

Abstract Title Page
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Title: Working with teachers to adapt an evidence-based intervention for children with autism

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Abstract Body

Limit 4 pages single-spaced.

Background / Context:

Description of prior research and its intellectual context.

Increasing diagnoses of autism have led to pressure to improve the quality of educational services for children with autism by incorporating evidence-based practices (EBPs) into school programs. However, this process has been difficult, and both autism researchers and educators report frustration concerning the gap between research and practice. Historically special education and intervention researchers have focused primarily on developing effective interventions, with less attention given to the pragmatics of implementation in the classroom and teacher training (Bondy & Bromwell, 2004). Thus EBPs for educating children with autism exist, but often they are not effectively incorporated into programs serving this population (McGee, Morrier & Daly, 1999). This can lead to varying outcomes for student with autism because practices are being implemented very differently across classrooms.

One EBP for students with autism that can be used in classrooms is Pivotal Response Training (PRT). PRT is a naturalistic behavioral intervention, based on the principles of applied behavior analysis, which is soundly supported in the scientific literature (National Research Council, 2001; National Standards Project, 2009). PRT is a multi-component intervention shown to be efficacious for improving communication, play, academic skills, and social interaction. The “pivotal” responses trained in PRT are *motivation, initiation and responsivity to multiple cues* (i.e., increasing breadth of attention). Specific elements include gaining attention, presenting clear and appropriate instructions, interspersing maintenance tasks, following the child’s choice, taking turns, requiring the child to respond to multiple cues, reinforcing attempts, providing contingent consequences and ensuring a direct relationship between the child’s response and the reinforcer.

Despite the evidence supporting PRT as an EBP for children with ASD, its effectiveness is unknown when teachers use it in classrooms. Though research examining usual care in the Southern California region indicates that more than seventy percent of 80 teachers surveyed reported using PRT or some variation of PRT, the majority reported adapting the intervention (Stahmer, 2007) which may affect treatment integrity and effectiveness.

In an effort to improve implementation of PRT in classrooms, researchers sought to work together with teachers to adapt PRT for the classroom. The collaborative model of translation includes obtaining feedback from teachers, observing teachers’ use of PRT in the classroom, testing recommended adaptations based on observation and feedback findings, and testing the modified program.

Collaboration with teachers allowed us to develop a classroom adaptation of PRT. The resulting intervention, classroom pivotal response teaching (CPRT), expands the applicability of the original PRT procedures for use in classroom settings. CPRT was developed after research indicated that teachers were not using PRT as specified in the original training manual. In research settings, care is taken to ensure that the protocol for an EBP is implemented correctly and fully—that is, as it was developed and tested by the research team. Deviation from the established protocol will reduce the fidelity of implementation and perhaps reduce the effectiveness of the intervention. Although the high percentage of teachers reporting classroom use of PRT in Southern California was encouraging, the issue of how to improve fidelity and ensure that PRT is maximally effective for the students receiving intervention remained.

We conducted a series of studies was to adapt PRT for classroom use in collaboration with teachers. The first step in the process of understanding how PRT may need to be adapted for effective use in the classroom was gathering information from teachers regarding their views on necessary adaptations. We began by bringing together groups of teachers to ask them about the benefits and barriers associated with their use of traditional PRT. Special education teachers found PRT to be an intuitive, effective strategy for teaching children with autism. Many teachers reported that PRT fit with their idea of “good teaching” and made sense to them. However, teachers also reported significant barriers to the use of PRT in the classroom. They found it difficult to take the skills they learned in one-on-one training and use them with groups of children, especially in settings like circle time, in large-group activities, and without proper training and support. Teachers also found data collection difficult and were unsure how to address specific individualized education program (IEP) goals using PRT strategies. In addition, teachers reported difficulty using some of the components of PRT correctly.

Once feedback was obtained from teachers, we conducted empirical studies to examine adaptations to specific components of PRT to make it easier to use in the classroom. A new manual was developed which included adapted components, methods for using strategies with groups of students, examples of how to address IEP goals using these strategies, and data collection strategies (Stahmer, Suhrheinrich, Reed, Schreibman & Bolduc, 2011). A teacher assisted in authoring the manual and an advisory board assisted in the development of examples and data collection methods. This collaborative model provided an adapted evidence-based practice for use in classrooms.

Purpose / Objective / Research Question / Focus of Study:

Description of the focus of the research.

The objective of this study was to determine the effectiveness of CPRT for students ages 3-8. Goals included determining if teachers could learn and utilize CPRT in the classroom with fidelity and evaluating whether teachers’ implementation of CPRT resulted in student improvement on targeted Individualized Education Plan (IEP) goals and standardized communication measures.

Setting:

Description of the research location.

This study was conducted in special education classrooms in Southern California serving children with an educational classification of autism ages 3-8 years.

Population / Participants / Subjects:

Description of the participants in the study: who, how many, key features, or characteristics.

