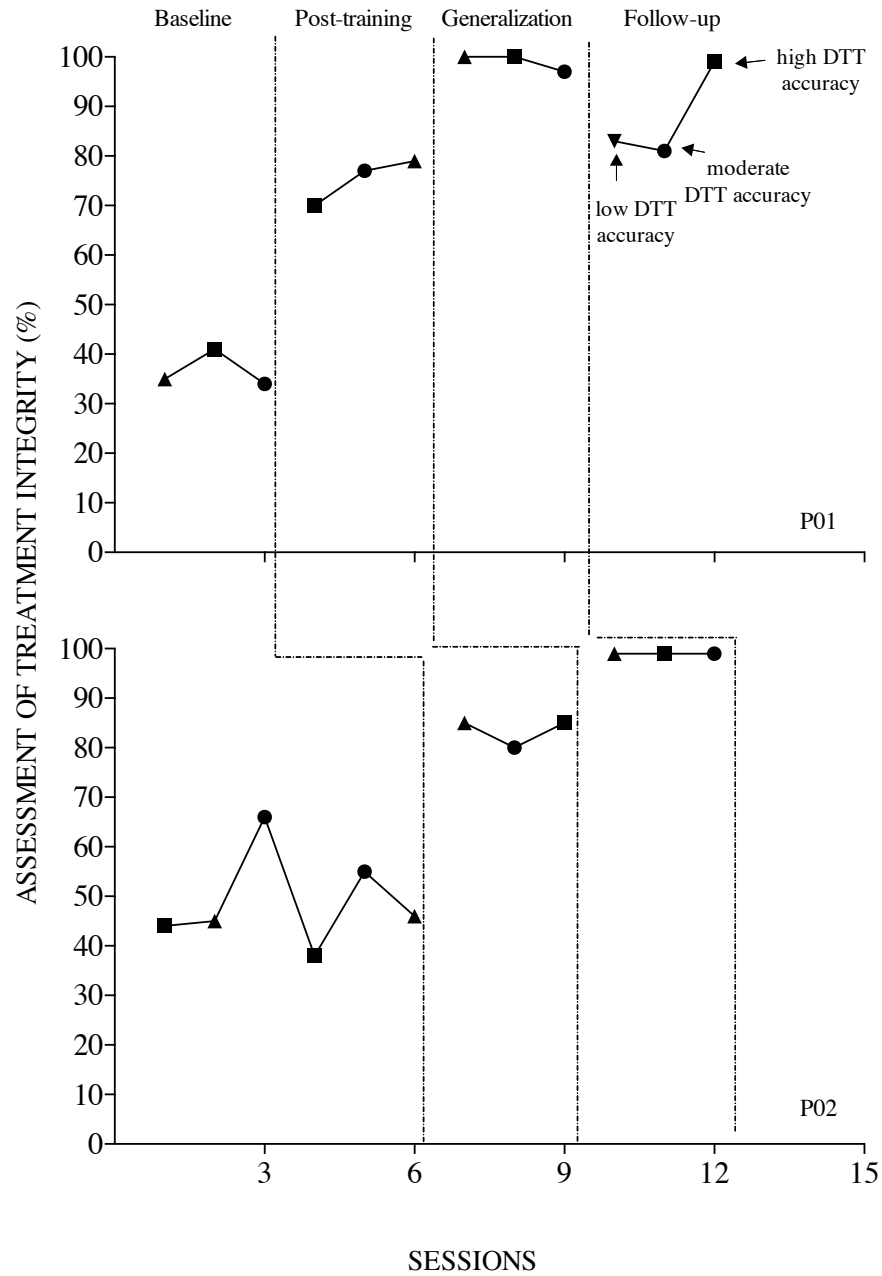
Low DTT Treatment Accuracy Condition

Participants 1 and 2 were assigned to the low DTT treatment accuracy condition where they evaluated the confederate instructor teaching the confederate child with approximately 40% DTT treatment accuracy. As demonstrated in Figure 2, Participant 1's assessment accuracy improved sizably from Baseline to Post-training, improving an

average of 38.7%. Baseline scores averaged 36.9% (matching pictures, 35.2%; pointing-to-named pictures, 41.4%; motor imitation, 34.1%). At Post-training, the mastery criterion of 80% was not met on any task, with assessment accuracy averaging 75.6% (matching, 79.1%; pointing, 70.4%; imitation, 77.4%). During the Generalization phase where the participant watched three videos of an Autism Tutor teach the three tasks to a child with ASD, assessment accuracy averaged 99% (matching, 99%; pointing, 99%; imitation, 99%). Approximately seven months later during three Follow-up sessions, Participant 1 averaged 87.3% (matching, low DTT treatment accuracy, 83%; pointing, high DTT treatment accuracy, 88%; imitation, moderate DTT treatment accuracy, 91%).

Participant 2's assessment of treatment integrity increased an average of 35.7% from Baseline to Post-training (see Figure 2). Because Participant 2 was paired with Participant 1 in the modified multiple-baseline design, Participant 2 was assessed during two Baseline conditions. That is, this participant completed three tasks in one Baseline

Figure 2. Accuracy using the DTTEF (matching ▲, pointing ■, imitation ●) for Participants 1 and 2 in the low DTT treatment accuracy condition.



session like Participant 1, and then completed the same three tasks a second time. During Baseline, Participant 2's assessment accuracy averaged 47.6% across the six tasks (matching, 45.2%, 38%; pointing, 44.4%, 36.2%; imitation, 66.4%, 55.1%). After

training, Participant 2's assessment accuracy averaged 83.3% (matching, 80%; pointing, 85%; imitation, 85%). Participant 2 met the mastery criterion on all three tasks during Post-training, and also assessed the Generalization sessions with high accuracy ($M = 99\%$; matching, 99%; pointing, 99%; imitation, 99%). This individual did not participate in the Follow-up sessions due to scheduling conflicts.

Moderate DTT Treatment Accuracy Condition

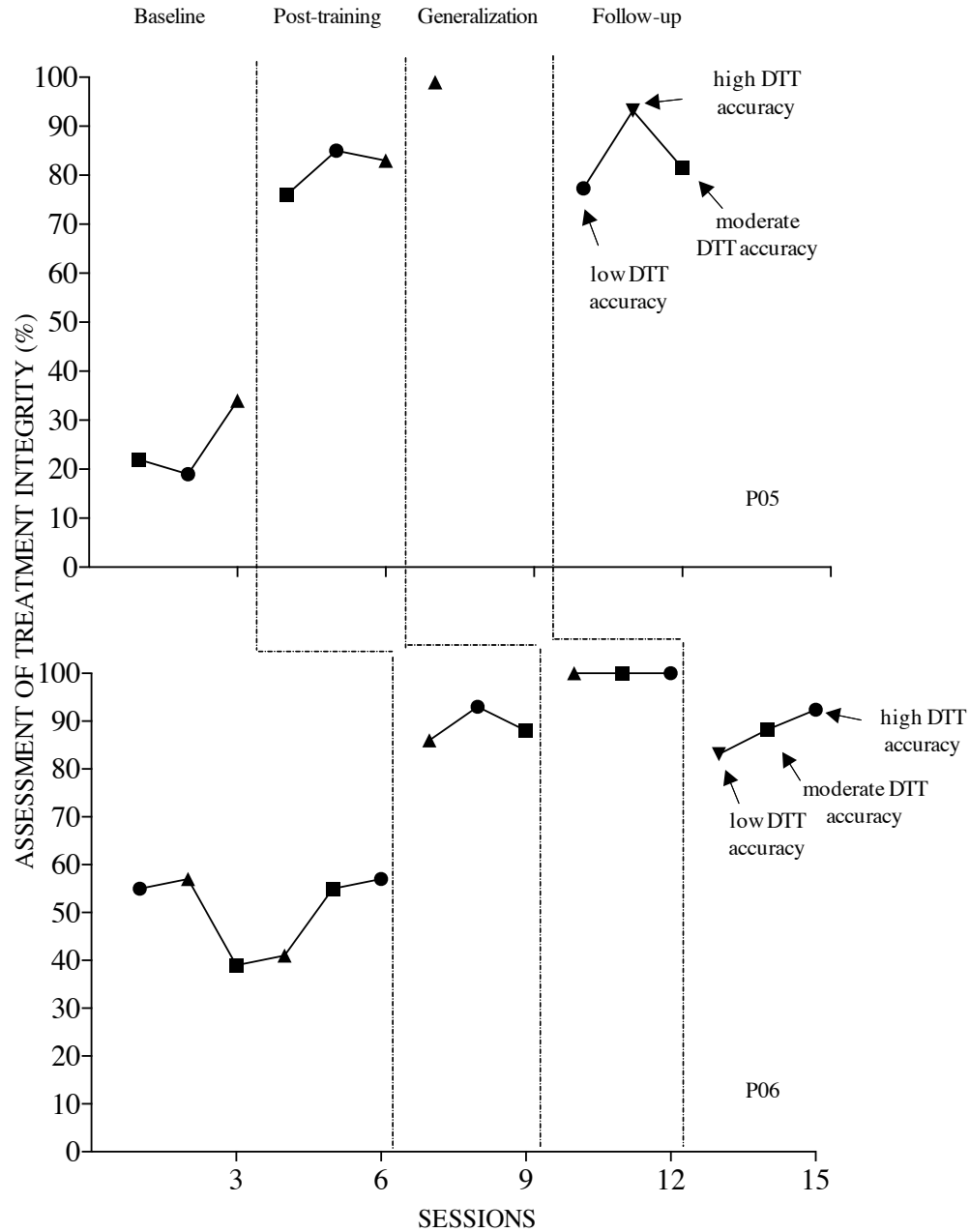
Participants 5 and 6 were assigned to the moderate DTT accuracy condition where they evaluated the confederate instructor teaching the confederate child with approximately 70% DTT treatment accuracy. Participant 5's mean assessment accuracy improved a sizable 56.2% from Baseline to Post-training (see Figure 3). Baseline scores averaged 25.2% (matching, 34.3%; pointing, 22.1%; imitation, 19.3%). At Post-training, accuracy averaged 81.4% (matching, 83.1%; pointing, 76.2%; imitation, 85%).

Participant 5 met the mastery criterion of 80% on two out of the three teaching tasks. Due to scheduling issues, Participant 5 only evaluated the treatment integrity of one video during Generalization in which he scored 99%. During the Follow-up sessions approximately seven months later, this participant assessed treatment integrity with 84% accuracy (matching, high DTT treatment accuracy, 93.2%; pointing, moderate DTT treatment accuracy, 81.5; imitation, low DTT treatment accuracy, 77.3; see Figure 3).

Participant 6 was assessed during two baseline phases where assessment accuracy averaged 50.8% (matching, 57.1%, 41.2%; pointing, 39.3%, 55.1%; imitation, 55.2%,

Figure 3. Accuracy using the DTTEF (matching ▲, pointing ■, imitation ●) for

Participants 5 and 6 in the moderate DTT treatment accuracy condition.



57%). After training, Participant 6 averaged 89.3% (matching, 88.1%; pointing, 86.3%; imitation, 93.4%), improving an average of 38.5%. Thus, Participant 6 met the mastery criterion on all three tasks. During the Generalization phase, Participant 6 scored 100%

while scoring the three videos of an Autism Tutor applying DTT to a child with ASD.

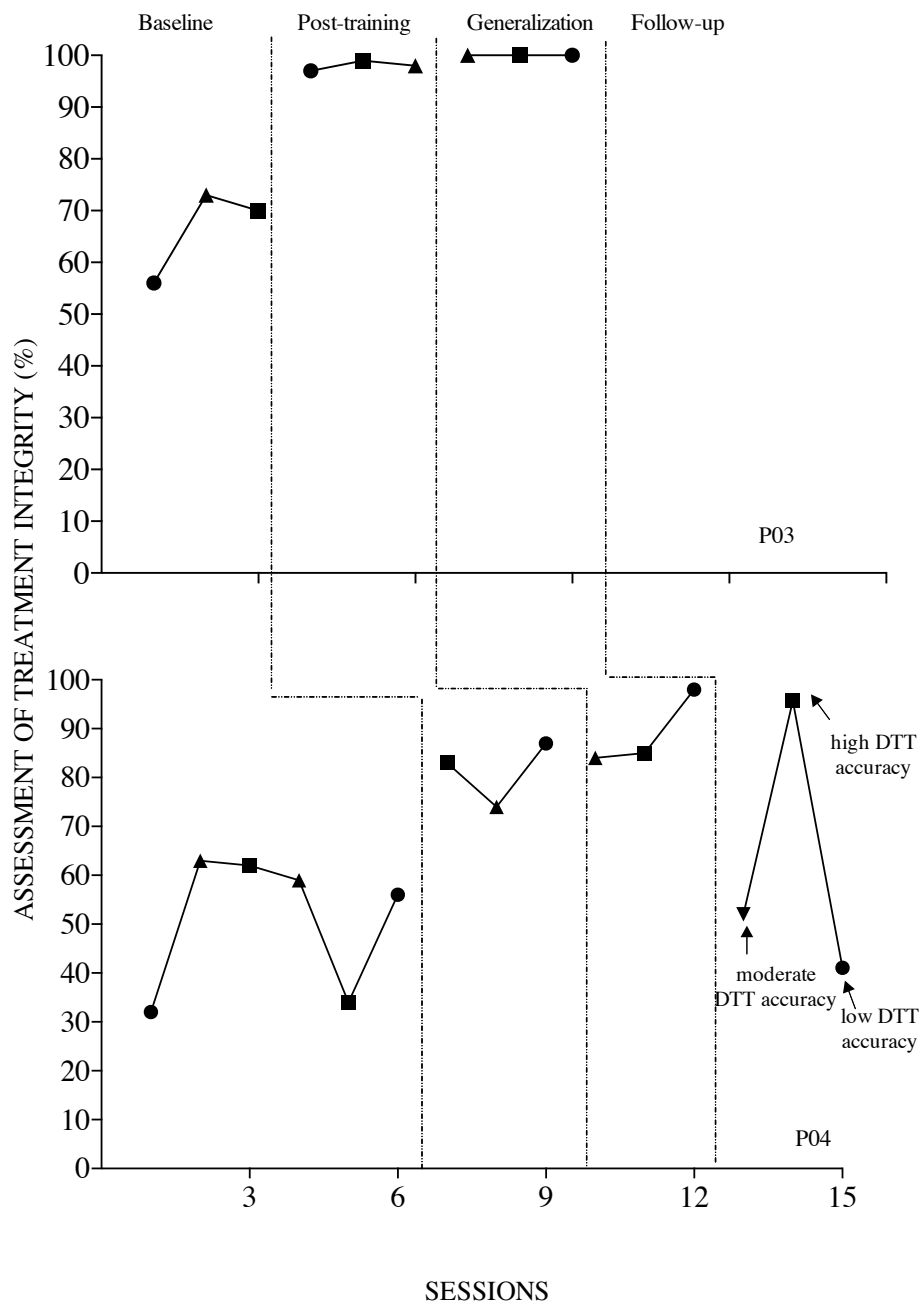
Finally, during the Follow-up phase, Participant 6 evaluated the sessions with an average of 87.9% (matching, low DTT treatment accuracy, 83.1%; pointing, moderate DTT treatment accuracy, 88.2%; imitation, high DTT treatment accuracy, 92.4%).

High DTT Treatment Accuracy Condition

Participants 3 and 4 were assigned to the high treatment integrity condition where they evaluated the confederate instructor teaching the confederate child with approximately 90% DTT accuracy. As demonstrated in Figure 4, Participant 3's assessment of treatment integrity improved from Baseline to Post-training an average of 31.7%. Participant 3 averaged 66.5% during Baseline (matching, 70.1%; pointing, 73.3%; imitation 56%). After training using the DTTEF-SIM, Participant 3 averaged 98.2% (matching, 99%; pointing, 98.3%; imitation, 97.2%), meeting the 80% mastery criterion on all three tasks. During the Generalization phase, Participant 3 evaluated the three videos of the Autism Tutor applying DTT to the child with ASD with an average of 99% (matching, 99%, pointing, 99%, imitation, 99%). Participant 3 did not participate in the Follow-up Sessions due to scheduling conflicts.

