The Impact of PRT on Promoting Social Interactions of High-functioning Autistic Child in Taiwan

Ya-Lun, Tsao

Assistant Professor, Early Childhood Care and Education, Taoyuan Innovation Institute of Technology, Jhongli City, Taiwan
E-mail: yaluntsao@gmail.com

Abstract

Educators in Taiwan began to shift their attention from mainstreaming to inclusion education for children with disabilities for decades. The striking focal point of this shift emphasizes that children with disabilities, regardless of minor or significant degree of disability, all have “zero reject” status and are able to enter ordinary classes allowing full integration placement in education. Consequently, designing an adequate curriculum, capable of being conducted in an inclusive classroom for children with special needs to develop their social skills, remains an urgent issue for educators in Taiwan. The purpose of this study was to assess the effects of social play activities in using peer mediated pivotal response training (PRT) on a 7- to 8- year-old high-functioning autistic child’s social skills development which includes maintained interactions, initiated conversations, and initiated play. The participant of this study was an autistic child in an inclusive setting in Taiwan. The foundation of the social play activities was the basic peer-implemented pivotal response training (PRT) for children with autism. The expected result is that autistic child’s social behaviors become manifestly improved after the intervention instituted when the autistic child interact with others.

Keyword: PRT, high-functioning autism, inclusion education.

1. Introduction

Recently, educators in Taiwan began to shift their attention from mainstreaming to inclusion education for children with disabilities. The striking focal point of this shift

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emphasizes that children with disabilities, regardless of minor or significant degree of
disability, all have “zero reject” status and are able to enter ordinary classes allowing
full integration placement in education. In other words, exceptional students and
ordinary students accept education equally and also have interaction. However, with
regard to educating autistic children, “Does inclusion work?” is a currently
controversial issue. What is inclusion? The word “inclusion” does not even appear in
the Individuals with Disabilities Education Act (IDEA) nor does any other related
term, for example, inclusive education. Most educators (e.g., Crealock&Bachor, 1995;
Fuchs & Fuchs, 1994; York, Doyle, &Kronberg, 1992) use the term inclusion to mean
the placement of children with disabilities into general education classrooms for all or
significant parts of the school day (Bowe, 2005). They also recognize that placements
must be made to account for appropriateness and individualization to follow IDEA
which guarantees each child with a disability a public education. That is,
appropriateness also means meeting the unique needs of each child. Meanwhile,
IDEA’s individualization mandates placement decisions be made on a case-by-case
basis.

Further, social contact is an important part of children’s development and
community living. Children engage in reciprocal social interactions at home, at school,
at work, and during leisure activities. And the acquisition of good social skills helps
students attain a way to approach positive reinforcement for enhancing their social
capabilities. Also, children must have the skills to approach peers in a socially
recognized manner or they are not likely to be accepted into a social group. Hence, the
main focus of this study is to enhance the social skills of children with autism within
the inclusive setting mandated in Taiwan and based on the social play activities
implemented by peers.

1.1 Statement of Problem
Since autism is an issue for which many educators express their concern, many
definitions have appeared which attempt to narrow its scope. The one mostly well
accepted is that children with autism experience considerable difficulty with normal
social skills and peer interactions. In fact, the American Psychiatric Association (1980)
proclaimed that difficulties with social development and problems with social
relationships are hallmarks of autism and are among the chief defining characteristics
of this pervasive developmental disorder (Stone & Greca, 1986).

In addition, children with autism typically have difficulties with social skills. Their
problems include deficits in specific social skills, as well as problems with social
relations. The social deficit in autism sometimes manifests itself as rather mild
impairments (i.e., difficulty establishing eye contact, making or interpreting facial
expressions, or altering body postures) (Scott, Clark, & Brady, 2000). Moreover,
students with autism usually lack appropriate social responsiveness from a very early
age. They generally avoid physical contact (e.g., cuddling and holding), and they may
not make eye contact.
1.2 Purpose of the Study
Based on the results of previous studies, the main reason for establishing this current study’s research setting in an inclusive education classroom, and adopting Pivotal Response Training was to probe the results of such interventions for current application to inclusive education in Taiwan. Moreover, this study assessed the effects of pivotal response training (PRT) when using peer mediation in play activities to enhance 7- to 8-year old high functioning autistic children’s social skills development which includes maintained interactions, initiative conversations, and initiative play.

