

Best Practices in Children's Mental Health:

A Series of Reports Summarizing
the Empirical Research on Selected Topics

Report #4 **"Outcome Studies of Children and** **Adolescents with Autism"** **December 2002**

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Report #1 - October 2001, "Inpatient Treatment for Children and Adolescents"

Report #2 -November 2001, "Inpatient Treatment for Adolescent Substance Abusers"

Report #3 - February 2002, "Group Care for Children and Adolescents"

When examining all of the diagnostic categories in the DSM, Autistic disorder "may be associated with the most severe impairment in functioning" for a number of reasons (Smith, 1993):

- Autism occurs in about 1 of every 2,500 individuals in the general population (Smith, 1993).
- Autism is three to four times more common in boys than girls (APA, 1987)
- Autism usually begins within the first few years of life and in almost 95% of untreated cases, problems continue throughout the life-span. (Rumsey, Rapoport & Sceery, 1985)

Most individuals with autism are not able to communicate, and only half actually communicate with words (Rutter, 1970).

- Children and adolescents with autism may experience depression and anxiety at a greater rate than non-autistic children (Kim et al., 2000).
- Around 75% of individuals with Autism perform in the mentally retarded range on intelligence measures, and most show severe impairments in self-help or ADL skills. For these reasons, most individuals with this disorder require residential or custodial care for the duration of their lives (Smith, 1993).

Study Questions

1. What are effective treatments for autism?
2. What is the role of the Mental Health system in the provision of services for individuals with autism?

Methodology

There has been a major shift in the research and treatment of autism. Given the previous belief in the field that autism was caused by cold, detached, hostile parents who facilitated the autistic child's withdrawal from the world, psychoanalysis was the treatment of choice from the 1940's to the 1960's. However, as more investigation into the etiology of autism was conducted, it became clear to investigators that the disorder was clearly organic in nature. Although autism was only first described in the 1940's, a great deal of literature around effective treatment of the disorder has been conducted. While the bulk of the research centers around the effectiveness of

behavior therapy with autism, other interventions have been examined with *limited or no effects* including: holding therapy (Richer & Zappella, 1989), psychodynamic therapy (Bettelheim, 1967), facilitated communication (Biklen, 1993), music therapy (Trevarthen, Aitken, Papoudi, & Roberts, 1996), auditory integration (Rimland and Edelson, 1995), scotopic sensitivity training (Irlen, 1995), sensory integration (Ayles, 1972), and psychopharmacology (Cook and Leventhal, 1995).

Currently, the focus of research points towards treatment models which are effective in increasing communication, controlling negative, destructive behaviors and increasing adaptive behaviors in autistic individuals. Although the bulk of research is still dominated by behavioral interventions, other approaches have been investigated and presented in this review. For this investigation, studies which were empirically grounded, or showed significant promise were included.

Many of the studies included in this table fit under the general type of treatment referred to as "behavioral" or "behavior modification". Since Ferster's work in the 1950's and 1960's, behavioral approaches have been considered to be effective in the "comprehensive treatment of autistic individuals (Cambell et al., 1996; pg 137). Most simply behavioral approaches aim to reduce or eliminate maladaptive behaviors and/or increase or intensify adaptive behaviors. The methods by which this process is carried out varies based on the behavior approaches and interventions which the treatment provider utilizes. Applied behavioral analysis (ABA) is the "implementation and evaluation of the wide range of principles and techniques that constitute behavioral learning theory (Whiteford Erba, 2000; pg 83). ABA is focused on utilizing behavior theory to shape and deliver effective, individualized instruction (Whiteford Erba, 2000; pg 84). Discrete Trial Training and Positive Behavioral Support are two very different methods of intervention within ABA, and both are described in the tables.

