Report to the General Assembly

Scope of Practice Review Committee Report on
Behavior Analysts

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State of Connecticut

Department of Public Health

Report to the General Assembly

The Department of Public Health's Oversight Responsibilities relating to Scope of Practice Determinations for Health Care Professions: Behavior Analysts

Table of Contents

Executive Summary

In accordance with Connecticut General Statutes (CGS) Section 19a-16d through 19a-16f, the Behavior Analyst Leadership Council (BALC) submitted a scope of practice request to the Department of Public Health to request to establish a licensure program for behavior analysts in Connecticut. The group envisions a licensure program that encompasses the scope of practice and the education, training and examination requirements for behavior analysts.

A scope of practice review committee was established to review and evaluate the request as well as subsequent written responses to the request and additional information that was gathered through the review process. Journal articles and other literature reviewed and evaluated by the scope of practice review committee stressed the need for licensure for behavior analysis practitioners, primarily for the purpose of enhancing consumer protection for some of the state's most vulnerable populations, including but not limited to, individuals with intellectual disabilities, autism spectrum disorders, and traumatic brain injuries.

In reviewing and evaluating the information presented, the scope of practice committee focused on assessing any public health and safety risks associated with the request, whether the request may enhance access to quality and affordable health care and whether the request enhances the ability of the profession to practice to the full extent of the profession's education and training.

Although behavior analysts have been defined in CGS statute section 20-185i since 2011, they are not licensed. The behavior analysts' now request licensure. They view this as the highest form of regulatory oversight and important to protect consumers of behavior analysis services. They also feel it will contribute to efforts to establish third party reimbursement for the profession. No member of the review committee opposed licensure.

Currently, behavior analysis practitioners are credentialed in the form of an international certificate program administered through the Behavior Analyst Certification Board (www.BACB.com).

All members of the review committee agreed that any new regulatory oversight of behavior analysts must not prohibit any profession currently operating within their scope of practice, and providing some aspect of behavior analysis, from continuing to be able to provide that service.

Background

CGS Section 19a-16d through 19a-16f establishes a process concerning the Department of Public Health's oversight responsibilities relating to Scope of Practice Determinations for Health Care Professions. Under the provisions of these statutes, persons or entities acting on behalf of a health care profession that may be directly impacted by a scope of practice request may submit a written impact statement to the Department of Public Health. The Commissioner of Public Health shall, within available appropriations, establish and appoint members to a scope of practice review committee for each timely scope of practice request received by the Department. Committees shall consist of the following members:

1. Two members recommended by the requestor to represent the health care profession making the scope of practice request;

2. Two members recommended by each person or entity that has submitted a written impact statement, to represent the health care profession(s) directly impacted by the scope of practice request; and

3. The Commissioner of Public Health or the commissioner's designee, who shall serve as an ex-officio, non-voting member of the committee.

Scope of practice review committees shall review and evaluate the scope of practice request, subsequent written responses to the request and any other information the committee deems relevant to the scope of practice request. Such review and evaluation shall include, but not be limited to, an assessment of any public health and safety risks that may be associated with the request, whether the request may enhance access to quality and affordable health care and whether the request enhances the ability of the profession to practice to the full extent of the profession's education and training. Upon concluding its review and evaluation of the scope of practice request, the committee shall provide its findings to the joint standing committee of the General Assembly having cognizance of matters relating to public health. The Department of Public Health (DPH) is responsible for receiving requests and for establishing and providing support to the review committees, within available appropriations.

Scope of Practice Request

The Behavior Analyst Leadership Council (BALC) submitted a scope of practice request for licensure for behavior analysts. The behavior analysts believe there is a critical need for licensure of behavior analysis practitioners for the purpose of enhancing consumer protection for some of the state's most vulnerable populations.

The BALC notes that in addition to the Board Certified Behavior Analyst credential (BCBA), the Behavior Analyst Certification Board also credentials Board Certified Assistant Behavior Analysts (BCaBAs) and Registered Behavior Technicians (RBTs). They are not seeking licensure of either of these credentials because individuals who hold these designations must, by definition, work under the direct supervision of BCBAs.

