

Example of research paper on behavioral interventions in helping children with au...

[Sociology](#), [Communication](#)



1. 0 Pivotal response therapy (PRT)

Pivotal response therapy/treatment/training is one of the early behavioral intervention techniques developed for management of autism. This techniques is built on the premise that autism interferes with “ pivotal behaviors” that ultimately underlie other behaviors are deficient in autistic children. The pivotal behaviors/areas are initiating activities, motivation, self-management, feelings and responding to multiple/complicated cues (signals). PRT therefore aims at increasing pivotal behaviors, particularly motivation, which would in turn enhance generalization. The autistic child chooses the activity and is rewarded (positive reinforcement) for every correct responses or attempt. As such, PRT trains the child to respond appropriately/positively by increasing motivation and the positive response in one situation can be transferred to another situation (generalization). PRT increases motivation for appropriate social behavior such as learning language and learning play skills and the maintenance of the learned skills over time.

PRT, having been used widely for several decades now, is supported by substantial empirical data as a naturalistic intervention that is effective and useful in the education of children with ASD. While it is structured to involve an instructor teaching the children with ASD to skills sequentially (from simple to complex), PRT is flexible enough to enhance the creativity and participation of the children. As such, the technique involves several specific strategies such as the therapist giving clear instructions and/or questions, the child choosing the activities (stimuli) from those offered by the instructor (therapist), reinforcement of the child’s choice and reasoning and turn taking

to allow modeling. These strategies have been found to increase home skills, play skills, joint attention, peer social interactions and verbal communication. The critical aspect of PRT is that it allows the child to direct the therapy by affording him/her an opportunity to choose the activities/materials hence the motivation to respond appropriately is easily increased, reinforced and the response is easily generalized.

As earlier stated, there are several studies in support of the effectiveness of PRT in helping children with ASD. Gouvousis (2011) conducted a study to determine if a preschool autism teacher could effectively use PRT in a classroom setup. . The study which involved 3 preschool autistic children and a preschool teacher, also evaluated changes in prompted, spontaneous and echoic expressions. The results indicated a number of improvements related to child and teacher behavior. The study found that the teacher's behavior systematically improved in terms of implementing PRT strategies in the classroom instructions and in play activities. For instance, the teachers skills and abilities in attending to the children, providing opportunities to the children, providing immediate reinforcement for responses and attempts, turn taking and maintenance of tasks improved. Expressive language improved in the 3 children, with one of the children showing improvement in both spontaneous and prompted words. The expressive language skills learnt in class were generalized in play activities. Other skills that were improved, albeit not in all the 3 children were appropriate, functional and symbolic play, eye contact and joint attention. These improvements motivated the children to share toys and hence increase social interaction.

Another study involving five children, aged between 3 and 6, diagnosed ASD

by an independent pathologist, compared PRT with video modeling. The children were first exposed to both techniques and then sequentially exposed to the two techniques. The study generally sought to compare the effects of the two behavioral interventions on play skills. The study established that both VM and PRT lead to an increase in the number of play actions with PRT resulting in greater increase. Stahmer et al., (2010) systematically reviewed studies to identify the different skills that can be taught using PRT. They established that PRT is effective in improving communication skills (conversational communication, speech imitations, verbalization, spontaneous communication and language), joint attention, peer social skills, play skills and homework skills.

Despite the literature supporting the efficacy of PRT and the continuous improvement of the technique over time, it has its critic. The main criticism of PRT has to do with the structured nature of the technique. While it is fairly flexible, the technique requires the interaction of the autistic child and the instructor which is likely to develop into dependence rather than independence. In addition, the nature of research supporting the technique is mainly descriptive with very limited sample size hence the quality of the data not comprehensive enough.

2. 0 Reciprocal Imitation Training

Though it is an independent behavioral intervention, reciprocal imitation training (RIT) is considered a recent variation of PRT (Ingersoll, 2010). The technique was developed on the premise that autism in children causes a substantial deficit in imitation skills, which in turn affects the children's ability to acquire more complex socialization skills and behaviors. It is

theorized that imitation plays critical part of the development of social and cognitive skill and thus a target of several behavioral intervention strategies (Ingersoll & Schreibman, 2006). By targeting imitation, RIT and other imitation based techniques not only improve imitation skills but other important social skills as well (Ingersoll, 2010).

