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# A Teacher's Use of Video to Train Paraprofessionals in Pivotal Response Techniques

## Adria Murphy, Suzanne Elaine Robinson, Debra L. Cote, Belinda Dunnick Karge, and Trissie Lee

California State University, Fullerton

Research has shown that students with moderate-severe disabilities need direct and frequent social instruction in order to communicate and play with their peers. At the same time, there is little commensurate support for the paraprofessionals tasked with providing this support. It is imperative, then, that paraprofessionals have effective strategies in their repertoire of practices to facilitate social interaction. This investigation examined one classroom teacher's use of video to train two paraprofessionals in Pivotal Response Treatment (PRT), an evidence based practice for students with autism. Findings suggest that the teacher-provided video training was effective in improving paraprofessionals' PRT implementation, and subsequently, the social interactions of their students with disabilities other than autism, namely cerebral palsy and Down's syndrome. Findings along with future directions for video-based training in the school setting are discussed.

*Keywords:* paraprofessionals, social interaction, pivotal response treatment, video training

School employees who are employed to work under the supervision of teachers are often referred to as paraprofessionals (Karge, Pierson, & Robinson, 2011). Paraprofessionals continue to be widespread means of supporting students with moderate-severe disabilities. However, a discrepancy exists between the reliance on paraprofessionals to provide educational support, and the training provided to paraprofessionals (Giangreco, Broer, & Edelman, 2001; Rispoli, Neely, Lang & Ganz, 2011). Unless or until paraprofessionals no longer play a major role in supporting students with disabilities (Bolton & Mayer, 2008; Fombonne, 2003), it is imperative that researchers offer methods for effectively preparing paraprofessionals to meet the needs of the students they serve. This is especially important since paraprofessionals are often responsible for the supervision of students during recess, which is the only time of the school day many students with moderate-severe disabilities get to freely and naturalistically interact with their typical

peers (Feldman & Matos, 2012; Harper, Symon, & Frea, 2008; Robinson, 2011).

To address the specific significant needs of students in this context, researchers have begun to expand the use of Pivotal Response Treatment (PRT), a naturalistic applied behavior analysis approach, identified as an evidence-based intervention for children with autism (National Autism Center, 2009; Simpson, 2005; Wong, et al., 2015). Robinson (2011) explored training paraprofessionals to implement PRT in the school setting via a brief video feedback training provided by an outside expert. The participants in this study demonstrated the ability to implement PRT with fidelity. Toward this same end, Feldman and Matos (2012) investigated the use of expert-provided in-vivo feedback (i.e., presented feedback live during the implementation), expanding upon Robinson's (2011) study by adding to the fidelity and generalization data. Though different training strategies were used (i.e., in-vivo v. video-based feedback), both of these investigations showed that experts were successful in training paraprofessionals to implement PRT with fidelity, which in turn correlated with gains in social communication skills of children with That said, these researchers recommended future investigation of a trainer-of-trainers model and the role of the teacher as a means of further reducing overreliance on both experts and paraprofessionals.

Teachers hold key positions of responsibility. They are most familiar with their students' needs, preferences, and goals; and have regular contacts with students, parents, and paraprofessionals. Furthermore, teachers are accountable to both administrators and parents. As such, teachers could potentially be the most successful, cost-effective, and logical

trainers of paraprofessionals. Currently, the majority of paraprofessional includes on-the-job training provided by classroom teachers; however, teachers report there is not enough time in the day to provide appropriate training, monitoring, and feedback to paraprofessionals (Causton-Theoharis, Giangreco, Doyle, & Vadasy, 2007). In fact, a sample of special education teachers reported spending only of their time with each percent paraprofessional they supervised (Giangreco & Broer, 2005). This predicament conveys the need for training methods that would enable teachers to be closely involved in the monitoring training and of their paraprofessionals, yet support them in doing such a task effectively and efficiently.

To address this need, the current investigation seeks to expand Robinson's (2011) study by exploring a teacher-provided video feedback training in PRT strategies. The primary research questions are: Can a teacher effectively use video feedback to train paraprofessionals to use PRT with fidelity? And secondly, Can implemented by paraprofessionals effectively improve the social communication skills of children with moderate to severe disabilities—including diagnoses other than autism?

### Methods

### **Participants**

One teacher trainer, two paraprofessionals, and two students with moderate-severe disabilities participated in this study. The typical peers consisted of first through third graders from the school's general education population. interacted with the student participants as play and communication partners on the playground, but were not specifically assigned to the participants and were not formally a part of the investigation. The only

eligibility criterion for the peers included their willingness to play and a permission form signed by their parents allowing photography and video at school.

### **Paraprofessional Participants**

Paraprofessionals qualified for participation based on the following criteria: (a) employed at the same school as the teacher trainer, (b) no previous training in

PRT, and (c) assigned to work with students with moderate-severe disabilities.

One adult participant worked in the teacher trainer's classroom and the other worked in another self-contained classroom at the same school (see Table 1). Both Hannah and Lydia participated voluntarily during their work hours.