Impact Statements and Responses to Impact Statements

Written impact statements in response to the scope of practice request submitted by the BALC were received from Connecticut Nurses' Association (CNA), Connecticut Association of School Psychologists (CASP), and the Connecticut Occupational Therapy Association (CONNOTA). None of the impact statements oppose licensure of behavior analysts in Connecticut; they believe oversight through licensure protects the public. All organizations raised concerns and expressed a need to have more knowledge of how the licensure of behavior analysts might infringe upon the scope of practice of other professions that might collaborate with behavior analysts and/or offer similar services.

The items in the impact statements were discussed at the initial and subsequent meeting of the Scope of Practice Review Committee and the representatives of the BALC provided responses.

The BALC believes that the proposed language protects other professionals who have aspects of behavior analysis within their scope of practice. Only those individuals who practice behavior analysis outside of their allowed scope of practice or without any professional credential would be prohibited from doing so by this licensure request.

Scope of Practice Review Committee Membership

In accordance with CGS Section 19a-16d through 19a-16f, a scope of practice review committee was established to review and evaluate the scope of practice request submitted by the BALC. Membership on the scope of practice review committee included:

1. Behavior Analyst Leadership Council;

2. Connecticut Occupational Therapy Association;
3. Connecticut Association of School Psychologists;
4. Connecticut Nurses' Association;
5. Connecticut Association for Behavior Analysts; and
6. The Commissioner's designee (chairperson and ex-officio, non-voting member).

Scope of Practice Review Committee Evaluation of Request

The Behavior Analyst Leadership Council scope of practice request included all of the required elements identified in CGS Section 19a-16d through 19a-16f as outlined below.

Public Health & Safety Benefits

The BALC identified that the public health and safety benefit of licensing behavior analyst is to increase consumer protections for individuals receiving behavior analytic services. Behavior analysts work with some of the youngest, most vulnerable, complex, and disabled populations in Connecticut. Licensure of behavior analysts would provide a more robust means for the State to conduct investigations into claims of professional misconduct or misrepresentation based upon an established scope of practice .Currently, behavior analysts have "title protection" or "statutory recognition" (CGS 20-185i). The only enforcement remedy available is a class D felony for misuse of the title. Licensure will offer consumers a regulatory process to investigate accusations of substandard care or misconduct and prosecute those who violate their scope of practice. These increased regulatory standards should also serve to protect the field, as all practitioners of behavior analysis would be subject to regulatory standards consistent with other established licensed professions.

Behavior analysts routinely work with vulnerable and often non-verbal children. However, they are not included on the Department of Children and Families' list of mandated reporters unless they are also direct school employees. While licensure of behavior analysts will not eliminate abuse of children with special needs, it can help reduce the likelihood of abuse by behavior analysts, and from a licensure perspective it would facilitate a means of investigating and prosecuting alleged abuses by a behavior analyst.

The BALC explains that behavior analysts work in public school programs as consultants throughout the state. As consultants rather than employees, behavior analysts are not mandated DCF reporters, receive no training on when and how to report suspected abuse or neglect to DCF, and do not have to undergo

a background check prior to working in school or home-based programs unless they work for a private program that has such a requirement.

The committee agreed that there are risks associated with not licensing the profession, as individuals may pose as a behavior analyst, but in reality have no training or skills to provide the services being advertised. Behavior analysts' licensure will provide better consumer protection. To support these concerns the BALC provided the example of an individual, who in 2008, claimed to be a BCBA and provided consultative services to Connecticut school districts and families privately. It was only after school districts and families had paid her hundreds of thousands of dollars, and some of the children experienced loss of skills and valuable intervention time, that it was discovered that this individual was not a BCBA. This individual was investigated by the Connecticut Attorney General's office and the Norwalk Police Department, was convicted, and sent to prison.

According to the BALC, behavior analysts are currently the only unlicensed practitioners allowed to provide services for the Connecticut Birth to Three System.

Access to Healthcare

The BALC asserts that behavior analyst licensure will improve access to behavior analytic treatment. Connecticut passed legislation that mandates insurance coverage for treatment for children with autism by BCBAs. However, the BALC reports that some insurance companies deny families this coverage because they contend that providers must have a state license to practice, not just be credentialed by the BACB. The BALC believes that licensure would improve access to behavior analysis services through self-funded plans and Medicaid for autism spectrum disorders, and other neurodevelopmental disorders. Licensure of behavior analysts may also facilitate access to behavior analytic services for individuals with other disabilities who are currently unable to do so because the existing legislative mandate is specific to individuals with a diagnosis of autism spectrum disorder. Behavior analyst representatives on the committee believe that licensing the profession will be the first step to removing public and private reimbursement barriers and may allow behavior analysts to provide services to a wider variety of clients.