Participant 4's mean assessment accuracy increased from Baseline to Post-training 30.3%. Participant 4 was assessed during two baseline phases for a total of six tasks. Baseline scores averaged 51.2% (matching, 63.4%, 56%; pointing, 62%, 59.2%; imitation, 32.3%, 34.4%). Post-training scores averaged 81.5% (matching, 74%;

Figure 4. Accuracy using the DTTEF (matching ▲, pointing ■, imitation ●) for Participants 3 and 4 in the high DTT treatment accuracy condition.



pointing, 87.1%; imitation, 83.4%). Thus, Participant 4 met the mastery criterion on two of the three tasks during Post-training. During the Generalization phase, Participant 4's assessment accuracy averaged 86% (matching; 84%, pointing, 85%; imitation 88%).

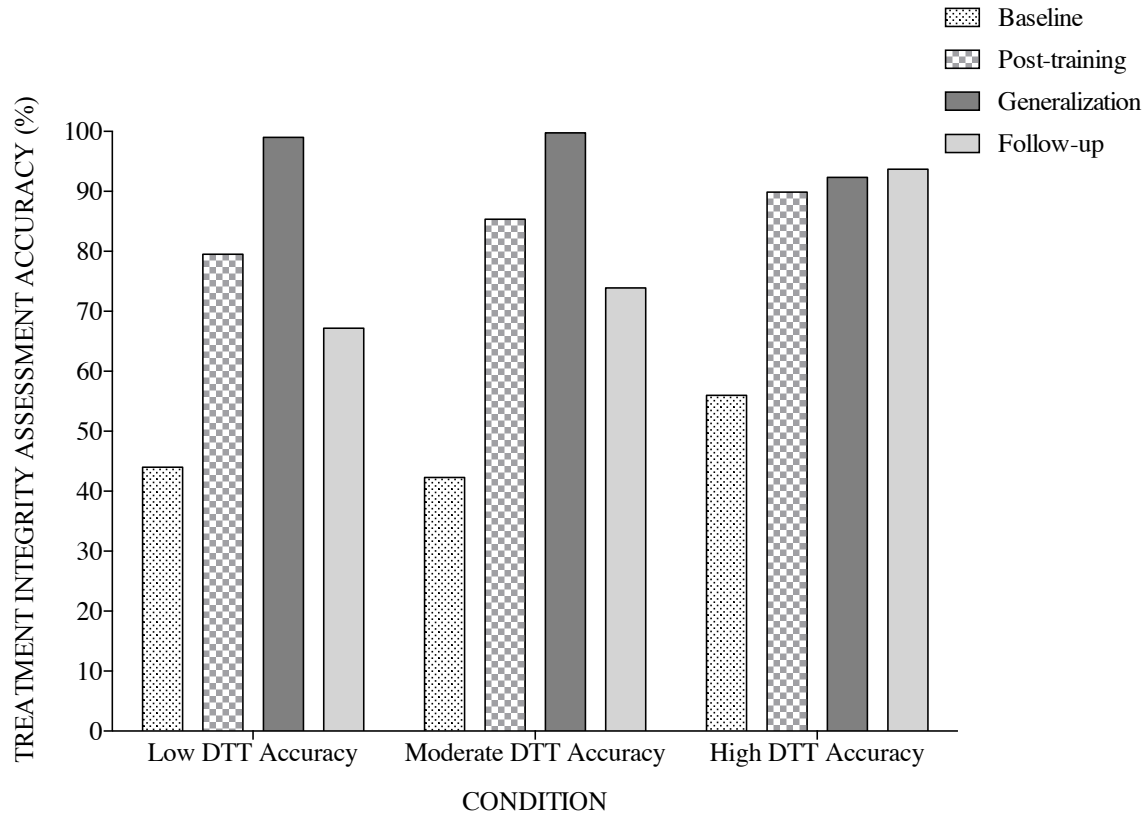
Finally, during Follow-up sessions, assessment accuracy averaged 62.9% (matching, moderate DTT treatment accuracy, 52%; pointing, high DTT treatment accuracy, 95.7%; imitation, low DTT treatment accuracy, 41.1%).

Overall, for all participants, assessment accuracy during Baseline was low across conditions, averaging 47.6% ($SD = 14.2$, range: 19% - 73%), and after training, assessment accuracy sizably increased, averaging 84.7% ($SD = 8.2$, range: 70% - 99%). At Post-training, three of six participants met the mastery criterion of 80% accuracy on all three tasks, two participants met the mastery criterion on two of the three tasks, and one participant did not meet the mastery criterion on any of the three tasks. Accuracy in the Generalization sessions was very high for all participants, averaging 96.7% ($SD = 5.5$, range: 84% - 100%). Finally, in the Follow-up phase, three of the four participants were able to evaluate the treatment integrity of low, moderate, and high DTT treatment conditions with high accuracy ($M = 77.8\%$, $SD = 18.72$).

The Use of the DTTEF Across Conditions and Phases

Comparing the three conditions of low DTT treatment accuracy, moderate DTT treatment accuracy, and high DTT treatment accuracy, the participants' treatment integrity accuracy using the DTTEF varied across conditions (see Figure 5). Specifically, Baseline, Post-training, and Follow-up accuracy was highest in the high DTT treatment accuracy condition and lower in the remaining conditions. In the low DTT treatment accuracy condition, Baseline accuracy averaged 44% ($SD = 10.63$), Post-training

Figure 5. Average assessment of treatment integrity for Participants 1-6 across conditions and phases.



accuracy averaged 79.48% ($SD = 5.44\%$), and Generalization accuracy averaged 99% ($SD = 0$). Participants assessed the tasks taught with low DTT treatment accuracy with an average of 67.16% ($SD = 22.75$) in the Follow-up phase. In the moderate DTT treatment accuracy condition, Baseline accuracy averaged 42.28% ($SD = 14.9$), Post-training accuracy averaged 85.35% ($SD = 5.69$), and Generalization accuracy averaged 99.75% ($SD = .05$). Participants assessed the tasks taught with moderate DTT treatment accuracy with an average of 73.9% ($SD = 19.25$) in the Follow-up phase. Finally, in the high DTT treatment accuracy condition, Baseline accuracy averaged 56.3% ($SD = 14.25$), Post-training accuracy averaged 89.83% ($SD = 10.09$), and Follow-up accuracy averaged 92.33 ($SD = 7.42$). Participants assessed the tasks taught with high DTT treatment

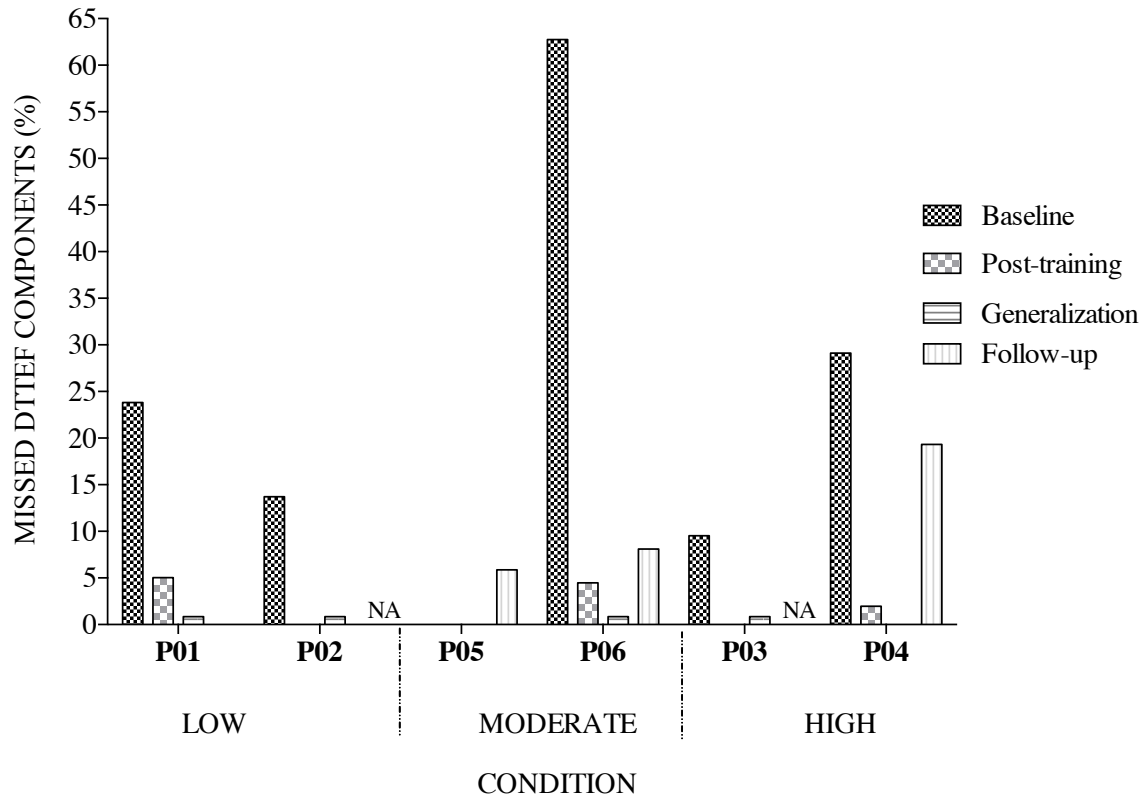
accuracy with an average of 93.7% ($SD = 1.72$) in the Follow-up phase.

DTTEF Components that Participants Didn't Score

The number of DTTEF components that were missed was also recorded for each participant. A missed component occurred when a DTT component for a trial was not scored and left blank. As demonstrated in Figure 6, the percentage of missed components was highest during the Baseline phase for all participants except for Participant 5. Specifically, for Participants 1 and 2 in the low DTT treatment accuracy condition, the percentage of missed components was 23.8% and 13.72%, respectively. For Participants 5 and 6 in the moderate DTT treatment accuracy condition, the percentage of missed components was 0%, and 62.74%, respectively. Finally, for Participants 3 and 4 in the high DTT treatment accuracy condition, the percentage of missed components was 9.52% and 29.13%, respectively.

Following training, the percentage of missed components decreased sizably. For Participants 1 and 2 in the low DTT treatment accuracy condition, the percentage of missed components was 5.04% and 0%, respectively. Specifically, across the 12 trials, Participant 1 missed Components 14 and 15 on nine trials. For Participants 5 and 6 in the moderate DTT treatment accuracy condition, the percentage of missed components was 0%, and 4.48%, respectively. Across the 12 trials, Participant 6 missed Components 14 and 15 six times, Component 14 one time, and Component 20 three times. For Participants 3 and 4 in the high DTT treatment accuracy condition, the percentage of

Figure 6. Percentage of missed components across participants and phases.



missed components was 0% and 1.96%, respectively. Specifically, Participant 4 missed Component 20 three times across the 12 trials.

During the Generalization phase, Participants 2, 3 and 5 did not miss scoring any of the DTTEF components. Participants 1, 4, and 6 only missed one component, which was Component 20, Fade Prompts Across Trials.

Finally, during the Follow-up phase, Participant 1 did not miss any of the DTTEF components. Participant 4 missed 19.32% of the components. These included three complete trials, two complete error correction trials, Component 9, Component 10 six times, Component 11 five times, and Component 14a five times, across the 12 trials. Participant 5 missed 5.88% of the components, which included Components 14 and 15

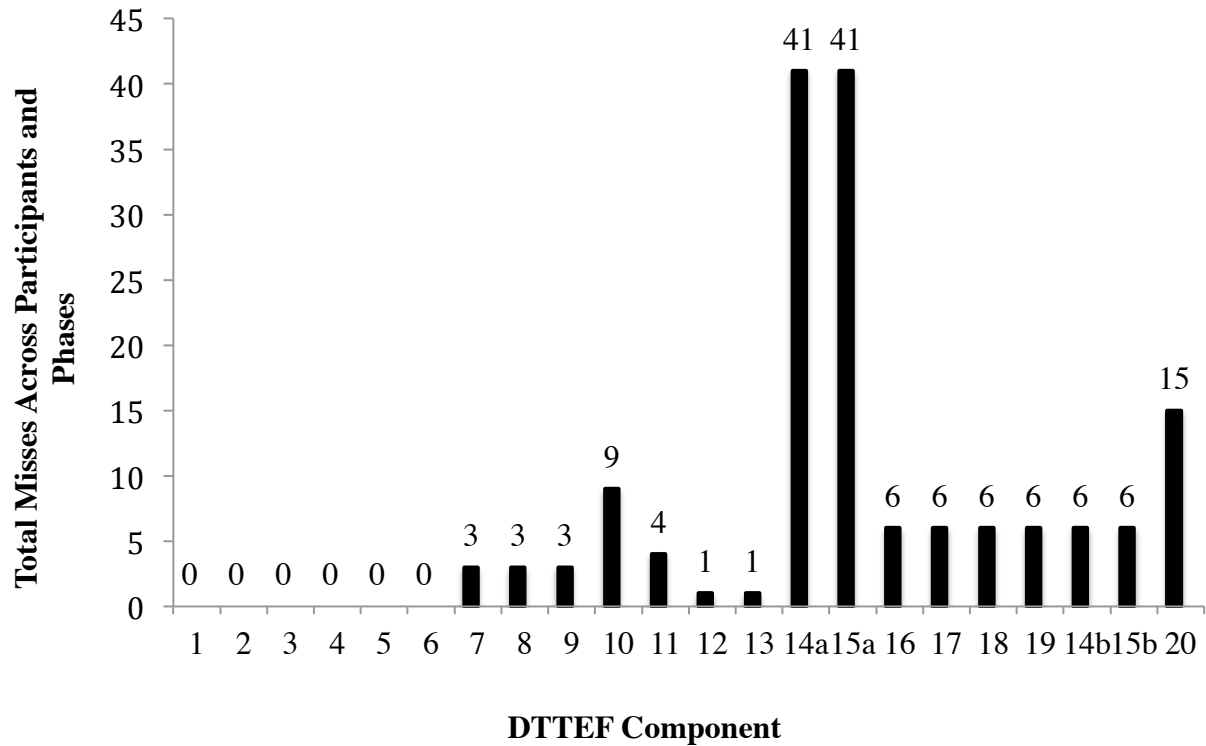
nine times each across the 12 trials. Finally, Participant 6 missed 8.12% of the components. These included Components 14 and 15 six times, Component 20 three times, and one complete error correction trial, across the 12 trials.

Interestingly, the results also demonstrated that some DTTEF Components were missed more frequently than others. Figure 7 demonstrates that Components 14a and 15a were missed a total of 41 times each across participants and phases, followed by Component 20 which was missed 15 times across participants and phases, and then Component 10 which was missed nine times across participants and phases. The remaining DTTEF Components that participants missed occurred at a lower frequency across participants and phases, ranging from 1-6 times.

Social Validity

All participants completed a 7-item social validity questionnaire which addressed the goals, the procedure, and the effects of the study. Participants rated the importance of the items on a scale of 1 to 5 (1 = *disagree* and 5 = *agree*). Overall, participants found the goals of the study to be important, rating the items an average of 5/5, the procedure to be effective, rating the items an average of 4.88/5, and the training package to be effective, rating the items an average of 4.77/5.

Figure 7. Frequency of DTTEF Components that were not scored across participants and phases.



Discussion

Treatment integrity is an important component of any behavioural intervention in experimental and applied settings. In order to draw valid inferences from the application of a behavioural intervention, treatments must be well specified, well tested, and carried out as intended (Kazdin, 1994). If an intervention is not administered accurately, then one cannot interpret the outcome with confidence (Cooper et al., 2007), and most importantly, client learning is compromised (DiGennaro Reed & Coddington, 2014). For example, numerous researchers have demonstrated that teaching with different levels of integrity results in a range of treatment effects for a client (e.g., Vollmer et al., 1999; St. Peter Pikin et al., 2010), and that administering a treatment with 50% accuracy can be

as detrimental to a client as administering the treatment with no accuracy (DiGennaro Reed, Reed, Baez, & Maguire, 2011). Because staff who are poorly trained in implementing behavioural services is one of the greatest challenges facing treatment providers and receivers (Cautilli, et al., 2000), and considering that DTT is widely used in EIBI for teaching children with ASD (Smith, 2001), there is a need for a standard evaluation method of the treatment integrity of DTT sessions. The DTTEF has been the only empirically validated tool used to assess the treatment integrity of DTT in the behavioural literature (e.g., Babel et al. 2008; Jeanson et al., 2010). Therefore, the current study evaluated the effectiveness of the DTTEF-SIM to teach individuals working with children with ASD in an intensive intervention program to evaluate the treatment integrity of DTT sessions.