Ingersoll and colleagues (2006) recently RIT to teach imitation. It is a naturalistic technique that is implemented in the context of social interaction and has been shown to substantially improve transfer of imitative behaviors . The technique helps the child to discover intrinsic motivation in imitation. The child is taught that s/he needs to imitate the action of another person rather than to respond to verbal instructions. The instructor also imitates the child's actions which in turn increases the rate of the child's imitation. The instructor also verbally describes the imitated actions to the child. The technique has been shown to increase pretend play actions, spontaneous imitation and social behaviors . Unfortunately, because the technique is still in its infancy, few studies have been conducted to validate its efficacy. A study involving five children with autism established that all the five children increased their imitation skills and generalized the skills to another situation. In addition, the participants showed increase in joint attention, language skills and pretend play, which implies the connection between the imitation skills and social communication skills alluded to earlier. (Ingersoll & Schreibman, 2006). Another study evaluated the effectiveness of RIT on both spontaneous and elicited imitation skills. The study, which used a randomized controlled trial, involved 21 young children who showed increase in both spontaneous and elicited imitation after the training. There was more

improvement in the spontaneous acts than elicited acts. The study also established that RIT was effective in teaching both object and gesture imitation (Ingersoll , 2010). The third study compared the efficacy of RIT and VM in teaching imitation. The study, which involved three participants per technique, indicated that both RIT and VM resulted in an increase in the ability to imitate. While participants in RIT showed a gradual increase in their imitation skills over sessions, those in VM showed rapid increase in the imitation skills. During 1 and 3 weeks follow-up visit, the researcher established that the imitation was generalized with different toys and partners, indicating the potential of both techniques in acquisition, maintenance and generalization of imitations skills. The rapid increase in skills after VM when compared to RIT was attributed to the fact that the use of a screen is more motivating and limits irrelevant distractions hence helping the children to focus. With time, the levels of imitation in RIT participants declined indicating low intrinsic motivation in this technique as compared to VM.

Like any other behavioral intervention, RIT has its critics and more so because it is a very recent technique and thus has not been studied much to build enough empirical data to support its efficacy. It is particularly criticized as a technique that has not been replicated by other researchers than those who developed the technique. With such a background, there are claims of bias data supporting the technique.

3. 0 picture exchange communication system (PECS)

Picture exchange communication system (PECS) is an augmentative communication system that trains the child initiate communication by

exchanging picture (s) with the recipient. (Bondy & Frost, 2001; Charlop-Christy, Carpenter, Le, Leblanc, & Kellet, 2002; Preston & Carter, 2009). The system was developed by Bondy and Frost to increase the social communication skills of the child. The child is taught to use different cards to create a sentence, with the emphasis being on the child initiating the request. PECS is popular in teaching autistic children because it requires less training, it is cost effective and can be used in different settings. The popularity of the system has grown in the last almost three decades to the extent that there are 9 PECS offices in different countries and over twenty two thousand people are trained in PECS. It has been reported that children who learn PECS develop speech along the way (Bondy & Frost, 1994; Schwartz, Garfinkle, & Bauer, 1998). PECS has also been shown to improve social skills and decrease disruptive/inappropriate behaviors. The current PECS training manual has been translated in eight different languages and has outlined clear steps in the system.

A study conducted to empirically assess the use of PECS in improving communication among autistic children indicated that PECS improved social communication skills in all the three boys that participated in the study. The children mastered the PECS communication skills in a relatively short period. By the fourth phase there was significant improvement in speech in the three boys. The imitation skills of the children also improved with the training. Another study involving 34 children and their teachers established that training the teachers on the use of PECS improved the children's ability to use PECS over time and other communication skills. This showed the need to train teachers in PECS as it has a direct effect on the students' acquisition of

skills. A literature review on the studies on PECS between 1994 and 2002 indicated that while there were many studies on the subject, very few used randomized controlled trials hence the quality of the data was low. The review of 27 studies therefore only provided preliminary evidence on the effectiveness of PECS. The study therefore recommended more RCTs to determine the efficacy of PECS. Another current meta-analysis reviewed studies conducted between 1994 and 2009 to determine the effectiveness of PECS in improving communication and speech. Most of the studies showed improved communication skills and speech improvement but most of them had a limited sample size.

