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Is Applied Behavior Analysis (ABA) and Early Intensive Behavioral Intervention (EIBI) an Effective Treatment for Autism?

A Cumulative Review of Impartial Reports

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Applied Behavior Analysis (ABA) and Early Intensive Behavioral Intervention (EIBI) for Autism are quite possibly the best examples of evidence-based behavioral health care. Impartial independent review panels consistently agree that ABA and EIBI treatments for autism are effective, and that the extensive body of research meets high standards of scientific evidence. These reviews also report that ABA and EIBI significantly improves the net health outcome in Autism in substantial and far-ranging ways.

What is striking about the independent reviews of EIBI and ABA for autism is that the more careful the scrutiny, the more emphatic are the conclusions. For example, the New York, the Maine, and the US AHRQ commissions embarked upon yearlong independent reviews of the scientific support of *ALL* possible interventions for autism. Each panel stringently applied scientific standards of proof to all interventions and found that *ABA-based therapies alone, of all possible treatments for children with autism, had been proven effective.*

As a result, the practice of ABA and EIBI have become part of the mainstream community standard of care. The conclusions from many years of independent review are quoted below.

In 1998, Division 53 of the **American Psychological Association** (the Society for Clinical Child and Adolescent Psychology) conducted a Task Force on Empirically Supported Child Psychotherapy. For autism, they found:

“The literature on effective focal treatments in autism is plentiful and published in a variety of journals, in the fields of developmental disabilities, applied behavior analysis, and discipline-specific journals. These studies generally consist of single-subject multiple-baseline designs or small sample treatment designs. Behavioral treatment approaches are particularly well represented in this body of literature and have been amply demonstrated to be effective in reducing symptom frequency and severity as well as in increasing the development of adaptive skills.” (p. 168).

Rogers, S.J. (1998) Empirically supported comprehensive treatments for young children with autism. *Journal of Clinical Child Psychology*, 27, 168-179.

In 1999, the **US Surgeon General** issued a lengthy report on the Mental Health in America. In the section on autism, he concluded:

“A well-designed study of a psychosocial intervention was carried out by Lovaas and colleagues. Nineteen children with autism were treated intensively with behavior therapy for 2 years and compared with two control groups. Followup of the experimental group in first grade, in late

childhood, and in adolescence found that nearly half the experimental group but almost none of the children in the matched control group were able to participate in regular schooling. Up to this point, a number of other research groups have provided at least a partial replication of the Lovaas model” (p. 164).

“Thirty years of research demonstrated the efficacy of applied behavioral methods in reducing inappropriate behavior and in increasing communication, learning, and appropriate social behavior.” (p. 164)

Satcher, D. (1999). *Mental health: A report of the surgeon general*. U.S. Public Health Service. Bethesda, MD.

In 1999, the **New York State Department of Health** convened a panel of nationally regarded experts and consumers who were charged with evaluating the scientific evidence in support of all available treatments for autism. This panel produced a large monograph that exhaustively reviewed the evidence in support of each treatment. While this panel found little support for most available treatments, their conclusion for ABA, after regarding the evidence of efficacy is:

“It is recommended that principles of applied behavior analysis (ABA) and behavior intervention strategies be included as important elements in any intervention program for young children with autism.”

In contrast, their conclusions about a common treatment for autism, sensory integration therapy, is characteristic of their conclusions about all other treatments, to wit:

“No adequate evidence has been found that supports the effectiveness of sensory integration therapy for treating autism. Therefore, sensory integration therapy is not recommended as a primary intervention for young children with autism.”

The New York Department of Health also concluded:

“[Based upon strong scientific evidence] it is recommended that principles of applied behavior analysis and behavior intervention strategies be included as an important element of any intervention program for young children with autism... [Based upon strong scientific evidence] it is recommended that intensive behavioral programs include as a *minimum* approximately 20 hours per week of individualized behavioral intervention using applied behavioral analysis techniques (not including time spent by parents)... It is recommended that all professional and paraprofessionals who function as therapists...receive regular supervision from a qualified professional with specific expertise in applied behavioral approaches... [Based upon strong scientific evidence] it is recommended that training of parents in behavioral methods for interacting with their child be extensive and ongoing and include regular consultation with a qualified professional...” (pp. 138-140).

New York State Department of Health Early Intervention Program. (1999). *Clinical Practice Guideline Report of the Recommendations for Autism/Pervasive Developmental Disorders*. New York State Department of Health, Albany, NY.