Laws Governing the Profession

In CGS Section 20-185i (2), a Board Certified Behavior Analysts (BCBA) is defined as a person who has been certified as a behavior analyst by the Behavior Analyst Certification Board.

CGS section 20-185i(b) states that, " no person, unless certified by the Behavior Analyst Certification Board as a board certified behavior analyst or a board certified assistant behavior analyst, shall use in connection with his or her name or place of business: (1) The words "board certified behavior analyst", "certified behavior analyst", "board certified assistant behavior analyst" or "certified assistant behavior

analyst", (2) the letters, "BCBA" or "BCABA", or (3) any words, letters, abbreviations or insignia indicating or implying that he or she is a board certified behavior analyst or board certified assistant behavior analyst or in any way, orally, in writing, in print or by sign, directly or by implication, represent himself or herself as a board certified behavior analyst or board certified assistant behavior analyst. Any person who violates the provisions of this section shall be guilty of a class D felony. For the purposes of this section, each instance of contact or consultation with an individual which is in violation of any provision of this section shall constitute a separate offense."

However, their statutory definition does not include the same level of the state regulatory oversight or enforcement remedies available to DPH for other professions that are licensed.

Current Requirements for Education and Training and Applicable Certification Requirements

There is only one nationally recognized credential for behavior analysts, which is obtained through the Behavior Analyst Certification Board. This organization reviews course work requirements and supervised fieldwork experience, and then provides a professionally developed and psychometrically valid and reliable written exam for those applicants who have met all qualifications. This credentialing organization and evaluation process has been utilized in all other states that currently have behavior analyst licensure, and is also included in all other state licensure legislation currently under consideration in other states. The BACB's credentialing programs are accredited by the National Commission for Certifying Agencies (NCCA) in Washington, DC. The NCCA is the accreditation body of the Institute for Credentialing Excellence. BCBAs must meet the eligibility standards established by the Behavior Analyst Certification Board. (www.BACB.com).

Summary of Known Scope of Practice Changes

Although there is title protection for behavior analysts pursuant to CGS Section 20-185i, there is no scope of practice specifically defined in statute for those providing services. Scope of practice requests were submitted in 2014 and 2015 to DPH, but were not selected for review. According to the BALC, legislation on licensure was also pursued but did not come up for a vote during that period.

The BALC proposes the definition for behavior analysis include scope of practice language:

> "Behavior Analysis" means the design, implementation and evaluation of environmental modifications, using behavior stimuli and consequences, including the use of direct observation, measurement and functional analysis of the relationship between the environment and behavior, to produce socially significant improvement in human behavior, but does not include: (A) Psychological testing, (B) neuropsychology, (C) cognitive therapy, (D) sex therapy, (E)

psychoanalysis, (F) hypnotherapy, (G) cognitive behavioral therapy, (H) occupational therapy, (I) speech and language therapy, and (J) long term counseling as treatment modalities.

Impact on Existing Relationships within the Health Care Delivery System

According to the BALC, licensing behavior analysts would positively affect existing relationships within Connecticut's health care system. Currently, schools, families, hospitals, and others in need of services must spend time and funds conducting research to identify qualified individuals, because there is no clearly defined standard acknowledged by the state. Behavior analyst licensure would help to efficiently identify qualified individuals. The BALC asserts that licensure will enhance behavior analysts' collaborative relationship with other professions in the health care delivery system and not impede any activities of other professions.

The committee discussed concerns of other professions that have behavior analysis in their scope. The BALC believes that the proposed language protects other professionals who have behavior analysis within their scope of practice. Only those individuals who practice behavior analysis outside of their scope of practice or without any professional credential would be prohibited from doing so by this licensure proposal.

Economic Impact

Behavior analyst members of the committee explained that the cost of caring for a person with autism, Down syndrome, or TBI is extremely high. Even if a behavior analyst is only able to achieve a minimum improvement with an individual, the cost savings can add up. The BALC provided the example of a person in a DDS facility, who may not be able to use the bathroom on their own. This person would require 1 to 1 care/supervision while at that facility. If a behavior analyst is only able to achieve independence using the bathroom, this individual would no longer require the 1 to 1 care required to use the bathroom on their own. The BALC members offer that behavior analysts are able to help clients stay in the home and avoid more costly mental health levels of care such as hospitalization.