*Table 1.* Paraprofessional Demographics

Name	Age	Education Completed	Paraprof. Experience	Experience w/ Student	Prior Training	Training Topics	Experience/Tx in PRT
Hannah	22	Some college- Architecture	1 year	1 year	District in- services	Safety, instructional strategies	None
Lydia	23	High School	1 year	6 months	District in- services	Safety, instructional strategies	None

### **Student Participants**

Student participants were selected based on the following criteria: (a) educational placement in the teacher's classroom, (b) independent diagnosis of a moderate/severe disability resulting in cognitive and language delays, and (c) no individually assigned paraprofessional (i.e., receiving classroom paraprofessional

support only). In order to determine appropriate communication goals for the students, the current IEP goals and most recent multi-disciplinary, psychoeducational triennial reports were reviewed (see Table 2). Additionally, the teacher trainer observed both students' behavior and language at recess

Table 2. Student Demographics

Students	Age	Grade Level	Diagnosis	Cognitive Test Scores	Language Test Scores
"Luke"	8	Third	Cerebral Palsy (Intellectual disability, orthopedic impairment)	KABC-2 standard score: 50= lower extreme; PTONI standard score: 52= extremely low	CELF-5 standard score: 48= <.01 percentile; PPVT-4 standard score: 50= <.01 percentile
"Ralph"	9	Third	Down Syndrome (Intellectual disability)	KABC-2 standard score: 53= lower extreme; PTONI standard score: 57= extremely low	EVT-2 standard score: 67= 1.0 percentile; PPVT-4 standard score: 50= 0.3 percentile

Note: KABC-2 = Kaufman Assessment Battery for Children, Second Edition; PTONI = Primary Test of Nonverbal Intelligence; CELF-5 = Clinical Evaluation of Language Fundamentals, Fifth Edition; EVT-2 = Expressive Vocabulary Test, Second Edition; PPVT-4 = Peabody Picture Vocabulary Test, Fourth Edition

According to formal assessments and classroom observations, both student participants were capable of producing multiple word utterances. Their utterances included multiple functions, including manding and commenting. However, when observed on the playground, both students were observed playing alone, talking to adults, or engaged in parallel play without using language with peers.

When guided to participate in a game with peers, Luke did not resist sharing with peers, but did not request additional turns after a peer took a turn. Rather, he either moved on to another activity by himself, or stood still and waited for the adult or peer to prompt him in the game or communicative act. Similarly, Ralph did not initiate with peers and rarely responded when a peer approached him, unless it was to say, "No thank you." He selected one activity (e.g., digging a hole in the sandbox) and spent the entire recess period on this activity. When peers said his name to get his attention, he turned away and did not respond. When guided to participate in a game with peers, Ralph demonstrated resistance, resorting to tantrum behavior when asked to share objects or include peers in play.

### **Teacher Trainer**

The special education teacher, Andrea, was a 26-year-old Caucasian female. She taught a self-contained class for students with a variety of moderate/severe disabilities. Andrea acquired knowledge in PRT through her teacher preparation program coursework and was enrolled in a Masters of Science in Education degree

program at a nearby university at the time of this study.

### **Setting and Materials**

This study took place on the playground during the first through third grade morning recess (15 minutes) and/or lunch recess (30 minutes), where students with special needs were regularly included. The playground consisted of basketball courts, a play structure (e.g., slides, ladders, monkey bars) and a sandbox. Preferred play activities for baseline and intervention sessions were determined by direct observation of students, or direct child selection using a visual choice board or verbal requests. All activities during baseline and intervention sessions utilized options that were typically available to the students during their regular recess playtimes.

The device used for recording and viewing all sessions was a fourth generation iPad. During the study, this device was dedicated solely to recording and storing video footage for training sessions and data collection. The teacher held the iPad for these sessions, standing 3 to 6 feet away from the activity targeted for recording.

### **Dependent Measures**

The first dependent variable is paraprofessionals' fidelity of **PRT** implementation. Following the methods used in Robinson's study (2011), correct or incorrect implementation of the PRT strategies (child choice/shared control, clear opportunities, natural and contingent adult reinforcement. and appropriate communication and proximity) was recorded using one-minute partial intervals. If the PRT strategy was performed correctly during this time, the interval counted as correct. If the strategy was performed incorrectly, it was counted as incorrect. If the interval were performed both correctly and incorrectly within the same interval, the interval was counted as correct if the number of correct executions outnumbered the incorrect executions. The fidelity of

implementation percentage for each video was achieved by adding the correct scores from each technique and dividing by the total number of possible correct scores (correct plus incorrect scores for each technique), then multiplying by 100 (Table 3).

Table 3. Fidelity of Implementation. Adopted from Koeael & Koeael (2006), Robinson (2011)

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Strategy	1	2	3	4	5
Child choice & Shared Control. The paraprofessional provides choices of					
preferred activities, follows the student's lead within activities, arranges the					
materials to establish shared control between the student and the					
communicative partner, and allows the student to reject stimulus items.					
Clear Opportunity. If student is not verbally engaged in reciprocal					
interaction, the paraprofessional provides a clear opportunity for the					
student to practice the target behavior. She gives clear attempts to evoke a					
verbal response (e.g., models the correct word/language, uses a time delay					
or carrier phrase, asks an open-ended question) or prompts the typical					
peer(s) to do so. If the student does not respond, the paraprofessional					
provides a second opportunity.					1
Contingent, Natural Reinforcement. If the student makes an attempt to					
respond to the opportunity (or verbally initiates), the paraprofessional					
immediately provides a natural reinforcer (e.g., the requested stimulus					
item), or prompts the typical peer(s) to do so. If the student does not make					
an attempt in response to the opportunity or is behaving inappropriately					
(e.g., screaming, throwing objects), the paraprofessional does not provide					
the student with the natural reinforcer (i.e., keeps the desired stimulus					
item).					
Adult Communication & Proximity. When facilitating social interaction, the					
paraprofessional minimizes her direct interactions with the students. The					
majority of her verbal communication involves prompting the student and					
the typical peers to initiate/respond toward one another and to reinforce					
one another. If the student and the typical peer are independently engaged					
in appropriate, reciprocal verbal interactions, the paraprofessional refrains					
from over-prompting or interrupting them. The paraprofessional does not					
sit or stand directly next to the target student.					1

Since the paraprofessionals' implementation of PRT is not relevant or helpful without understanding the effects of this intervention on students, the second dependent variable is students' verbal requests and total utterances. Data on

student requests (i.e., any mand for a tangible object) followed the same one-minute partial interval method so that adult participant and student participant data paralleled each other, allowing for direct comparison. The total number of

participants' peer-directed utterances was also recorded during each session.