Also in 1999, a Practice Parameters Consensus Panel of the following Professional Organizations and Agencies: **American Academy of Neurology, American Academy of Family Physicians, American Academy of Pediatrics, American Psychological Association, Society for Developmental and Behavioral Pediatrics, and the National Institute of Child Health & Human Development** found:

“The press for early identification comes from evidence gathered over the past 10 years that intensive early intervention in optimal educational settings results in improved outcomes in most young children with autism, including speech in 75% or more and significant increases in rates of developmental progress and intellectual performance... However, these kinds of outcomes have been documented only for children who receive 2 years or more of intensive intervention services during the preschool years... Autism must be recognized as a medical disorder, and managed care policy must cease to deny appropriate medical or other therapeutic care under the rubric of “developmental delay” or “mental health condition...”

Filipek, P.A. et al. (1999). The screening and diagnosis of autistic spectrum disorders. *Journal of Autism and Developmental Disorders*. 29, 439-484.

A practice parameters panel of the **American Academy of Child and Adolescent Psychiatry** found:

“At the present time the best available evidence suggests the importance of appropriate and intensive educational interventions to foster acquisition of basic social, communicative, and cognitive skills related to ultimate outcome... Early and sustained intervention appears to be particularly important, regardless of the philosophy of the program, so long as a high degree of structure is provided. Such programs have typically incorporated behavior modification procedures and applied behavior analysis... It is clear that behavioral interventions can significantly facilitate acquisition of language, social, and other skills and that behavioral improvement is helpful in reducing levels of parental stress.”

Volkmar, F., Cook, E.H., Pomeroy, J., Realmuto, G. & Tanguay, P. (1999). Practice parameters for the assessment and treatment of children, adolescents, and adults with autism and other pervasive developmental disorders. *Journal of the American Academy of Child and Adolescent Psychiatry*, 38 (Supplement), 32S-54S.

In another yearlong, exhaustive review, the **Maine Administrators of Services** for Children with Disabilities found:

“Early interventionists should leverage early autism diagnosis with the proven efficacy of intensive ABA for optimal outcome and long-term cost benefit... The importance of early, intensive intervention for children with autism cannot be overstated... Furthermore, early, intensive, effective intervention offers the hope of significant cost/benefit.”

“Over 30 years of rigorous research and peer review of applied behavior analysis’ effectiveness for individuals with autism demonstrate ABA has been objectively substantiated as effective based upon the scope and quality of science.” (p. 29).

Maine Administrators of Services for Children with Disabilities (2000). *Report of the MADSEC Autism Task Force*. MADSEC, Manchester, ME.

In 2001 the **American Academy of Pediatrics** issued a Policy Statement which said:

“There is a growing body of evidence that intensive early intervention services for children in whom autism is diagnosed before 5 years of age may lead to better overall outcomes... Behavioral training, including teaching appropriate communication behaviors, has been shown to be effective in decreasing behavior problems and improving adaptation.” (pp. 8-10).

American Academy of Pediatrics (2001). Policy Statement: The Pediatrician’s Role in the Diagnosis and Management of Autistic Spectrum Disorder in Children (RE060018) *Pediatrics*, 107, 1221-1226.

“Currently accepted strategies are to improve the overall functional status of the child by enrolling the child in an appropriate and intensive early intervention program that promotes development of communication, social, adaptive, behavioral, and academic skills; decrease maladaptive and repetitive behaviors through use of behavioral and sometimes pharmacologic strategies... Early diagnosis resulting in early, appropriate, and consistent intervention has also been shown to be associated with improved long-term outcomes... Behavioral training, including communication development, has been shown to be effective in reducing problem behaviors and improving adaptation... Behavioral training, including teaching appropriate communication behaviors, has been shown to be effective in decreasing behavior problems and improving adaptation.”

Committee on Children With Disabilities (2001). Technical Report: The Pediatrician’s Role in the Diagnosis and Management of Autistic Spectrum Disorder in Children. *Pediatrics*, 107, e85.

The **National Research Council** convened a panel of perhaps the most well recognized national experts in the treatment of autism. This panel was also charged with integrating the scientific literature and creating a framework for evaluating the scientific evidence concerning the effects and distinguishing features of the various treatments for autism. They also produced an entire monograph of analysis of the available evidence and concluded, regarding the ABA programs, which they identified as the “well-known model approaches to early autism intervention:”

“There is general agreement across comprehensive intervention programs about a number of features of effective programs... The consensus across programs is generally strong concerning the need for: early entry into an intervention program... Overall, effective

programs are more similar than different in terms of levels of organization, staffing, ongoing monitoring, and the use of certain techniques, such as discrete trials, incidental learning, and structured teaching periods... there is substantial research supporting the effectiveness of many specific therapeutic techniques and of comprehensive programs in contrast to less intense, nonspecific interventions.”