BALC references the State of Connecticut Department of Developmental Services Y15 Funding Guidelines and an article from *Behavior Intervention* – "Behavioral Intervention for Young Children with Autism-General Model and Single State Case" to support their position that the services provided by behavior analysts can ultimately save the state money (Appendix F, Appendix G).

According to the BALC, there are currently 510 to 610 BCBAs working in Connecticut with numbers projected to increase. BALC contends that state licensure will generate additional income to Connecticut in licensing fees.

Regional and National Trends

Twenty-five states have licensure in behavior analysis: Alabama, Alaska, Arizona, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Mississippi, Missouri, Nevada, New York, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Dakota, Tennessee, Utah, Virginia, West Virginia, Washington, and Wisconsin.

Seven others states have introduced licensure bills: California, Florida, Illinois, Michigan, Minnesota, North Carolina, and Texas; and three other states will soon be initiating new legislative actions in the coming year: Indiana, Iowa, and Nebraska.

Each of the twenty-five states with licensure laws, as well as the other states in the process of seeking licensure, specifically references the BACB credentials and/or the BACB standards. The BALC in their scope request includes the scope of practice language for each state. With the exception of New York, all of these licensure laws encompass the practice of behavior analysis across settings and populations. The New York legislation is currently specific to provision of services only for people with autism. However, efforts are underway to modify this legislation to encompass the full range of populations who can benefit from behavior analysis services.

Other than Connecticut, there are now 43 other states plus the District of Columbia and the US Virgin Islands that have passed insurance legislation that covers ABA, the majority of which specifically identify BCBAs as appropriate provider; and Ohio has legislation pending. Like Connecticut, Indiana has a title act for BCBAs.

Other Health Care Professions that may be impacted by the Scope of Practice Request as Identified by the Requestor

The BALC notes that there may be concerns on the part of individuals that any new scope of practice requests could potentially infringe on established professions. The BALC stresses that the purpose of this scope request is not to regulate or change the scope for those professions who already have training and skills in behavior analysis. The BALC ensures that their scope of practice is clearly distinct and not infringing on another professional discipline's scope of practice.

Description of How the Request Relates to the Profession's Ability to Practice to the Full Extent of the Profession's Education and Training

The scope committee is in agreement that licensure is critical to behavior analysts' ability to practice to the full extent of their profession. Without licensure, behavior analysts have a limited ability to assist many children and adults who could benefit from the services, although they are trained to provide these to a broad range of clients. According to the BALC, there are children and adults throughout the state who cannot access services or cannot obtain insurance coverage for services because they do not have a primary diagnosis of autism. For those who do receive services, licensure would ensure that people obtain high quality behavioral programming from qualified, fully credentialed professionals.

Behavior analyst committee members also contend that licensing behavior analysts could enhance the education and training required. Since licensure will be directly tied to the requirements of the BACB to sit for the exam, as those requirements become more rigorous, so will the requirements to obtain a license. Licensure will result in greater accountability by each practitioner.

Findings/Conclusions

The scope of practice review committee reviewed the information in the Behavior Analyst Leadership Council's (BALC) scope of practice request and additional information provided by behavior analysts as a result of committee discussions. The scope of practice committee evaluation of the proposal focused on assessing potential health and safety benefits associated with the request, whether the request enhances access to quality and affordable health care, the potential economic impact of the request, and how the request might enhance the ability of the profession to practice to the full extent of the profession's education and training.

The behavior analysts request licensure, as they view this as the highest form of regulatory oversight and an important mechanism to protect consumers of behavior analysis services. Behavior analysts provide services for some of the state's most vulnerable populations including but not limited to individuals with intellectual disabilities, autism spectrum disorders, and traumatic brain injuries. Much of the discussion in the group was about the various mechanisms to ensure that providers are qualified.

Currently, the responsibility for protecting consumers served by Board Certified Behavior Analysts (BCBAs) falls under the auspices of the Behavior Analyst Certification Board's disciplinary review committee. The Behavior Analyst Certification Board's review disciplinary committee has been effective in monitoring complaints and identifying individuals fraudulently claiming certification. However, this committee reviews only those behavioral professionals who are certified, who have submitted an application to become certified, or who claim to be board certified. Other individuals that practice behavior analysis without certification, but do not claim to be a BACB certificant, are not subject to the authority of this review committee. The BALC asserts with the establishment of licensure of behavior analysts, there would be a means of conducting regulatory investigations into claims of professional

misconduct or misrepresentation or substandard quality of care, based upon an established scope of practice rather than misuse or misrepresentation as a BCBA.