Results

Although there were myriad of investigations into treatment efficacy for individuals with autism, many studies had significant flaws in research design. Through the course of this investigation approximately 55 articles were reviewed, but only 13 selected for inclusion in this literature review based on the quality of the study. Excluded studies held flaws in the research design, sample population and/or sample size. Several investigations showed significant decreases in negative behaviors during the treatment phase, however at follow-up, these positive gains could

not be maintained. For the purpose of this investigation, studies which held outcomes that were statistically significant or highly promising in nature were included. Of the articles selected, 6 were empirically based studies (articles #1-6 in table) which investigated behavioral interventions or self-management techniques; and 7 were non-empirical descriptions of various programs (articles #7-13 in table) which showed promise in the treatment of autism.

Pertinent Findings from Individual Studies

- > Treatment programs which were more intense, appeared more effective. Treatment programs which were up to 40 hours per week were more effective than programs 10 hours a week (1,2,6).
- Long-term treatment, or treatment for 2-3 years at a time, was significantly related to lower levels of maladaptive behaviors and high levels of adaptive behavior(1,6).
- Early intervention is most effective. Thus, younger children tended to have better outcomes than children who were older when treatment was initiated (1,2,3,5).
- Parental involvement was important in achieving and maintaining gains established in treatment (3,4, 5,10).
- Training parents to be therapists was very common and proved to be effective in maintaining functioning (3,4,5,10).
- Treatment had significant effects on the reduction of maladaptive behaviors and increases in adaptive behaviors (1-6).
- > Treatment had positive effects on measures of intelligence and communication (1,2,5,6).
- A high degree of structure in the program was provided in all studies (1-13).

Treatment programs set in the client's home, or community were more effective than those set in an institutional setting (1,2,5).
- > Consistency between environments was vital in achieving positive outcomes (1,2,4,5).
- > Individual treatment seemed more effective than group treatment (1-13).
- No studies have proven the effectiveness of treatment through adulthood. Follow-up has not been conducted on adults with autism who made significant gains in treatment as children.

Response to Question #1- What are effective treatments for autism?

Based on the empirically based studies listed in this literature review, current successful treatment programs for children and adolescents with autism have included the following:

Assessment

- ~ Early identification and treatment vital
- Assessment of individual needs and strengths
- Identification of specific problematic behaviors and reinforcers

- Collaboration of services
 - Consistency in school, home, community, education and treatment environments
 - Collaborative treatment team which includes parents, therapist, teachers, other family members and supports.
 - Training of all members of treatment team so treatment is 24 hours a day, seven days per week in all aspects of child's life.
- Duration and Intensity of treatment
 - Treatment is long-term- i.e. at least 2 years
 - Treatment should occur during the majority of the child's waking hours.
 - Treatment continues after 2 year period by training parents to continue to function as therapists.

Intense and structured interventions:

- 20-40 hours per week
- Individualized interventions on a one to one basis
- Services delivered in home or in community rather than treatment setting
- Training and utilization of parents as therapists

- **Empirically-based Treatment Models**
 - **Lovaas Treatment Model- (ABA) (studies 1,2,5,6)**
 - Utilizes ABC model
 - Each behavior has:
 - antecedent (directive)
behavior (child's response which may be positive or negative)
 - consequence (reaction from the therapist)
 - positive for appropriate behaviors
 - bite of food, hug, or praise
 - negative for inappropriate behaviors
 - verbal "No!"
 - pause before next trial
 - Treatment is 1:1
 - Takes place in the child's home
 - 20-40 hours per week
 - Utilization of parents as therapists

Self-Management Treatment (studies 3,4)

- Used with children who have adequate communication skills
- Works to decrease problematic behaviors and increase appropriate behaviors
- > Clients are taught to monitor their own behavior
 - Uses training sessions
 - Child tracks inappropriate and appropriate behaviors
 - Utilizes trial periods of time
 - ~ Initially brief, but increasing through treatment
 - Clients are rewarded for engaging in appropriate behavior and identifying correctly the behaviors. Fading was used -a process of slowly decreasing the number and intensity of prompts, either by withdrawing the treatment provider for intermittent periods of time, or by changing the intensity of the prompt- starting with physical prompt, moving to gesture, then to verbal prompt and finally to no prompt
 - Maintenance probes were used -collection of data during fading period to determine whether appropriate behavior continued in the absence of the treater.
 - Reinforcers and self-monitoring tools phased out so child becomes independent