“There is now a large body of empirical support for more contemporary behavioral approaches using naturalistic teaching methods that demonstrate efficacy for teaching not only speech and language, but also communication... Some advantages of the behavioral research on teaching social skills have been the measurement of generalization and maintenance, attention to antecedents and consequences, and use of systematic strategies to teach complex skills by breaking them down into smaller, teachable parts.” (p. 53).

“Outcomes of discrete trial approaches have included improvements in IQ scores, which are correlated with language skills, and improvements in communication domains of broader measures... Behavioral interventions use the powerful tools of operant learning to treat symptoms of autism spectrum disorders.

“A state fund for intensive intervention, or more systematic use of Medicaid waivers or other patterns of funding currently in place in some states, should be considered.” (p. 224).

National Research Council (2001). *Educating Children with Autism, Committee on Educational Interventions for Children with Autism*, Division of Behavioral and Social Sciences and Education, Washington, D.C.: National Academy Press.

A review by **Mayo Clinic and Harvard** pediatricians found:

“The weight of currently available scientific evidence, however, indicates that ABA should be viewed as the optimal, comprehensive treatment approach in young children with ASD.”

Barbarese, W.J., Katusic, S.K., & Voigt, R.G. (2006). Autism: A review of the state of the science for pediatric primary health care clinicians. *Archives of Pediatric and Adolescent Medicine*, 160. 1167-1175.

The Department of Health Policy, Management and Evaluation of the **University of Toronto**, ON found:

“Under our model parameters, expansion of IBI to all eligible children represents a cost-saving policy whereby total costs of care for autistic individuals are lower and gains in dependency-free life years are higher.” (page 136).

Motiwala, S.S., Gupta, S., Lilly, M.D., Ungar, W.J., & Coyte, P.C. (2006). The cost-effectiveness of expanding intensive behavioural intervention to all autistic children in Ontario. *Healthcare Policy*, 1, 135-151.

The **Hawaii Department of Health** Empirical Basis to Services Task Force found:

“These results are quite promising in terms of effect size, although it should be noted that the outcome variables for these studies mainly involved reductions in the frequency of autistic behaviors or increases in social communication or other forms of social exchange (e.g., turn taking). None of these studies claimed that children were autism free following the intervention programs. Nevertheless, these findings represent an extraordinary improvement over the evidence base for interventions for autistic spectrum disorders in the previous Biennial Report.”

“Two treatment families demonstrated Best Support. Intensive Behavioral Treatment was successful in three (3) studies, beating alternative treatments in two (2) of those, and beating a no-treatment control in one (1). Likewise, Intensive Communication Training was also successful in three (3) studies, beating alternative treatments in two (2) of those, and beating a no-treatment control in one (1) study. ...The shape of the profile suggests that all successful treatments for autistic spectrum disorders involve teaching communication skills and modeling of appropriate communication or other behaviors. Other strategies include training in non-verbal communication (social skills), teaching parents and teachers to praise desired behaviors, and the setting of goals paired with the intensive rehearsal and reinforcement of behaviors consistent with those goals (i.e., discrete trial training).” (pp. 16-19).

Chorpita, B.F. & Daleiden, E.L. (2007). 2007 Biennial report: Effective psychosocial interventions for youth with behavioral and emotional needs. Child and Adolescent Mental Health Division, Honolulu: Hawaii Department of Health.

The **California Blue Ribbon Commission** on Autism found:

“Early identification and intervention for ASD is critical for children to reach their full potential and reduce their level of disability and dependence. Although the outcomes of interventions and treatment for ASD vary with each child, there is widespread agreement in the field based on a large body of research that it is important for children with ASD to receive intensive interventions during early childhood. (page 26)”

“Children with ASD who have improved functioning as a result of early intervention services may have less intensive and costly service needs for the rest of their lives, thereby reducing hardships on families and costs for systems of care to serve these individuals during adulthood. For this reason, investments in early identification and intervention services are considered an important, cost-effective approach for society. (page 27)”

“Health plans may deny services for ASD for reasons related to medical necessity that are at odds with medical science. For example, some plans have denied ASD interventions on the basis that ASD is a disorder of brain development that is present from birth and therefore not amenable to medical treatments or interventions. This ruling by some health plans seems to contradict the numerous and mounting scientific evidence that ASD may be associated with multiple factors, usually become evident in the second or third year of life, are frequently associated with demonstrable changes in brain function, and appear to be caused by the interactions of genetic and environmental factors. (page 33)”

“Another reason for denial of services by some health plans is that ASD is a chronic disorder and therefore not amenable to acute treatments or cure. Such reasoning seems at odds with the coverage that health plans routinely provide for numerous other chronic illnesses (such as diabetes and congestive heart failure) that are also frequently incurable. Thus, the frequent denial of these services for ASD by some health plans may be inconsistent both with current scientific evidence as well as with the standards and approaches applied to other illnesses and medical conditions. (page 34)”