### **Experimental Procedures**

This study followed an AB design with a pre-determined number of baseline, treatment, and maintenance sessions (i.e., three, three, and two sessions, respectively), based on the maximum number of sessions scheduling limitations would permit and the minimum number of sessions required to potentially establish a trend.

Training of the Trainer. Prior to any data collection, Andrea video recorded her own implementation of the PRT strategies with a student across two different recess activities and then met with a faculty member to receive video-feedback on her PRT implementation. While the faculty member perceived that the teacher demonstrated the ability to use PRT, her fidelity of implementation was not formally assessed. Next, the faculty member and teacher discussed the steps for giving video feedback to paraprofessionals, which included praise for correct strategy use and performance based corrective feedback for incorrect strategy use (see Robinson, 2011).

The paraprofessional-Baseline. student pairs were observed one or two times per week, during which five minutes of the 15-30 minute recess were videorecorded on the iPad. The video recording began as soon as the student participant and typical peer(s) began playing the same activity. For each of the baseline sessions, Hannah and Lydia were instructed to facilitate peer interaction between their assigned student participant and a typical peer on the playground. No other instructions were given to paraprofessional participants during baseline sessions.

Intervention and Maintenance. Following the baseline phase, the teacher conducted an initial training session with each paraprofessional individually whereby

the teacher reviewed at least one of their baseline videos and verbally explicated the target PRT strategies: child choice/shared control, clear opportunities, natural and contingent reinforcement, and appropriate adult communication and proximity (see Table 3). The paraprofessionals were encouraged to self-evaluate through reflection by referencing the fidelity of implementation data sheet and written definitions of each strategy.

While viewing the videos, the teacher trainer began and ended each session with positive statements. The teacher also provided specific praise on correct implementation of each strategy. When an incorrect usage of a technique, or a missed opportunity for a technique, was viewed, the teacher and paraprofessional paused the video to discuss the scenario. The teacher provided corrective feedback and encouraged the paraprofessional to selfreflect on possible improvements by asking open-ended questions and providing time for the paraprofessional to ask clarifying questions (Robinson, 2011). The teacher also provided specific suggestions improvements. This training session lasted approximately 20-30 minutes. Training sessions were held in a private, one-on-one context during the paraprofessional's work hours, or during the paraprofessional's free time before or after work. Training sessions during non-work hours were only held when voluntarily suggested by the paraprofessionals, and were not required or suggested by the teacher trainer.

After the initial training session, paraprofessional participants completed three treatment probes, which consisted of three, five-minute recess activities with their assigned student and one or more typical peers. Between these recorded sessions, the paraprofessionals met with the teacher for 20-minute video-feedback training sessions,

reviewing the video of the previous intervention session. Following the predetermined schedule of three intervention sessions, training ceased. The maintenance phase began four weeks after the treatment sessions. Two maintenance sessions were video recorded in the same format as the baseline sessions.

# Results Paraprofessional Fidelity of Implementation

Results from the paraprofessionals' implementation of the target PRT techniques are presented in Figures 1-3. Looking at the performance of both paraprofessionals across the three experimental phases (Figure 1), it appears that a trend was established during baseline with fidelity of implementation averaging

16.67% and ranging between 0% and 28%. Hannah achieved a mean of 21.33% (range = 20-24%), while Lydia demonstrated a mean of 12% (range = 0-28%). During the treatment phase, both paraprofessionals demonstrated improvements in their fidelity scoring a mean of 78% (range= 60-100%). Hannah's mean fidelity for treatment probes was 69.33% (range = 60-80%), while Lydia's was 86.66% (range = 60-100). Both paraprofessionals reached a fidelity score of at least 80% after one-to-two treatment sessions. Finally, during the maintenance phase, both paraprofessionals maintained an overall implementation fidelity score of at least 80%, with Hannah scoring 92% (range 88-96) and Lydia scoring 94% (range = 92-96%).

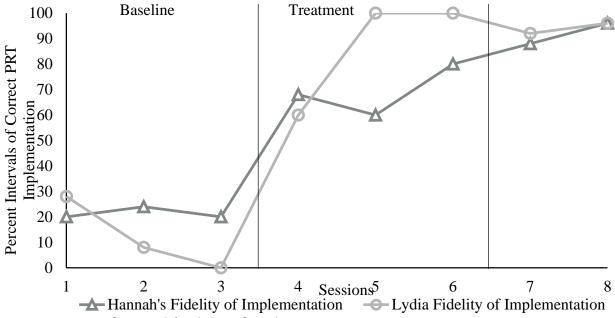


Figure 1. Paraprofessionals' Fidelity of Implementation

Looking at the specific strategies (Figures 2 and 3), the technique demonstrated with the highest fidelity during baseline was child choice (mean =70%; range =0-100%). Neither

paraprofessional demonstrated shared control or contingent natural reinforcement. Moreover, clear opportunities and appropriate adult communication and proximity were poorly or not at all

demonstrated. Comparing baseline and treatment, it appears that the greatest improvement for both paraprofessionals was for the use of shared control. While neither demonstrated shared control during baseline sessions (0%). demonstrated the strategy correctly 100% of intervals across the three treatment sessions, and Lydia demonstrated the strategy correctly in 93% of intervals per session. Conversely, the strategies with the lowest average of correct intervals for Hannah and Lydia were clear opportunities (mean = .3) and contingent, natural reinforcement (mean = 1), respectively. Both Hannah and Lydia used Child Choice with 100% accuracy, but only Lydia was successful appropriate communication with proximity.

Both paraprofessionals maintained their accurate use of child choice at 100%.