Another issue the committee discussed was that licensure could have significant impact on the ability to access behavior analysis, as licensing the profession may remove the barrier of limited insurance reimbursement. This may enable behavior analysts to provide services to a wider variety of clients. The behavior analyst committee members explained that insurance companies are extremely reluctant, and often refuse, to reimburse unlicensed professionals.

The BALC stresses there is no negative fiscal impact anticipated if legislation is passed to license behavior analysts, as BCBAs are already employed statewide in public schools, private schools, hospitals, home-based service agencies, state agencies (e.g., DDS, DCF), colleges and universities. They postulate that licensing behavior analysts will result in cost savings for the state in state services and income generated in licensing fees. The BALC members offer that behavior analysts are able to help clients stay in the home and avoid more costly mental health levels of care such as hospitalization.
Documents provided by BALC identified that early intervention of behavior analytical services for children with autism can have cost benefits and research indicates that "substantial numbers of children with autism or PDD –NOS (Pervasive developmental disorder –not otherwise specified) can attain intellectual, academic, communication, social, and daily living skills within the normal range." (Appendix F, G)

The BALC explained the purpose of their scope request is not to regulate or change the scope for those professions who have training and skills in behavior analysis. Rather concern is in regard to persons advertising or making claims, who may not be qualified to provide the services. A number of professions and other groups have been involved in the discussions concerning BCBA legislation including psychologists, speech language and hearing professionals, occupational therapists, college and university professors who teach behavior analytic coursework, parents of children with autism and other disabilities, parent advocates, and private state approved schools that employ BCBAs. Over the last year, the BALC's proposed Scope of Practice definition has been modified as a result of these discussions to ensure that their scope of practice is clearly distinct and not infringing on other professional disciplines' scopes of practice.

The BALC emphasizes that licensure is critical to behavior analysts' ability to practice to the full extent of their profession. Without licensure, behavior analysts have a limited ability to assist many children and adults who could benefit from the services, as they are trained to provide services to a broad array of clients. There are children and adults throughout the state today who cannot access services, or who cannot obtain insurance coverage for services because they do not have a primary diagnosis of autism. For those who do receive services, licensure is critical to ensure that people obtain good quality behavioral programming from qualified, fully credentialed professionals.

The members of the scope of practice review committee support the concept of licensure of behavior analysts.

Draft statutory language was not reviewed by scope of practice review committee members. Should the Public Health Committee decide to raise a bill to this scope of practice request, the Department of Public

Health along with the organizations that were represented on the scope of practice review committee (The BALC) respectfully request the opportunity to work with the Public Health Committee on statutory language. DPH notes that due to the estimated number of behavior analysts practicing in Connecticut (500-600), it would be necessary to request additional licensing staff via a fiscal note.

Appendices Table of Contents

Appendix A

Scope of Practice Law

Sec. 19a-16d. Submission of scope of practice requests and written impact statements to Department of Public Health. Requests for exemption. Notification and publication of requests. (a) Any person or entity, acting on behalf of a health care profession that seeks to establish a new scope of practice or change a profession's scope of practice, may submit a written scope of practice request to the Department of Public Health not later than August fifteenth of the year preceding the commencement of the next regular session of the General Assembly.

(b) (1) Any written scope of practice request submitted to the Department of Public Health pursuant to subsection (a) of this section shall include the following information:

(A) A plain language description of the request;

(B) Public health and safety benefits that the requestor believes will be achieved should the request be implemented and, if applicable, a description of any harm to public health and safety should the request not be implemented;

(C) The impact that the request will have on public access to health care;

(D) A brief summary of state or federal laws that govern the health care profession making the request;

(E) The state's current regulatory oversight of the health care profession making the request;

(F) All current education, training and examination requirements and any relevant certification requirements applicable to the health care profession making the request;

(G) A summary of known scope of practice changes either requested or enacted concerning the health care profession in the five-year period preceding the date of the request;

(H) The extent to which the request directly impacts existing relationships within the health care delivery system;

(I) The anticipated economic impact of the request on the health care delivery system;

(J) Regional and national trends concerning licensure of the health care profession making the request and a summary of relevant scope of practice provisions enacted in other states;

(K) Identification of any health care professions that can reasonably be anticipated to be directly impacted by the request, the nature of the impact and efforts made by the requestor to discuss the request with such health care professions; and

(L) A description of how the request relates to the health care profession's ability to practice to the full extent of the profession's education and training.