2. Review of Literature
2.1 Characteristics and Patterns of Play of Autistic Children
Children with developmental delays or disabilities sometimes experience equivalent delay in some characteristics of play. Contrarily, children with autism have a pattern of development that is not delayed, but rather is distorted (Quinn & Rubinm, 1984). In play activities, apparently, children with autism lack make-believe ability because of their lack of basic representational skills, while other children with severe mental retardation may not have the same lack. In other words, autistic children are unable to have one object represent another or to represent themselves in the mental states of dolls or imaginative play scenarios (Frost, Wortham, & Reifel, 2001). Children with autism tend to engage in repetitive and stereotypical manipulation of toys and object play rather than using toys in appropriate ways or even in complex play.

2.2 Challenges of Children with Autism during Play Activities
Social interaction, communication, and imagination are the principal elements in play activities. Unquestionably, children with autism engage in play activities in unusual ways. Vygotsky claimed that, “in play a child always behaves beyond his average ability because play contains all developmental tendencies in a condensed form” (Sherratt & Peter, 2002, p.3). This playfulness commonly remains latent for the majority of autistic children (Sherratt & Peter, 2002). Children with autism seem to lack the urge to spontaneously engage in playful behavior during free-play; however, structured play contexts with an interested adult can reveal indications of their play potential and clear enjoyment of activities. Ironically, the structured approach to explicitly teaching children with autism how to play creatively actually has an overtly cognitive dimension when play is essentially an affective activity for autistic children.

Children with autism are fundamentally challenged in their abilities to encode and decode meaning (Frith, 2003). They appear to demonstrate a lack of empathy, have difficulty with flexible, lateral thinking, and tend to be very literal. In addition, Vygotsky (1978) recognized that children learn cultural tools (such as turn-taking, queuing and conversation) through the facilitation of peers and people surrounding them during play activities.

2.3 Functions and Development of Play
Play can influence children when it occurs between different age groups. Scarlett, Naudeau, Salonius-Pasternak, and Ponte (2005) mentioned that, “play during infancy
and toddler years do not always happen with parents” (p. 42). In many instances, infants and toddlers play with other children, such as friends at day care, neighbors, or siblings. This means that one can legitimately assume that older, more competent children and siblings provide scaffolding. For instance, older children or siblings have a tendency to play more gently with a toddler than they would with another 5-year-old child. Yet, older children have more limited perspective-taking abilities than their parents, which may limit their capacity to scaffold their younger siblings or peers (Vandell & Wilson, 1987). Consequently, older children might not have the same motivation and patience to engage infants in turn-taking activities, for example.

Children with disabilities may engage in play differently than their non-disabled peers. The nature of play for children with disabilities depends on the particular disability or combination of disabling factors, the opportunities for play, the accessibility of toys, availability of a modified play environment, and the presence of peers and adults to facilitate and encourage play (Frost et al., 2001). Based on Fein and Kinney’s (1994) classification of disabilities in terms of “intellectual impairments, physical disabilities, and emotional disorders” (p. 197), several organizational patterns are beneficial for discussing these different types of disabilities as well as the effects and benefits gained though play. In addition, since many children have multiple disabilities, they might have disabling conditions in more than one category.

### 2.4 Common Elements of Play-based Curricula

The most critical aspect of the quality of children’s play is the balance of play materials. Prescott (as cited in Frost et al., 2001) suggested that a good balance in play materials means an equilibrium between complex and simple materials, and open-ended versus close-ended materials. Complex materials are those frequently used, such as clay. In contrast, simple materials are those only one or a few children use, such as books. In addition, the open-ended materials allow children to express themselves freely and creatively while closed materials are the ones that structure the order of children’s play.

