

Critical Review:
Does Teaching Joint Attention Improve Expressive Language Abilities in Children with Autism?

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or dissertations published before October 2009. Search terms included: ((joint attention) OR (prelinguistic communication) OR (shared attention)) AND ((expressive language) OR (speech)) AND ((autism) OR (PDD-NOS)).

Selection Criteria

Studies selected included at least one group, or a single participant, where the intervention provided targeted joint attention. As well, expressive language or spontaneous speech had to be one of the outcomes measured. Participants also had to have a clinical diagnosis of autism or PDD-NOS. No limits were set on

and 3 years old. Two of the participants were diagnosed with PDD-NOS, one with autism and one was described as having “likely autism spectrum disorder”.

Intervention was incorporated into the preschool program the children attended and implemented by teachers at this school. Target responses and mastery criteria were outlined *a priori* and treatment used a combination of discrete trial and pivotal response training. Between one and four treatment sessions were done per day, with each session consisting of 10 trials. Intervention continued until each child mastered all requirements of the program. Procedural reliability ranged from 98% to 100%.

Language was measured by totaling the number of vocalizations (e.g., phonemes or words) that occurred during joint attention trials. Children produced between zero and four vocalizations at baseline and at study completion produced between 24 and 86 new phonemes and 1 to 18 new words.

This study had some critical limitations. Primarily, by not employing a multiple baseline procedure across participants it was possible that maturation accounted for the improvements in language. Secondly, the authors did not include a description of any other therapies the children were involved in at the time intervention occurred. Therefore, it was possible that an extraneous variable associated with this factor contributed to the outcomes found. Third, only informal measures were used to assess expressive language. The addition of a standardized measure would have strengthened the findings since there were no blinding procedures used. As a result subjective biases could have lead to inaccurate observations which may have distorted the findings.

There were several points of merit to this study. First, because the authors included phonemes as an outcome measure, results were able to reveal subtle improvements to verbal output that may not otherwise have been seen. This added support to the possibility that teaching joint attention does improve expressive language for these children. Also, since teaching was generalized across materials, people and settings it increased confidence that a nuisance variable associated with the teaching conditions did not influence the results. In addition, the study also had good procedural fidelity which increased certainty that all children received the same intervention.

The study outcomes showed that improvements were seen in expressive language for all three children. However the limitations of the study made it difficult to be confident this outcome is a direct result of the

intervention. Therefore, overall this study provided equivocal evidence as to whether teaching joint attention improves expressive language in children with autism.

Whalen and Schreibman (2003) completed a single-subject, multiple baseline study across four participants. Children involved all had a clinical diagnosis of autism or PDD-NOS with a mean age of 4 years, 2 months.

The intervention procedure used a combination of discrete trial and pivotal response training (PRT) and consisted of two phases: response training and initiation training. Target behaviours were specifically outlined *a priori* and fidelity of implementation ranged from 93% to 100%. Intervention was conducted in a laboratory setting by the researchers one day per week which included three, 25-minute sessions. All children mastered both training phases in an average of 5 weeks.

Whalen, Schreibman and Ingersoll (2006) reported the effects this training had on spontaneous speech. Language probes were administered which consisted of 10-minute PRT sessions. No changes in language were observed during baseline for any child; however all four increased in spontaneous speech by post-treatment and 3-month follow-up. The average rate of spontaneous speech at baseline was 20% (range 0% to 65%) and the post-treatment average was 55% (range 25% to 80%).

All children in the study showed some improvement in verbal output which supports the idea that teaching joint attention will improve expressive language in children with autism. The study design also provided support for this idea. By staggering baseline across participants the researchers were able to account for any developmental changes that may have occurred during treatment. Since no changes in language occurred during baseline for any child, it was more likely that the changes seen at post-treatment were a result of the joint attention intervention. Also, the clearly outlined procedures and mastery criteria led to strong fidelity of implementation. Therefore it was fairly likely that each child received the same dose and type of intervention and that the researchers themselves did not introduce an extraneous factor that may have influenced the results.

There were a few limitations to this study which decreased confidence that the intervention led to the outcomes. Most importantly, the researchers did not specify what they did during PRT probes or provide a clear definition for spontaneous speech. Due to this it was difficult to fully understand what was specifically being measured and therefore the exact changes that occurred to language. In addition, this will make replication of these findings challenging. Finally, none

make this argument less compelling. Most relevant is the extent to which children vary on the autism spectrum. Drew et al. (2002) and Kasari et al. (2006) did not report the severity levels of the autism diagnoses so it is unclear if the groups compared were a representative sample of this population. Whalen et al. (2003) did report this data, which included children with 'mildly moderate' and 'average probability of autism'. Jones et al. (2006) included children with varying degrees of autism but severity levels were not reported. Since improvements were seen across participants the possibility is raised that joint attention training could improve expressive language regardless of autism severity. However, examination of available information from these studies indicates that most of the participants were within the mild to moderate range of autism. Therefore the effects of this training remain unknown for children in the more severe range.

Participants across studies also had varying language abilities at outset. This makes it difficult to determine if any pre-treatment language abilities would influence the success a child could have with this intervention. Three studies reported receptive language abilities which ranged from 6 months to 2 years of age. Some children were completely nonverbal while others used expressive language in some contexts. Kasari et al. (2008) provided evidence that children with stronger expressive language at baseline may make the most gains in this area post-intervention. More interestingly, she found that for children whose expressive language was lower than 20 months of age at baseline, joint attention intervention had the most benefit on expressive language. Since all participants did make gains in expressive language across studies, it is possible that improvements may not be dependent upon pre-treatment language abilities. However, Kasari's findings suggest that the degree of improvement is dependent upon pre-treatment language abilities.

One factor which may be a prerequisite is mental age. Children in all studies had a mental age of at least 12 months. It is suggested by Whalen et al. (2006) that this should potentially be a requirement for intervention as joint attention does not develop in typical children until approximately this age. Future research investigating this topic would be beneficial.

Additional factors to consider are the validity and reliability of the measures used to assess language. Only one study used a standardized measurement tool with testers who were blind. All others used parent report and informal measures without blinding procedures. As a result there is a potential that bias could have led to inaccurate observations and the language outcomes seen were not a true representation

of children's abilities. Regardless of this, it cannot be overlooked that improvements in expressive language were seen across studies, no matter what assessment measure was used. Therefore, when considering the evidence collectively, there is greater confidence that expressive language will improve after joint attention intervention.

The best intervention method is also still in question. All studies used a combination of treatment approaches which included different definitions for target behaviours. Sessions took place in different settings, the individuals providing treatment had varying expertise and the amount of time spent in treatment varied for each child. The consistent factor was that all interventions taught children to both respond to and initiate joint attention. Since each child made improvements in expressive language perhaps the quantity and type of training used is less important than what is taught. The current evidence suggests that teaching both responsive and initiative joint attention behaviours is important for improvements to expressive language. However, it is still unclear which treatment approach is the most efficacious.

Furthermore, it remains unclear if teaching joint attention alone improves expressive language or if the outcomes found are a result of this intervention being conducted in conjunction with other therapies. Jones et al. (2006) and Whalen et al. (2003) did not report what other interventions the children were involved with. Drew et al. (2002) reported that the children who received joint attention intervention also received local services. Only Kasari et al. (2006) conducted a study which controlled for other interventions. From a clinical perspective it is unrealistic that a client will only participate in one intervention at a time. There are also ethical implications regarding withholding necessary treatment. Yet from a research perspective it is not ethical to withhold necessary treatment. Yet from a research perspective it is not ethical to withhold necessary treatment. Yet from a research perspective it is not ethical to withhold necessary treatment.