It was hypothesized that mastering the material in the DTTEF-SIM would help participant staff of the St.Amant Autism Programs to assess the treatment integrity of DTT sessions. Overall, there was a sizable increase in participants' assessment accuracy from Baseline to Post-training across the three conditions (evaluating low DTT treatment accuracy, moderate DTT treatment accuracy, and high DTT treatment accuracy). Across all conditions, there were no overlapping data points from Baseline to Post-training, and the dependent variable increased immediately and sizably following the intervention, suggesting that the DTTEF-SIM was effective in teaching participants to assess the treatment integrity of DTT sessions using the DTTEF. In the Generalization phase where participants were required to observe three video sessions of an Autism Tutor teach three tasks to "child" with ASD, accurate use of the DTTEF was very high. In the Follow-up phase, approximately seven months later, where participants were required to evaluate the

confederate instructor teach the confederate child with low, moderate, and high integrity, accurate use of the DTTEF was also high. Additionally, the number of DTTEF components that were missed decreased sizably from Baseline to Post-training, and were minimal in Generalization. This suggests that after training, participants were able to keep-up with the pace of the teaching session, completing more of the DTTEF, and with higher accuracy. It was observed that the percentage of missed components did increase approximately seven months after training during the Follow-up session, however, accuracy remained high for three of the four participants and was moderate for the fourth participant, but two of three data points were similar to Baseline levels.

The current study's effectiveness contributes to the broader range of treatment integrity literature for several reasons. First, agencies using an evaluation form to monitor treatment integrity of behavioural assessments can use the results from the current study to support creating a training package for staff using other evaluation forms. For example, the Assessment of Basic Learning Abilities-Revised (ABLA-R) is an assessment tool used to identify the learning ability of individuals with DD. To ensure that testers administer the ABLA-R with accuracy, the ABLA-R tester evaluation form (ABLA-R TEF; Martin, Martin, Yu, Thomson, & DeWiele, 2011), which has been proven reliable and valid, is used (Awadalla et al., 2014). To ensure that staff are using the ABLA-R TEF correctly, which results in accurate test results, researchers could create a self-instructional training package. Second, agencies or researchers using an evaluation form to monitor the integrity of behavioural interventions such as token economies (e.g., Plavnick, Ferreri, & Maupin, 2010), differential reinforcement (e.g., LeGray, Dufrene, Sterling-Turner, Olmi, & Bellone, 2010), and response interruption and

redirection (RIRD; Dickman, Bright, Montgomery, & Miguel, 2012) could also create a training package for those required to use the respective evaluation form, which could aid in accurate assessment results. Third, in reviews of the treatment integrity of behavioural interventions, numerous researchers have reported the paucity of studies that have included a treatment integrity assessment (e.g., McIntyre et al., 2007). If more researchers included a behavioural checklist, such as the DTTEF, then the likelihood that the procedures and/or interventions used in the experiments are being administered with accuracy will increase, potentially resulting in stronger treatment effects.

Several limitations of the current study should be noted. First, during the Generalization phase, the Autism Tutor taught the three DTT tasks with 100% accuracy, which likely resulted in sessions that were easier for participants to score. In turn, participants' assessment accuracy was very high during this phase. Second, the Generalization phase consisted of video files of the Autism Tutor and a child with ASD as opposed to live scoring. Live scoring sessions would be more similar to what a participant would experience in his/her work environment. Third, only three of the six participants met the mastery criterion of 80% accuracy on all three tasks at Post-training. However five of six participants met the mastery criterion on two of the three tasks. The participant who did not meet the mastery criterion on any of the tasks was Participant 1 who was assigned to the low DTT treatment accuracy condition which was likely more difficult to score. Nevertheless, this participant averaged 75.6% accuracy, which was not far from the 80% criterion. Fourth, only four of the six participants were available for the Follow-up sessions, so it is unclear if the other participants' skills would have been maintained at this time. Also, these Follow-up sessions were conducted with the

confederate instructor and confederate child as opposed to a real child with ASD in order to control for the level of DTT treatment accuracy. Fifth, in comparison to the previous phases, the number of missed components during the Follow-up phase was particularly high for Participant 4 (e.g., up to 48/119).

Because this is the first study evaluating the effectiveness of the DTTEF-SIM, future research needs to replicate and extend the results of the current study. Replications should include additional participants in each condition, participants from other agencies, Autism Tutors with varying levels of experience in a Generalization phase, and children of varying functioning levels in a Generalization phase. To increase the percent improvement and decrease the number of missed components from Baseline to Post-training, another study could also require that participants meet a mastery criterion on scoring videotaped sessions where participants can pause between trials to complete scoring before proceeding to live scoring. Seeing as specific components (14a and 15a) were missed more than others, more detail on these components could be included in training. Furthermore, since errors on specific components can differentially affect treatment outcomes (e.g., Carroll et al., 2013), recent research has suggested assessing the treatment integrity of individual components as opposed to a global integrity measure (Cook et al., 2015).

In summary, the current study demonstrated that the DTTEF-SIM can be used to teach Autism Senior Tutors and Autism Consultants to evaluate the treatment integrity of DTT sessions conducted by a confederate instructor and confederate child with ASD, and an Autism Tutor and child with ASD. The results of this study are important in the application of EIBI and DTT as this training method was time efficient and effective.

The current results may enable agencies providing behavioural services to ensure that DTT is being applied consistently and accurately, resulting in positive gains for their clients.

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A SELF-INSTRUCTIONAL MANUAL FOR THE DISCRETE- TRIALS TEACHING EVALUATION FORM (DTTEF)

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Fazzio, and Lindsay Arnal**

2014

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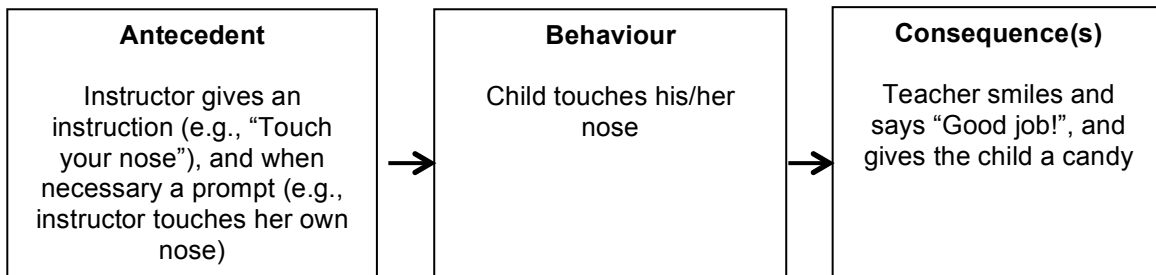
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INTRODUCTION

Autism Spectrum Disorder (ASD) is a neurodevelopmental disability that affects approximately 1 in 88 children in the United States (Centers for Disease Control, 2012). It is characterized by: deficits in communication and social interaction, and

restricted, repetitive patterns of behaviour, interests, or activities. A diagnosis is based on significant impairments in everyday functioning and being present in early childhood.

Early Intensive Behavioural Intervention (EIBI), based on the procedures of applied behaviour analysis (ABA) is the most effective treatment for children with ASD (Kodak & Grow, 2011; Matson & Smith, 2008; Matson & Sturmey, 2011). A common strategy for delivering EIBI with children with autism is discrete-trials teaching (DTT). This teaching method is made up of a series of individual teaching trials that typically last approximately 5-20 seconds each. DTT trials are typically separated by brief inter-trial intervals, and a teaching session typically consists of 12-20 trials. On each DTT trial, an instructor presents an **antecedent** (i.e., instruction plus prompts), the child emits a **behaviour**, and the instructor then presents a **consequence**, as diagrammed below.



Following a DTT trial, the teacher records the results (e.g., a correct prompted response) and gets ready for the next trial. DTT is useful in EIBI for teaching new discriminations, language, motor, and academic skills. Considering that research has demonstrated the effectiveness of EIBI with the use of DTT, it is essential that individuals are trained to properly administer DTT in order to establish effective interventions. Fazio and Martin developed a self-instructional manual for teaching staff and parents to conduct DTT with children with autism. The manual has been revised and researched several times until the latest edition in 2011. Most recently, the addition of a self-instructional video to the manual was proven effective for teaching tutors and parents to conduct DTT with around 90% accuracy after approximately 4.5 hours of study time (e.g., Thomson et al., 2012; Wightman et al., 2012; Young et al., 2012). Fazio and Martin's self-instructional manual presents a DTT package of 20 components, from preparation of the teaching trials, to prompting, prompt fading, error correction, and data collection that can be assessed for accuracy. In order to determine whether or not an instructor or parent accurately applied the 20 components of DTT while teaching a child with autism, Fazio, Arnal, and Martin developed the Discrete-Trials Teaching Evaluation Form (DTTEF; revised 2010) which has been demonstrated valid and reliable (e.g., Babel et al., 2008; Jeanson et al., 2010).

The purpose of this manual is to teach the reader how to use the DTTEF to determine whether staff or a parent is correctly applying the 20 components of DTT while conducting a DTT session with a child with ASD. The reader should perform each of the training tasks in this manual as they are described, and should memorize the Dos and Don'ts of a component of DTT before proceeding to the next component.

The Five Parts of the DTTEF

The 20 components of the DTTEF are divided into the following parts:

Part I: Prepare to Conduct a Teaching Session (6 components)

Part II: On Standard Trials, Manage Antecedents (5 components)

Part III: On Standard Trials, Manage Consequences and Record Data (3 components)

Part IV: An Error Correction Trial Following an Error (5 components)

Part V: Fade Prompts Across Trials (1 component)

Throughout this manual, you will encounter study questions. Each time that you encounter a question, we encourage you to figure out the answer and memorize it before proceeding.

Study Questions

1. What do the following acronyms refer to: EIBI, ABA, DTT, and DTTEF?
2. List the three components of a discrete-trial and describe an example.
3. Name the five parts of the DTTEF

As you study the content of this manual, follow each of the training steps as they are stated.

PART I: PREPARE TO CONDUCT A TEACHING SESSION

COMPONENT 1: DETERMINE TEACHING TASK(S)

Before an instructor begins a DTT session, the first step is to determine which task is to

Training Step 1a: Read the following material on Part I of the DTTEF and memorize the Dos and Don'ts for the six components of Part I.

be taught. Throughout this manual we will refer to three simple tasks commonly taught to a child beginning EIBI: (a) identity matching (e.g., when a picture of a cat, a house, and a tree are placed in front of a child, and the child is given an identical picture of a cat, the child will place the second picture of the cat on the top of the picture of the cat in front of him/her); (b) pointing-to-named pictures (e.g., when a picture of a dog, balloons, and a banana are placed in front of a child and the instructor says "Show me the dog", the child will point to the picture of the dog); and (c) motor imitation (e.g., when an instructor claps and says "Do this", the child will imitate the clapping).

***Throughout this manual, the Dos and Don'ts refer to the behaviour of the instructor (the individual implementing DTT with a child with autism). ***

When preparing a teaching session:

DO:


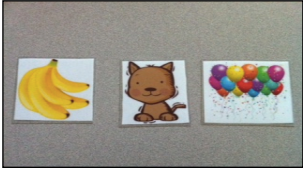

- Organize the teaching materials prior to beginning the session (e.g., gather the pictures that will be presented to the child during a matching task)

DON'T:

Use a training task that is not prescribed for the specific child by his/her behaviour analyst/ABA consultant

COMPONENT 2: GATHER THE TEACHING MATERIALS

Task	Matching pictures	Pointing-to-named pictures	Motor Imitation
------	-------------------	----------------------------	-----------------

Materials	Identical pictures of a cat, house, and tree	Pictures of balloon, dog, and banana	No physical materials required (you model the correct response)
Example			

DO:

- Check the top of the data sheet for the list of correct materials when applicable (e.g., specific pictures you will need)
- Keep only those materials that are needed on the table and remove others

DON'T:

- Use items other than the ones specified on the data sheet
- Have materials on the table that are not required for the task (e.g., 6 pictures instead of 3)

COMPONENT 3: SELECT AT LEAST THREE REINFORCER(S)**DO:**

- Pick at least three potential reinforcer choices (e.g., edibles or leisure items)
- Select reinforcers that will be easy to present and consume during a brief period of time between trials

DON'T:

- Pick an item that is dangerous
- Forget to provide a choice of reinforcers before a block of trials
- Select a reinforcer that will be time consuming in between trials (e.g., give the child one chip as oppose to the whole bag)

COMPONENT 4: ARRANGE THE TEACHING SETTING**DO:**

- Prepare a teaching area that includes a table and two chairs (for instructor and the child)
- Arrange the data sheets, materials, and reinforcer choices so that they are easily accessible for the instructor, and out of reach of the child

DON'T:

Have additional materials present because they are a distraction

Study Questions

4. Name the first four components for preparing to conduct a teaching session.
5. State the Dos and Don'ts for each of the first four components for preparing to conduct a teaching session.

COMPONENT 5: DETERMINE THE PROMPT FADING PROCEDURE AND INITIAL FADING STEP

A **prompt** is a cue or assistance provided by the instructor to increase the likelihood that the child will respond correctly to an instruction, especially when the child is learning a new task. Prompts may be vocal, gestural, or physical (e.g., hand over hand guidance). Before beginning the teaching session, the instructor should determine which prompting procedure to use, as recommended by the behaviour analyst. There are several types of prompting and prompt fading (i.e., systematic removal of prompts based on correct responding by the child) procedures, however this manual will focus on and use the most common of them known as **most-to-least prompt fading**. This type of prompting involves providing the most intrusive prompts initially, then gradually fading them out. This strategy begins with: (a) a **Full Prompt (F)**, complete assistance to help the child perform the task), which is decreased to (b) a **Partial Prompt 1 (P1)**, light physical assistance for the child to accomplish the task), which is decreased to (c) a **Partial Prompt 2 (P2)**, the instructor giving a gesture to help the child, but not touching the child), which is decreased to (d) **No Prompt (NP)**, the instructor giving the instruction but without assistance).

Note. The instructor may not vocally state what the prompt-fading procedure is. In this case, score this component an N/A.

DO:

- Check the data sheet for the type of prompting and fading procedures and initial prompting level for a task (e.g., F, P1, P2, or NP). Note that it might not be stated on the data sheet
- If it is a new task, always start with a Full Prompt (F)

DON'T:

- Vary from the prescribed prompting procedures and fading steps
- Over prompt by providing more physical guidance than necessary to obtain a correct response

COMPONENT 6: INVITE THE CHILD TO THE TABLE AND GIVE A REINFORCER CHOICE

DO:

- Instruct the child to come to the table (if he/she is not already there)
- Present the reinforcers, previously gathered, in a row on the table in front of the child
- Tell the child to “pick one”
- Give the child a reinforcer for sitting down at the table (**optional**)
- **Note: in experimental sessions, the child is not invited to the table, so just score whether the reinforce choice was given**

DON'T:

- Choose the reinforcer for the child
- Have all of the reinforcer choices on the table after the child has chosen one

Training Step 1b: Make sure that you have memorized the above Dos and Don'ts. After you have memorized the above Dos and Don'ts, then watch Part A of the video that shows an instructor preparing to conduct a teaching session and use the following score form to score the instructor on the first six components of the DTTEF (see checklist below). To ensure you have scored each component correctly, compare your answers to the Answer Guide at the back of the manual.

DTTEF SCORE FORM

SCORING: = ✓ performed correctly; X = performed incorrectly; / = did not apply
COMPONENT **SCORE**

Part 1: Prepare to Conduct a Teaching Session	
1. Determine the Teaching Task(s)	
2. Gather the Teaching Materials	
3. Select at Least 3 Reinforcers	
4. Arrange the teaching Setting	
5. Determine the Prompt-Fading Procedure and the Initial Fading Step	
6. Invite the Child to the Table and Give a Reinforcer Choice	

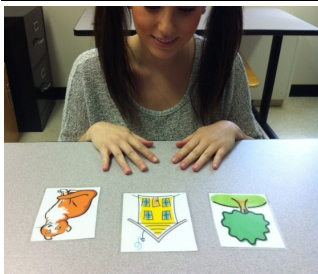
PART II: ON STANDARD TRIALS, MANAGE ANTECEDENTS

Training Step 2a: Assume that an instructor has completed all six steps of preparing to conduct a teaching session and is now ready to begin conducting DTT trials. On each trial, the instructor will present appropriate antecedents, the child will respond, the instructor will present appropriate consequences, and then record data. Your task is now to learn the Dos and Don'ts for the seven steps that make up Parts II and III.