(2) In lieu of submitting a scope of practice request as described in subdivision (1) of this subsection, any person or entity acting on behalf of a health care profession may submit a request for an exemption from the processes described in this section and section 19a-16e. A request for exemption shall include a plain language description of the request and the reasons for the request for exemption, including, but not limited to: (A) Exigent circumstances which necessitate an immediate response to the scope of practice request, (B) the lack of any dispute concerning the scope of practice request, or (C) any outstanding issues among health care professions concerning the scope of practice request can easily be resolved. Such request for exemption shall be submitted to the Department of Public Health not later than August fifteenth of the year preceding the commencement of the next regular session of the General Assembly.

(c) In any year in which a scope of practice request is received pursuant to this section, not later than September fifteenth of the year preceding the commencement of the next regular session of the General Assembly, the Department of Public Health, within available appropriations, shall: (1) Provide written notification to the joint standing committee of the General Assembly having

cognizance of matters relating to public health of any health care profession that has submitted a scope of practice request, including any request for exemption, to the department pursuant to this section; and (2) post any such request, including any request for exemption, and the name and address of the requestor on the department's web site.
(d) Any person or entity, acting on behalf of a health care profession that may be directly impacted by a scope of practice request submitted pursuant to this section, may submit to the department a written statement identifying the nature of the impact not later than October first of the year preceding the next regular session of the General Assembly. Any such person or entity directly impacted by a scope of practice request shall indicate the nature of the impact taking into consideration the criteria set forth in subsection (b) of this section and shall provide a copy of the written impact statement to the requestor. Not later than October fifteenth of such year, the requestor shall submit a written response to the department and any person or entity that has provided a written impact statement. The requestor's written response shall include, but not be limited to, a description of areas of agreement and disagreement between the respective health care professions.

Sec. 19a-16e. Scope of practice review committees. Membership. Duties. (a) On or before November first of the year preceding the commencement of the next regular session of the General Assembly, the Commissioner of Public Health shall, within available appropriations allocated to the department, establish and appoint members to a scope of practice review committee for each timely scope of practice request submitted to the department pursuant to section 19a-16d. Committees established pursuant to this section shall consist of the following members: (1) Two members recommended by the requestor to represent the health care profession making the scope of practice request; (2) two members recommended by each person or entity that has submitted a written impact statement pursuant to subsection (d) of section 19a-16d to represent the health care professions directly impacted by the scope of practice request; and (3) the Commissioner of Public Health or the commissioner's designee, who shall serve as an ex-officio, nonvoting member of the committee. The Commissioner of Public Health or the commissioner's designee shall serve as the chairperson of any such committee. The Commissioner of Public Health may appoint additional members to any committee established pursuant to this section to include representatives from health care professions having a proximate relationship to the underlying request if the commissioner or the commissioner's designee determines that such expansion would be beneficial to a resolution of the issues presented. Any member of such committee shall serve without compensation.
(b) Any committee established pursuant to this section shall review and evaluate the scope of practice request, subsequent written responses to the request and any other information the committee deems relevant to the scope of practice request. Such review and evaluation shall include, but not be limited to, an

assessment of any public health and safety risks that may be associated with the request, whether the request may enhance access to quality and affordable health care and whether the request enhances the ability of the profession to practice to the full extent of the profession's education and training. The committee, when carrying out the duties prescribed in this section, may seek input on the scope of practice request from the Department of Public Health and such other entities as the committee determines necessary in order to provide its written findings as described in subsection (c) of this section.

(c) The committee, upon concluding its review and evaluation of the scope of practice request, shall provide its findings to the joint standing committee of the General Assembly having cognizance of matters relating to public health. The committee shall provide the written findings to said joint standing committee not later than the February first following the date of the committee's establishment. The committee shall include with its written findings all materials that were presented to the committee for review and consideration during the review process. The committee shall terminate on the date that it submits its written findings to said joint standing committee.