Study participants included 20 teachers in San Diego County currently teaching children with autism ages 3-8. Participating teachers had 1-2 students with a primary educational diagnosis of autism, and did not have received prior training in PRT. Student participants were recruited through participating teachers. Thirty-seven children with a primary educational classification of autism, educated by a participating teacher participated.

Intervention / Program / Practice:

Description of the intervention, program, or practice, including details of administration and duration.

PRT is a form of naturalistic behavioral intervention, based on principles established via applied behavior analysis (ABA), and is well supported in the scientific literature. Compared to a more highly structured, repetitive-practice form of behavioral intervention, such as discrete trial training (DTT), PRT involves the same behavioral principles but has a more loosely structured and naturalistic format. PRT was designed based on a series of empirical studies identifying important treatment elements that address “pivotal” areas of development affecting a wide range of functioning. The “pivotal” responses trained in PRT are *motivation* and *responsivity to multiple cues* (i.e., increasing breadth of attention). Specific elements include clear and appropriate prompts, child choice, turn-taking, interspersal of maintenance tasks, reinforcing attempts, responding to multiple cues, and a direct response-reinforcer relationship (see Table 1). In contrast to the other procedures that have focused almost exclusively on increasing verbal (language) and nonverbal communication skills, PRT has been used to teach a variety of skills, including symbolic play (e.g., Stahmer, 1995), peer social interaction (e.g., Pierce & Schreibman, 1997), and self-initiations (Koegel, Carter, & Koegel, 2003). PRT has been identified as an established intervention in a recent comprehensive review of treatment methods for use with children with autism, conducted by the National Standards Project (2009).

Classroom Pivotal Response Teaching or CPRT uses the same principals and strategies as PRT but has been adapted for the classroom. CPRT is essentially a child-directed model that emphasizes allowing the child to choose the nature of the educational interaction, the materials involved, and the timing. Further, it involves ensuring child attention, interspersing previously mastered skills, providing reinforcing consequences that are directly related to the child’s behavior or response to the instruction, reinforcing response attempts, and encouraging turn-taking with the teacher or other students. Also, CPRT incorporates tasks that serve to broaden the attention of the child by teaching responses to simultaneous multiple stimuli.

Research Design:

Description of the research design.

A multiple-baseline across participants design was utilized. Twenty teachers were randomly assigned 3 to 6 baseline observations of current teaching techniques during regular classroom activities. The independent variable (CPRT training) was first applied to participants in the 2-week baseline condition, then the 4-week and so on. The effects of the independent variable were verified by demonstrating that the intervention changed one participant’s behavior without impacting the remaining participants’ behavior during baseline. The effects of the independent variable were replicated across different participants. This design controls for historical events (e.g., a curriculum or personnel change in a classroom setting) that might concurrently affect multiple participants and (b) participant maturation and/or exposure to the clinical or experimental protocol and environment (Kazdin, 1982). After completing baseline, teachers participated in a 6-week training in CPRT, which included didactic lecture, video examples, hands-on practice, and classroom coaching sessions with a trainer.

Data Collection and Analysis:

Description of the methods for collecting and analyzing data.

Observations of teacher implementation of CPRT during classroom activities occurred throughout the training period. Video samples were coded for teacher fidelity and implementation of CPRT as well as changes in child behavior. Videos were taken of each teacher participant working in their own classroom. Video samples were scored for teacher and student behavior by trained research assistants, blind to the hypotheses. Each teacher identified one to two target students with autism in her/his classroom. Target students were assessed during baseline on standardized communication measures, and relevant IEP goals were selected by the teacher for targeting with CPRT. Progress on IEP goals was tracked throughout the study period using Goal Attainment Scaling (GAS). Post-training observations of teacher implementation and follow-up student assessments occurred at two-months after the end of CPRT training.

Findings / Results:

Description of the main findings with specific details.

A total of 19 teachers (95%) mastered all eight components of CPRT and implemented the intervention with fidelity after receiving training. Many teachers already utilized the antecedent components before training. These components are what many teachers refer to as “good teaching”, and are not overly unique to CPRT. Teachers were not effectively using consequence components at baseline. Most groups moved from not passing fidelity in these areas to passing fidelity, meaning that they were using direct, contingent consequences and reinforcing attempts more systematically and consistently throughout the session after training. Some teachers had difficulty maintaining fidelity at two-months follow-up. See Results: CPRT figure.

A total of 60% of students made accelerated progress on standardized communication assessments over the study period. The majority of students made better than expected progress on teacher selected IEP goals. Engagement was coded during CPRT implementation as (1) Active engagement (student was interacting with the teacher as part of the activity); (2) Passive engagement (student was attentively watching the teacher); (3) Object engagement (student was on task and in an appropriate interaction with teaching materials) and (4) Inappropriate (any disruptive or problem behavior that interrupts the progress of the activity). Average levels of active engagement increased from baseline to training, and we saw a decrease in passive engagement (See Results: Student Engagement figure). There was an increase in object engagement and a decrease in inappropriate engagement.