COMPONENT 7: CHECK THE DATA SHEET FOR THE ARRANGEMENT OF TEACHING MATERIALS OR RESPONSE TO MODEL

An example of a data sheet:

Teaching Trials	Position of Pictures on Table Cat House Tree			Picture to give to child	Standard Trials		Error Correction Trials (next trial after an error)	
					Correct	Error	Correct	Error
1	R	M	L	Cat				
2	L	R	M	House				
3	M	L	R	Tree				



The table above is a sample of a data sheet for an identity matching pictures task. You can see that the three pictures used are “cat”, “house,” and “tree”. You can also see that the data sheet identifies a specific arrangement of these materials for each teaching trial, and which picture to give the child to match. The arrangement of house: child’s middle; tree: child’s left), and the picture to give the child is the cat. Note that the pictures are facing the child and after each trial the picture on the child’s right gets moved to the child’s left, and so on.

DO:

- Check the data sheet for the arrangement of the materials (e.g., “L”, “M”, “R”)
- Check the data sheet for the correct picture to give the child (identity matching), the correct picture for the child to point to (pointing-to-named pictures), or the model response for the child to imitate (motor imitation)

DON'T:

- Ignore the position and sequencing arrangements specified by the data sheet
- Use materials that are not specified by the data sheet

COMPONENT 8: SECURE THE CHILD'S ATTENTION

DO:

- Ensure that the child is looking at the instructor or materials before delivering the instruction
- Call the child's name and prompt him/her to “look” at you or the task materials if he/she is not attending

DON'T:

- Present the instruction if the child is not attending
- Use intrusive prompts to get the child to attend
- Attempt to increase motivation to attend by using other incentives (e.g., “Do you want your candy? Then...”)

Study Questions

6. What is the title of Part II of the DTTEF?
7. State Components 7 and 8 of the DTTEF (the first two components of Part II).
8. State the Dos and Don'ts for Components 7 and 8 of the DTTEF.

COMPONENT 9: PRESENT THE TEACHING MATERIALS OR MODEL THE RESPONSE

DO:

- Check the data sheet for the arrangement of the correct materials or response (e.g., left/right/middle) or model the response
- For tasks with pictures, present the pictures in a row with equal distance between them unless otherwise specified by the behaviour analyst
- Ensure that pictures are displayed facing the child (and not you)
- For the imitation task, model the response (e.g., the instructor putting his/her arms up)
- Score the first behaviour of the instructor (if there are several attempts)

DON'T:

- Present materials not specified (e.g., dog/balloons/banana) during the matching task
- Forget to rotate the position of the materials as specified in the data sheet
- Skip the order of the trials prescribed on the data sheet
- Place an item closer to another or closer to the child

COMPONENT 10: PRESENT THE CORRECT INSTRUCTION

Task	Instruction
Matching pictures	"MATCH"
Pointing to named objects	"BALLOONS"/ "DOG"/ "BANANAS"
Motor imitation	"DO THIS"

DO:

- Check the top of the data sheet for information provided about the correct instruction and use it
- Use the specified instruction consistently across trials
- Repeat the instruction if the child was not attending

DON'T:

- Present an extra auditory cue (e.g., saying "match *cat*"; or "put your *arms up*" – these are incorrect) for the matching pictures and motor imitation tasks
- Repeat the instruction if the child is attentive, but not responding (the instructor is required to use prompts which is described next)
- Present the instruction in the form of a question

COMPONENT 11: PRESENT PROMPTS

As described in Component 5, there are four different levels of prompts in most-to-least prompt fading (F, P1, P2, and NP). Consider the following examples of the four prompting levels during a matching pictures task. A **Full prompt (F)** would involve the instructor placing the sample picture in the child's hand, presenting the instruction, then taking the child's hand with their own, and placing it on top of the correct picture in the array. A **Partial Prompt 1 (P1)** would involve the instructor giving the sample picture to the child, presenting the instruction, and using one or two fingers to guide the child's hand towards placing the sample picture on top of the correct picture in the array. A **Partial Prompt 2 (P2)** would involve giving the child the sample picture, presenting the instruction, and pointing to the correct picture in the array. Finally, **No Prompts (NP)** would involve giving the child the picture, presenting the instruction, and providing no guidance. To score this item, you should have a copy of the instructor's data sheet so that you will know if the instructor begins with the correct prompt, and fades their prompts according to the following rules:

Prompting Rules:**3 consecutive correct responses = move down a prompting level**

- E.g., 3 consecutive correct responses at F, move to P1
- E.g., 3 consecutive correct responses at P1, move to P2
- E.g., 3 consecutive correct responses at P2, move to NP

Prompting and other procedures for error correction trials (Component 13) will be described later.

DO:

- Present the prompts according to the prescribed prompt fading procedures.
- Use full prompts (F) when starting a new task with the child
- Remember that after 3 consecutive correct responses (i.e., three of the same Prompts in a row) the instructor should move down a prompting level (e.g., 3 F prompts → 3 P1 prompts → 3 P2 prompts → NP)
- Prompt within 1-2 seconds maximum from the instruction to avoid errors

DON'T:

- Prompt more intrusively than needed (e.g., with F when you only need P1).
- Provide any additional prompting other than what is described in your prompting procedure and instruction
- Wait longer than 2 seconds to prompt the child, unless in the NP level

Study Questions

9. State Components 9, 10, and 11 of the DTTEF (components from Part II).
10. List the Dos and Don'ts for Component 9 of the DTTEF.
11. State Component 10 of the DTTEF, and list the Do's and Don'ts for Component 10.
12. State Component 11 of the DTTEF.
13. What are the prompting rules for moving down a prompting level?
14. List the Dos and Don'ts for Component 11 of the DTTEF.

PART III: MANAGE CONSEQUENCES FOR RESPONSES AND RECORD DATA

COMPONENT 12: FOLLOWING A CORRECT RESPONSE, PRAISE AND PRESENT AN ADDITIONAL REINFORCER

DO:

- Reinforce a correct response immediately after responding
- Use verbal praise AND provide the selected reinforcer (e.g., edible)

DON'T:

- Wait to reinforce the child
- Record the data before you reinforce the child

Training Step 2b: Study components 7-12 until you know all of the Dos and Don'ts. Then skip component 13 (for now) and study components 14a and 15a.

COMPONENT 13: FOLLOWING AN INCORRECT RESPONSE BLOCK GENTLY, REMOVE MATERIALS, SHOW NEUTRAL EXPRESSION FOR 2-3 SECONDS.

DO:

- Attempt to block the response by covering materials or blocking an action (if possible)
- Remove the materials from in front of the child after the error
- Remain neutral for 2-3 seconds

DON'T:

- Reinforce the incorrect response
- Talk, smile, or provide the child with any potential reinforcement
- Use verbal reprimands such as "no" or "stop" or "that's not right!"

COMPONENT 14a: RECORD THE RESPONSE IMMEDIATELY AND ACCURATELY**DO:**

- Record the response and the prompting level for the correct response immediately after the child responds
- If multiple prompts are used, record the level that prompted the response (i.e., the last prompt used)
- After a correct response, record the data in the correct column (under '**standard trials**' and '**correct response**')
 - This occurs during the inter-trial interval (see Component 15)

DON'T:

- Wait until the end of the block of trials to record the data – you might forget the response or become distracted
- Use the wrong column to record the data (e.g., a correct response in an error correction column)

Note: There will be an example of recording responses following Component 14b

COMPONENT 15a: INTER-TRIAL INTERVAL**DO:**

- Wait 3-10 seconds between trials before presenting the next teaching trial
 - From the time the materials are removed to setting out the materials for next trial OR after child response if no reinforcer provided

DON'T:

- Talk to the child during this time
- Wait more than 10 seconds to present the next instruction

Study Questions

15. State Components 12, 14a, and 15a for Part II.

16. List the Dos and Don'ts for Components 12, 14a, and 15a of the DTTEF.

Training Step 2c: Make sure you have memorized the Dos and Don'ts for Components 7-12, 14a, and 15a. Then study the DTTEF score form presented below for Parts II and III. Then watch Part B of the video that demonstrates managing antecedents and consequences for correct responses on DTT trials, and use the score form below to score Components 7-12, 14a, and 15a, as you observe them on the successive video. Use Table 1 below to score Components 9 and 14a. After you have scored the video, then compare your answers to those in the Answer Guide at the back of the manual.

Table 1. Instructor's responses in Part A of the video demonstration.

Teaching Trials	Position of Pictures on Table <u>Cat</u> <u>House</u> <u>Tree</u>			Picture to give to child	Standard Trials		Error Correction Trials (next trial after an error)	
					Correct	Error	Correct	Error
1	R	M	L	Cat	✓F			
2	L	M	R	House	✓F			
3	M	L	R	Tree	✓F			

DTTEF SCORE FORM

SCORING: ✓ = performed correctly; X = performed incorrectly; / = did not apply

COMPONENT**SCORE**

Part II: On Standard Trials, Manage Antecedents		1	2	3
7. Check the data sheet for the arrangement of teaching materials or response to be modeled.				
8. Secure the child's attention				
9. Present the teaching materials and/or model response				
10. Present the correct instruction				
11. Present Prompts				
Part III: On Standard Trials, Manage Consequences & Record Data				
Score 12 Or 13 Not both	12. Following a correct response , praise & present an additional reinforcer			
	13. Following an incorrect response , block gently if possible, remove materials or stop gesturing & show a neutral expression for 2 or 3 seconds			
14a. Record the response immediately/accurately				
15a. Allow brief intertrial interval of 3-10 seconds				

Training Step 3a: Your next step is to study how an instructor should respond to a child following an incorrect response, and then how an instructor should conduct an error correction trial. First, study the Dos and Don'ts of Component 13. Next, study the Dos and Don'ts for Part IV.

COMPONENT 13: FOLLOWING AN INCORRECT RESPONSE BLOCK GENTLY, REMOVE MATERIALS, & SHOW A NEUTRAL EXPRESSION FOR 2-3 SECONDS.

DO:

- Attempt to block the response by covering materials or blocking an action (if possible)
- Remove the materials from in front of the child after the error
- Remain neutral for 2-3 seconds

DON'T:

- Reinforce the incorrect response
- Talk, smile, or provide the child with any potential reinforcement
- Use verbal reprimands such as "no" or "stop" or "that's not right!"

Study Question

State Component 13 and the Dos and Don'ts.

PART IV: ERROR CORRECTION FOLLOWING AN ERROR

After the child has made an error in responding (e.g. pointing to the balloons when the instruction was to point to the bananas), you will conduct an error correction trial.

On error correction trials, prompt with the previous (a level higher) prompting level

- E.g., error on P1, prompt with F on error correction trial
- E.g., error on P2, prompt with P1 on error correction trial
- E.g., error on NP, prompt with P2 on error correction trial

On the error correction trial, many of the components will be identical to standard trial (e.g., trial number, arrangement of materials, pictures, or model). However, the prompting level will increase, and the instructor will not give the child a reinforcer for a correct response; the instructor will only use praise. If the child responds correctly on the error correction trial, then the instructor will proceed with the prompting rules that were followed before the error.

If 2 errors occur (can be non-consecutive) on standard trials, then move back to the previous prompting level which will require another 3 consecutive responses at that given level

- E.g., 2 errors at P1, move back to F
- E.g., 2 errors at P2, move to P1
- E.g., 2 errors at NP, move to P2

COMPONENT 16: SECURE THE CHILD'S ATTENTION

DO:

- Ensure that the child is looking at the instructor or materials before delivering the instruction
- Call the child's name and prompt him/her to "look" at you or the task materials if he/she is not attending

DON'T:

- Present the instruction if the child is not attending
- Use intrusive prompts to get the child to attend
- Attempt to increase motivation to attend by using other incentives (e.g., "Do you want your candy? Then...")

COMPONENT 17: RE-PRESENT THE MATERIALS AND/OR MODEL RESPONSE

DO:

- Re-present the materials in the same order that was present when the child made the error
- Present the materials in a row with equal distance between them
- For imitation, present the model response while instructing "Do this"

DON'T:

- Move on to the next arrangement of stimuli or response listed for the next trial
- Present the wrong materials (e.g., dog/balloons/banana during the matching task)
- Present the materials in the wrong order
- Skip the order of the trials
- Place items closer to another or closer to the child

Study Questions

17. What is the rule for moving back up to a higher prompting level?
18. List Component 16 and 17 for Part IV, Error Correction Following an Error.
19. For Components 16 and 17, list their Dos and Don'ts.

COMPONENT 18: RE-PRESENT THE INSTRUCTION AND PROMPT IMMEDIATELY TO GUARANTEE A CORRECT RESPONSE

DO:

- Present the same instruction that was stated when the child made the error
- Use a prompting level that is one level higher than the one that was erred on (e.g., when a child errors with a P1, use an F)
- Prompt immediately (within three seconds) to ensure a correct response

DON'T:

- Present an extra auditory cue (e.g., saying “match *cat*”; or “put your *arms up*” – these are incorrect) for the visual matching and motor imitation tasks
- Repeat the instruction if the child is attentive, but not responding
- Prompt more intrusively than needed (e.g., with F when you only need P1)
- Provide any additional prompting other than what is described in your prompting procedure
- Wait longer than 2 seconds to prompt the child

COMPONENT 19: PRAISE ONLY

DO:

- Praise immediately following the a correct response on the error correction trial

DON'T:

- Provide an additional reinforcer (e.g., edible) on the error correction trial

COMPONENT 14b: RECORD RESPONSE IMMEDIATELY & ACCURATELY

On the error correction trial, record the response immediately and accurately under the “**Error Correction Trials**” column and under the appropriate heading; “**correct**” or “**error**”.

On the following page, a sample data sheet is presented that illustrates how an instructor would record data correctly for an identify matching task. Read the following description of the instructor's behaviour, and follow along with the data sheet.

On the first three trials, the instructor correctly used Full Prompts (F), and recorded that the child responded correctly. On trial 4, the instructor correctly faded his/her Full Prompt to a Partial Prompt 1, and recorded that the child did not respond correctly. As a result, the instructor correctly conducted an error correction trial, prompting more intrusively with a Full Prompt (F) to guarantee a correct response (which this manual will explain shortly), and the child responded correctly. On trial 5, the instructor correctly continued using a Partial Prompt 1 (P1) and the child did not respond correctly. Again, the instructor conducted an error correction trial, prompting more intrusively with a Full Prompt (F) to guarantee a correct response. Because there were two errors using Partial Prompt 1 (P1), the instructor correctly increased his/her prompting level back to a Full Prompt (F). After three consecutive correct responses on trials 6, 7, and 8, the instructor correctly reduced his/her prompting level to a Partial Prompt 1 (P1). After three

consecutive correct responses at P1, the instructor correctly reduced his/her prompting level to a Partial Prompt 2.

On each trial, record child's response as correct (✓) or error (x) in the appropriate column, and indicate prompting level (F, P1, P2, or NP).

Teaching Trials	Position of Pictures on Table			Picture to give to child	Standard Trials		Error Correction Trials (next trial after an error)	
	Cat	House	Tree		Correct	Error	Correct	Error
1	R	M	L	Cat	✓F			
2	L	R	M	House	✓F			
3	M	L	R	Tree	✓F			
4	R	M	L	House		x P1	✓F	
5	L	R	M	Tree		x P1	✓F	
6	M	L	R	House	✓F			
7	R	M	L	Cat	✓F			
8	L	R	M	Tree	✓F			
9	M	L	R	Cat	✓P1			
10	R	M	L	House	✓P1			
11	L	R	M	Cat	✓P1			
12	M	L	R	House	✓P2			

DO:

- Record the response and the prompting level for the correct response immediately after the child responds
- If multiple prompts are used, record the level that prompted the response (i.e., the last prompt used)
- After a correct response, record the data in the correct column (under 'standard trials' and 'correct response')
 - This occurs during the inter-trial interval (see Component 15)

DON'T:

- Wait until the end of the block of trials to record the data – you might forget the response or become distracted
- Use the wrong column to record the data (e.g., a correct response in an error correction column)

COMPONENT 15b: INTER-TRIAL INTERVAL

DO:

- Wait 3-10 seconds before moving onto the next standard trial

DON'T:

- Talk to the child during the inter-trial interval
- Wait longer than 10 seconds to present the next instruction

Study Questions

20. List Components 18, 19, 14b and 15b of the DTTEF.

21. List the Dos and Don'ts for Components 18, 19, 14b, and 15b of the DTTEF

Training Step 3b. Memorize the Do's and Don'ts for Components 13, 14b, 15b, and 16-19. Then study the score form presented below for Part IV of the DTTEF. Watch Part C of the video that demonstrates error correction trials following an error, and use the score form to score Components 7-19, 14b, 15b, as you observe them on the video. Use Table 2 to score Components 9, 13, 14, 17, and 14b. When you are done, compare your answers with those in the Answer Guide at the end of the manual. Assume that the instructor has completed components 1-6 already.