• **Promising Treatment Models**

- **Positive Behavioral Support (study 7)**
 - Developed out of ABA
 - Focuses on "improving overall quality of life for individuals with disabilities and their families
 - Not focused on reducing negative behaviors
 - Utilizes larger systemic changes
- **TEACCH (study 9)**
 - Highly individualized treatment
 - Parents as therapists
 - Floor time, occupational and physical therapy used to adequately structure the child's environment
 - Consistency and collaboration between environments
 - Services are life-long and may include:
 - assessment/diagnosis
 - treatment
 - social work
 - education
 - speech pathology
 - individual therapy
 - consultation
 - family services
 - community collaboration
 - supported employment and living.

- **Promising Techniques across models**
 - **Discrete Trial Training (DTT) (study 11)**
 - Intervention used within the ABA or Lovaas model
 - **Floor Time (or Greenspan Model) (study 10)** > Based on developmental models
 - Focus on social interaction and emotional development
 - Utilizes parents as therapists
 - Treatment is set up in 20 minute periods of "play"
 - Each behavior exhibited is treated as purposeful
 - Often as an intervention within another model
- **Approaches which have limited or questionable Effectiveness:**
 - **Auditory Integration (study 12)**
 - > No clear empirical evidence of efficacy
 - **Facilitated Communication (study 8)**
 - Shown to be ineffective
 - **Psychopharmacology**
 - > There are "no pharmacologic agent with FDA-approved labeling specific for the treatment of (autism) in either children or adults" (Cook and Levelnthal, 1995; pg 381).
 - However, there is suggested potential in utilizing neuroleptics, SSRI's, antidepressants, mood stabilizers and anxiolytics in treating behaviors and issues associated with autism. Systematic controlled investigations are uncommon and more research is needed to demonstrate medications' efficacy in treating autism (J Am Acad Child & Adol Psychiatry, 1999).

Response to Question #2

What is the role of the Mental Health System in the provision of services for individuals with autism?:

The research in the treatment of autism shows that service delivery and structure is intensive (20-40 hours per week of direct intervention). All of the studies which demonstrated effective interventions were conducted in the university setting, thus making replication in the real world difficult. Nowhere in the research is it explicit or implicit that Community Mental Health Centers should be the primary provider of services for individuals with autism, nor does it state what services the mental health system is equipped to provide. Thus, at best, this investigation can point towards a few possible roles that the mental health center should consider in the delivery of services for this population.

The first option would have Community Mental Health Centers taking the primary role in the treatment of children and adolescents with autism. This would follow the lead of some school programs which have attempted to take the lead role in providing services, however there is no evidence of the effectiveness of these programs. Taking on this lead role would require CMHCs to hire or appoint one or more workers who would specialize in this field. These workers should ideally obtain training through one of the university programs which has demonstrated empirical effectiveness in treating autistic children. Through the leadership of this clinician, the mental health center could then provide intensive interventions and/or ongoing training of parents to deliver

intensive interventions to their children with autism. Ideally, this individual would also work collaboratively with the school system to ensure that cohesive, consistent treatment is being delivered in all of the child's environments. Because of the intensity of the treatment, costs would be quite high and funding problematic. However a potential source for funding which Community Mental Health Centers could explore is Medicaid.

The second option for Community Mental Health Centers in the service delivery for individuals with autism is to take on a supportive role. This would allow mental health centers to supplement the services already being provided by other agencies such as special education, university-based or MR/DD programs. These services could focus on two areas: 1) treatment of co-morbid issues in individuals with autism and 2) provision of supportive services for families of autistic children.