The report specifically addresses the value of ABA:

“Behavioral interventions that include pivotal response therapy, applied behavioral analysis, and directed response interventions have also proven therapeutic value in the treatment of ASD. (page 34)”

“There is also compelling evidence that many children with ASD can respond to and improve with intensive behavior modification therapy. Although the exact mechanism of action is the subject of ongoing research, there is evidence of improved brain plasticity in children with autism as the result of early interventional therapy. (page 39)”

“Often this therapy is provided in the home environment and may require multiple professionals working simultaneously with the child and the family for up to 40 or more hours per week. The duration of these services varies widely, but most children with ASD will require early intensive behavior intervention for a minimum of several years as well as ongoing interventions and supports throughout their lifetimes. In addition, parent education is recommended so that intervention may be ongoing throughout the child’s waking hours. (pages 39-40)”

The California Legislative Blue Ribbon Commission on Autism (2007). *Report: An Opportunity to Achieve Real Change for Californians with Autism Spectrum Disorders*. Sacramento, CA: The Legislative Office Building ([HTTP://senweb03.sen.ca.gov/autism](http://senweb03.sen.ca.gov/autism)).

In a second review the **American Academy of Pediatrics** again found:

“The effectiveness of ABA-based intervention in ASDs has been well documented through 5 decades of research by using single-subject methodology and in controlled studies of comprehensive early intensive behavioral intervention programs in university and community settings. Children who receive early intensive behavioral treatment have been shown to make substantial, sustained gains in IQ, language, academic performance, and adaptive behavior as well as some measures of social behavior, and their outcomes have been significantly better than those of children in control groups.” (p. 1164).

Myers, S.M., Johnson, C.P. & the American Academy of Pediatrics Council on Children With Disabilities, (2007). Management of children with autism spectrum disorders. *Pediatrics*.

120, 1162–1182. doi:10.1542/peds.2007-2362. PMID 17967921. Available online at <http://aappolicy.aappublications.org/cgi/reprint/pediatrics;120/5/1162.pdf>. Accessed November 27, 2007.

In a second review, the Division 53 of the **American Psychological Association** Task Force on Empirically Supported Child Psychotherapy again found:

“Randomized controlled trials have demonstrated positive effects in both short-term and longer term studies. The evidence suggests that early intervention programs are indeed beneficial for children with autism, often improving developmental functioning and decreasing maladaptive behaviors and symptom severity at the level of group analysis... Lovaas’s treatment meet Chambless and colleague’s criteria for ‘well-established’” (p. 8).

“Across all the studies we cited, improvements in language, communication, and IQ, and reduction in severity of autism symptoms indicate that the core symptoms of autism appear malleable in early childhood.” (p. 30).

Report for Division 53 of the American Psychological Association (the Society for Clinical Child and Adolescent Psychology): Rogers, S.J., & Vismara, L.A. (2008). Evidence-based comprehensive treatments for early autism. *Journal of Clinical Child and Adolescent Psychology*. 37, 8-38.

While the common finding is that one third to one half of the children dramatically outperform controls, there is also evidence that a subset even reach typical levels of functioning. These results are important to note, because the results of these studies are not that the children are scoring barely higher than the controls. Instead, the results are clinically significant in that a substantial number of the children are reaching socially important levels of functioning. For example in a review of children referred to a number of **leading comprehensive medical evaluation clinics throughout the Northeastern US**, a review by pediatricians and psychologists compared a group of such “optimal outcome” (OO) children with a group of typical children, and with a group of “high functioning autism” (HFA) children, at least three years after treatment had concluded. They found:

“The pattern of test results was consistent across all measures: On all measures, the typically-developing children had the highest average scores, followed by the optimal-outcome group, and the HFA group showed the lowest level of functioning on all tasks. Additionally, the optimal outcome group, as a whole, scored within the normal range on all tasks and only the high-functioning ASD group scored in the impaired range on some of the standardized tests. The OO group also scored lower than the typically developing group (but well within the average range) on parent ratings of attention problems, atypical behavior, and depression. On the numerous other tasks that we used to assess these groups, the children in the optimal-outcome group were statistically indistinguishable from their typically developing peers. In sum, we appear to have found a group that, with the possible exception of some very subtle pragmatic deficits, is currently functioning at the same level as their typically developing peers, and we are continuing to follow this group.”

Helt, M., Kelley, E., Kinsbourne, M., Pandey, J., Boorstein, H., Herbert, M., & Fein, D. (2008). Can children with autism recover? If so, how? *Neuropsychology Review*. 18, 339-366.