Table 2. Instructor's responses in Part C of the video demonstration.

Teaching Trials	Position of Pictures on Table <u>Cat</u> <u>House</u> <u>Tree</u>			Picture to give to child	Standard Trials		Error Correction Trials (next trial after an error)	
					Correct	Error	Correct	Error
1	R	M	L	Cat		X P2		✓P1
2	M	R	L	House		X	✓P1	
3	L	M	R	Tree		X NP	✓P2	

Part II: On Standard Trials, Manage Antecedents		1	2	3
7. Check the data sheet for the arrangement of teaching materials or response to be modeled.				
8. Secure the child's attention				
9. Present the teaching materials and/or model response				
10. Present the correct instruction				
11. Present Prompts				
Part III: On Standard Trials, Manage Consequences & Record Data				
Score 12 Or 13 Not both	12. Following a correct response , praise & present an additional reinforce			
	13. Following an incorrect response , block gently if possible, remove materials or stop gesturing & show a neutral expression for 2 or 3 seconds			
14a. Record the response immediately/accurately				
15a. Allow brief intertrial interval of 3-10 seconds				
Part IV: An Error Correction Trial Following An Error				
16. Secure the child's attention				
17. Re-present the materials				
18. Re-present the instruction & prompt immediately to guarantee correct response				
19. Praise only				
14b. Record the response immediately/accurately				
15b. Allow brief intertrial interval of 3-10 seconds				

PART V: PROMPT FADING

COMPONENT 20: FADE PROMPTS ACROSS TRIALS AS DESCRIBED ON PROCEDURE OR DATA SHEET

The final component of this DTT package is to always fade prompts across trials.

Remember the prompting rules:

3 consecutive correct responses = move down a level

2 errors = move up a level

On an error correction trial = prompt with one level higher

DO:

- Fade prompts according to most-to-least prompt fading procedure and steps prescribed (with at least 80% accuracy on the DTTEF; e.g., at least 10/12 trials)

DON'T:

- Skip through prompting steps
- Provide prompts that are not components of most-to-least prompt fading procedure and steps prescribed

Study Questions

22. List Component 20 of the DTTEF.

23. State the three prompting rules for moving up a prompt level, down a prompt level, and for prompting on an error correction trial.

24. List the Dos and Don'ts for Component 20 of the DTTEF.

Training Step 4: Make sure that you have memorized the Do's and Don'ts of Components 1-20 of the DTTEF. Then watch Part D of the video, which demonstrates 12 trials of an instructor teaching a child an identity matching task. Assume that Components 1-6 were already conducted. Use Table 3 below to score Components 9, and 14. Score all 20 components of the DTTEF using the data sheet on the next page.

Teaching Trials	Position of Pictures on Table			Picture to give to child	Standard Trials		Error Correction Trials (next trial after an error)	
	Cat	House	Tree		Correct	Error	Correct	Error
1	L	M	R	Cat	✓F			
2	R	L	M	House	/			
3	M	R	L	Tree	✓F			
4	L	R	M	House	P			
5	R	M	L	Tree				
6	M	R	L	House	✓ P1			
7	L	R	M	Cat	✓P			
8	R	L	M	Tree	✓P2			
9	M	R	L	Cat	✓ P2			
10	L	M	R	House	✓ NP			
11	R	L	M	Cat	✓ NP			
12	M	R	L	House	✓ NP			

DTTEF

SCORING: = ✓ performed correctly; X = performed incorrectly; / = did not apply

COMPONENT**SCORE**

Part I: Prepare to Conduct a Teaching Session												
1. Determine the Teaching Task(s)												
2. Gather the Teaching Materials												
3. Select at Least 3 Reinforcers												
4. Arrange the teaching Setting												
5. Determine the Prompt-Fading Procedure and the Initial Fading Step												
6. Invite the Child to the Table and Give a Reinforcer choice												
Part II: On Standard Trials, Manage Antecedents												
	1	2	3	4	5	6	7	8	9	10	11	12
7. Check the data sheet for the arrangement of teaching materials or response to be modeled.												
8. Secure the child's attention												
9. Present the teaching materials and/or model response												
10. Present the correct instruction												
11. Present Prompts												
Part III: On Standard Trials, Manage Consequences & Record Data												
Score 12 Or 13 Not both	12. Following a correct response , praise & present an additional reinforcer											
	13. Following an incorrect response , block gently if possible, remove materials or stop gesturing & show a neutral expression for 2 or 3 seconds											
14a. Record the response immediately/accurately												
15a. Allow brief intertrial interval of 3-10 seconds												
Part IV: An Error Correction Trial Following An Error												
16. Secure the child's attention												
17. Re-present the materials												
18. Re-present the instruction & prompt immediately to guarantee correct response												
19. Praise only												
14b. Record the response immediately/accurately												
15b. Allow brief intertrial interval of 3-10 seconds												
Part V: Fade Prompts												
20. Fade prompts across trials												

Training Step 5: Be sure that you have memorized the Dos and Don'ts of all 20 Components. Now, review the components of the DTTEF as you prepare to score a live session of an instructor teaching three tasks to a confederate who will be role-playing a child with autism. When you are ready to score the live session, please let the researcher know.

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DTTEF

SCORING: = ✓ performed correctly; X = performed incorrectly; / = did not apply

COMPONENT**SCORE**

Part I: Prepare to Conduct a Teaching Session												
1. Determine the Teaching Task(s)												
2. Gather the Teaching Materials												
3. Select at Least 3 Reinforcers												
4. Arrange the teaching Setting												
5. Determine the Prompt-Fading Procedure and the Initial Fading Step												
6. Invite the Child to the Table and Give a Reinforcer choice												
Part II: On Standard Trials, Manage Antecedents												
	1	2	3	4	5	6	7	8	9	10	11	12
7. Check the data sheet for the arrangement of teaching materials or response to be modeled.												
8. Secure the child's attention												
9. Present the teaching materials and/or model response												
10. Present the correct instruction												
11. Present Prompts												
Part III: On Standard Trials, Manage Consequences & Record Data												
Score 12 Or 13 Not both	12. Following a correct response , praise & present an additional reinforcer											
	13. Following an incorrect response , block gently if possible, remove materials or stop gesturing & show a neutral expression for 2 or 3 seconds											
14a. Record the response immediately/accurately												
15a. Allow brief intertrial interval of 3-10 seconds												
Part IV: An Error Correction Trial Following An Error												
16. Secure the child's attention												
17. Re-present the materials												
18. Re-present the instruction & prompt immediately to guarantee correct response												
19. Praise only												
14b. Record the response immediately/accurately												
15b. Allow brief intertrial interval of 3-10 seconds												
Part V: Fade Prompts												
20. Fade prompts across trials												

Answer Guide

Answers to training step 1b: Part A of video demonstration: Prepare to conduct a teaching session

DTTEF SCORE FORM

SCORING: ✓ = performed correctly; X = performed incorrectly; / = did not apply

COMPONENT

SCORE

Part 1: Prepare to Conduct a Teaching Session	
1. Determine the Teaching Task(s)	✓
2. Gather the Teaching Materials	✓
3. Select at Least 3 Reinforcers	✓
4. Arrange the teaching Setting	✓
5. Determine the Prompt-Fading Procedure and the Initial Fading Step	NA
6. Invite the Child to the Table and Give a Reinforcer Choice	✓

Answers to training step 2c: Part B of video demonstration: Managing antecedents and consequences for correct responses

DTTEF SCORE FORM

SCORING: ✓ = performed correctly; X = performed incorrectly; / = did not apply

COMPONENT		SCORE		
Part II: On Standard Trials, Manage Antecedents		1	2	3
7. Check the data sheet for the arrangement of teaching materials or response to be modeled.		✓	✓	✓
8. Secure the child's attention		✓	✓	✓
9. Present the teaching materials and/or model response		✓	X	X
10. Present the correct instruction		✓	✓	✓
11. Present Prompts		X	X	X
Part III: On Standard Trials, Manage Consequences & Record Data				
Score 12 Or 13 Not both	12. Following a correct response , praise & present an additional reinforcer	✓	✓	✓
	13. Following an incorrect response , block gently if possible, remove materials or stop gesturing & show a neutral expression for 2 or 3 seconds			
14a. Record the response immediately/accurately		✓	✓	✓
15a. Allow brief intertrial interval of 3-10 seconds		✓	✓	✓

Answers to training step 3b: Part C of the video demonstration: Error correction trials**DTTEF SCORE FORM**

SCORING: ✓ = performed correctly; X = performed incorrectly; / = did not apply

COMPONENT **SCORE**

Part II: On Standard Trials, Manage Antecedents		1	2	3
7. Check the data sheet for the arrangement of teaching materials or response to be modeled.		✓	✓	✓
8. Secure the child's attention		✓	✓	✓
9. Present the teaching materials and/or model response		X	✓	✓
10. Present the correct instruction		✓	✓	✓
11. Present Prompts		✓	✓	✓
Part III: On Standard Trials, Manage Consequences & Record Data				
Score 12 Or 13 Not both	12. Following a correct response , praise & present an additional reinforce			
	13. Following an incorrect response , block gently if possible, remove materials or stop gesturing & show a neutral expression for 2 or 3 seconds	✓	✓	✓
	14a. Record the response immediately/accurately	✓	X	✓
15a. Allow brief intertrial interval of 3-10 seconds		✓	✓	✓
Part IV: An Error Correction Trial Following An Error				
16. Secure the child's attention		✓	✓	✓
17. Re-present the materials		✓	✓	✓
18. Re-present the instruction & prompt immediately to guarantee correct response		✓	X	✓
19. Praise only		✓	✓	✓
14b. Record the response immediately/accurately		✓	✓	✓
15b. Allow brief intertrial interval of 3-10 seconds		✓	✓	✓

Answer to training step 4: Part D of video: 12 Trials of DTT**DTTEF SCORE FORM**

SCORING: ✓ = performed correctly; X = performed incorrectly; / = did not apply

COMPONENT**SCORE**

Part II: On Standard Trials, Manage Antecedents		1	2	3	4	5	6	7	8	9	10	11	12
7. Check the data sheet for the arrangement of teaching materials or response to be modeled.		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
8. Secure the child's attention		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
9. Present the teaching materials and/or model response		✓	✓	✓	X	X	✓	X	✓	✓	✓	✓	✓
10. Present the correct instruction		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
11. Present Prompts		X	X	X	X	X	X	✓	✓	✓	✓	✓	✓
Part III: On Standard Trials, Manage Consequences & Record Data													
Score 12 Or 13 Not both	12. Following a correct response , praise & present an additional reinforcer	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	13. Following an incorrect response , block gently if possible, remove materials or stop gesturing & show a neutral expression for 2 or 3 seconds												
14a. Record the response immediately/accurately		✓	X	✓	X	X	✓	✓	✓	✓	✓	✓	✓
15a. Allow brief intertrial interval of 3-10 seconds		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	/
Part IV: An Error Correction Trial Following An Error													
16. Secure the child's attention													
17. Re-present the materials													
18. Re-present the instruction & prompt immediately to guarantee correct response													
19. Praise only													
14b. Record the response immediately/accurately													
15b. Allow brief intertrial interval of 3-10 seconds													
Part V: Fade Prompts													
20. Fade prompts across trials													X

Appendix B

Example of the Script for Confederate Role-Playing the Instructor: Moderate Treatment Integrity

DTTEF

SCORING: = ✓ performed correctly; X = performed incorrectly; / = did not apply

COMPONENT											SCORE											
Part I: Prepare to Conduct a Teaching Session																						
1. Determine the Teaching Task(s)											✓											
2. Gather the Teaching Materials											✓											
3. Select at Least 3 Reinforcers											✗											
4. Arrange the teaching Setting											✓											
5. Determine the Prompt-Fading Procedure and the Initial Fading Step											/											
6. Invite the Child to the Table and Give a Reinforcer choice											✗											
Part II: On Standard Trials, Manage Antecedents											1	2	3	4	5	6	7	8	9	10	11	12
7. Check the data sheet for the arrangement of teaching materials or response to be modeled.											✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓
8. Secure the child’s attention											✓	✓	✗	✓	✓	✗	✓	✓	✗	✓	✓	✓
9. Present the teaching materials and/or model response											✓	✗	✓	✓	✗	✓	✓	✗	✗	✗	✗	✗
10. Present the correct instruction											✓	✗	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓
11. Present Prompts											✗	✓	✓	✗	✗	✓	✗	✗	✓	✓	✓	✓
Part III: On Standard Trials, Manage Consequences & Record Data																						
Score 12 or 13, NOT both	12. Following a correct response , praise & present an additional reinforcer										✓	✓	✗	✓			✗		✓	✓	✓	✓
	13. Following an incorrect response , block gently if possible, remove materials or stop gesturing & show a neutral expression for 2 or 3 seconds															✗	✗		✗			
14a. Record the response immediately/accurately											✗	✓	✓	✗	✓	✓	✗	✗	✗	✓	✓	✓
15a. Allow brief intertrial interval of 3-10 seconds											✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	/
Part IV: An Error Correction Trial Following An Error																						
16. Secure the child’s attention															✓	✓		✓				
17. Re-present the materials															✗	✓		✓				
18. Re-present the instruction & prompt immediately to guarantee correct response															✓	✓		✓				
19. Praise only															✗	✓		✓				
14b. Record the response immediately/accurately															✗	✗		✓				
15b. Allow brief intertrial interval of 3-10 seconds															✓	✓		✓				
Part V: Fade Prompts																						
20. Fade prompts across trials														✗								

Appendix C Three DTT Data Sheets

Data Sheet for Confederate Instructor for Teaching Matching

Materials Required:

Double pictures of a cat, a house, and a tree.

Child's Response on Each Trial:

Accept picture from teacher and place it on top of corresponding picture on the table.

Set-Up for Each Trial:

A row of three pictures on the table in front of the child.

Instructions at start of each trial:

Say "Match."

Prompts or Cues to Consider Using:

1. Full prompt (F): Full physical guidance
2. Partial prompt 1 (P1): Light physical guidance and pointing to correct picture
3. Partial prompt 2 (P2): Gestural prompt, pointing to correct picture only
4. No prompt (NP)

On each trial, record child's response as correct (✓) or error (x) in the appropriate column, and indicate prompting level (F, P1, P2, or NP).

Teaching Trials	Position of Pictures on Table			Picture to give to child	Standard Trials		Error Correction Trials (next trial after an error)	
	<u>Cat</u>	<u>House</u>	<u>Tree</u>		Correct	Error	Correct	Error
1	R	M	L	Cat				
2	L	R	M	House				
3	M	L	R	Tree				
4	R	M	L	House				
5	L	R	M	Tree				
6	M	L	R	House				
7	R	M	L	Cat				
8	L	R	M	Tree				
9	M	L	R	Cat				
10	R	M	L	House				
11	L	R	M	Cat				
12	M	L	R	House				

Data Sheet for Confederate Instructor for Teaching Pointing-to-named pictures

<u>Materials Required:</u> Pictures of a banana, balloons, and a dog.	<u>Child's Response on Each Trial:</u> Points to the item named by teacher.
<u>Set-Up for Each Trial:</u> A row of three pictures on the table in front of child	<u>Instructions at start of each trial:</u> Teacher says, "(name of object)"

<u>Prompts or Cues to Consider Using:</u> <ol style="list-style-type: none"> 1. Full prompt (F): Full physical guidance 2. Partial prompt 1 (P1): Light physical guidance and pointing to correct picture 3. Partial prompt 2 (P2): Gestural prompt, pointing to correct picture only 4. No prompt (NP)

On each trial, record child's response as correct (✓) or error (x) in the appropriate column, and indicate prompting level (F, P1, P2, or NP)

Teaching Trials	Position of Pictures on Table			Name of Item to Say	Standard Trials		Error Correction Trials (next trial after an error)	
	Banana	Balloons	Dog		Correct	Error	Correct	Error
1	R	M	L	Banana				
2	L	R	M	Balloons				
3	M	L	R	Dog				
4	R	M	L	Balloons				
5	L	R	M	Dog				
6	M	L	R	Balloons				
7	R	M	L	Banana				
8	L	R	M	Dog				
9	M	L	R	Banana				
10	R	M	L	Balloons				
11	L	R	M	Banana				
12	M	L	R	Dog				

Data Sheet for Confederate Instructor for Teaching Motor Imitation

<u>Materials Required:</u> None.	<u>Child's Response on Each Trial:</u> Child imitates the action modeled by teacher.
<u>Set-Up for Each Trial:</u> Teacher models an action to be imitated.	<u>Instructions at start of each trial:</u> Teacher says, "Do this."