Hannah also maintained 100% fidelity for shared control and improved implementation of clear opportunities and contingent natural reinforcement by 47% and 80%, reaching 100% accuracy. Lydia maintained 100% fidelity for communication proximity improved and and implementation of shared control, clear opportunities, and natural contingent reinforcement by 7%, 44%, and 47%, respectively. The only strategy for which either paraprofessional demonstrated a lower mean fidelity score was Hannah's use of communication and proximity. Overall, across treatment and maintenance phases, child choice was implemented correctly for 100% of the intervals, shared control for 96%, clear opportunities for 76%, contingent natural reinforcement for 64%, communication proximity for 82%.

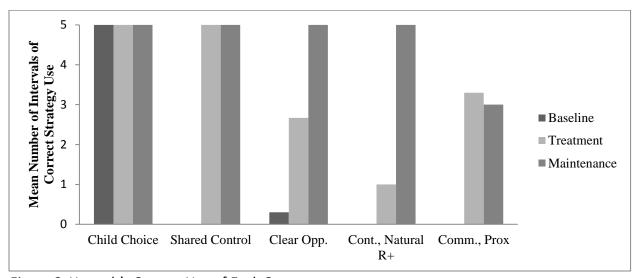


Figure 2. Hannah's Correct Use of Each Strategy

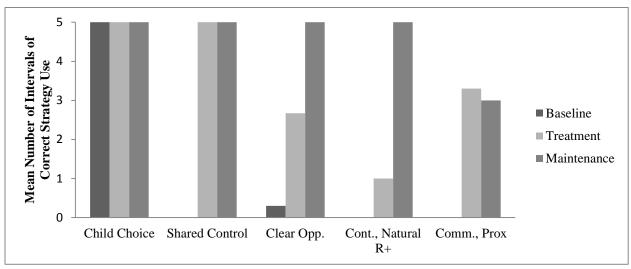


Figure 3. Lydia's Correct Use of Each Strategy

## **Student Participation Target Behaviors Requesting**

During the baseline phase, Luke directed requests to peers in a mean of 27 percent of the intervals (range = 0-60%) while Ralph made requests in a mean of 13.33 percent (range = 0-40%). During the treatment phase, requesting increased for both students. Neither student had probes

containing zero requests, as they both did during the baseline phase. Luke's mean percent increased to 60 (range = 40-80%), while Ralph's jumped to 73.33 (range = 20-100%). In the maintenance phase, Luke's requesting again increased to 100% of the intervals. Ralph increased his requesting to a mean of 90% of the intervals (range = 80-100%). See Figures 4 and 5.

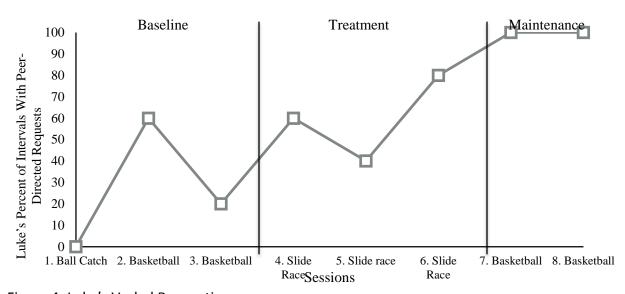


Figure 4: Luke's Verbal Requesting

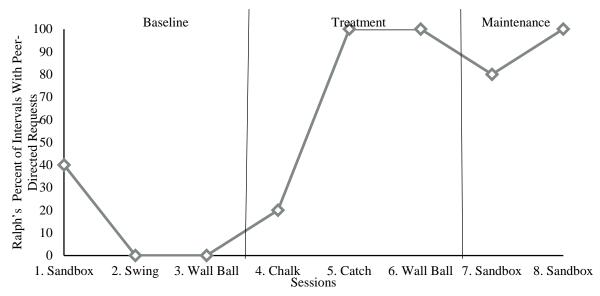
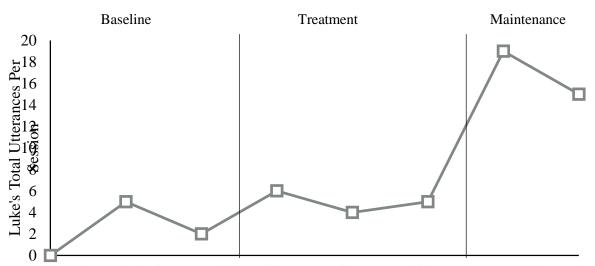


Figure 5. Ralph's Verbal Requesting

### **Total Utterances**

To measure the effects of PRT on overall language use, the total number of utterances directed to peers was counted. One tally was given to each utterance, regardless of length (i.e., a one word utterance and a full sentence were both tallied as one utterance). During baseline sessions, Luke produced a mean of 2.3 utterances per session (range = 0-5), while

Ralph produced a mean of 2 utterances per session (range = 0-4). In the treatment phase, Luke's total utterances increased to a mean of 5.67 (range = 4-7), while Ralph's utterances increased to a mean of 17.3 (range = 3-27). In the maintenance phase, Luke's mean utterances increased to 17.5 (range = 16-19), while Ralph's utterances decreased to 13 (range = 10-16). See Figures 6 and 7.



1. Ball Catch 2. Basketball 3. Basketball 4. Slide Race 5. Slide Race 6. Slide Race 7. Basketball 8. Basketball *Figure 6*. Luke's Total Utterances

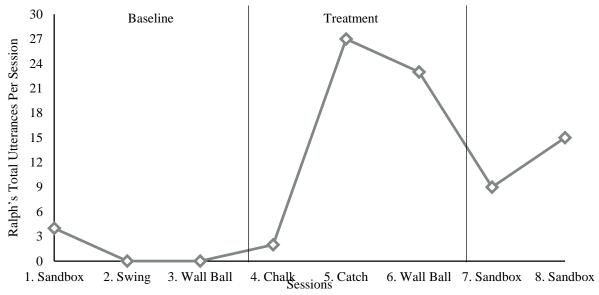


Figure 7. Ralph's Total Utterances

In comparing each pair's performance across sessions, the behavior of the student appears to coincide with that of the paraprofessional, with the exception of the baseline for Hannah, who maintained

a low, steady score while Luke's verbalizations were variable. All of the remaining conditions across participants demonstrate a relational trend (see Figures 8 and 9).