Yet, play-based curricula mostly focus on creative processes rather than on end-products. For example, play centers are more likely to include a wide range of open-ended art materials (e.g., paint and markers) than an art project with a single objective outcome (e.g., making clown faces that all turn out the same) (Frost et al., 2001). Johnson, Christie, and Yawkey (1999) found positive relationships between play and creativity, which means that play promotes creative thinking. In addition, findings showed that divergent thinking occurred when children regularly engaged in make-believe.

### 2.5 Ways of Developing Play in Children within the Autistic Spectrum

Play develops competence. However, the most crucial part of enhancing capacities of children with autism is for them to understand and be familiar with the social world, and ultimately to participate in peer culture. A starting point is helpful for planning structured opportunities for improving the play of autistic children. However, children with autism are not actually deficient in the ability to play. They simply appear to lack direction, and they need to be encouraged and motivated to play (Sherratt & Peter, 2001).
Duffy (1998) suggested that the following needs to occur: (a) create a condition within which children are inspired to be creative and imaginative and (b) develop children’s creativity and imagination through interaction with them (Sherratt & Peter, 2002, p. 39).

First, adults must create conditions for purposeful play. Even though relationships are mediated, and attitudes towards oneself and the social world form meaningful personal experiences with adults, children with autism can share experiences and interact with the thoughts and feelings of other children. In other words, children with autism can develop social play and gain pleasure from sharing play activities in which they become an emotional shareholder. In this context, adults must provide shared attention by making contact and imitating children in order to reinforce autistic children’s spontaneous reactions. In this way, adults model appropriate play interactions.

Second, adults must create interactions in the play process with autistic children. By adults providing direct experiences, objects, artifacts, materials, and a selection of ideas, children with autism become aware of creative possibilities and support adults’ initiatives. Duffy (1998) developed a useful four-stage model of the creative process to support children with autism as they endeavor to master play activities (Sherratt & Peter, 2002, p. 42).

In sum, children with autism are known to have profound deficits for social behavior development. In play activities, apparently, children with autism lack make-believe ability because of their lack of basic representational skills, while other children with severe mental retardation may not have the same deficit. In other words, autistic children are unable to have one object represent another or to represent themselves in make-believe mental states with dolls or imaginative play scenarios (Frost, Wortham & Reifel, 2001). Children with autism tend to engage in repetitive and stereotypical manipulation of toys and object-play, rather than using toys in appropriate ways or even in complex play.

3. Methodology
The purpose of this study was to assess the effects of social play activities in using peer mediated Pivotal Responses Training (PRT) with typically developing children to increase the social behaviors of children with autism. The main research questions were: Will social skills intervention enhance social development of children with autism? To what extent can the efficacies of social skills intervention be evaluated?

3.1 Participants
The target participant for this study was an autistic child, his special education teacher and parents, and an non-autistic children; The autistic child had the non-autistic child as a play-peer in an inclusive environment in an elementary school in Taipei City, Taiwan.

3.2 Research Design
This research study aimed to investigate the effectiveness of the implementation of PRT with non-autistic children as play-peers for promoting the social skills and social
interactions of high-functioning autistic children. Based on the purpose of the study, a multiple-baseline, across-subjects and across peers design (Tawney & Cast, 1984) analyzed social behavior before peer PRT training (baseline) and after peer PRT (intervention) during play sessions.

Given the elements of the multiple-baseline design, the effects are demonstrated by introducing the intervention to different students at different points in time (Kazdin, 1982). In this study, observations were of the occurrences and frequencies of the expected social skills, which include maintaining/sustaining interactions (e.g., following a request, complying with a response or answering questions), initiating conversations (e.g., saying “the block is green”), and initiating play (e.g., handing the peer a toy) during the play activities in each play session.

3.3 Setting and Training Materials
The non-autistic child received a 15-minute PRT session before each play session. The training session provided non-autistic children with strategies or skills to enhance interactions in the following play session. Training and generalization materials that all children play with during the intervention phase consisted of approximately 15 toys. The selections of toys as the medium for the expected interaction were indicated from interviews with the teacher and parents of all three autistic children.