Prompts or Cues to Consider Using:

1. Full prompt (F): Full physical guidance
2. Partial prompt 1 (P1): Light physical guidance
3. Partial prompt 2 (P2): Gestural prompt, pointing to child's hand that was previously guided
4. No prompt (NP)

On each trial, record child's response as correct (✓) or error (x) in the appropriate column, and indicate prompting level (F, P1, P2, or NP).

Teaching Trials	Action to Model for Child	Standard Trials		Error Correction Trials (next trial after an error)	
		Correct	Error	Correct	Error
1	Arms Up				
2	Arms Up				
3	Hands Ready				
4	Clap				
5	Hands Ready				
6	Clap				
7	Hands Ready				
8	Arms Up				
9	Clap				
10	Arms Up				
11	Hands Ready				
12	Clap				

Appendix D

Scripts for Confederate Child with ASD

Pointing-to-named pictures task

Pointing	1
Attending/Not attending	A
Prompting level	FP
Correct/Error	C
Pointing	2
Attending/Not attending	A
Prompting level	FP
Correct/Error	C
Pointing	3
Attending/Not attending	NA Tap Table
Prompting level	FP
Correct/Error	C
Pointing	4
Attending/Not attending	A
Prompting level	P1
Correct/Error	C
Pointing	5
Attending/Not attending	A
Prompting level	(P1)
Correct/Error	E
Pointing - ERROR CORRECTION	5
Attending/Not attending	A
Prompting level	FP
Correct/Error	C
Pointing	6
Attending/Not attending	A
Prompting level	P1
Correct/Error	C
Pointing	7
Attending/Not attending	A
Prompting level	P1
Correct/Error	C
Pointing	8
Attending/Not attending	A
Prompting level	P1
Correct/Error	C
Pointing	9
Attending/Not attending	A

Prompting level	(P2)
Correct/Error	E
Pointing – ERROR CORRECTION	9
Attending/Not attending	A
Prompting level	P1
Correct/Error	C
Pointing	10
Attending/Not attending	A
Prompting level	(P2)
Correct/Error	E
Pointing – ERROR CORRECTION	10
Attending/Not attending	A
Prompting level	P1
Correct/Error	C
Pointing	11
Attending/Not attending	NA Look Down
Prompting level	P1
Correct/Error	C
Pointing	12
Attending/Not attending	A
Prompting level	P1
Correct/Error	C

Motor imitation task

Imitation	1
Attending/Not attending	A
Prompting level	FP
Correct/Error	C
Imitation	2
Attending/Not attending	A
Prompting level	FP
Correct/Error	C
Imitation	3
Attending/Not attending	A
Prompting level	FP
Correct/Error	C
Imitation	4
Attending/Not attending	A
Prompting level	(P1)
Correct/Error	E
Imitation – ERROR CORRECTION	4
Attending/Not attending	A

Prompting level	FP
Correct/Error	C
Imitation	5
Attending/Not attending	A
Prompting level	P1
Correct/Error	C
Imitation	6
Attending/Not attending	A
Prompting level	P1
Correct/Error	C
Imitation	7
Attending/Not attending	NA Ceiling
Prompting level	P1
Correct/Error	C
Imitation	8
Attending/Not attending	A
Prompting level	(P2)
Correct/Error	E
Imitation – ERROR CORRECTION	8
Attending/Not attending	A
Prompting level	P1
Correct/Error	C
Imitation	9
Attending/Not attending	A
Prompting level	P2
Correct/Error	C
Imitation	10
Attending/Not attending	A
Prompting level	(P2)
Correct/Error	E
Imitation	10
Attending/Not attending	NA Look Down
Prompting level	P1
Correct/Error	C
Imitation	11
Attending/Not attending	A
Prompting level	P1
Correct/Error	C
Imitation	12
Attending/Not attending	A
Prompting level	P1
Correct/Error	C

Matching Pictures Task

Matching	1
Attending/Not attending	A
Prompting level	FP
Correct/Error	C
Matching	2
Attending/Not attending	A
Prompting level	FP
Correct/Error	C
Matching	3
Attending/Not attending	A
Prompting level	FP
Correct/Error	C
Matching	4
Attending/Not attending	NA Turn
Prompting level	P1
Correct/Error	C
Matching	5
Attending/Not attending	A
Prompting level	P1
Correct/Error	C
Matching	6
Attending/Not attending	A
Prompting level	P1
Correct/Error	C
Matching	7
Attending/Not attending	A
Prompting level	(P2)
Correct/Error	E
Matching - ERROR CORRECTION	7
Attending/Not attending	A
Prompting level	P1
Correct/Error	C
Matching	8
Attending/Not attending	A
Prompting level	P2
Correct/Error	C
Matching	9
Attending/Not attending	NA Ceiling
Prompting level	P2
Correct/Error	C
Matching	10

Attending/Not attending	A
Prompting level	P2
Correct/Error	C
Matching	11
Attending/Not attending	A
Prompting level	NP
Correct/Error	E
Matching – ERROR CORRECTION	11
Attending/Not attending	A
Prompting level	P2
Correct/Error	C
Matching	12
Attending/Not attending	A
Prompting level	NP
Correct/Error	E
Matching – ERROR CORRECTION	12
Attending/Not attending	A
Prompting level	P2
Correct/Error	C

Appendix E
Background Questionnaire

1. What is your age? _____
2. What is your gender? _____
3. How long have you worked as an Autism Consultant at St.Amant? _____
4. How long had you worked as a Senior Tutor at St.Amant? _____
5. How long had you worked as a Tutor at St.Amant? _____
6. Were you originally trained using Fazzio and Martin's DTT manual? _____
7. What is your highest level of education? _____
8. Have you participated in any other DTT research? If so, please describe: _____

Appendix F Study Overview

1. Introduction

- a. Background Questionnaire

2. Baseline assessment

- a. Assess a confederate instructor attempt to teach three/six tasks to a confederate child with ASD

3. Training

- a. Discrete-Trials Teaching Evaluation Form Self-Instructional Manual
- b. Video demonstrations
- c. Practice activities
- d. Mastery test

4. Post-Training Assessment

- a. Assess a confederate instructor attempt to teach three tasks to a confederate child with ASD
- b. Social validity questionnaire

5. At a later date – Generalization Assessment

- a. Assess three videos of an Autism Tutor teaching three tasks to a child with ASD

Appendix G

Abbreviated Instructions to Assess Treatment Integrity of a DTT Session

Abbreviated Instructions for Using the Discrete-Trials Teaching Evaluation Form (DTTEF) to Score an Instructor Implementing Discrete-Trials Teaching (DTT) during a Motor Imitation Task

- For this task you will assess the accuracy of an instructor implementing DTT during a **motor imitation** task with a confederate who will be role-playing a child with ASD who has minimal language skills.
- Do your best at assessing what you think would be appropriate to set up, instructions, prompt or cues, and consequences while the instructor attempts to teach the “child”, based on the guidelines listed below.
- The instructor will have all of the materials that are required provided to them. Your task is to assess if the instructor is accurately implementing DTT to the confederate during the teaching task. The task will consist of the instructor teaching the “child” to imitate actions using his/her arms and/or hands. The actions are clapping, raising both arms up (arms up), and placing one hand on top of the other on the table or lap (hands ready). Across trials, the instructor should try to teach the “child” to imitate the three actions.
- After each response by the “child”, the instructor should accurately record whether the “child” responded correctly independently, responded correctly with prompts or cues, or made an error, using the data sheet provided to them.
- Take a few minutes to study the attached DTTEF where you will record your assessment of the instructor’s DTT accuracy. Then read the steps below.

Summary of Steps to be Conducted by the Instructor

1. Arrange the necessary materials.
2. Decide what he/she will use as consequences for correct responses and consequences for incorrect responses
3. On each trial:
 - a. Secure the child’s attention
 - b. Present the correct materials
 - c. Present the correct instruction
 - d. Provide help if needed
 - e. Once the child responds, provided what he/she considers to be an appropriate consequence or reaction to an error
 - f. Across trials gradually provide less assistance
 - g. Continue in this manner for 12 teaching trials

Record the results of your assessment on the evaluation form attached. Please let the researcher know when you are finished.

Abbreviated Instructions for Using the Discrete-Trials Teaching Evaluation Form (DTTEF) to Score an Instructor Implementing Discrete-Trials Teaching (DTT) during a Matching Pictures Task

- For this task you will assess the accuracy of an instructor implementing DTT during a **matching pictures** task with a confederate who will be role-playing a child with ASD who has minimal language skills.
- Do your best at assessing what you think would be appropriate to set up, instructions, prompt or cues, and consequences while the instructor attempts to teach the “child”, based on the guidelines listed below.
- The instructor will have all of the materials that are required provided to them. Your task is to assess if the teacher is accurately implementing DTT to the confederate during the teaching task. The task will consist of the “child” placing a sample card on top of the identical comparison card on the table when the teacher says, “match” and gives the child the sample card. Across trials, the instructor should try to teach the “child” to match the three pictures.
- After each response by the “child”, the instructor should accurately record whether the “child” responded correctly independently, responded correctly with prompts or cues, or made an error, using the data sheet provided.
- Take a few minutes to study the attached DTTEF where you will record your assessment of the instructor’s DTT accuracy. Then read the steps below.

Summary of Steps to be Conducted by the Instructor

4. Arrange the necessary materials.
5. Decide what he/she will use as consequences for correct responses and consequences for incorrect responses
6. On each trial:
 - a. Secure the child’s attention
 - b. Present the correct materials
 - c. Present the correct instruction
 - d. Provide help if needed
 - e. Once the child responds, provided what he/she considers to be an appropriate consequence or reaction to an error
 - f. Across trials gradually provide less assistance
 - g. Continue in this manner for 12 teaching trials

Record the results of your assessment on the evaluation form attached. Please let the researcher know when you are finished.

Abbreviated Instructions for Using the Discrete-Trials Teaching Evaluation Form (DTTEF) to Score an Instructor Implementing Discrete-Trials Teaching (DTT) during a Pointing-to-named pictures Task

- For this task you will assess the accuracy of an instructor implementing DTT during a **pointing-to-named pictures** task with a confederate who will be role-playing a child with ASD who has minimal language skills.
- Do your best at assessing what you think would be appropriate to set up, instructions, prompt or cues, and consequences while the instructor attempts to teach the “child”, based on the guidelines listed below.
- The instructor will have all of the materials that are required provided to them. Your task is to assess if the teacher is accurately implementing DTT to the confederate during the teaching task. The task will consist of the “child” pointing to the correct picture after the instructor places pictures on the table and names one of them. Across trials, the teacher should try to teach the “child” to point to all three pictures when they are named.
- After each response by the “child”, the instructor should accurately record whether the “child” responded correctly independently, responded correctly with prompts or cues, or made an error, using the data sheet provided.
- Take a few minutes to study the attached DTTEF where you will record your assessment of the instructor’s DTT accuracy. Then read the steps below.

Summary of Steps to be Conducted by the Instructor

7. Arrange the necessary materials.
8. Decide what he/she will use as consequences for correct responses and consequences for incorrect responses
9. On each trial:
 - a. Secure the child’s attention
 - b. Present the correct materials
 - c. Present the correct instruction
 - d. Provide help if needed
 - e. Once the child responds, provided what he/she considers to be an appropriate consequence or reaction to an error
 - f. Across trials gradually provide less assistance
 - g. Continue in this manner for 12 teaching trials

Record the results of your assessment on the evaluation form attached. Please let the researcher know when you are finished.

Appendix H
Mastery Test

Name the first four components for preparing to conduct a teaching session.

What are the prompting rules for moving down a prompting level?

State Component 13 and the Dos and Don'ts.

List Component 16 and 17 for Part IV, Error Correction Following an Error.

State the three prompting rules for moving up a prompt level, down a prompt level, and for prompting on an error correction trial.

Appendix I **Social Validity Questionnaire**

	1 Disagree	2 Somewhat disagree	3 Neutral	4 Somewhat agree	5 Agree
Goals					
I think that the goal of the study, to train staff to evaluate the treatment integrity of discrete-trials teaching sessions with children with ASD is important.					
I think that the goal of teaching staff the 20 main DTT components is important.					
Procedures					
I found the self-instructional manual to teach staff how to evaluate the treatment integrity of DTT sessions with children with ASD effective.					
I found the practice activities on teaching staff how to evaluate the treatment integrity of DTT sessions with children with ASD effective.					
Effects					
I have learned to evaluate the treatment integrity of DTT sessions of three teaching tasks with children with ASD.					
I have learned the 20 main components of a DTT session.					
I think that what I have learned will help me be an effective staff member of the St.Amant Autism Programs.					

Appendix J Procedural Reliability Datasheets

PROCEDURAL RELIABILITY DATA SHEET: INTRODUCTION

Participant #:	<input style="width: 90%;" type="text"/>	Date:	<input style="width: 90%;" type="text"/>	Start Time:	<input style="width: 90%;" type="text"/>
		Observer:	<input style="width: 90%;" type="text"/>	End time:	<input style="width: 90%;" type="text"/>

Record if the experimenter followed this script when conducting this phase

+ indicates YES - indicates NO / indicates not applicable

1. Developed Rapport with Tutors(s): researcher introduced themselves, etc.	
2. Introduced the Project: researcher says to participant, <i>“Thank you so much for agreeing to participate in this study. You are helping me with a study looking at how effective a manual is for teaching staff how to evaluate the treatment integrity of DTT sessions. Your participating really helps us a lot in our research involving Discrete-Trials Teaching and treatment integrity.”</i>	
3. Reminded of Consent: researcher says to participant, <i>“Before we go to the testing room, I just wanted to remind you that one of the items that you agreed to on the consent form was that it would be ok if the sessions were videotaped for data analysis purposes. Is this still ok with you?”</i>	
4. Additional Observers: researcher says, <i>“I also want to let you know that there will be one researcher role-playing a child with ASD. She will be working off of a script.”</i>	
5. Nature of study: researcher says, <i>“I want to emphasize that we are not assessing your performance as a staff member in this study, we are assessing the effectiveness of our training manual for training staff to evaluate treatment integrity of DTT sessions. Our observations are in no way related to your job performance. If you feel uncomfortable, or feel frustrated at any time, please let me or another researcher know, and you can take a break.”</i>	
6. Schedule: (Give study overview and reading to participant(s)) and say, <i>“We will now go over a brief overview of the timeline of the study. If you have any questions, please let me know”.</i>	

PROCEDURAL RELIABILITY DATA SHEET: PRESTUDY ASSESSMENT

Participant #: Date: Start Time:

Observer: End time:

Record if the experimenter followed this script when conducting this phase

+ indicates YES - indicates NO / indicates not applicable

	Task 1	Task 2	Task 3
1. Prepared area: appropriate for the task			
2. Introduced confederate and explained that he/she is working off a script and will be role-playing a non-verbal child with ASD.			

3. Instructed participant:	Task 1	Task 2	Task 3
<i>"Now you will have 10 minutes to read through a one- page summary guideline for evaluating the treatment integrity one of three DTT teaching tasks. Then you will attempt to evaluate the treatment integrity of a confederate instructor apply DTT to a confederate role-playing a child with ASD. If you are ready to teach the task before 10 minutes are up, please let me know."</i>			
When the participant is ready to teach, say <i>"This session will be recorded for data analysis and you will be observing/evaluating the session live. Your performance will be scored at a later time, but we cannot provide any feedback at this point."</i>			
<i>"We cannot help you during any of this, so please save any questions you have until the end of the session."</i>			

	Task 1	Task 2	Task 3
4. Provided participant with summary guideline sheet			
5. Timed participant's study time (10 minutes)			
6. Instructed Participant <i>"10 minutes are up. You can now attempt to teach [confederate]. Let me know when you are finished."</i>			
7. When participant has completed teaching attempt, thank them and proceed to next task			
8. When participant has completed task 3, thank them and confirm a brief break , and the time to start the next step on the overview sheet.			