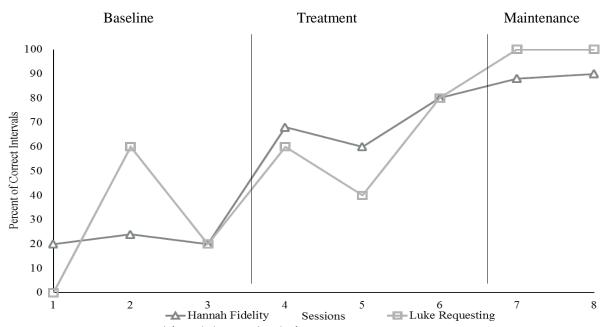


Figure 8. Comparing Hannah's Fidelity and Luke's Requesting

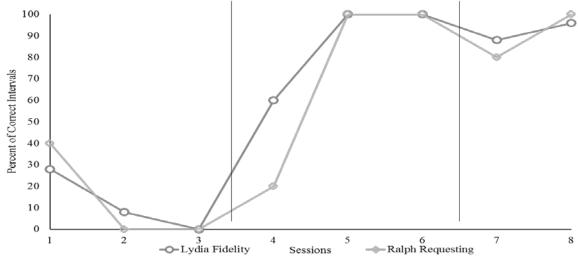


Figure 9. Comparing Lydia's Fidelity and Ralph's Requesting

### Discussion

This study, drawn from the current research on the use of PRT in the school setting, investigated whether a teacher could effectively use video to train paraprofessionals in PRT, and subsequently, whether paraprofessional implementation would lead to improvements in students' verbal behavior. As a whole, the findings demonstrate an upward trend in all variables dependent and the relationship between paraprofessional fidelity and student behavior.

### **Paraprofessional Outcomes**

Prior to this study, the paraprofessionals were observed at recess supervising students without facilitating social interaction or language use, in spite of district-provided and on-the-job trainings received. Following their initial training session, the paraprofessionals demonstrated marked improvement and maintained above 80% accuracy during the maintenance phase. Interestingly, they varied in their individual performance of each strategy, yet both showed the most growth in shared control, improving from no use during baseline to correct implementation in nearly every interval across intervention and maintenance phases. Comparably, Robinson (2011) found student outcomes appeared to hinge most on shared control, as shared control provided the motivation for students to practice their target behaviors.

### **Student Outcomes**

It appeared the two students made gains in the target behaviors, although caution is warranted in making this conclusion. It is difficult to compare diverse activities (e.g., the slide race v. basketball, sandbox v. chalk), as they tend to lend themselves to different opportunities (e.g., frequency/number of opportunities to request, wait time in between turns). Still, Luke demonstrated increased requesting and total utterances in the basketball activity during maintenance, as compared to basketball in baseline. Similarly, Ralph showed gains in the target behaviors when comparing the sandbox and wall ball activities across phases.

Most notably, the students' requesting corresponded closely to paraprofessional fidelity of implementation. This relationship highlights a few important points for consideration. First, it provides social validation for the video feedback

training and confirms the effectiveness of PRT in helping students practice important skills. Second, it points to the fact that these students, like many others with moderate-severe disabilities, were not practicing important skills without adequately trained staff; yet with trained support staff, they were able to verbally interact with their peers without disabilities. Third, it raises a discussion about the reliance on support staff.

Ideally, students with moderatesevere disabilities would learn and maintain key social communication skills and not indefinitely require an adult's direct involvement in order to play with their peers. Further investigation on the training of peers to moderate the activities for and with their schoolmates with disabilities would be a worthy endeavor.

### **Study Limitations**

The primary limitation is the length of baseline sessions being pre-determined at three sessions for both paraprofessionals, which means that variables such as maturation were not controlled for. A multiple baseline design across participants would have afforded a more reliable demonstration of intervention effectiveness. Secondly, while this study did demonstrate maintenance of paraprofessional fidelity and student outcomes over time, the paraprofessionals did not participate in a generalization phase. A phase in which paraprofessionals utilized PRT with another set of students with disabilities would have demonstrated the effectiveness of video feedback training at preparing paraprofessionals to support other students in their assigned classroom, and ruled out the possibility of improvements because the solelv paraprofessional had more time and experience with the specific students paired with them for this research.

Third, the use of partial interval data collection methods did not lend to capturing the full improvements in the observed behaviors, albeit this was consistent across all phases and participants. For example, multiple rapid requests made during the same interval would have only been marked as one positive interval, rather than showing the exact number of these requests. On the other hands, while data on exact frequency may provide useful information, partial interval time sampling is typically a more time-efficient means of tracking behaviors, and therefore may be more useful and practical for teachers in the field who wish to utilize this training method and analyze their findings.

Lastly, video recording sessions on the playground were limited to five minutes due to the need to work within the confines of the school's bell schedule, and the need to support other students and staff during that time. These scheduling limitations resulted in both the video recording sessions and the video feedback training sessions with paraprofessionals to be quite brief. This may have limited the potential of this training. Had the entire recess been recorded, more opportunities for interaction may have been included in each session, providing the paraprofessionals with more content to later review and discuss with the teacher trainer. On the other hand, these scheduling limitations parallel situations that would occur in many school environments and thus may paint a more accurate picture of the typical daily experience of teachers paraprofessionals. would and lt advantageous for future investigations to identify ideal video feedback session duration so as to achieve the greatest efficiency compromising without effectiveness.