Conclusions:

Description of conclusions, recommendations, and limitations based on findings.

Teachers were able to accurately implement CPRT in their classrooms but maintaining intervention use after the end of training was difficult indicating a need for ongoing coaching. Teachers’ use of CPRT led to significant student progress on both standardized and observational measures. This preliminary study supports the effectiveness of CPRT and the success of increasing fidelity of implementation of evidence-based practices through cooperative adaptation of these models.

Appendices

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Appendix A. References

References are to be in APA version 6 format.

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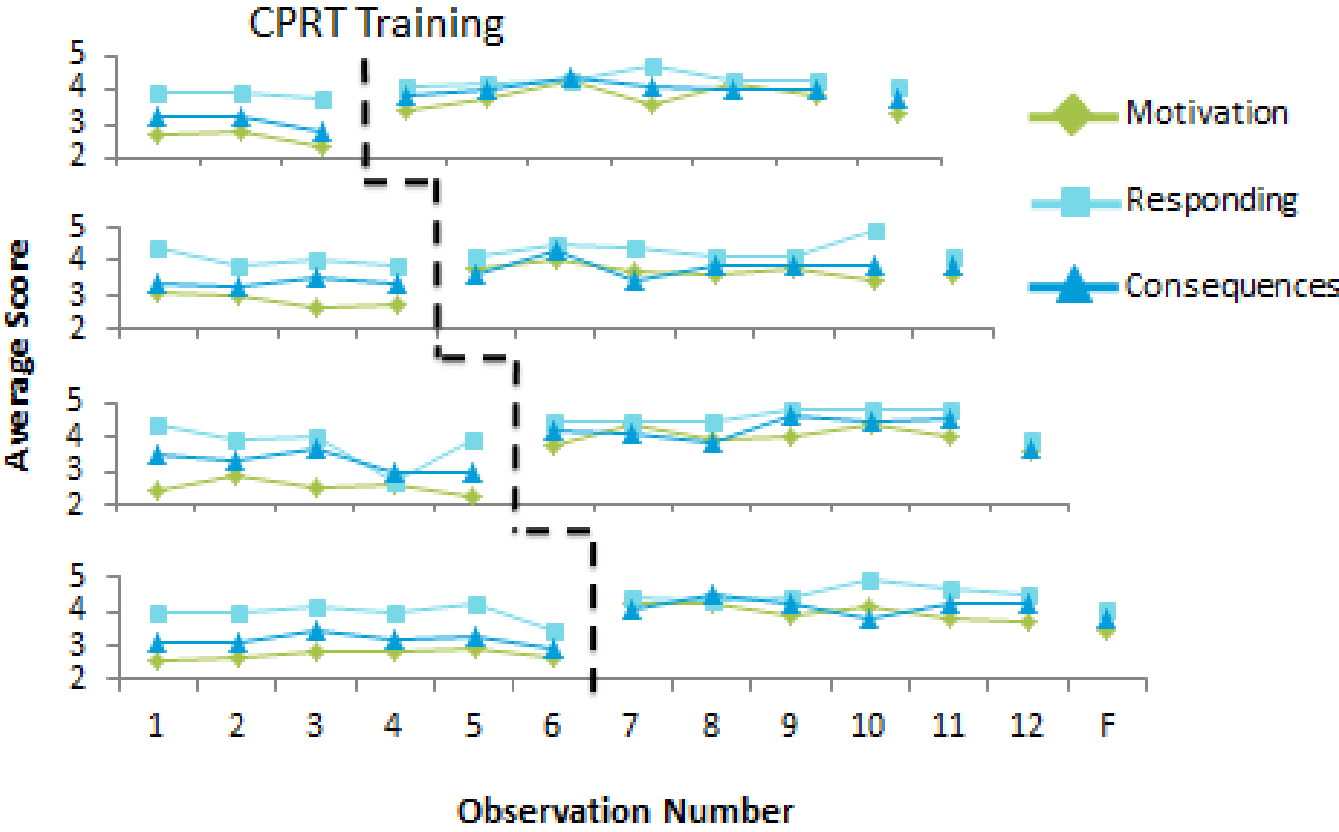
Appendix B. Tables and Figures

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Table 1. Core Elements of PRT

- (1) The instruction should be clear, appropriate to the task, uninterrupted, and the child should be attending to the therapist or task;
- (2) Maintenance (previously mastered) tasks should be interspersed frequently;
- (3) Multiple cues should be presented if appropriate for the child's developmental level;
- (4) The child should be given a significant role in choosing the stimulus item(s);
- (5) Rewards should be immediate, contingent, uninterrupted, and effective;
- (6) Natural or direct reinforcers should be used the majority of the time;
- (7) Rewards should be contingent on response attempts.

Results: CPRT Fidelity



Results: Student Engagement