PROCEDURAL RELIABILITY DATA SHEET: TRAINING

Participant #:	<input type="text"/>	Date:	<input type="text"/>	Start Time:	<input type="text"/>
		Observer:	<input type="text"/>	End time:	<input type="text"/>

Record if the experimenter followed this script when conducting this phase

+ indicates YES - indicates NO / indicates not applicable

1. Now, you will read the Discrete-Trials Teaching Form (DTTEF) Self-Instructional Manual.	
2. Make sure you learn the study questions as you come across them in the manual (you can use the paper/pen/highlighter to make notes if needed).	
3. Make sure to memorize the Do's and Don'ts of each of the 20 DTTEF components.	
4. Use the computer to watch the 4 video demonstrations of a teacher using DTT to teach a confederate child with ASD and then use the datasheets in the manual to score her performance. After, check your DTTEF with the answer key at the back of the manual to ensure that you are evaluating the treatment integrity of the session with accuracy.	
5. Do you have any questions? Let me know when you are finished 😊	
6. <i>Now you will take a mastery test. Try to answer the questions to the best of your ability. (Give the mastery test and mark immediately). If restudy is required, say "There was _____question(s) that were not answered correctly (show which ones). Please restudy the material for these questions and let me know when you are ready to re-write. Give the participant another piece of paper to re-write the questions and mark immediately. Repeat until 100% is obtained.</i>	
7. Offer break.	

PROCEDURAL RELIABILITY DATA SHEET: POST-STUDY ASSESSMENT

Participant #:	<input type="text"/>	Date:	<input type="text"/>	Start Time:	<input type="text"/>
		Observer:	<input type="text"/>	End time:	<input type="text"/>

Record if the experimenter followed this script when conducting this phase

+ indicates YES - indicates NO / indicates not applicable

	Task 1	Task 2	Task 3
1. Prepared area: appropriate for the task			
2. Introduced confederate and explained that he/she is working off a script and will be role-playing a non-verbal child with ASD.			

3. Instructed participant:	Task 1	Task 2	Task 3
<i>"Now you will have 10 minutes to read through a one- page summary guideline for evaluating the treatment integrity one of three DTT teaching tasks. Then you will attempt to evaluate the treatment integrity of a confederate instructor apply DTT to a confederate role-playing a child with ASD who is nonverbal. If you are ready to teach the task before 10 minutes are up, please let me know."</i>			
When the participant is ready to teach, say <i>"This session will be recorded for data analysis and you will be observing/evaluating the session live. Your performance will be scored at a later time, but we cannot provide any feedback at this point."</i>			
<i>"We cannot help you during any of this, so please save any questions you have until the end of the session."</i>			

	Task 1	Task 2	Task 3
4. Provided participant with summary guideline sheet			
5. Timed participant's study time (10 minutes)			
6. Instructed Participant <i>"10 minutes are up. You can now attempt to teach [confederate]. Let me know when you are finished."</i>			
7. When participant has completed teaching attempt, thank them and proceed to next task			
8. When participant has completed task 3, thank them and confirm a brief break, and the time to start the next step on the overview sheet.			
9. Schedule GENERALIZATION SESSION			

PROCEDURAL RELIABILITY DATA SHEET: GENERALIZATION

Participant #:	<input type="text"/>	Date:	<input type="text"/>	Start Time:	<input type="text"/>
		Observer:	<input type="text"/>	End time:	<input type="text"/>

Record if the experimenter followed this script when conducting this phase

+ indicates YES - indicates NO / indicates not applicable

	Task 1	Task 2	Task 3
1. Prepared area: appropriate for the task			
INSTRUCTED PARTICIPANT: <i>"In this phase, you are going to attempt to evaluate the treatment integrity of an Autism Tutor teach three tasks using DTT to a child with ASD. You are going to use the DTTEF to score the Autism Tutor's performance across three videotaped sessions. Before each task, you will get to read through a one-page summary of how to score that task."</i>			
2. <i>"You will evaluate 12 trials of Task 1 and then take a break. You will then repeat with Task 2, then take a break, and then complete Task 3."</i>			
3. Give task 1 instructions and wait 10 mins or until participant is ready. <i>"You can now attempt to evaluate Task 1. I will press the play button. We will not be able to pause/stop the video. Please let me know when you are finished."</i>			
Waited for participant to finish task, and took a break			
4. Give task 2 instructions and wait 10 mins or until participant is ready. <i>"You can now attempt to evaluate Task 2. I will press the play button. We will not be able to pause/stop the video. Please let me know when you are finished."</i>			
Waited for participant to finish task, and took a break			
5. Give task 3 instructions and wait 10 mins or until participant is ready. <i>"You can now attempt to evaluate Task 3. I will press the play button. We will not be able to pause/stop the video. Please let me know when you are finished."</i>			
Waited for participant to finish task & thanked them for coming in.			

PROCEDURAL RELIABILITY DATA SHEET: FOLLOW-UP

Participant #: Date: Start Time:

Observer: End time:

Record if the experimenter followed this script when conducting this phase

+ indicates YES - indicates NO / indicates not applicable

	Task 1	Task 2	Task 3
1. Prepared area: <i>Thank you for coming in today for the follow-up assessment. Today, you will be evaluating the treatment integrity of the same three tasks (matching, pointing, and imitation) as you did during BL and PT phases of the study.</i>			
2. Introduced confederate and explained that he/she is working off a script and is role-playing a non-verbal child with ASD.			

	Task 1	Task 2	Task 3
3. Instructed participant: <i>"Now you will have 10 minutes to read through a one- page summary guideline for evaluating the treatment integrity one of three DTT teaching tasks. Then you will attempt to evaluate the treatment integrity of a confederate instructor apply DTT to a confederate role-playing a child with ASD who is nonverbal. If you are ready to teach the task before 10 minutes are up, please let me know."</i>			
When the participant is ready to teach, say <i>"This session will be recorded for data analysis and you will be observing/evaluating the session live. Your performance will be scored at a later time, but we cannot provide any feedback at this point."</i>			
<i>"We cannot help you during any of this, so please save any questions you have until the end of the session."</i>			

	Task 1	Task 2	Task 3
4. Provided participant with summary guideline sheet and waited 10 mins or until participant ready			
5. Instructed Participant <i>"10 minutes are up. You can now attempt to teach [confederate]. Let me know when you are finished."</i>			
6. When participant has completed teaching attempt, thank them and proceed to next task			
7. When participant has completed task 3, thank them and end session			

Appendix K
Participant Consent Forms



**Recruitment letter – AUTISM CONSULTANT/SENIOR TUTOR/LEAD
AUTISM TUTOR**

*Teaching Staff to Evaluate the Treatment Integrity of Discrete-Trials Teaching
Sessions with Children with Autism Spectrum Disorder*



UNIVERSITY
OF MANITOBA

Dear St.Amant Autism Staff,

My name is Jade Wightman and I am a PhD student in the Applied Behavior Analysis (ABA) program at the University of Manitoba. I am writing to invite you to consider participating in a research study that involves teaching staff who work with children with ASD to evaluate the treatment integrity (teaching accuracy) of Autism Tutors while they conduct discrete-trials teaching (DTT) sessions with children with autism spectrum disorder (ASD). To be eligible for participating in this study, you must be an Autism Consultant/Senior Tutor/Lead Tutor working in the St.Amant Autism Program.

In the study, you will first participate in a baseline assessment where you will evaluate the treatment integrity of a confederate (role playing a Tutor) conducting three DTT sessions with another confederate (role-playing a child with ASD). Each session will consist of 12 DTT trials. During training, you will read and study an 18-page manual that will teach you how to evaluate treatment integrity of DTT sessions using the Discrete-Trials Teaching Evaluation Form (DTTEF). You will also watch video demonstrations and engage in self-practice activities. At Post-training, you will attempt to evaluate a confederate instructor teaching a confederate child three teaching tasks, like in baseline. Finally, in a generalization phase, you will evaluate the treatment integrity of a videotaped DTT session of an Autism Tutor administering DTT to a child with ASD. All sessions will take place in a private room at St.Amant.

Completing all phases of the study will take approximately five hours, with four hours allocated to baseline, training, and post-training session, and approximately one-hour allocated to the generalization session that will occur at a later date.

You will receive a \$20 honorarium for your participation. If you are interested in participating and/or wish to receive more information about the project, please contact me by phone.

Thank-you,
Jade Wightman
MA; PhD Candidate
University of Manitoba & St. Amant Research Center

Supervisor:
Dr. Garry Martin
Professor Emeritus
Department of Psychology



**Project Description and Consent Form – AUTISM CONSULTANT/SENIOR
TUTOR/LEAD AUTISM TUTOR**

*Teaching Staff to Evaluate the Treatment Integrity of Discrete-Trials Teaching
Sessions with Children with Autism Spectrum Disorder*



UNIVERSITY
OF MANITOBA

Research Project Title:	Teaching Staff to Evaluate the Treatment Integrity of Discrete-Trials Teaching Sessions with Children with Autism Spectrum Disorder
Principal Investigator:	Jade Wightman, PhD Candidate
Advisor:	Dr. Garry Martin, PhD, Professor Emeritus

What is the purpose of the project?

The purpose of the current study is to evaluate the effectiveness of a self-instructional package to teach staff who supervise Autism Tutors who work with children with ASD to evaluate the treatment integrity of Tutors while they apply discrete-trials teaching (DTT) with children with ASD.

What will you do in the study, and how long will it take?

Phase 1: Baseline. You will attempt to evaluate the treatment integrity of three teaching tasks commonly taught to children with ASD; (a) matching pictures, (b) pointing-to-named pictures, and (c) motor imitation. You will observe a confederate instructor teach 12 trials of each of the three tasks to another confederate role-playing a child with ASD. You will receive a set of abbreviated instructions on how to evaluate each task, and the Discrete-Trials Teaching Evaluation Form (DTTEF) to evaluate the confederate instructor's performance. Each evaluation will be separated by a brief break. You will participate in this assessment one or two times to accommodate the research design.

Phase 2: Training. You will receive the Discrete-Trials Teaching Evaluation Form Self-Instructional Manual (DTTEF-SIM). The manual consists of 18 pages of self-instruction, and is divided into five parts. Part 1 is on preparing to conduct a teaching session, Part 2 is on managing antecedents on standard trials, Part 3 is on managing consequences for responses and recording data, Part 4 is on an error correction trial following an error, and Part 5 is on fading prompts across trials. Within the five parts are 25 study questions, video demonstrations and practice activities that correspond to the video demonstrations that involve using the DTTEF to score the videos. Once you have finished studying the manual, you will write a mastery test of the material. It will consist of five questions taken directly from the study questions that appear in the manual. In order to move on to the next phase of the study, you must answer the test with 100% mastery.

Phase 3: Post-training. You will evaluate the confederate instructor teach the confederate child the same three tasks as during Baseline.

Phase 4: Generalization. You will evaluate the treatment integrity of a videotaped session of an Autism Tutor administering DTT to teach each of 3 tasks, 12 trials per task, to a child with ASD.

Completing all phases of the study will take approximately five hours.

Will any recording devices be used?

Sessions will be videotaped for data analysis purposes. Only you, the researcher, and the researcher and assistant will be present in the room. Only the primary investigator and research assistant will have access to the videos, which will be password protected. You have the option of

viewing the video recordings when they are completed. Videos will be destroyed three months after the study has been completed (approximately December 2014).

What are the risks and benefits in taking part in the project?

The study involves no risks. Benefits include that we will make the results of our assessment available to the Senior Tutors/Tutors/Parents or decision maker of the child with ASD if they indicated they would like to receive the results on the consent form. This will be of value to the participants as it provides information on a teaching method that can be used to improve the treatment integrity assessment accuracy of DTT sessions. Also, you will learn a skill that is relevant to your profession.

How will confidentiality be maintained?

The primary investigator will know the identities of the participants because face-to-face interaction is required to collect the information. Participants' identities, however, will be coded on all recording forms. The key to decode their identities will be kept strictly confidential, stored in a password-protected file accessible only to the principal investigators. Any presentations, reports, or publications resulting from the proposed project will contain no identifying information. All documents containing identifying information will be destroyed three months after the study's completion (approximately Dec 2014). The raw data will be coded and will be stored in the St. Amant research office for five years after the publication of the research (American Psychological Association Standard 1.08). After this time, the raw, coded data will be destroyed.

Is there any payment or cost for participating?

You will receive a \$20 Starbucks gift card for participating. There is no cost.

Is participation voluntary?

Participation is voluntary and your decision to participate or not will in no way influence services you receive from any organization. Moreover, even after you give consent, you can stop at any time and for any reason by simply calling or emailing the principal investigator identified in this document.

Researchers involved in the study will be trained in identifying and reporting potential abuse of individuals through their mandatory attendance to the General Orientation to St. Amant Research Centre. Researchers and research assistants associated with this project will be informed of their responsibilities and the legal obligation to report physical, sexual, and/or emotional abuse if it is discovered in the course of the study.

How and with whom will the research results be shared?

Summary results will be disseminated in scientific journals and at conferences. Summary results will be shared (in the form of written reports, workshops, or presentations) with services and programs at St. Amant and possibly other service providers in Manitoba, and other public forums. Results will be shared for the purpose of disseminating potentially useful information that improves training of staff. Disseminated results will contain no participant identifying information.

When will I receive the results of the project?

If you wish to be informed of the results, please check YES in the appropriate box at the end of this form and I will send you a summary of the findings within the three months following data collection completion.

Signing the Consent Forms

Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in the research project. In no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from the study at any time, and /or refrain from answering any questions you prefer to omit, without prejudice or consequence. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation.

The University of Manitoba Research Ethics Board(s) and a representative(s) of the University of Manitoba Research Quality Management / Assurance office may also require access to your research records for safety and quality assurance purposes.

This research has been approved by the Psychology/Sociology Research Ethics Board of the University of Manitoba. If you have any concerns or complaints about this project you may contact any of the above-named persons or the Human Ethics Coordinator (HEC) at 474-7122. A copy of this consent form has been given to you to keep for your records and reference.

Please return all pages of this *Project Description and Consent to Participation Form* in the enclosed stamped envelope to the researcher.

CONSENT FORM: Signatures												
I,	_____,	hereby consent to participate in the project										
(please print your name)	<i>Teaching Staff to Evaluate the Treatment Integrity of Discrete-Trials Teaching Sessions with Children with Autism Spectrum Disorder</i>											
<p>By giving consent:</p> <p>I understand that I will be trained to evaluate the treatment integrity of DTT sessions using a self-instructional package.</p> <p>I allow the research project staff to include results in publications, reports, and talks, so that others may learn from this project.</p> <p>I understand that my identity will not be disclosed.</p> <p>I understand that I can revoke or amend this consent at any time and for any reason.</p> <p><u>Please provide the following information:</u></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%; padding: 5px;">Name of participant:</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">House phone:</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">Cell phone:</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">Email:</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">Preferred time of contact:</td> <td style="padding: 5px;"></td> </tr> </table>			Name of participant:		House phone:		Cell phone:		Email:		Preferred time of contact:	
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House phone:												
Cell phone:												
Email:												
Preferred time of contact:												
<p><i>For the purposes of contacting you to participate in the study, and sending you the results when the study is completed, <u>please print your phone number and mailing address/or email here:</u></i></p>												
<i>Please check YES or NO for the following items:</i>		YES										
1. I would like to receive the results of this project. Please send them to my (check one) mailing address__ email address__.		NO										
_____	_____											
Signature of Participant	Date											
_____	_____											
Name of Researcher/Delegate	Signature of Researcher/Delegate	Date										



Recruitment letter – AUTISM TUTOR
*Teaching Senior Tutors to Evaluate the Treatment Integrity of Discrete-Trials
Teaching Sessions with Children with Autism Spectrum Disorder*



Dear Autism Tutor,

My name is Jade Wightman and I am a PhD student in the Applied Behavior Analysis (ABA) program at the University of Manitoba. I am writing to invite you to consider participating in a research study that is looking at teaching Autism Senior Tutors to evaluate the treatment integrity (teaching accuracy) of Tutors while they conduct discrete-trials teaching (DTT) sessions with children with autism spectrum disorder (ASD). To be eligible for participating in this study, you must be an Autism Tutor working in the St. Amant Autism Program.

In the study, a Senior Tutor (who you do not work with) will observe a videotaped session of you administering DTT to teach each of 3 tasks, 12 trials each, to a child with ASD. The Senior Tutor would have recently participated in a study that examined the effectiveness of a self-instructional package to teach him/her to evaluate the treatment integrity of DTT sessions. In this first part of the study, the Senior Tutor will have learned to evaluate DTT sessions administered by a confederate, role-playing an instructor while teaching another confederate, role-playing a child with ASD. The part of the study that you are invited to participate in will assess whether the skills that the Senior Tutor acquired during training will generalize when evaluating an Autism Tutor (yourself) teaching a child with ASD.

Participating in the study will take approximately one-hour of your time. The session will be scheduled at a time convenient for you.