4. Results
4.1 Results of Social Behaviors Performed from Maintained Interactions

Baseline
From Table 1, the level-range of Paul’s performed behaviors of maintained interactions was 4% to 26%, and the level-change was -17% (26% ~ 5%). The trend within the phase displayed a slightly descending tendency, with trend-stability at 0% (< 75), which means the collected data were not reaching a stable condition. However, the study continued toward the intervention phase after collecting six data points.

Intervention
Collected data included 13 points during the intervention phase. Paul’s behavior percentage ranged from the 4% to 31%, and the level-change was -5% (13% ~ 8%) (See Table 1). The level-stability, within the phase was 23% (< 75%) and became defined as a variable. Moreover, the trend-direction displayed an increasing pattern with trend-stability at 38% (< 75%); both the level-stability and the trend-stability appeared as variable conditions.

Follow-up
From Table 1, within the six collected data points, Paul’s performance for maintaining interactions ranged from 13% to 29%, with a level-change of +11% (13% ~ 24%). The ascending direction for both the trend-and level-stabilities were 0% (< 75%) and represented variable conditions.
The Impact of PRT on Promoting Social Interactions of High-functioning Autistic

Table 1: Within Condition Analysis: Maintaining Interactions of the Dyad.

<table>
<thead>
<tr>
<th>Conditions (In sequence)</th>
<th>Paul</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condition Length</td>
<td>A</td>
</tr>
<tr>
<td>Trend-Direction</td>
<td>6</td>
</tr>
<tr>
<td>Trend-Stability</td>
<td>0%</td>
</tr>
<tr>
<td>Data paths within Trend</td>
<td>(−)</td>
</tr>
<tr>
<td>Level-Stability</td>
<td>0%</td>
</tr>
<tr>
<td>Level-Range</td>
<td>4–26</td>
</tr>
<tr>
<td>Level-Change</td>
<td>26–9</td>
</tr>
</tbody>
</table>

Note. A represents baseline phases of the dyad; B represents intervention phases of the dyad; C represents follow-up phases of the dyad

4.2 Results of Social Behaviors Performed from Initiated Conversations

Baseline
From Table 2, the level-range of Paul’s performed behavior for initiating conversations was 2% to 10%, and the level-change was -5 (7% ~ 2%). The trend within the phase showed a slightly descending pattern with a trend-stability of 83% (>75%), which means Paul’s behavior for initiating conversations showed stability. After collecting six data points, the investigation moved to the intervention phase.

Intervention
Paul’s behavior consisted of 13 data points for initiating conversations during the intervention phase. The percentage of Paul’s behavior for initiating conversations was 0% to 12%, and the level-change was -6% (0% ~ 6%) (See Table 2). The level-stability within the phase was 54% (<75%) and was defined as variable. Moreover, the trend-direction showed a decrease with a trend-stability of 62% (<75%), demonstrated that Paul’s behavior for initiating interactions was more unstable than in the baseline phase.

Table 2: Within Condition Analysis: Initiating Conversations of the Dyad.

<table>
<thead>
<tr>
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<th>Paul</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>Trend-Direction</td>
<td>6</td>
</tr>
<tr>
<td>Trend-Stability</td>
<td>83%</td>
</tr>
<tr>
<td>Data paths within Trend</td>
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<tr>
<td>Level-Stability</td>
<td>33%</td>
</tr>
<tr>
<td>Level-Range</td>
<td>2–10</td>
</tr>
<tr>
<td>Level-Change</td>
<td>7–2</td>
</tr>
</tbody>
</table>

Note. A represents baseline phases of the dyad; B represents intervention phases of the dyad; C represents follow-up phases of the dyad
Follow-up
From Table 2, six data points represent Paul’s behavior for initiating conversations, and the level-range was 4% to 23% with a level-change of +10% (13% ~ 23%). The trend-direction defines an acceleration with a trend-stability of 67% (< 75%), which showed that Paul’s behavior for initiating conversations increased even after the intervention faded.

