



Feasibility and potential efficacy of the family-centered Prevent-Teach-Reinforce model with families of children with developmental disorders



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ABSTRACT

This study examined the feasibility and potential efficacy of the family-centered Prevent-Teach-Reinforce (PTR) model with three families of young children with an autism spectrum disorder or language delay with sensory processing problems. Particularly, the study assessed the family adherence to the PTR intervention, changes in child behavior, family use of the Individualized Behavior Rating Scale Tool (IBRST), procedural integrity, and social validity. A multiple-baseline design across families was used to examine the functional relation between parent-implemented PTR intervention and changes in child behavior. Results indicated that the family-centered PTR process was successful in promoting parents to design and implement the PTR intervention plans with fidelity, and the parents' implemented intervention plans were effective in increasing replacement behavior and decreasing problem behavior across children. The results also indicated that the parents successfully used the IBRST to monitor their child's progress and were highly satisfied with the PTR intervention process and outcomes for their children.

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1. Introduction

Behavioral challenges may be a significant concern for families of children with developmental disorders including autism spectrum disorders (ASD). The presence of challenging behavior or lack of appropriate behavior can often cause significant interference in daily life and routines. Research has suggested that approximately one third of young children with the diagnosis of ASD have behavioral challenges that are deemed clinically significant (Hartley, Sikora, & McCoy, 2008). Family routines are the most common and most influential interactions for children with and without disabilities (Clarke, Dunlap, & Vaughn, 1999; Lucyshyn et al., 2004; Vaughn, Clarke, & Dunlap, 1997). Because children spend the majority of their time at home with their family members, it is beneficial and even necessary to address this environment when considering interventions for children with developmental and behavioral challenges. However, family-centered interventions having a good contextual fit with family life must be developed and implemented for the success of behavior change in these children (Duda, Clarke, Fox, & Dunlap, 2008; Lucyshyn et al., 2007; Moes & Frea, 2002).

There is growing empirical evidence for the efficacy of the application of positive behavior support (PBS) with families of children with developmental disorders who have problem behavior (Buschbacher, Fox, & Clarke, 2004; Cheremshynski,

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Lucyshyn, & Olson, 2013; Lohrmann-O'Rourke & Yurman, 2001; Lucyshyn et al., 2007; Vaughn, Wilson, & Dunlap, 2002). PBS is an ecological model derived from the fundamental concept of operant learning theories to improve the quality of life of individuals with disabilities who have behavioral challenges (Bradshaw, Mitchell, & Leaf, 2010; Carr et al., 2002; Shipley-Benamou, Lutzker, & Taubman, 2002; Von Mizener & Williams, 2009). Within a PBS approach, practitioners seek to reduce problem behavior without the use of potentially aversive consequences, and instead focus on environmental adaptations and supports, instruction, and reinforcement of appropriate behavior (Dunlap et al., 2009). However, to date, there remains a dearth of research on the application of a family-centered approach to PBS for children with developmental disorders in the natural family contexts.

1.1. Prevent-Teach-Reinforce model

Prevent-Teach-Reinforce (PTR) is a manualized intervention model of PBS for use by natural change agents to support children with severe problem behavior and uses the collaborative, team-driven problem-solving framework. The model was originally developed as a systematic process to assist typical students in school settings, whose persistent problem behaviors had not yet been resolved through classroom systems of behavior management (Iovannone et al., 2009). PTR is a model that also follows the principles of applied behavior analysis (ABA) (Dunlap et al., 2009). There are five steps within the PTR model: (a) teaming, (b) goal setting, (c) assessment, (d) intervention, and (e) evaluation. There are also three components within the intervention: Prevent, Teach, and Reinforce (Dunlap et al., 2009; Iovannone et al., 2009), which address antecedent variables, behavioral functions and replacement behavior, and consequence variables in designing behavior intervention plans. The five-step process requires developing hypotheses based upon information derived from functional behavior assessment (FBA) and selecting interventions that are matched with the hypotheses. The teachers or family members play a vital role in the development and implementation of the PTR intervention plan. However, it is suggested that teachers and families should have access to training and coaching during implementation of the PTR intervention in order to achieve and sustain high levels of fidelity. However, due to very limited research on the PTR model, the extent to which the collaborative team-driven PTR process facilitated by a consultant can benefit families of children with developmental disabilities is not clear.

A few previous studies have investigated the feasibility and preliminary efficacy of the PTR model using case study or single subject research designs. Dunlap, Iovannone, Wilson, Kincaid, and Strain (2010) provided two case studies that involved two male children with problem behavior, ages 8 and 9 years, who had delays in academic and social developmental areas. In both cases, the teams consisted of the classroom teacher and a university-based consultant. The results indicated that the PTR intervention was effective in decreasing the children's problem behavior and increasing the appropriate behavior, demonstrating high acceptability of the interventions on a social validity rating scale. Strain, Wilson, and Dunlap (2011) tested the PTR model in a concurrent multiple baseline design across three children with autism in general classrooms, which showed that the PTR process was effective in decreasing problem behavior and increasing task engagement of all participants. Follow-up data indicated that results were sustained after the PTR consultant no longer provided on-site assistance. The study was successful in providing the first empirical support that the PTR model could be effective with children with autism.

Sears, Blair, Crosland, and Iovannone (2013) expanded the research on the PTR model by implementing the PTR in two home environments with two children with ASD, ages 4 and 6 years. The authors modified specific components of the manual's worksheets, which were previously tailored to the school setting, in order to make it appropriate for home-based options. A multiple baseline design across routines was used to examine the outcome of the PTR intervention implemented by the parents as well as to test generalization of the model with a novel routine. Results suggested that the school-based PTR model was adaptable to home settings, and implementation of the PTR interventions by family members was associated with reductions in the children's problem behaviors and increases in alternative behaviors during targeted and nontargeted family routines, demonstrating high social validity.

1.2. Limitations of research on PTR

The current literature on the PTR model has limitations leading to possible research in the future. The time series data reported in the study by Dunlap et al. (2010) were based on teacher perceptions and not reliable direct observations. Further, the coaching sessions described were very brief; it was not clear what the requirement was during implementation for a coaching session, how long the additional coaching sessions were, or how often they were conducted. The levels of support needed for the teachers during the intervention phase were not clearly defined. A limitation of the Strain et al. (2011) study was similar, as the levels of consultation support needed for the teachers were not clearly described in detail for future research to replicate.

Limitations of the Sears et al. (2013) study included limited data collected during intervention and a small number of participants. In addition, the study did not report the extent to which parents could use the Individualized Behavior Rating Scale Tool (IBRST), which should be developed in Step 2 (Goal Setting) of the PTR process. Due to the importance of data-based decision making during selection, implementation, and modification of interventions, PTR suggests using the IBRST that utilizes a direct observation method. The tool is designed to rate the target behavior at the time and place it occurs in the natural setting and is considered easy to use and efficient (Iovannone, Greenbaum, Wang, Dunlap, & Kincaid, 2014). However, data on the usability or feasibility of the IBRST are currently not available in the current literature on PTR. Another

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