It is difficult to ascertain the incidence of co-morbid psychiatric disorders in individuals with autism as the issue is scarcely mentioned in the literature. A recent study comparing children with autism or asperger's with children in the general community from the same age group showed a significantly higher incidence of co-morbid psychiatric issues in the children with autism or asperger's. Almost one-fifth (17%) of children with autism or asperger's had scores on symptoms of depression in the clinically significant range. The children with co-morbid psychiatric disorders were also more likely to exhibit aggressive behaviors and have impaired relationships with supports. This study concludes that treating the co-morbid psychiatric disorder could possibly decrease aggression thus improving the child's overall functioning (Kim et al., 2000). While it is clear that mental health centers could provide these services, there is no guidance documented in the literature around how these services would be designed, or a model for the appropriate treatment of co-morbid psychiatric issues in individuals with autism.

Similarly, mental health centers are on their own in treating the families of individuals with autism. While there are a few studies around the treatment of depression, anxiety and other psychiatric issues in the families of children with autism, they are only case studies so the generalization of results is difficult. The models of treatment which have been proven effective in the treatment of autism make no mention of the provision of services to families. It is clear that these families would likely have difficulties in their adjustment to the disability and need support. Because the mental health centers are skilled at providing treatment from a family systems perspective, issues around the family's adjustment to the disability can be addressed, thus providing emotional support vital to the family.

In conclusion, based on the information uncovered in this investigation, the most appropriate role for Community Mental Health centers is a secondary, supportive role. Thus, it would behoove mental health centers to be aware, as more studies become available, of the effective treatment of co-morbid psychiatric disorders in individuals with autism. They will need to work collaboratively with the other systems providing treatment for the autism so services are delivered in a cohesive manner. In treating these co-morbid issues, it would be vital for mental health centers to be aware of innovative treatments in autism so they can assist parents in finding appropriate treatment programs for their autistic children. And finally, mental health centers would need to provide emotional support for families which is vital in helping them adjust to their child or family member's disability.

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Empirical Studies of Treatment for Children and Adolescents with Autism

Citation	Study Setting	Type of Study	Treatment Model	Pertinent Findings
<p>1) Lovaas O., (1987). Behavioral treatment and normal educational and intellectual functioning in young autistic children. <u>Journal of Consulting and Clinical Psychology</u>. (55) 3-9</p>	<p>UCLA-Autism Project</p>	<p>Outcome study comparing 3 groups of autistic children: those who received</p> <ol style="list-style-type: none"> 1) intensive treatment (n=19), 2) minimal treatment (n=19) and 3) treatment at another facility not affiliated with UCLA (n=21). <p>Randomization was not used, as assignment to groups was based on therapist availability to provide treatment. All children were under 4 yrs of age at intake and had an IQ above 40.</p>	<p>Intensive behavior therapy (applied behavioral analysis ABA) interventions which consisted of 40 or more hours per week of one-to-one behavior tx for over 2 years. The first control group (minimal treatment group) received the same type and duration of treatment, but for only 10 or fewer hours per week. The second control group received minimal treatment at another facility. Each child was assigned several well trained student therapists who worked with students within their home. Parents were also considered part of the therapy team and were trained to deliver interventions. The first year of treatment focused on reducing self-stimulatory and aggressive behaviors. During the second year, treatment was used to teach expressive and abstract language and play. The third year emphasized "expression of emotions, pre-academic tasks and observational learning".</p>	<p>At intake, there were no significant differences between the experimental or control groups except chronological age at onset of treatment as the control group subjects were an average of 6 months older than the children in the experimental group. At follow-up (average age of children-7), 47% of the experimental group achieved normal levels of functioning as compared to only 2% of the control groups. In the experimental group, 40% were considered mildly retarded and placed in special education classes for the language delayed and only 10% were placed in classrooms for the severely autistic/retarded; while in the control groups, 45% were mildly retarded and placed in classes for the language delayed and 53% were severely retarded and placed in autistic/retarded lasses. While these outcomes are significant, they are criticized as no study has been able to replicate outcomes at this level of success.</p>
<p>2) McEachin J., Smith T., Lovaas O., (1993) Long-Term outcome for children with autism who received early intensive behavioral treatment. <u>American Journal on Mental Retardation</u> (4) 359-372.</p>	<p>UCLA-Autism Project</p>	<p>Longitudinal empirical research project comparing gains made in behavior for 19 children receiving intensive treatment vs. control group of 19 children who did not. The second control group used for previous study was not followed (n=21). Average age of children was 12 yrs old. A second part of the study examined the 9 subjects who had the best outcomes to determine extent to which they achieved normal functioning.</p>	<p>The experimental group showed significantly higher scores in intellectual functioning, measures of adaptive and maladaptive behaviors, and a significantly higher percentage of the experimental group were in "normal" school placements. Overall scores in measures of personality functioning did not differ for the experimental and control group, however the groups were significantly different in scores measuring psychosis and somatic concerns. For the 9 children in the experimental group who achieved best outcomes, there was no significant difference between their scores and the scores of comparison groups of non-autistic children with normal functioning. Intelligence scales put them in the high end of the normal range, and normal functioning on adaptive and maladaptive behavior scales as well as personality functioning scales.</p>	<p>The experimental group showed significantly higher scores in intellectual functioning, measures of adaptive and maladaptive behaviors, and a significantly higher percentage of the experimental group were in "normal" school placements. Overall scores in measures of personality functioning did not differ for the experimental and control group, however the groups were significantly different in scores measuring psychosis and somatic concerns. For the 9 children in the experimental group who achieved best outcomes, there was no significant difference between their scores and the scores of comparison groups of non-autistic children with normal functioning. Intelligence scales put them in the high end of the normal range, and normal functioning on adaptive and maladaptive behavior scales as well as personality functioning scales.</p>