If you are interested in participating and/or wish to receive more information about the project, please contact me by phone.

Sincerely,

Jade Wightman
University of Manitoba & St. Amant Research Center

Supervisor:
Dr. Garry Martin
Professor Emeritus
Department of Psychology



Project Description and Consent Form – AUTISM TUTOR
Teaching Senior Tutors to Evaluate the Treatment Integrity of Discrete-Trials
Teaching Sessions with Children with Autism Spectrum Disorder



UNIVERSITY
OF MANITOBA

Research Project Title: Teaching Senior Tutors to Evaluate the Treatment Integrity of Discrete-Trials Teaching Sessions with Children with Autism Spectrum Disorder

Principal Investigator: Jade Wightman, PhD Candidate

Advisor: Dr. Garry Martin, PhD, Professor Emeritus

This consent form, a copy of which will be left with you for your records and reference, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what participation will involve. If you would like more details about something mentioned here, or information not included here, feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

What is the purpose of the project?

The main purpose of the current study is to evaluate the effectiveness of a self-instructional package for teaching Autism Senior Tutors who work with children with ASD to evaluate the treatment integrity of Tutors while they apply a common method used to teach such children, discrete-trials teaching (DTT).

The purpose of the component of the study that you will participate in is to assess whether the skills that the Senior Tutor acquired during training will generalize when evaluating an Autism Tutor teaching a child with ASD.

What will you do in the study, and how long will it take?

You will teach 3 brief DTT sessions, 12 trials each, and one task per session, to a child with ASD. The three tasks are commonly taught to children with ASD; (a) matching pictures, (b) pointing to named pictures, and (c) motor imitation. The teaching sessions will be videotaped so that a Senior Tutor who has recently been trained to evaluate the quality of DTT sessions can evaluate the video using the Discrete-Trials Teaching Evaluation Form (Fazzio, Martin & Arnal, 2012). Your total participation will involve one meeting of approximately one hour.

Will any recording devices be used?

Video recordings will be made of the assessments in order for the Senior Tutor to observe the video at a later date, to conduct our observations, and improve the accuracy of data collection. Only you, the child with ASD, and the researcher and assistant will be present in the room. Only the primary investigator and research assistant will have access to the videos, which will be password protected. You have the option of viewing the video recordings when they are completed. Videos will be destroyed three months after the study has been completed (approximately December 2014).

What are the risks and benefits in taking part in the project?

The study involves no risks. Benefits include that we will make the results of our assessment (effectiveness of the DTTEF-SIM) available to the Senior Tutors/Tutor/Parents or decision maker of the child with ASD if they indicated they would like to receive the results on the consent form. This will be of value to the participants as it provides information on a teaching method that can be used to improve the treatment integrity assessment accuracy of DTT sessions.

How will confidentiality be maintained?

The primary investigator will know the identities of the participants because face-to-face interaction is required to collect the information. Participants' identities, however, will be coded on all recording forms. The key to decode their identities will be kept strictly confidential, stored in a password-protected file accessible only to the principal investigators. Any presentations, reports, or publications resulting from the proposed project will contain no identifying information. All documents containing identifying information will be destroyed three months after the study's completion (approximately Dec 2014).

Is there any payment or cost for participating?

There is no cost or payment for participating.

Is participation voluntary?

Participation is voluntary and your decision to participate or not will in no way influence services you receive from any organization. Moreover, even after you give consent, you can stop at any time and for any reason by simply calling or emailing the principal investigator identified in this document.

Researchers involved in the study will be trained in identifying and reporting potential abuse of individuals through their mandatory attendance to the General Orientation to St. Amant Research Centre. Researchers and research assistants associated with this project will be informed of their responsibilities and the legal obligation to report physical, sexual, and/or emotional abuse if it is discovered in the course of the study.

How and with whom will the research results be shared?

Summary results will be disseminated in scientific journals and at conferences. Summary results will be shared (in the form of written reports, workshops, or presentations) with services and programs at St. Amant and possibly other service providers in Manitoba, and other public forums. Results will be shared for the purpose of disseminating potentially useful information that improves training of staff. Disseminated results will contain no participant identifying information.

When will I receive the results of the project?

If you wish to be informed of the results, please check YES in the appropriate box at the end of this form and I will send you a summary of the findings within the three months following data collection completion.

Signing the Consent Forms

Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in the research project. In no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from the study at any time, and /or refrain from answering any questions you prefer to omit, without prejudice or consequence. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation.

The University of Manitoba Research Ethics Board(s) and a representative(s) of the University of Manitoba Research Quality Management / Assurance office may also require access to your research records for safety and quality assurance purposes. This research has been approved by the Psychology/Sociology Research Ethics Board of the University of Manitoba. If you have any concerns or complaints about this project you may

contact any of the above-named persons or the Human Ethics Coordinator (HEC) at 474-7122. A copy of this consent form has been given to you to keep for your records and reference.

Please return all pages of this *Project Description and Consent to Participation Form* in the enclosed stamped envelope to the researcher.

CONSENT FORM: Signatures													
I	_____ ,	hereby consent to participate in the project											
,													
(please print your name)		<i>Teaching Senior Tutors to Evaluate the Treatment Integrity of Discrete-Trials Teaching Sessions with Children with Autism Spectrum Disorder</i>											
<p>By giving consent: I understand that I will be conducting three DTT sessions of 12 trials per session with a child with ASD I allow the research project staff to make video recordings during project sessions so that the video can be observed by a Senior Tutor (who does not work with me) I allow the researchers to include results in publications, reports, and talks, so that others may learn from this project. I understand that I can revoke or amend this consent at any time and for any reason. I understand my identity will not be disclosed.</p> <p><u>Please provide the following information:</u></p> <table border="1"> <tbody> <tr> <td>Name of participant:</td> <td></td> </tr> <tr> <td>House phone:</td> <td></td> </tr> <tr> <td>Cell phone:</td> <td></td> </tr> <tr> <td>Email:</td> <td></td> </tr> <tr> <td>Preferred time of contact:</td> <td></td> </tr> </tbody> </table>				Name of participant:		House phone:		Cell phone:		Email:		Preferred time of contact:	
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Please check YES or NO for the following items:													
2. I would like to receive the results of this project. Please send them to my (check one) mailing address__ email address__.													
_____ Signature of Participant		_____ Date											
_____ Name of Researcher/Delegate		_____ Signature of Researcher/Delegate	_____ Date										



Recruitment letter – CAREGIVER OF CHILD WITH ASD
*Teaching Senior Tutors to Evaluate the Treatment Integrity of Discrete-Trials
Teaching Sessions with Children with Autism Spectrum Disorder*



Dear Parent/caregiver,

My name is Jade Wightman and I am a PhD student in the Applied Behavior Analysis (ABA) program at the University of Manitoba. I am writing to invite you to consider having your child participate in a research study involving teaching Autism Senior Tutors to evaluate the teaching accuracy (called treatment integrity) of Tutors while they are applying discrete-trials teaching (DTT) sessions with children with autism spectrum disorder (ASD). Treatment integrity is the degree to which an intervention or procedure is implemented as intended and is very important in early intensive behaviour intervention programs like the St. Amant Autism Programs.

In the current study, Senior Tutors were trained to evaluate the treatment integrity of DTT sessions with a confederate, role-playing an instructor, teaching another confederate, role-playing a child with ASD.

The phase of the study that I am inviting your child to participate in will assess if the skills acquired by the Senior Tutor during training will generalize when he/she evaluates a Tutor who is teaching a child with ASD.

To be eligible to participate in this study, your child must be receiving services from the St. Amant Autism Programs.

Participation of your child will be scheduled at St. Amant and at a time convenient for you. The session will be approximately one-hour. During this session, an Autism tutor will attempt to teach approximately 36 DTT trials (12 trials of three tasks) to your child. The session will be videotaped so that Senior Tutors who were trained to evaluate the treatment integrity of DTT sessions can evaluate the teaching accuracy of the Tutor.

If you are interested in participating and/or wish to receive more information about the project, please contact me by phone.

Sincerely,

Jade Wightman
University of Manitoba & St. Amant Research Center

Supervisor:
Dr. Garry Martin
Professor Emeritus
Department of Psychology



Project Description and Consent Form – CAREGIVER OF CHILD WITH ASD

Teaching Senior Tutors to Evaluate the Treatment Integrity of Discrete-Trials Teaching Sessions with Children with Autism Spectrum Disorder



Research Project Title: Teaching Senior Tutors to Evaluate the Treatment Integrity of Discrete-Trials Teaching Sessions with Children with Autism Spectrum Disorder

Principal Investigator: Jade Wightman, PhD Candidate

Advisor: Dr. Garry Martin, PhD, Professor Emeritus

This consent form, a copy of which will be left with you for your records and reference, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what participation will involve. If you would like more details about something mentioned here, or information not included here, feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

What is the purpose of the project?

The main purpose of the current study is to evaluate the effectiveness of a self-instructional package for teaching Autism Senior Tutors who work with children with ASD to evaluate the treatment integrity of Tutors while they apply a common method used to teach such children, discrete-trials teaching (DTT).

What will your child do in the study, and how long will it take?

The Tutor will teach your child 12 trials of each of three tasks commonly taught to children with ASD; (a) matching pictures, (b) pointing to named pictures, and (c) motor imitation. The session will be videotaped so that the Senior Tutors who were trained to assess treatment integrity can evaluate the teaching accuracy of the Tutor using the Discrete-Trials Teaching Evaluation Form. Participation of your child will involve one session at St. Amant and will take approximately one hour.

Will any recording devices be used?

Video recordings will be made of the assessments in order for the Senior Tutor to observe and assess the teaching accuracy of the Tutor, to conduct our observations and improve the accuracy of data collection. Only you, the researcher, and a research assistant will be present in the room. Only the primary investigator will have access to the videos, which will be password protected. You have the option of viewing the video recordings when they are completed. Videos will be destroyed three months after the study has been completed (approximately December 2014).

What are the risks and benefits in taking part in the project?

The study involves no risks. Benefits include that we will make the results of our assessment available to the Senior Tutors/Tutors/Parents or decision maker of the child with ASD if they indicated they would like to receive the results on the consent form. This will be of value to the participants as it provides information on a teaching method that can be used to improve the treatment integrity assessment accuracy of DTT sessions. Also, participants (Senior Tutors) will learn an additional skill that is relevant to their profession.

How will confidentiality be maintained?

The primary investigator will know the identities of the participants because face-to-face

interaction is required to collect the information. Participants' identities, however, will be coded on all recording forms. The key to decode their identities will be kept strictly confidential, stored in a password-protected file accessible only to the principal investigators. Any presentations, reports, or publications resulting from the proposed project will contain no identifying information. All documents containing identifying information will be destroyed three months after the study's completion (approximately Dec 2014).

Is there any payment or cost for participating?

There is no cost or payment for participating.

Is participation voluntary?

Participation is voluntary and your decision to have your participate or not will in no way influence services you or your child receive from any organization. Moreover, even after you give consent, you can stop at any time and for any reason by simply calling or emailing the principal investigator identified in this document.

Researchers involved in the study will be trained in identifying and reporting potential abuse of individuals through their mandatory attendance to the General Orientation to St.Amant Research Centre. Researchers and research assistants associated with this project will be informed of their responsibilities and the legal obligation to report physical, sexual, and/or emotional abuse if it is discovered in the course of the study.

How and with whom will the research results be shared?

Summary results will be disseminated in scientific journals and at conferences. Summary results will be shared (in the form of written reports, workshops, or presentations) with services and programs at St. Amant and possibly other service providers in Manitoba, and other public forums. Results will be shared for the purpose of disseminating potentially useful information that improves training of staff. Disseminated results will contain no participant identifying information.

When will I receive the results of the project?

If you wish to be informed of the results, please check YES in the appropriate box at the end of this form and I will send you a summary of the findings within the three months following data collection completion.

Signing the Consent Forms

Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to have your loved one participate as a subject. In no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from the study at any time, and /or refrain from answering any questions you prefer to omit, without prejudice or consequence. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation.

The University of Manitoba Research Ethics Board(s) and a representative(s) of the University of Manitoba Research Quality Management / Assurance office may also require access to your research records for safety and quality assurance purposes. This research has been approved by the Psychology/Sociology Research Ethics Board of the University of Manitoba. If you have any concerns or complaints about this project you may contact any of the above-named persons or the Human Ethics Coordinator (HEC) at 474 7122. A copy of this consent form has been given to you to keep for your records and reference.

CONSENT FORM: Signatures												
I _____ , ,	hereby consent for my child to participate in the project											
(<i>please print your name</i>)	<i>Teaching Senior Tutors to Evaluate the Treatment Integrity of Discrete-Trials Teaching Sessions with Children with Autism Spectrum Disorder</i>											
<p>By giving consent:</p> <p>I understand that the researcher will videotape a Tutor teaching my child three DTT tasks (approximately 36 trials)</p> <p>I understand that Senior Tutors who have agreed to participate in the study will be observing the Tutor teaching my child using DTT</p> <p>I allow the research project staff to make video recordings during project sessions, and to include results in publications, reports, and talks, so that others may learn from this project.</p> <p>I understand that my and my child's identities will not be disclosed.</p> <p>I understand that I can revoke or amend this consent at any time and for any reason.</p> <p><u>Please provide the following information:</u></p> <table border="1"> <tbody> <tr> <td>Name of participant:</td> <td></td> </tr> <tr> <td>House phone:</td> <td></td> </tr> <tr> <td>Cell phone:</td> <td></td> </tr> <tr> <td>Email:</td> <td></td> </tr> <tr> <td>Preferred time of contact:</td> <td></td> </tr> </tbody> </table>			Name of participant:		House phone:		Cell phone:		Email:		Preferred time of contact:	
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<i>Please check YES or NO for the following items:</i>		YES	N O									
3. I would like to receive the results of this project. Please send them to my (check one) mailing address____ email address____.												
_____	_____											
Signature of Participant	Date											
_____	_____											
Name of Researcher/Delegate	Signature of Researcher/Delegate	Date										

Appendix L
University of Manitoba Ethics Approval



Research Ethics and Compliance
Office of the Vice-President (Research and International)

Human Ethics
208-194 Dafoe Road
Winnipeg, MB
Canada R3T 2N2
Phone +204-474-7122
Fax +204-269-7173

APPROVAL CERTIFICATE

May 9, 2014

(Advisor – G. Martin)

TO: Jade K. Wightman
Principal Investigator

FROM: Jacquie Vorauer, (Psychology/Sociology Research Ethics Board (FOREB))

Re: Protocol #P2014:028
"Teaching Senior Tutors to Evaluate the Treatment Integrity of Discrete-Trials Teaching Sessions with Children with Autism Spectrum Disorders"

Please be advised that your above-referenced protocol has received human ethics approval by the **Psychology/Sociology Research Ethics Board**, which is organized and operates according to the Tri-Council Policy Statement (2). It is the researcher's responsibility to comply with any copyright requirements. **This approval is valid for one year only.**

Any significant changes of the protocol and/or informed consent form should be reported to the Human Ethics Secretariat in advance of implementation of such changes.

Please note:

- If you have funds pending human ethics approval, please mail/e-mail/fax (261-0325) a copy of this Approval (identifying the related UM Project Number) to the Research Grants Officer in ORS in order to initiate fund setup. (How to find your UM Project Number: <http://umanitoba.ca/research/ors/mrt-faq.html#pr0>)
- If you have received multi-year funding for this research, responsibility lies with you to apply for and obtain Renewal Approval at the expiry of the initial one-year approval; otherwise the account will be locked.

The Research Quality Management Office may request to review research documentation from this project to demonstrate compliance with this approved protocol and the University of Manitoba Ethics of Research Involving Humans.

The Research Ethics Board requests a final report for your study (available at: http://umanitoba.ca/research/orec/ethics/human_ethics_REB_forms_guidelines.html) **in order to be in compliance with Tri-Council Guidelines.**

Appendix M
St.Amant Ethics Approval



A local committee consisting of:

<u>Name</u>	<u>Position</u>
Kerri Walters	Clinical Manager, Autism Programs
Lindsay Wishnowski	Consultant, Autism Programs
Toby Martin	Manager, St.Amant Research Centre

Has examined the research access application

Titled: **Teaching Senior Tutors to Evaluate the Treatment Integrity of Discrete-Trials Teaching Sessions with Children with Autism Spectrum Disorder**

Proposed by: **Jade Wightman & Garry Martin**

And considers it to be acceptable for conduct within St.Amant.

Date: 2014-May-22

Review Facilitator: Dr. Toby Martin Signature: _____