Sec. 19a-16f. Report to General Assembly on scope of practice review processes. On or before January 1, 2013, the Commissioner of Public Health shall evaluate the processes implemented pursuant to sections 19a-16d and 19a-16e and report to the joint standing committee of the General Assembly having cognizance of matters relating to public health, in accordance with the provisions of section 11-4a, on the effectiveness of such processes in addressing scope of practice requests. Such report may also include recommendations from the committee concerning measures that could be implemented to improve the scope of practice review process.

Appendix B

Committee Membership

Behavior Analysts Committee 2016-2017

Connecticut Occupational Therapy Association - Morgan Villano morganvillano@mac.com

Ms. Joyce Rioux, jrioux@crec.org
Ms. Deborah Jones, dejones@crec.org

Connecticut Association of School Psychologists
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Behavior Analyst Leadership Council

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Appendix C

Original Scope of Practice Request and Attachments

Behavior Analyst Leadership Council

August 1, 2016

Karen G. Wilson, HPA
Practitioner Licensing and Investigations Section
Department of Public Health
410 Capital Ave, MS #12APP
P.O. Box 340308
Hartford, CT 06124-0308

RE: Scope of Practice Review Request for Licensure of Behavior Analysts

Dear Ms. Wilson,

A Scope of Practice Request for licensure of Behavior Analysts was submitted in 2014 and 2015 but unfortunately was not selected for review due to the limited departmental resources available for such requests. We subsequently pursued legislative action on licensure without having this review because we believed that licensure is critically important to protect consumers of behavior analytic services. In spite of garnering substantial support from consumers of behavior analytic services, behavior analysts, other professional disciplines, and legislators in both the House and Senate the bill did not come up for a vote.

Behavior analysis practitioners are currently credentialed in the form of an international certificate program administered through the Behavior Analyst Certification Board (www.BACB.com). However, there is a critical need for licensure for behavior analysis practitioners, primarily for the purpose of enhancing consumer protection for some of the state's most vulnerable populations including but not limited to individuals with Intellectual Disabilities, Autism Spectrum Disorders, and traumatic brain injuries.

It is important to note that in addition to the Board Certified Behavior Analyst® credential (BCBA®), the Behavior Analyst Certification Board also credentials Board Certified Assistant Behavior Analysts® (BCaBA®'s) and Registered Behavior Technicians® (RBT®'s). We are not currently seeking licensure of either of these credentials because

individuals who hold these designations must, by definition, work under the direct supervision of a BCBA.

Public Health & Safety Benefits

The primary rationale relative to the public health and safety benefits of the licensing of behavior analyst is increased consumer protections for individuals receiving behavior analytic services. Currently, the responsibility for protecting consumers served by Board Certified Behavior Analysts (BCBA's) falls under the auspices of the Behavior Analyst Certification Board's disciplinary review committee. The Behavior Analyst Certification Board's review committee has been very effective in monitoring complaints and identifying individuals fraudulently claiming certification. However, this committee reviews only those behavioral professionals who are certified, who have submitted an application to become certified, or who claim to be board certified. Other individuals that practice Applied Behavior Analysis (ABA) without certification but do not claim to be a BACB certificant are not subject to the authority of this review committee. For example, someone without any training or experience in Behavior Analysis can claim to be any of the following without facing any sanctions by the BACB or violating any existing Connecticut state laws: "Behavior Analyst," "Behavior Specialist," "Applied Behavioral Analyst," "ABA Expert," or any other similar designation.

Example: "Marvin" is a 12-year-old boy with severe Autism who lives in Hartford County. His parents were in desperate need of home services because of high rates of aggression, self-injurious behavior, erratic sleep habits and frequent clothing removal. "Marvin's" parents arranged for consultation by a "Behaviorist" who they later learned was not a BCBA nor had received any formal training in behavior analysis. The "Behaviorist" did not do an assessment of the problem behavior nor the family's skill set at the onset of treatment. The "Behaviorist's" method of addressing the child's problem behaviors was to prescribe a "sleep hygiene" routine that was not written in approachable terminology, was condescending to the parents, and was not in keeping with sound behavior analytic practice. Given the severity of Marvin's behavior, it was not even feasible for the family to implement the prescribed plan and it would have been dangerous to do so. The student's behavior continued to worsen until the family found another service provider who was appropriately trained and credentialed.

With the establishment of licensure of Behavior Analysts, there would be a means of conducting localized investigations into claims of professional misconduct or misrepresentation based upon an established scope of practice rather than misuse or misrepresentation solely as a BCBA. A Department of Public Health investigation would also provide the BACB review committee additional evidence for investigation of potential professional misconduct. Additionally, the BACB review committee would gain increased enforcement authority by referring certificants that also hold a state license

to the Department of Public Health for investigations of potential violations of professional practice.