Empirical Studies of Treatment for Children and Adolescents with Autism

Citation	Study Setting	Type of Study	Treatment Model	Pertinent Findings
<p>3) Koegel R., & Koegel L., (1990). Extended reductions in stereotypic behavior of students with autism through a self-management treatment package. <i>Journal of Applied Behavior Analysis</i> (23) 119-127.</p>	<p>University of California- Santa Barbara</p>	<p>Multiple baseline design was utilized across all subjects to examine effectiveness of self-management procedures. (n=4) Ages of each of the four children were: 9,11,13 and 14 yrs old.</p>	<p>Three subjects received self-management training in areas of academic and self-help tasks while the remaining subject received training in various independent living tasks. Phase 1 sessions were delivered in a treatment setting, while Phase 2 was delivered in community settings. All four participants participated in Phase 1, however only two were selected for Phase 2 Sessions lasted one hour, twice a week.</p>	<p>Selection criterion for the investigation maintained that children would have appropriate language skills, as interventions only focused on problematic autistic behaviors, not communication deficits. Problem behaviors which occurred at high levels during baseline were significantly reduced during self-management treatment phases, and appropriate behaviors increased. When treatment was withdrawn problem behaviors immediately and intensely returned. When the second phase of treatment was initiated, problematic behaviors immediately decreased. Fading and maintenance probes allowed treatment gains to be maintained even in the absence of the therapist. Thus, self-management techniques can be effective.</p>
<p>4) Stahmer A., & Schreibman L., (1992). Teaching children with autism appropriate play in unsupervised environments using a self-management treatment package. <i>Journal of Applied Behavior Analysis</i>. (25) 447-459.</p>	<p>University of California- San Diego</p>	<p>Study evaluating the outcome effects of self-management on behavior in 3 children with autism. Ages of children were 7, 12 and 13.</p>	<p>Treatment using self-management approach which sought to decrease reliance on the therapist using components such as: self-evaluation of performance, self-monitoring, and self-delivery of reinforcement. Four behavior categories were targeted in this investigation: self stimulation, appropriate play, inappropriate behaviors, and other behavior. Other behavior encompassed all behaviors which could not be deemed as appropriate or inappropriate ex. "sitting and doing nothing".</p>	<p>The study focused on increasing appropriate play and decreasing inappropriate behaviors as children had adequate language skills and were able to use complete sentences. Children were able to learn to monitor their own behavior correctly within a short time frame, however they showed more difficulties in monitoring inappropriate play during very long intervals. Each of the three children were able to self-monitor accurately 90% of the time, 84% of the time, and 85% of the time, respectively. For all three, self-management interventions were effective in increasing appropriate play and decreasing inappropriate behaviors. At one month follow-up, 2 of the 3 children maintained high levels of appropriate behaviors on their own. The third child was able to return to higher functioning after a brief booster session.</p>