Critics of PECS have raised concerns of possible detrimental effects of picture communication on speech development especially if the intervention is on very young children such that they develop dependence on picture communication. However, 25 years of research have shown that PECS actually improves speech in most cases. Another criticism is that most of the evidence is based on weak experimental design that do not eliminate the confounding effects. As such, the popularity of PECS preceded empirical data

4. 0 Self management

This is a recent technique aimed at empowering autistic individuals to attain independence by eliminating stereotypic and repetitive behaviors that disrupt social interaction. The technique includes self-monitoring, self-evaluation and self-reinforcement. The technique can further be broken down to several steps. First, the target behavior is identified then the instructor and the learner determine how often the learner will monitor

his/her target behavior. The instructor must meet the student to elaborate self-monitoring and to identify the goal and this gives the student a sense of ownership. The hallmark of this technique is the fact that the instructor and the learner work together in determining the goal, the monitoring schedules and the tracking of the progress but the learner implements the self-management plan in which the learner records and rates the behavior. The plan is incorporated in the school and home setup so that the parent is also involved. Finally, once the student has mastered the behavior, self-monitoring is gradually faded (Moore, 2009; Bonow, 2010 ; Park, 2012).

Several studies support the use of self-management in ASD.

A study aimed at examining the efficacy of the technique in improving communication skills through personal narrative showed positive results. The study engaged three autistic children aged between 5 and 8 years and their parents. The study revealed that self management increases personal narrative ability, quality of the personal narratives, language, synchronous discourse and conversational skills. Another study reviewed several articles on the use of self-management to improve behavior and quality of life. The study found that the technique increases the frequency of appropriate behavior. Self management has also been shown to improve the child's ability to distinguish between appropriate and inappropriate behavior, completion of tasks and increases independence.

Self-management should not replace but rather complement other behavioral interventions. poor training and lack of appropriate reinforcement can result in the failure of the intervention. The student must have a very strong intrinsic motivation to successfully implement self-management. The

teacher must also invest a lot of time in identifying the behavior and training the student.

5. 0 Video Modeling

Like RIT, video modeling (VM) is an imitation modeling based on the premise that imitation deficits in autism impede other social communication skills. VM involves the autistic child watching a video demonstrating a specific targeted task and imitating the task. The task or behavior to be imitated must be presented in a way that interests the child, in a language s/he understands and in a predictable and repeated fashion. VM is actually an advancement of the traditional in vivo modeling, which was developed from the finding that developing children learn a lot through models (Charlop-Christy, Le, & Freeman, 2000). As earlier mentioned VM, because it is based on a screen that many kids enjoy watching, has a very high intrinsic motivation. Usually the model presented on the video can be the individual (self) or another person (peer or therapist). Video self-modeling has been shown to be more effective than peer modeling because the former enhances increased attention. VM has been found to be more effective than the traditional in vivo modeling and RIT (Charlop-Christy, Le, & Freeman, 2000; Cardon & Wilcox, 2011). VM has been employed in improving purchasing skills, vocabulary, conversational speech, question asking, emotional understanding, verbal responding, helping behaviors, daily living skills, play skills and acquisition of attributes (Haring, Breen, Weiner, Kennedy, & Bednersh, 1995; Marcus & Wilder, 2009). VM promotes the generalization and maintenance of these behaviors, especially because the video can be watched repeatedly (Charlop-Christy, Le, & Freeman, 2000).

VM has been found to have several advantages as a modeling/ imitation based technique. First, the videotape can be produced and watched in a variety of naturalistic settings rather than the restrictions of a classroom/clinic as is the case with in vivo modeling. Second, the tape can be recreated to achieve the desired effect and thus the therapist has more control of the modeling procedure. Third, the tape can be conveniently watched repeatedly until the child acquires and masters the targeted behavior. Fourth, VM is more affordable when compared to having a therapist teach the child imitation skills. Lastly, as mentioned earlier the screen appears to increase the focus and attention of the child by eliminating disruptions and hence has higher intrinsic motivation (Charlop-Christy, Le, & Freeman, 2000; Cardon & Wilcox, 2011). In addition, the strong visual processing of autistic individuals enhances the efficacy of VM. The technique has been found to facilitate motivation, attention, production and retention (four components that are necessary for learning and hence the high success rate of VM). As such, there is an enormous body of knowledge supporting VM.

