

**Critical Review:
The Effectiveness of TEACCH on Communication and Behaviour in Children with Autism**

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This critical review examines the effects of the Treatment and Education of Autistic and Communication Handicapped Children (TEACCH) program on communication and behaviour in children with autism. The current research is limited and few studies provide strong research-based evidence to support the implementation of the program. Professionals who provide intervention to children in this population need stronger evidence that supports this program, in order to present accurate information to parents.

Introduction

Autism is a developmental disability that affects communication and language from early on in life. It involves the inability to express communicative functions and engage in typical social behaviour (Paul, 2001). Some common characteristics include lack of social or emotional reciprocity, the inability to initiate and sustain conversation if speech is present, or in some cases the delay or absence of spoken language with no attempt to communicate in other ways. Some children with autism also engage in repetitive motor behaviours such as rocking or hand-flapping (Paul, 2001). It should also be noted that autism is a lifelong disability.

Although several treatment interventions exist, strong evidence-based research is still limited. The Treatment and Education of Autistic and Communication Handicapped Children (Division TEACCH) is a program that was established in 1966 at the University of North Carolina by Eric Schopler and Robert J. Reichler (Peeremboom, 2001). At the time of its development, it was believed that autism was caused by parental failure to provide adequate emotional support. Therefore, Division TEACCH employed a novel philosophy in that parents not only were not to blame for causing autism in their child but that they play a crucial role in treatment (Ozonoff & Cathcart, 1998). It was hypothesized that children with autism responded better to a structured learning situation rather than an unstructured one. Parents therefore collaborate with professionals to provide that structured environment (Peeremboom, 2001). The TEACCH approach focuses on the individual with autism as well as developing a program around his/her skills, interests, and needs (Division TEACCH). It is built on three important aspects, 1) early diagnosis and assessment 2) parental

collaboration, and 3) structured teaching (Peeremboom, 2003).

Although research exists on each of these aspects alone, there are still very few quality outcome studies on its overall effectiveness (Peeremboom, 2003; Ozonoff & Cathcart, 1998). Therefore the question still remains, *is TEACCH an effective treatment for children with autism?* The rationale then, is apparent. Intervention teams around the globe, which include speech-language pathologists, need strong evidence to support the treatment they are involved in and to validate the costs of its implementation.

Objectives

The primary objective of this paper is to critically evaluate the existing literature regarding the effectiveness of TEACCH on the communication and behaviour of children with autism. The research studies will be analyzed on the basis of their sample size and the use of control groups, because few studies are strong in these areas. It is important for design methods to compare treatment groups. Without the use of control group, it is difficult to know if change can be attributed to the intervention or to developmental maturation (Ozonoff & Cathcart, 1998). To date, there are very few studies that have used this type of design. Many of these have been done without the use of control groups making it difficult to isolate and measure the effects of the TEACCH program (Ozonoff & Cathcart, 1998).

The secondary objective of this paper is to propose evidence-based clinical recommendations for the use of TEACCH in this unique population.

Methods

Search Strategy

Computerized databases, including PubMed, Google Scholar, and Medline, were searched using the following search strategy:

((TEACCH) and (autism)) OR ((TEACCH) and (efficacy)) OR (treatment) OR (program)).

The search was limited to articles written in English.

Selection Criteria

Studies selected for inclusion in this critical review paper were required to have investigated the effectiveness of TEACCH on communication and behaviour in children (persons under the age of 15 years) with autism. Studies were also required to have employed the use of control groups in their research design. No limits were set on the demographics of research participants or outcome measures.

Data Collection

Results of the literature search yielded the following types of articles congruent with the aforementioned selection criteria review: experimental design (3).

Results

Impact of home-programming aspect of TEACCH on developmental domains and behaviour.

A study done by Ozonoff and Cathcart (1998) sought to evaluate the effectiveness of the home programming aspect of TEACCH. They hypothesized that the home program would improve subject performance on the Psychoeducational Profile-Revised (PEP-R), which measures functioning in seven developmental domains; imitation, perception, fine and gross motor skills, eye-hand coordination, and nonverbal and verbal conceptual ability (Ozonoff & Cathcart, 1998). They also used the Childhood Autism Rating Scale (CARS), which measures behaviour relevant to autism. The results of the study did reveal positive changes in several developmental domains on the PEP-R, including Imitation, Fine Motor, Gross Motor, Cognitive Performance, as well as total post-test PEP-R score. CARS scores also showed significant improvement.

Using a mixed group design, the researchers compared two groups, one received TEACCH and the other did not. The groups were tested pre- and post- implementation. Another strength in the research was that they employed widely used tests

(PEP-R and CARS) to achieve baseline scores for each child. When evaluating the PEP-R test results they also used a multivariate analysis of variance to find statistical significance. This type of analysis compares several measures between groups, which is appropriate for the design of the study.

Among the strengths of the study were also some weaknesses. There were 22 subjects in total. This is considered a small sample size and therefore reduces the power of the study. However, it is difficult to achieve large sample sizes in autism research due to the small population and high variability in the disorder. The first eleven subjects to respond to the study announcement were assigned to the treatment group and the final 11 comprised the control group. Therefore the subject groups were not randomized. Parents play a major role in TEACCH-based home programming. It is possible that the parents in the groups had different characteristics. The treatment group may have included parents who were eager to participate and were then more likely to effect change in their children than the parents in the control group (Ozonoff & Cathcart, 1998).