Empirical Studies of Treatment for Children and Adolescents with Autism

Citation	Study Setting	Type of Study	Treatment Model	Pertinent Findings
<p>5) Lovaas O., Koegel R., Simmons J., Long J., (1973). Some generalization and follow-up measures on autistic children in behavior therapy. <i>Journal of Applied Behavior Analysis</i>. (1) 131-166.</p>	<p>UCLA Autism Project</p>	<p>Empirical study of autistic children treated with behavior therapy. (n=20) Study utilized pretest/posttest design. Average age in the study was 5 yrs old.</p>	<p>Behavior therapy model utilizing normalizing reinforcing stimuli within each subject's environment to increase desirable behaviors. Four treatment groups were set up- groups 1 and 2 were inpatients and received treatment 8 hrs a day 6-7 days per week. The parents of children in group 2 were trained to carry out treatment. With groups 3 and 4, treatment was initiated inpatient and the children were then transitioned to outpatient where parents were trained for 2-3 hrs per week by investigators to continue the treatment in the home.</p>	<p>Inappropriate behaviors such as self-stimulation and echolalia were reduced while appropriate behaviors were increased. Spontaneous social interactions and spontaneous use of language occurred within eight months. IQs and social quotients reflected improvement during treatment. All children improved, however some improved more than others. Follow-up measures showed that those children whose parents were trained to carry out the behavior therapy continued to improve while those who were institutionalized did not. Brief reinstatement of behavior therapy temporarily reinstated original tx gains for institutionalized.</p>
<p>6) Smith T., Groen A., Wynn J., (2000). Randomized Trial of Intensive Early Intervention for Children with Pervasive developmental Disorder. <i>American Journal on Mental Retardation</i> (105) 269-285.</p>	<p>UCLA-Autism Project</p>	<p>Study which used randomization to compare groups of autistic children or pervasive developmental disorder who received intensive treatment vs. parent training. (n=28) Age of Children- 18-42 months.</p>	<p>Intensive treatment group received an average of 24 hours per week of individual treatment for one year, gradually reducing hours over the next 1 to 2 years. Treatment was conducted by a team of 4 to 6 student therapists supervised by the primary investigators. The client's parents attended 5 hours per week of treatment for the first 3 months of the investigation. Parent training group received 5 hours per week of training for 3 to 9 months in the home. Trained parents worked with their child to implement the prescribed treatment for 5 hours per week. In addition, each child was enrolled in special education classes through the school system for 10-15 hours per week.</p>	<p>Investigators used the same treatment manual previously used in a study by Lovaas and colleagues, however outcomes were not as favorable. At intake, the intensive treatment group and parent training group did not differ in any statistically significant way. The children were also compared based on diagnosis, and at intake and follow up, there was no statistically significant difference between children diagnosed with autism and children diagnosed with pervasive developmental disorder in each of the treatment groups. However at follow-up, it did appear that children with pervasive development obtained slightly higher scores than their peers with autism on measures including IQ. Children treated in the intensive treatment group outperformed children in parent training group at follow-up on measures of intelligence, language, visual spatial ability, academic achievement and school placement. Within the intensive treatment group, 2 of the 15 children achieved "best outcomes" meaning placement in a regular classroom and IQ scores above 85. Two other children in this group met placement criterion, but slightly missed the IQ cutoff. These 4 children performed in the average range on most outcome measures. Data does not reflect children who were phased out that were not progressing.</p>