The **NIMH (National Institute of Mental Health)** states:

“Among the many methods available for treatment and education of people with autism, applied behavior analysis (ABA) has become widely accepted as an effective treatment. ...The basic research done by Ivar Lovaas and his colleagues at the University of California, Los Angeles, calling for an intensive, one-on-one child-teacher interaction for 40 hours a week, laid a foundation for other educators and researchers in the search for further effective early interventions to help those with ASD attain their potential.”

National Institute of Mental Health (2008). Autism Spectrum Disorders: Pervasive Developmental Disorders. NIH Publication no. 08-5511.

A review by US and British pediatricians in **the Lancet** found:

“The most well researched treatment programmes are based on principles of applied behaviour analysis. Treatments based on such principles represent a wide range of early intervention strategies for children with autism—from highly structured programmes run in one-on-one

settings to behaviourally based inclusion programmes that include children with typical development. The first types of behavioural treatment programmes developed and examined were very structured, intensive, one-on-one programmes called discrete trial training, which were highly effective for up to half of children enrolled in four randomised clinical trials and six studies with closely matched comparison groups done in the past 20 years.”

“These intensive programmes are expensive, and children have difficulty generalising the information from a very structured session to group and community settings. Less structured, more naturalistic behavioural programmes have been developed, such as pivotal response training and incidental teaching. In individual and nonrandomised group studies, researchers noted that about half of children have good outcomes in these types of programmes. Presently, even structured sessions typically include naturalistic methods for increasing generalisation and maintenance. A combination of these behavioural methods is more effective than is usual care for improvement of outcomes for children with autism. Parent-mediated interventions have been shown in controlled studies to be an important aspect of intervention. Investigators identified that generalisation and maintenance of behaviour changes were improved when parents were trained in highly structured behavioural methods. As behavioural programming for children with autism evolved from teaching one behaviour at a time to a broadened focus of increasing general motivation and responsiveness, parent education also began to change. Parents were taught naturalistic strategies that were easier to use in the home, needed fewer hours of training, increased both leisure and teaching time, and improved parent satisfaction and enjoyment of the treatment.”

Levy, S.E., Mandell, D.S., & Schultz, R.T. (2009). Autism. *Lancet*. 374, 1627-1638.

A subsequent review by the **Hawaii Department of Health** Empirical Basis to Services Task Force again found:

“The best support favored Intensive Behavioral Treatment and Intensive Communication Training, although the effect sizes were relatively small. Both of these treatment approaches were rated as highly trainable, tested among youths of various ethnic backgrounds, in various format types (e.g., individual and group) and settings (e.g., school, clinic, home, and community), as well as by different therapist types (e.g., prebachelor’s-level therapists, master’s-level therapists, and doctors). The duration of both Level 1 treatments was at least a year. Another promising characteristic of these two approaches is that they were both tested on boys as young as one and two years old.”

Chorpita, B.F. et al. (2011). Evidence-based treatments for children and adolescents: An updated review of indicators of efficacy and effectiveness. *Clinical Psychology Science and Practice*. 18, 154-172.

A review by the **US Agency for Health Care Research and Quality** found that ABA and EIBI had sufficient evidence to support a recommendation for practice:

“Evidence supports early intensive behavioral and developmental intervention, including the University of California, Los Angeles (UCLA)/Lovaas model and Early Start Denver Model (ESDM) for improving cognitive performance, language skills, and adaptive behavior in some groups of children. ...Evidence suggests that interventions focusing on providing parent training and cognitive behavioral therapy (CBT) for bolstering social skills and managing challenging behaviors may be useful for children with ASDs to improve social communication, language use, and potentially, symptom severity.”

But further, by comparison, the AHRQ also reviewed all alternative available treatments. They reached clearly negative conclusions about all other treatments that are currently widely covered by insurance policies:

“No current medical interventions demonstrate clear benefit for social or communication symptoms in ASDs. ...Little evidence is available to assess other behavioral interventions, allied health therapies, or complementary and alternative medicine. ...repetitive behavior showed improvement with both risperidone and aripiprazole. Both medications also cause significant side effects, however, including marked weight gain, sedation, and risk of extrapyramidal symptoms (side effects, including muscle stiffness or tremor, that occur in individuals taking antipsychotic

medications). These side effects limit use of these drugs to patients with severe impairment or risk of injury.”

Warren, Z., Veenstra-VanderWeele, J., Stone, W., Bruzek, J.L., Nahmias, A.S., Foss-Feig, J.H., Jerome, R.N., Krishnaswami, S., Sathe, N.A., Glasser, A.M., Surawicz, T., & McPheeters, M.L. (April, 2011). Therapies for Children With Autism Spectrum Disorders. Comparative Effectiveness Review No. 26. (Prepared by the Vanderbilt Evidence-based Practice Center under Contract No.290-2007-10065-I.) AHRQ Publication No. 11-EHC029-EF. Rockville, MD:Agency for Healthcare Research and Quality. Available at: www.effectivehealthcare.ahrq.gov/reports/final.cfm.