### **Future Research**

While the issues related to teacher paraprofessional roles and responsibilities are being explored on a broader scale (i.e., at the systems level), research that can offer efficient yet effective on-the-job training methods would likely be an appreciated contribution for staff as well as administrators, parents, and students (Giangreco, Broer, & Suter, 2011; Rispoli, Neely, Lang, & Ganz, 2011). This may particularly help address the conundrum teachers currently face in holding the primary role and responsibility of directing and supervising their paraprofessionals, yet having little training and time to do so (Causton-Theoharis et al., 2007; Felmdan & Matos, 2012; Giangreco & Broer, 2005; Robinson, 2011). Specifically related to training methods, video modeling and video feedback provide convenient, effective, and innovative means for improving paraprofessional and student behavior, allowing for the replaying of events, selfreflection, and discussion, without disruption to the learning environment (see Masats & Dooly, 2011 and Robinson, 2011). Video technology, which has become "more accessible, cheaper, and user-friendly" (Masats & Dooly, 2011, p. 1152), allows for a portable means of demonstrating and learning strategies, enhancing the dissemination of evidence-based practices. It is recommended that future investigations expand upon this study to validate the initial findings, develop the teacher-as-trainer model, assess for paraprofessionals' ability to generalize their skills, and explore ways to utilize video in the school setting as a means of reducing the research-to-practice gap.

Lastly, at the student level, it would be beneficial for future research to examine long-term outcomes of students' target skills, quality and quantity of peer interactions, and the concept of friendship following this type of intervention. It is

insufficient for interventions to produce temporary effects, isolated skills, and superficial interactions. Social support and friendships are important for all, including and especially for those with disabilities (Rossetti, 2015), thus the responsibilities of practitioners and researchers alike more broadly include the facilitation of meaningful relationships as a means to a good quality of life (see Turnbull & Turnbull, 2011). spontaneous, Encouraging reciprocal, voluntary interactions developed over time in the context of mutual enjoyment and shared activities would more likely to lead to true friendships (Rossetti, 2015). While this was beyond the scope of the current study, it will be imperative for the field to move forward helping school staff understand their role along these lines.

### Conclusion

Since students diagnosed with disabilities other than autism often have delays in language, social skills, behavior, and adaptive skills similar to those in children with autism, it stands to reason that PRT would be a relevant means of treating their needs as well (Simpson, 2005). This has not yet, however, been explored in the literature on PRT (Wong et al., 2015). Furthermore, few studies have investigated paraprofessional implementation of PRT, and fewer still, if any, have looked at the feasibility of the teacher serving as trainer (Feldman & Matos, 2012; Robinson, 2011). Given the strain on teachers caused by the need to train paraprofessionals on the job without great disruptions to their workday schedule (Giangreco & Broer, 2005), it follows that the most time-efficient and flexible training delivery method would be the most desirable in naturalistic situations. This study therefore contributes to the research on PRT by (a) focusing on children with diagnoses other than autism, (b) corroborating research that has demonstrated the effective utilization of paraprofessionals in improving students' skills, and (c) adding the role of the teacher.

### References

- Barlow, D. H., & Hersen, M. (1984). Single case experimental designs:

  Strategies for studying behavior change (2nd ed.). Needham Heights, MA: Allyn & Bacon.
- Baker-Ericzén, M.J., Stahmer, A. C. & Burns, A. (2007) Child demographics associated with outcomes in a community-based pivotal response training program. *Journal Of Positive Behavior Interventions* 9(1), 52-60.
- Barlow, D. H., Levitt, J. T., & Bufka, L. F. (1999). The dissemination of empirically supported treatments: A view to the future. *Behaviour Research and Therapy, 37*, 147-162.
- Bolton, J. & Mayer, M. D. (2008). Promoting the generalization of paraprofessional discrete trial teaching skills. Focus on Autism and Other Developmental Disorders, 23, 103-111.
- Brown, J. & Murray, D. (2001). Strategies for enhancing play skills for children with autism spectrum disorders.

  Education and Training in Mental Retardation and Developmental Disabilities, 36 (3), 312-317.
- Carter, E., O'Rourke, L, Sisco, L. G., & Pelsue, D. (2009). Knowledge, responsibilities, and training needs of paraprofessionals in elementary and secondary schools. *Remedial and Special Education*, 30, 344-359.
- Causton-Theoharis, J. N., Giangreco, M. F., Doyle, & Vadasy, P. F. (2007).

  Paraprofessionals: The "sous-chefs" of literacy instruction, *Council for Exceptional Children*, (40)1, 56-62.

- Davis, R.W., Kotecki, J. E., Harvey, M. W., & Oliver, A. (2007). Responsibilities and training needs of paraprofessionals in physical education. *Adapted Physical Activity Quarterly*, 24, 70-83.
- Demchak, M. A., Kontos, S., & Neisworth, J. T. (1992). Using a pyramid model to teach behavior management procedures to childcare providers. *Topics in Early Childhood Special Education*, 12, 458-477.
- Feldman, E. K. & Matos, R. (2012). Training paraprofessionals to facilitate social interactions between children with autism and their typically developing peers. *Journal of Positive Behavior Interventions*. 15(3), 169-179
- Fombonne, E. (2003). Epidemiological surveys of autism and other pervasive developmental disorders: An update. *Journal of Autism and Developmental Disorders*, 33, 365-382.
- French, N. (2001). Supervising paraprofessionals: A survey of teacher practices. *The Journal of Special Education*, 35(1), 41-53.
- Giangreco, M. F., & Broer, S. M. (2005).

  Questionable utilization of
  paraprofessionals in inclusive
  schools: Are we addressing
  symptoms or causes? Focus on
  Autism and Other Developmental
  Disabilities, 20, 10-26.
- Giangreco, M. F., Broer, S. M., & Edelman, S. W. (2001). Respect, appreciation, and acknowledgement of paraprofessionals who support students with disabilities. *Exceptional Children, 67,* 485-498.
- Giangreco, M. F., Broer, S. M., & Eledman, S. W. (2002). "That was then, this is now!" Paraprofessional supports for students with disabilities in general

- education classrooms. *Exceptionality*, *10*, 47-64.
- Giangreco, M. F., Broer, S. M., & Suter, J. (2011). Guidelines for selecting alternatives to overreliance on paraprofessionals: Field-testing in inclusion-oriented schools. *Remedial and Special Education*, 32(1), 22-38.
- Giangreco, M. F., Suter, J. C., & Doyle, M. B. (2010). Paraprofessionals in inclusive schools: a review of recent research. *Journal of educational and psychological consultation*, 20, 41-57.
- Giangreco, M. F., Edelman, S. W., Broer, S. M., & Doyle, M. B. (2001).