Non-Empirical Resources for Treatment of Children and Adolescents with Autism

Citation	Description of Approach	Implementation/ Intervention	Outcomes
<p>7) Horner, R. H. (2000) <u>Positive Behavior Supports. Focus on Autism and Other Developmental Disabilities</u> 15, 2; 97(15). and</p> <p>Albin R., Lucyshyn J., Homer R., & Flannery K., (1996). <u>Conextual fit for behavioral support plans: A model for "goodness of fit."</u> In L.K. Koegal, R. Koegel & G. Dunlap (Eds.), <u>Positive behavioral support: Including people with difficult behavior in the community</u> (pp 81-98). Baltimore Books.</p>	<p>Positive behavioral support- developed out of the applied behavioral analysis approach, but focuses more on "improving overall quality of life for individuals with disabilities and their families" rather than focusing on reducing negative behaviors.</p>	<p>Focuses on "fixing environments, not people" . Treatment investigates the individual, family and system variables which impact behaviors. Treatment consists of developing "comprehensive support interventions" and overcoming obstacles to higher functioning. Four themes are prevalent in positive behavioral support:</p> <ol style="list-style-type: none"> 1) Functional assessment is vital in understanding the "patterns of problem behavior". 2) "Behavior support should reduce problem behaviors and affect how a person lives." 3) "Behavior support should be comprehensive in structure and scope" <p>"The unit of behavioral intervention must be expanded if we are to build our schools' and communities' capacity to deliver behavior support efficiently."</p> <p>Positive Behavioral Support is guided by 5 "features":</p> <ol style="list-style-type: none"> 1. The interventions must address all of the problem behaviors which set up obstacles for the child in areas of physical safety, socialization, and education. 2. Interventions must be consistent through the child's entire day and environment. 3. Functional assessment will determine the comprehensive interventions. Re-assessment is ongoing and vital in meeting the child at their current level of functioning. 4. Positive behavioral support utilizes numerous strategies of intervention. Interventions may transform over time to include new, innovative interventions which address the child's current needs. 5. Interventions must be appropriate and "fit the context" so they are realistic and match the skills and support abilities of that environment. <p>Finally, positive behavioral support focuses on larger systemic changes which must occur for all individuals within the environment to be supported.</p>	<p>No empirical evidence of efficacy, however reported individual outcomes are encouraging.</p>

Non-Empirical Resources for Treatment of Children and Adolescents with Autism

Citation	Description of Approach	Implementation/ Intervention	Outcomes
<p>8) Mostert, M.P. (2001). Facilitated Communication Since 1995: A review of published studies. <u>Journal of Autism and Developmental Disorders</u> 31, 3; 287-313.</p>	<p>Facilitated Communication- holds the belief that individuals with autism simply have difficulties, due to a motor deficit, with self-expression, not a cognitive impairment. It is also believed that individuals with autism were able to understand and use language.</p>	<p>Involves the utilization of a mechanical device with assistance from another individual to communicate. Often the device is a standard typewriter, computer, or modified versions of these and other machines. The assistant facilitates the communication by holding the autistic individual's hand or arm, guiding them over the machine. This approach is criticized as it is not clear that the communication are valid and directly from the individual with autism. It is postulated that responses are impacted or produced by the assistant through the subject.</p>	<p>After reviewing 29 published studies examining the effectiveness of facilitated communication, this study supports previous reviews which finds "little to no support for the efficacy" of facilitated communication.</p>
<p>9) Cambell, M., Schopler E., Cueva J., & Hallin A., (1996) Treatment of autistic disorder. <u>Journal of the American Academy of Child and Adolescent Psychiatry</u> (35) 134-144.</p>	<p>Treatment and Education of Autistic and Related Handicapped Children (TEACCH)- based on behavioral, development and ecological perspectives and has over 30 years empirical data documenting its efficacy. Involves parent-professional collaboration in order to develop supports which facilitate independence and sustain individual throughout their life.</p>	<p>Highly individualized treatment which uses parents as therapists, floor time, occupational and physical therapy to adequately structure the child's environment. Consistency and collaboration between environments (school, home, community, therapeutic setting) is required. Services are life-long and may include assessment/diagnosis, treatment- social work, education, speech pathology and therapy, consultation, community collaboration, supported employment and living, and family services. 5 Key TEACCH principles include: 1) use of strengths to build bridge between two cultures, 2) ongoing assessment, 3) environmental structure, 4) seeing non-compliance as need to help individual understand expectations, 5) parents key members of treatment team.</p>	<p>More empirically based research has been suggested to clearly document the effectiveness of the TEACCH intervention. Small-scale studies have demonstrated efficacy, however large, randomized, controlled studies should be conducted.</p>
<p>10) Whiteford Erba, H. (2000). Early Intervention Programs for Children With Autism: Conceptual Frameworks for Implementation. <u>American Journal of Orthopsychiatry</u> (70), 82-95.</p>	<p>Floor time- also known as the "Greenspan" model or DIR (developmental individual-difference, relationship-based). Follows the developmental model to target focus on social interactions and emotional development.</p>	<p>Uses play and other interactive methods to address emotional development which leads to improvements in cognitive function. Structured in 20 minute segments and utilizes parents as therapists.</p>	<p>No empirical evidence of efficacy has been established.</p>