Autism Speaks states:

“Behavior analysis is a scientifically validated approach to understanding behavior and how it is affected by the environment. In this context, “behavior” refers to actions and skills.

“Environment” includes any influence – physical or social – that might change or be changed by one’s behavior. On a practical level, the principles and methods of behavior analysis have helped many different kinds of learners acquire many different skills – from healthier lifestyles to the mastery of a new language. Since the 1960s, therapists have been applying behavior analysis to help children with autism and related developmental disorders. ...Today, ABA is widely recognized as a safe and effective treatment for autism. It has been endorsed by a number of state and federal agencies, including the U.S. Surgeon General and the New York State Department of Health. Over the last decade, the nation has seen a particularly dramatic increase in the use of ABA to help persons with autism live happy and productive lives. In particular, ABA principles and techniques can foster basic skills such as looking, listening and imitating, as well as complex skills such as reading, conversing and understanding another person’s perspective.”

Autism Speaks (2012) Applied Behavior Analysis (ABA). Downloaded from

<http://www.autismspeaks.org/what-autism/treatment/applied-behavior-analysis-aba> on November 2, 2012.

The US CDC (Centers for Disease Control) states:

“A notable treatment approach for people with an ASD is called applied behavior analysis (ABA). ABA has become widely accepted among health care professionals and used in many schools and treatment clinics. ABA encourages positive behaviors and discourages negative behaviors in order to improve a variety of skills. The child’s progress is tracked and measured.”

Centers for Disease Control (2012) Autism Spectrum Disorders. Downloaded from

<http://www.cdc.gov/ncbddd/autism/treatment.html> on November 2, 2012.

Conclusion

These results aren’t occasional findings. As has been repeatedly stated in many peer-reviewed research reports and in many medical editorials and medical review panel recommendations, Applied Behavior Analysis, Behavior Therapy, and Early Intensive Behavioral Intervention treatments are the only substantiated treatment for children with autism. It is the widely held conclusion of ABA researchers, expert independent review committees, and the central consumer advocacy agencies in the field of autism that Applied Behavior Analysis consists of a large body of valid scientific evidence demonstrating that the technology improves the net health outcome as much as or more than established alternatives, and that these results have been readily attained outside the investigational settings.

Bibliography

- American Academy Of Pediatrics (2001). Policy Statement: The Pediatrician's Role in the Diagnosis and Management of Autistic Spectrum Disorder in Children (RE060018) *Pediatrics*, 107, 1221-1226. <http://www.aap.org/policy/re060018.html>
- American Psychological Association Division 53: Society of Clinical Child and Adolescent Psychology. Review of Evidence-Based Mental Health Treatment for Children and Adolescents, including Autism. http://effectivechildtherapy.com/sccap/?m=sPro&fa=pro_ESToptions#sec13 Accessed November 29, 2010
- Autism Society of America (1998) Intensive Behavioral Intervention. Informational handout downloaded from www.autism-society.org
- Autism Speaks (2012) Applied Behavior Analysis (ABA). Downloaded from <http://www.autismspeaks.org/what-autism/treatment/applied-behavior-analysis-aba> on November 2, 2012.
- Baker, B.L. & Feinfield, K.A. (2003). Early intervention. *Current opinion in psychiatry*. 16, 503-509.
- Barbaresi, W.J., Katusic, S.K., & Voigt, R.G. (2006). Autism: A review of the state of the science for pediatric primary health care clinicians. *Archives of Pediatric and Adolescent Medicine*, 160. 1167-1175.
- Bregman, J.D. & Gerdtz, J. (1997). Behavioral Interventions. In D.J. Cohen & F.R. Volkmar, (Eds.), *Handbook of Autism and Pervasive Developmental Disorders* (pp. 606-630). New York: Wiley.
- Bregman, J.D., Zager, D. & Gerdtz, J. (2005). Behavioral interventions. In F.R. Volkmar, R. Paul, A. Klin, & D. Cohen (eds.) *Handbook of Autism and Pervasive Developmental Disorders*. New York: John Wiley & Sons. 897-924.
- California Legislative Blue Ribbon Commission on Autism (2007). *Report: An Opportunity to Achieve Real Change for Californians with Autism Spectrum Disorders*. Sacramento, CA: The Legislative Office Building. Available online at: <http://senweb03.sen.ca.gov/autism>
- Centers for Disease Control (2012) Autism Spectrum Disorders. Downloaded from <http://www.cdc.gov/ncbddd/autism/treatment.html> on November 2, 2012.
- Chorpita, B.F. & Daleiden, E.L. (2007). *2007 Biennial report: Effective psychosocial interventions for youth with behavioral and emotional needs*. Child and Adolescent Mental Health Division, Honolulu: Hawaii Department of Health.
- Chorpita, B.F. & Daleiden, E.L. (2009). *2009 Biennial Report: Effective psychosocial interventions for youth with behavioral and emotional needs*. Child and Adolescent Mental Health Division, Honolulu: Hawaii Department of Health. Available online at: <http://hawaii.gov/health/mental-health/camhd/library/pdf/ebs/ebs013.pdf>
- Chorpita, B.F. et al. (2011). Evidence-based treatments for children and adolescents: An updated review of indicators of efficacy and effectiveness. *Clinical Psychology Science and Practice*. 18, 154-172.
- Cohen, H., Amerine-Dickens, M., & Smith, T., (2006). Early Intensive Behavioral Treatment: Replication of the UCLA model in a community setting. *Developmental and Behavioral Pediatrics*, 27, S145-S155.
- Committee on Children With Disabilities (2001). Technical Report: The Pediatrician's Role in the Diagnosis and Management of Autistic Spectrum Disorder in Children. *Pediatrics*, 107, e85. <http://www.pediatrics.org/cgi/content/full/107/5/e85>
- Dawson, G. (2008). Early behavioral intervention, brain plasticity, and the prevention of autism spectrum disorder. *Development and Psychopathology*. 20, 775-803. doi:10.1017/S0954579408000370.