All the children were receiving services from various local day treatment programs throughout the entire study. The children were matched on age, severity of autism, initial PEP-R scores, and the time interval between pre- and post- testing. The time interval between testing was only 4 months, which raises the question of whether this is sufficient time to see accurate change. A third test would have been helpful in determining whether or not improved skills were maintained. The authors also did not specify if the design included single or double- blinding and therefore an element of bias is highly probable.

The authors state that the results suggest that TEACCH-based home programming is effective. The results revealed highly significant positive change, however, it is important to take into account the limitations of the study. It should also be noted that since the authors only evaluated the home-programming aspect of TEACCH, results cannot be applied to TEACCH in its entirety.

Another study conducted in Troina, Italy, compared TEACCH to a non-specific approach for children with autism (Panerai, Ferrante, & Zingale, 2002). They investigated several typical characteristics of autism and found significant positive changes within the treatment group.

In this study, the authors sought to evaluate the TEACCH program as a whole, adding to its generalizability. Like the previous study, it employed a control group, which is rare in autism research, and they also employed a mixed group design by using pre- and post- testing. The interval between tests was one year, which is a much longer time interval period

than in the previous study (Panerai et al., 2002). This may be a more appropriate length of time in order to see change. However, such a long time interval also makes it more difficult to attribute any changes to the treatment. The children were also assessed using the PEP-R and the Vineland Adaptive Behavior Scale (VABS), which is designed to assess adaptive behaviours. Both tests are known to be highly valid and reliable. The participants were matched on gender (all male) and nosographic disability, also known as autism associated with severe intellectual disability. The authors also employed a double-blinded design in order to reduce the presence of performance bias (Panerai et al., 2002).

This study shares a few of the same weakness as the previous one. There were 16 subjects in total and as mentioned before the small sample size decreases the power of the results. There was also considerable heterogeneity between the control group (CG) and the experimental group (EG) because they were from two very different populations. The CG attended regular schools with support teachers and the EG resided in a treatment institute and received TEACCH. In the EG, 5 out of the 8 subjects had concomitant pathologies, whereas the CG was shown to have only a single case. Therefore the EG was at a higher disadvantage. Statistical evidence showed significant differences between the groups at the baseline level. The EG was not only different in terms of heterogeneity among group members, but they were also older in chronological age, younger in mental age, and had more accentuated autistic characteristics.

The implementation of the program was also poorly described. The staff were said to be trained however it was not clear as to what the treatment entailed and how it was being implemented.

Significant improvements were found in 7 of the 8 domains of the PEP-R in the EG, while only 1 domain improved for the CG. The EG also improved on more domains than the CG on the VABS. It would seem obvious to conclude that TEACCH is a highly effective treatment approach, and the authors clearly state this. However, it is possible that subjects who are more cognitively and physically involved (i.e. the EG) may be able to show more improvement with the program than less involved subjects (i.e. the CG). Due to the significant differences in the groups and the small sample size, it is difficult to generally state that the TEACCH program is highly effective. Although this study revealed very positive outcomes, caution is needed when considering the results and the notable limitations of the study must be taken into account.

Impact of TEACCH on maladaptive and functional behaviours.

Kusmierski & Henckel (2002) investigated the effects of TEACCH on maladaptive and functional behaviours commonly known in autism. All subjects were already receiving TEACCH, however the treatment group received additional hours. Unfortunately the results were highly variable.

The subjects in this study were all from the same facility, unlike the previous studies. This adds to the homogeneity of the groups. Their use of controls was also positive. The authors matched subjects on a baseline that was achieved by a record review of the number and type of maladaptive behaviours observed in one-hour intervals. The baseline data was collected over the 30-day period prior to implementation of the program. The authors then described the behaviour of each participant during the implementation of the program, which also lasted 30 days. They collected data on the frequency and type of behaviours each child exhibited and compared their initial and the final averages (Kusmierski & Henckel, 2002).

The limitations found in this study are significant. Not only was the research design unclear, only 4 subjects participated. Therefore it could be likened to that of a case study because it used a more descriptive approach in the findings. Such a small sample size also limits the statistical analyses that can be used to evaluate data. Results of the study were inconclusive and provide no further evidence as to whether or not TEACCH is truly an effective intervention for children with autism.

Recommendations for Clinicians

Based on theory and the evidence found, TEACCH has the potential to be a very effective program for children with autism. However, there are several limitations in the studies analyzed, therefore making it difficult to attribute positive changes solely to the program. With these considerations in mind, caution should be taken when advising families about the effectiveness of TEACCH. The studies presented in this paper show indications that TEACCH may be an effective intervention and that its implementation has not been shown to be harmful. A study that includes control groups, uses double-blinded methodology, and a much larger sample size would be optimal. The methodologies and interventions implemented in such studies should also be clearly outlined.

Conclusions

In conclusion, the above research suggests that more information is needed, in comparing interventions for autism. TEACCH is a widely known program and should continue to be evaluated for effectiveness. Future research that compares other interventions, such as Applied Behavioral Analysis and the Hanen Program is also needed. Such investigations would provide information that may reveal which interventions work best with certain autistic populations.

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