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<p>11) Smith T., (2001). Discrete Trial Training in the Treatment of Autism. <u>Focus on Autism and Other Developmental Disabilities</u> (16) 86-106.</p>	<p>Discrete Trial Training (DTT)- part of the Applied Behavior Analysis approach and seeks to “simplify instruction to enhance children’s learning”. Three aspects of DTT foster learning: 1) the trials are short, so there are many opportunities for learning 2) Instruction is one on one, so it can be individualized 3) It is brief, simple and clear which sets up the child to succeed.</p>	<p>Utilizes a brief unit of instruction (5-20 seconds) on a one to one basis by therapist or teacher in a “distraction-free setting”. The trial consists of five steps:</p> <ol style="list-style-type: none"> 1) Cue (or the discriminative stimulus)- the therapist states a clear instruction such as “Do this”. 2) Prompt- while stating the cue, the therapist helps the client in engaging in the correct behavior- this is faded out as child learns correct response on their own. 3) Response- the child performs behavior responding to the cue. 4) Consequence- For correct response, therapist praises child (using hugs, verbal praise, food, toys etc.) For incorrect response, the therapist says “No”, withdraws attention, removes toys etc. 5) Inter-trial interval- the therapist pauses for a brief period of time before giving next cue (1-5 seconds). 	<p>There has been a great deal of research around selecting cues, prompts and reinforcements, however no empirical evidence of efficacy when DTT is used exclusively.</p>
<p>12) Rimland B., & Edelson S. (1995). Brief Report: A Pilot Study of Auditory Integration Training in Autism. <u>Journal of Autism and Developmental Disorders</u> (25) 61-70.</p>	<p>Auditory Integration Training- based on the notion that approximately 40% of individuals with autism are hypersensitive to certain sounds. It is believed that individuals with autism who display certain negative, maladaptive behaviors are actually responding to over stimulating sounds.</p>	<p>Process begins by determining which frequencies the individual is hypersensitive to through the use of an audiogram. The client then listens to 10 hours of modulated music in which those frequencies to which a client is hypersensitive are filtered out. The modulated music is then mixed with brief periods of music in which the highest and lowest frequencies are dampened. During the 10-day training period, the client listens to 30 minutes of modulated music twice a day. It is reported that this auditory training is linked with a decrease in negative or self-stimulating behaviors and an increase in positive, adaptive behaviors and cognitive functioning.</p>	<p>Only small-scale investigations have been conducted (n=18).</p>
<p>13) Lord C.,(1995) Facilitating social inclusion. In: <u>Learning and Cognition in Autism</u>, Schopler E, Van Bourgondien ME, Bristol MM, eds. New York: Plenum Press, pp 199-219.</p>	<p>Social Skills Training- utilizes behavioral, developmental and/or ecological approach to teach social skills in children who have significant “social-cognitive” deficits.</p>	<p>Based on several assumptions:</p> <ol style="list-style-type: none"> 1) Social skills can be trained in a controlled setting and generalized to more realistic settings. 2) Skills needed to attain developmental levels can be distinguished and taught. 3) There is a link between social skills and social acceptance. 4) Children who show a lack of social skills simply do not know the appropriate behaviors to engage in. 	<p>No empirical evidence of efficacy.</p>