- Dawson, G. & Burner, K. (2011). Behavioral interventions in children and adolescents with autism spectrum disorder: A review of recent findings. *Current Opinion in Pediatrics*, 23, 616-620 doi:10.1097/MOP.0b013e32834cfo82
- Eikeseth, S., Smith, T., Jahr, E., & Eldevik, S. (2007) Outcome for children with autism who began intensive behavioral treatment between ages 4 and 7: A comparison controlled study. *Behavior Modification*, 31, 264-278.
- Filipek, P.A. et al. (1999). The screening and diagnosis of autistic spectrum disorders. *Journal of Autism and Developmental Disorders*. 29, 439-484.
- Frazier, T.W., Youngstrom, E.A., Haycock, T., et al. (2010). Effectiveness of medication combined with intensive behavioral intervention for reducing aggression in youth with autism spectrum disorder. *Journal of Child and Adolescent Psychopharmacology*, 20, 167-177.
- Helt, M., Kelley, E., Kinsbourne, M., Pandey, J., Boorstein, H., Herbert, M., & Fein, D. (2008). Can children with autism recover? If so, how? *Neuropsychology Review*. 18, 339-366.
- Howard, J.S., Sparkman, C.R., Cohen, H.G., Green G., & Stanislaw H. (2005). A comparison of intensive behavior analytic and eclectic treatments for young children with autism. *Research in Developmental Disabilities*. 26, 359-383.
- Howlin, P., Magiati, I., & Charman, T., (2009). Systematic review of early intensive behavioral interventions for children with autism. *American Journal on Intellectual and Developmental Disabilities*. 114:23-41. doi:10.1352/2009.114:23;nd41. PMID 19143460.
- Johnson, E., & Hastings, R.P. (2002). Facilitating factors and barriers to the implementation of intensive home-based behavioural intervention for young children with autism. *Child Care Health and Development*. 28, 123-129.
- Koegel, R.L., Koegel, L.K., Vernon, T.W., & Brookman-Fraze, L.I. (2010). Empirically supported pivotal response treatment for children with autism spectrum disorders. In J.R. Weisz & A.E. Kazdin (Eds.), *Evidence-Based Psychotherapies for Children and Adolescents*. New York: Guilford. 327-344.
- Levy, S.E., Mandell, D.S., & Schultz, R.T. (2009). Autism. *Lancet*. 374, 1627-1638.
- Maine Administrators of Services for Children with Disabilities (2000). *Report of the MADSEC Autism Task Force, Revised Edition..* Kennebec Centre, RR 2 Box 1856, Manchester, ME 04351, <http://www.madsec.org/docs/atf.htm>
- Mudford, O.C., Martin, N.T., Eikeseth, S., & Bibby, P. (2001). Parent-managed behavioral treatment for preschool children with autism: Some characteristics of UK programs. *Research in Developmental Disabilities*, 22, 173-182.
- Myers, S.M., Johnson, C.P. & the American Academy of Pediatrics Council on Children With Disabilities, (2007). Management of children with autism spectrum disorders. *Pediatrics*. 120, 1162-1182. doi:10.1542/peds.2007-2362. PMID 17967921. Available online at <http://aappolicy.aappublications.org/cgi/reprint/pediatrics;120/5/1162.pdf>. Accessed November 27, 2007.
- National Institute of Mental Health (2008). Autism Spectrum Disorders: Pervasive Developmental Disorders. NIH Publication no. 08-5511.
- National Research Council (2001). *Educating Children with Autism*, Committee on Educational Interventions for Children with Autism, Division of Behavioral and Social Sciences and Education, Washington, D.C.: National Academy Press. <http://books.nap.edu/books/0309072697/html/index.html>
- New York State Department of Health Early Intervention Program (1999). *Clinical Practice Guideline: Report of the Recommendations, Autism/Pervasive Developmental Disorders, Assessment and Intervention for Young Children*. Publication #4215. Health Education Services, P.O. Box 7126, Albany, NY 12224. <http://www.health.state.ny.us/nysdoh/eip/menu.htm>