  Paraprofessional support of students with disabilities: Literature from the past decade. *Exceptional Children*, 68, 45-63.
- Giangreco, M. F., Elelman, S. W., & Broer, S. (2003). School wide planning to improve paraeducator supports. *Exceptional Children*, 70, 63-79.
- Han, S. S & Weiss, B. (2005). Sustainability of teacher implementation of school-based mental health programs. *Journal of Abnormal Child Psychology*, 33, 665-679.
- Haring, K., Saren, D., Lovett, D., & Shelton, M. (1992). A study of the demographic and attitudinal differences between paraprofessionals and teachers in self-contained special education classrooms. Journal of Developmental and Physical Disabilities, 4(1), 51-73.
- Harper, C. B., Symon, J. B. G., & Frea, W. D. (2008). Recess is time-in: Using peers to improve social skills of children with autism. *Journal of Autism and Developmental Disorders*. 38, 815-826.

- Jones, K. H. & Bender, W. N. (1993).

  Utilization of paraprofessionals in special education: A review of the literature. Remedial and Special Education, 47, 7-14.
- Kazdin, A., Koegel, R., Koegel, L. K., Vernon, T., & Brookman-Frazee, L. (2010). Empirically supported pivotal response treatment for children with autism spectrum disorders. In J. Weisz (Ed.), Evidence-based psychotherapies for children and adolescents (2nd Ed.). (pp. 342-343). New York, NY: The Guilford Press.
- KOEGEL, R., O'DELL, M., & KOEGEL, L. (1987).

  A NATURAL LANGUAGE TEACHING

  PARADIGM FOR NONVERBAL AUTISTIC

  CHILDREN. JOURNAL OF AUTISM AND

  DEVELOPMENTAL DISORDERS, 17(2),

  187-200.
- Koegel, R. L., Schreibman, L., Good, A.,
  Cerniglia, L., Murphy, C., & Koegel, L.
  K. (1989). How to teach pivotal
  behaviors to children with autism: A
  training manual. Santa Barbara, CA:
  University of California.
- Koegel, R. L. & Bimbela, A. (1996) Collateral effects of parent training on family interactions. *Journal Of Autism & Developmental Disorders*, 26 (3), 347-359.
- Koegel, R L., Koegel, L.K. & Carter, C.M. (1999). Pivotal teaching interactions for children with autism. *School Psychology Review*, (28) 4, 576.
- Koegel, R. L. & Koegel, L. K. (2006). Pivotal Response Treatments for Autism: Communication, Social, & Academic Development. Baltimore, MD: Brookes.
- Koegel, L. K., Koegel, R. L., Shoshan, Y., & McNerney, E. (1999). Pivotal response intervention II: Preliminary long-term outcome data. *Journal of*

- the Association for Persons with Severe Handicaps, 24, 186-198.
- Kuhn, L. R., Bodkin, A. E., Devlin, S. D. & Doggett, R. A. (2008). Using Pivotal response training with peers in special education to facilitate play in two children with autism."

  Education and Training in Developmental Disabilities, 43(1), 37-45.
- Lang, M. & Fox, L. (2003). Breaking with tradition: Providing effective professional development for instructional personnel supporting students with severe disabilities.

  Teacher Education and Special Education, 26, 17-26.
- Laski, K. E., Charlop, M. H., Schreibman, L. (1988). Training parents to use the natural language paradigm to increase their autistic children's speech. *Journal of Applied Behavior Analysis*, 21(4), 391-400.
- Lydon, H., Healy, O., & Leader, G. (2011). A comparison of Video Modeling and Pivotal Response Training to teach pretend play skills to children with Autism Spectrum Disorders.

  Research in Autism Spectrum Disorders, 5, 872-884.
- Karge, B. D., Pierson, M., & Robinson, S. (2011). Alternative certification teachers: Building partners with paraprofessionals, National Association of Alternative Certification Journal, 6(2), 3-10.
- Koegel, L.K., Carter, C. M. & Koegel, R. L. (2003). Teaching children with autism self-initiations as a pivotal response." *Topics in Language Disorders* (23)2, 134-145.
- Masats, D. & Dooly, M. (2011). Rethinking the use of video in teacher education: A holistic approach.

- Teaching and Teacher Education, 27(7), 1151-1162.
- Minjarez, M. B., Williams, S. E., Mercier, E. M. & Hardan, A. Y. (2011). Pivotal response group treatment program for parents of children with autism. *Journal of Autism and Developmental Disorders* 41, 92-101.
- Malmgren, K.W., & Causton-Theoharis, J. N. (2006) Boy in the bubble: Effects of paraprofessional proximity and other pedagogical decisions on the interactions of a student with behavioral disorders. *Journal of Research in Childhood Education* 20(4), 301-312.
- National Autism Center. (2009) *National* standards report. Retreived from http://www.nationalautismcenter.org/pdf/NAC%20Standards%20Report.pdf.
- Nefdt, N., Koegel, R., Singer, G., Gerber, M. (2010). The use of a self-directed learning program to provide introductory training in pivotal response treatments to parents of children with autism. *Journal of Positive Behavior Intervention* 12(1), 23-32.
- Pierce, K., & Schreibman, L. (1995).
  Increasing complex social behaviors in children with autism, effects of peer-implemented pivotal response training. *Journal of Applied Behavior Analysis*, (28)3, 285-295.
- Pierce, K., & Schriebman, L. (1997). Multiple Peer Use of Pivotal Response Training to Increase Social Behaviors of Classmates with Autism: Results from Trained and Untrained Peers. Journal of Applied Behavior Analysis, 3, 157-160.
- Randolph, J. K, Strichter, J. P., Schmidt, C. T. & O'Connor, K. V. (2011). Fidelity and effectiveness of PRT