One early study compared the effectiveness of VM and in vivo modeling. Five children with autism were assigned two tasks, one for VM and one for in vivo modeling, and the acquisition and generalization of the task was evaluated. VM was found to lead to faster acquisition of the targeted behavior and promoted generalization of the behavior more than the in vivo modeling (Charlop-Christy, Le, & Freeman, 2000). An earlier study indicated that VM can complement rather than replace in vivo modeling in teaching complex purchase skills. Another study compared peer video modeling with self-

modeling. The two techniques were used to teach three autistic children to identify and appropriately label novel letters. While all the three children mastered the task to the predetermined threshold in self-modeling, only one child mastered the task in peer modeling. In addition, the child that mastered the task in both situations mastered the task more quickly in self-modeling than in peer modeling. This study therefore confirmed the finding of earlier studies that self-modeling is more effective in teaching response than peer modeling. Kinney, Vedora and Stromer (2003) investigated the use of computer video model to teach spelling. The child, Ana watched a video tape of the teacher writing target words and then wrote the words. The exercise was carried out sequentially from easy to more complicated words and sentences. Anna successfully and quickly imitated the teacher and wrote the words correctly and the skill was generalized and maintained at home. This is one of the few studies demonstrating the effectiveness of VM in acquisition of academic skills. Video modelling has also been found to increase task completion and multitask completion. This study established that VM can be used in the improvement of daily functioning. A metanalysis of 19 studies from 1985 to 2005, found that VM improves perspective taking skills, problem behavior and functioning skills and social communication skills.

Critics of VM criticize the technique on the basis of the limited empirical data to support the effectiveness of the technique because most of the studies are mainly descriptive and have very limited sample sizes (Bellini, Akullian, & Hopf, 2007; Ingersoll, 2010). In fact in the above mentioned metanalysis of 19 studies only 3 were conducted using the randomized controlled trials.

Another criticism is that the techniques is highly structured which compromises spontaneous imitation (Ingersoll & Schreibman, 2006; Ingersoll, 2010). The use of the technique in the classroom setup has not been investigated thoroughly.

6. 0 What counts as sufficient evidence of the effectiveness of a technique?

The studies supporting the efficacy of a procedure can be categorized as strong evidence, which meets evidence standards, or weaker evidence, which meets the standards with reservation or insufficient evidence, which do not meet the evidence standards. These standards are based on several factors that determine if the evidence is sufficient or not as discussed below:

6. 1 Eligibility screening

This is the first step in determining whether a study supporting the efficacy of a procedure or technique constitutes sufficient evidence. The screening is based on the relevance of the procedure/intervention/technique to the condition or topical area, the relevance and size of the sample relative to the interest population, the relevance and validity of the findings and the timeliness of the research. For a study to be considered sufficient evidence, the research must have been published within the relevant (within 20 years from the beginning of the area) i. e it must be current enough. The study must primarily analyze the efficacy of the procedure; studies addressing the implementation, meta-analyses and literature reviews are not acceptable measures of sufficient evidence. The study must also use a scientifically acceptable design. The study design is crucial in determining the quality of the research and the acceptable designs (in order of the quality) are

randomized controlled trial (RCTs-provide the highest quality of data), quasi-experimental design (QED) and single subject or regression discontinuity.

6. 2 Study design

As earlier mentioned, the design of the studies and not the number of the studies, supporting the effectiveness of a technique determines whether the evidence is sufficient or not. The study design as well as the sample properties affects the validity and quality of the data. Most of the behavioral interventions are supported by purely descriptive studies with limited sample size which compromises the quality of the research. The research supporting the efficacy of an intervention must be empirical and not descriptive. The recognized gold standard research design for assessing the efficacy of interventions is the randomized control trial (RCT). In the absence of RCT, single quasi-experimental designs can be considered sufficient evidence of efficacy, though with reservations. On the other hand, single-case designs are considered insufficient evidence.

In RCT, two groups (often the test group and a control group) are assigned randomly so that the outcomes are not biased in any way and thus the high rating of RCT studies. In a QED, the intervention and the control groups are not assigned randomly but through the same method e. g. they are both volunteers. Since the two groups differ, an acceptable QED must have a mechanism that makes the groups equivalent in terms of observable properties. The reservations on the QED are because of the unobservable properties, which may interfere with the intervention positively or negatively.

6. 3 Confounding Factors

The researchers must be able to identify and where possible eliminate confounding factors which are likely to have the same effect as the intervention or interfere with the intervention. For instance, the effect of EIBI are likely to be affected by the age, sex, the setting, the environment and other factors. For a study to be considered sufficient evidence, the design must address the confounding factors (either by eliminating them, equalizing them or having an acceptable correction for the factors).

In conclusion, an intervention should adhere to the components of an evidence-based practice which are: step-by-step direction for implementation, have an implementation check list and be supported by RCT studies.

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