- Perry, A., Cummings, A., Geier, J. D., Freeman, N. L., Hughes, S., LaRose, L., Managhan, T., Reitzel, J.A., & Williams, J. (2008). Effectiveness of intensive behavioral intervention in a large, community-based program. *Research in Autism Spectrum Disorders*, 2, 621–642.
- Reichow, B. & Volkmar, F. (2010). Social skills interventions for individuals with autism: evaluation for evidence-based practices within a best evidence synthesis framework. *Journal of Autism and Developmental Disorders*, 40, 149–166.
- Reichow, B., Volkmar, F.R., & Cicchetti, D.V. (2008). Development of the evaluative method for evaluating and determining evidence-based practices in autism. *Journal of Autism and Developmental Disorders*. 38, 1311-1319.
- Rimland, B. (1994). Recovery from autism is possible. *Autism Research Review International*, 8, 3.
- Rogers, S.J. (1998). Empirically supported comprehensive treatments for young children with autism. *Journal of clinical child psychology*. 27. 167-178.
- Rogers, S.J., & Vismara, L.A. (2008). Evidence-based comprehensive treatments for early autism. *Journal of Clinical Child and Adolescent Psychology*. 37:8–38. doi:10.1080/15374410701817808. PMID 18444052.
- Sallows, G.O., & Graupner, T.D. (2005). Intensive behavioral treatment for children with autism: Four-year outcome and predictors. *American Journal on Mental Retardation*, 110, 417-438.
- Satcher, D. (1999). *Mental health: A report of the surgeon general*. U.S. Public Health Service. Bethesda, MD. Available at: <http://www.surgeongeneral.gov/library/mentalhealth/chapter3/sec6.html#autism>
- Simeonsson, R.J., Olley, J.G., & Rosenthal, S.L. (1987). Early intervention for children with autism. In M.J. Guralnick & F.C. Bennett (Eds.) *The effectiveness of early intervention for at-risk and handicapped children*. (pp. 275-296). Orlando FL: Academic Press.
- Smith, T. (2010). Early and intensive behavioral intervention in autism. In J.R. Weisz & A.E. Kazdin (Eds.), *Evidence-Based Psychotherapies for Children and Adolescents*. New York: Guilford. 312-326.
- Vismara, L.A. & Rogers, S.J. (2010). Behavioral treatments in autism spectrum disorder: What do we know? *Annual Review of Clinical Psychology* 6, 447-468.
- Volkmar, F., Cook, E.H., Pomeroy, J., Realmuto, G. & Tanguay, P. (1999). Practice parameters for the assessment and treatment of children, adolescents, and adults with autism and other pervasive developmental disorders. *Journal of the American Academy of Child and Adolescent Psychiatry*, 38 (Supplement), 32s-54s.
- Warren, Z., McPheeters, M.L., Sathe, N., Foss-Feig, J.H., Glasser, A., & Veenstra-VanderWeele, J. (2011). A systematic review of early intensive intervention for autism spectrum disorders. *Pediatrics*, 127, e1303-e1311. doi: 10.1542/peds.2011-0426
- Warren, Z., Veenstra-VanderWeele, J., Stone, W., Bruzek, J.L., Nahmias, A.S., Foss-Feig, J.H., Jerome, R.N., Krishnaswami, S., Sathe, N.A., Glasser, A.M., Surawicz, T., McPheeters, M.L. (2011). Therapies for children with autism spectrum disorders. *Comparative Effectiveness Review*, No. 26, Rockville, MD: Agency for Healthcare Research and Quality. Available at: www.effectivehealthcare.ahrq.gov/reports/final.cfm.
- Young, J., Corea, C., Kimani, J., & Mandell, D. (2010). *Autism spectrum disorders (ASDs) services: Final report on environmental scan*. Columbia, MD: IMPAQ International.