- implementation by caregivers without college Degrees. Focus on Autism and Other Developmental Disabilities, 26, 230-238.
- Rispoli, M. Neely, L., Lang, R., & Ganz, J. (2011). Training paraprofessionals to implement interventions for people with autism spectrum disorders: A systematic review. *Developmental Neurorehabilitation*, 14(6), 378-388.
- Robinson, S. E. (2011), Teaching paraprofessionals of students with autism to implement pivotal response treatment in inclusive school settings using a brief video feedback training package, Focus on Autism and Other Developmental Disabilities, 26(2), 105-118.
- Rose, D. J. & Church, R. J. 1998. Learning to teach: The acquisition and maintenance of teaching skills.

  Journal of Behavioral Education, 8, 5-35.
- Rossetti, Z. (2015). Descriptors of friendship between secondary students with and without autism or intellectual and developmental disability.

  Remedial and Special Education, 36(3), 181-192.
- Roter, D. L., Larson, S., Shinitzky, H., Chernoff, R., Serwint, J. R., Adamo, G., & Wissow, L. (2004). Use of an innovative video feedback technique to enhance communication skills training. *Medical Education*, 38, 145-157.
- Schepis, M. M., Reid, D. H., Ownby, D. H. & Clary, J. (2003). Training preschool staff to promote cooperative participation among young children with severe disabilities and their classmates. Research and Practice for Persons with Severe Disabilities, 28, 37-42.

- Silverman, W. K. & Kurtines, W. M. (2004).

  Research progress on effectiveness, transportability, and dissemination of empirically supported treatments: Integrating theory and research.

  Clinical Psychology, Science, and Practice, 11, 295-299.
- Simpson, R. (2005). Evidence-based practices and students with autism spectrum disorders. Focus on Autism and Other Developmental Disabilities, 20, 140–149.
- Stone, W., Lemanek, K., Fishel, P.,
  Fernandez, M. & Altemeier, W.
  (1990). Play imitation skills in the
  diagnosis of autism in young
  children. *Pediatrics*, 86(2), 267-272.
  Sexton, D., Snyder, P., Wolfe, B.,
  Lobman, M., Stricklin, S., & Akers, P.
  (1996). Early intervention in-service
  training strategies: Perceptions and
  suggestions from the field. *Exceptional Children*, 62, 485-495.
- Suter, J. C & Giangreco, M. F. (2009).

  Numbers that count: Exploring special education and paraprofessional service delivery in inclusion-oriented schools. *The Journal of Special Education*, 43(2), 81-93.
- Tate, T. L., Thompson, R. H. & McKerchar, P. M. 2005. Training teachers in an infant classroom to use embedded teaching strategies. *Education & Treatment of Children, 28,* 206-221.
- Tillery, C. Y., Werts, M. G., Roark, R. & Harris, S. 2003. Perceptions of paraeducators on job retention. Teacher Education and Special Education, 26, 118-127.
- Turnbull, A. & Turnbull, D. (2011). Right science and right results: Lifestyle change, PBS, and human dignity.

  Journal of Positive Behavior
  Interventions, 13(2), 69-77.

- U.S. Department of Education. (2006). Table 3-4. Paraprofessionals employed (FTE) to provide special education and related services to children ages 6 through 21 under IDEA, Part B, by qualification status and state: Fall 2006. Retrieved from: https://www.ideadata.org/PartBdat a.asp.
- Vismara, L. A., Young, G. S., Stahmer, A. C., Griffith, E., McMahon, Rogers., & Sally J., 2009. Dissemination of evidence-based practice: Can we train therapists from a distance?

  Journal of Autism Development and Disorders (39) 1636-1651.
- Voos, A. C., Pelphrey, K.A., Tirrell, J., Bolling, D.Z., Vander Wyk, B., Kaiser, M. D., McPartland, J. C., Volkmar, F. R., & Ventola, P. (2013). Neural mechanisms of improvement in social motivation after pivotal response treatment: Two case studies. *Journal of Autism and Developmental Disorders*, 43, 1-10.
- Walton, K. M, & Ingersoll, B. R. (2012).
  Improving social skills in adolescents and adults with autism and severe to profound intellectual disability: A review of the literature.
- Watson, T. S. & Kramer, J. J. (1995).

  Teaching problem solving skills to teachers-in-training: An analogue experimental analysis of three methods. *Journal of Behavioral Education*, 5, 281-293.
- Werts, M. G., Harris, S., Tillery, C. Y., & Roark, R. (2004). What parents tell us about paraeducators. *Remedial and Special Education*, 25, 232-239.
- Werts, M. G., Zigmond, N., & Leeper, D.C. (2001). Paraprofessional proximity and academic engagement:
  Students with disabilities in primary aged classrooms. *Education and*

- Training in Mental Retardation and Developmental Disabilities, 36, 424-440.
- Wong, C., Odom, S. L., Hume, K. Cox, A. W., Fettig, A., Kucharczyk, S., Brock, M. E., Plavnick, J. B., Fleury, V. P., Schultz, T. R. (2015). Evidence-based practices for children, youth, and young adults with autism spectrum disorder: A comprehensive review. *Journal of Autism and Developmental Disorders, 45*(7), 1951-1966.
- Zhang, J. & Wheeler, J. J. (2011). A metaanalysis of peer-mediated interventions for young children with autism spectrum disorders. Education and Training in Autism and Developmental Disabilities, 46(1), 62-77.