4.3 Results of Social Behaviors Performed on Initiated Play
Baseline
From Table 3, the level-range of Paul’s behavior for initiating play was 0% to 7%, and the level-change was -2% (2% ~ 0%). The trend within the phase showed a slightly descending pattern and became stable toward the end of the phase with a trend-stability 33% (< 75%), which means Paul’s behavior for initiating play had not reached a stable condition. Paul behaved stably at the end of the baseline phase, and six data points were collected for Paul’s behavior, allowing transition to the intervention phase.

Intervention
Thirteen data points represented Paul’s behavior for initiating play during the intervention phase. The percentage of Paul’s behavior for initiating play was 0% to 43%, and the level-change was +14 (3% ~ 17%) (See Table 3). The level-stability was 0% (< 75%) and was defined as variable. Moreover, the trend-direction displayed an ascending pattern with a trend-stability of 85% (> 75%), which means Paul behaved in a stable, increasing pattern for initiating play during the intervention phase.

<table>
<thead>
<tr>
<th>Table 3: Within Condition Analysis: Initiating Play of the Dyad.</th>
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<tbody>
<tr>
<td><strong>Conditions (In sequence)</strong></td>
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<tr>
<td>Condition Length</td>
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<tr>
<td>Trend Direction</td>
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<td>Trend Stability</td>
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<tr>
<td>Data Paths within Trend</td>
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<tr>
<td>Level Stability</td>
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<tr>
<td>Level Range</td>
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<tr>
<td>Level Change</td>
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</tbody>
</table>

Note. A represents baseline phases of the dyad; B represents intervention phases of the dyad; C represents follow-up phases of the dyad

Follow-up
From Table 3, six data points collected for Paul’s behavior for initiating play, produced a level-range of 11% to 9% with a level-change of -1% (10% ~ 9%). The trend-direction defined a slightly descending pattern with the trend-stability at a high, 100% (> 75%) after the intervention faded.
5. Conclusions and Recommendations
The conclusion section presents a summary of results of the social play activities occurring as a result of the activities of peers trained with the pivotal response training for enhancing the social interactions of the child with autism.

5.1 Social Play Activities Implemented Peers with PRT Enhanced the Behavior of the Children with Autism for Maintaining Interactions
Based on the results shown, the autistic child’s behaviors for maintaining interactions were enhanced from the baseline to the follow-up phrase. The improvements of him showed a stable increase in behavior. Overall, the social play activities occurring from peers trained with the pivotal responses training enhanced the autistic child’s behavior for maintaining interactions.

5.2 Social Play Activities Implemented Peers with PRT Enhanced the Behavior of the Children with Autism for Initiating Conversations
The high-functioning autistic child’s behaviors for initiating conversations improved, as the results showed. The interpretation is that the peers trained with pivotal response training within the social play activities improved the high-functioning autistic child’s behaviors for initiating conversations.

5.3 Social Play Activities Implemented Peers with PRT Enhanced the Behavior of the Children with Autism for Initiating Play
The high-functioning autistic child, basically, showed a much increased improvement for behavior for initiating play after introduction of the intervention. All the improvements continued into the follow-up phase. This obviously illustrated that the social play activities administered by the trained peers enhanced the high-functioning autistic child’s behavior for initiating play.

5.4 The Parents and the Teacher’s Attitudes toward the Effects of the Trained Peers
The parents and the teacher of the high-functioning autistic child displayed positive perspectives for the effects of the social play activities administered by the peer trained in pivotal response training. The effects included not only improved behavior of the high-functioning autistic child for social interactions, but also for increasing his initial motivations for communicating with the peer.

To sum up, the social play activities administered by the peer with pivotal response training enhanced the high-functioning autistic child’s behaviors for maintaining interactions, initiating conversations, and initiating play. In addition, the improvements were noticed not only within the study setting, but also extended more frequently to the settings in which the high-functioning autistic child interact with others (i.e., within the home setting with their parents, within the school setting with peers and teachers).
Reference