Example: Although the exception rather than the rule, there are some BCBA-run organizations providing "ABA services" in various locations across the state to DDS clients and students in public schools in the state that "over-employ" individuals who have received some training in ABA but who do not have sufficient training, adequate supervision, or any recognized credential. The BCBA ostensibly responsible for service delivery has little or no direct contact with either the person providing these "ABA" services nor the individuals receiving those services. Because a BCBA is listed on the company's masthead it is sometimes difficult for administrators or parents to understand that the services they are paying for may not in fact be delivered by an appropriately trained and credentialed provider.

BCBA's work with some of the youngest, most vulnerable, complex, and disabled populations in Connecticut. ABA services are often conducted in schools or homes by non-certified paraprofessional staff under the supervision of a BCBA, and often without any other responsible adult present. Licensure will offer families a regulated process to investigate accusations of misconduct and prosecute those who violate their scope of practice. These increased regulatory standards should also serve to protect the field, as all practitioners of ABA would be subject to regulatory standards consistent with other established licensed professional disciplines (e.g., speech language therapists, physical therapists, and psychologists).

Example: In 2008, a woman named Stacey Lore claimed to be a BCBA and provided consultative services to school districts and families privately. It was only after school districts and families had paid her hundreds of thousands of dollars, and some of the children experienced loss of skills and valuable intervention time that can never be reclaimed, it was discovered that Ms. Lore was not a BCBA. In fact, her highest level of education was a GED. Ms. Lore was investigated by the Attorney General's office, and the Norwalk Police Department. Ms. Lore was convicted and sent to prison. This situation was the impetus for both Public Acts 10-175 and 11-228. While certainly the most egregious and highly publicized example, Ms. Lore has not been the only person to misrepresent her qualifications to provide ABA services to children with special needs and without licensure, the burden of determining who is qualified to provide these services falls on consumers including desperate parents who don't always have the means to thoroughly vet prospective providers.

Our proposed licensure bill includes language that specifically protects other professionals who have behavior analysis within their scope of practice, such as psychologist and school psychologists. Only those individuals who practice behavior analysis outside of their scope of practice or without any professional credential would be prohibited from doing so by this proposed licensing bill.

A number of professions and other groups have been involved in the discussions concerning BCBA legislation including Psychologists, Speech Language and Hearing professionals, Occupational Therapists, college and university professors who teach behavior analytic coursework, parents of children with Autism and other disabilities, parent advocates, and private state approved schools that employ BCBA's. Over the last year, our proposed Scope of Practice definition has been modified as a result of these discussions to ensure that our scope of practice is clearly distinct and not infringing on other professional discipline's scopes of practice.

The Behavior Analyst Certification Board defines a Behavior Analyst as follows:

"A behavior analyst is a person qualified by at least a master's degree and Behavior Analyst Certification Board certification and/or a state-issued credential (such as a license) to practice behavior analysis independently. A behavior analyst delivers services consistent with the dimensions of applied behavior analysis. Common services may include, but are not limited to, conducting behavioral assessments, analyzing data, writing and revising behavior-analytic treatment plans, training others to implement components of treatment plans, and overseeing implementation of treatment plans. Behavior analysts are qualified to provide services to clients with a variety of needs, including improvements in organizational functioning (e.g., staff performance, management and pay structure interventions), socially significant skill deficits (e.g., communication, adaptive behavior), and socially significant behavioral excesses (e.g., aggression, self-injurious behavior), among others. Behavior analysts provide training and supervision to assistant behavior analysts and behavior technicians."

Although the majority of behavior analysts working within the state of Connecticut at the present time work primarily with students with Autism and other Developmental Disabilities, individuals with this professional designation work with a variety of populations and areas of emphasis relevant to both typical children and adults and well as those with learning differences. For example, behavior analysts are working with children with social and emotional difficulties to keep them living at home with their families; training nursing home staff to manage medications and enhance patient care; training foster care parents; helping people quit smoking, lose weight, and manage diabetes; reducing recidivism of incarcerated youth and adults; and maximizing the athletic performance of Olympic hopefuls. Based upon a survey of certificants conducted in 2014, the Behavior Analyst Certification Board delineated the areas of professional practice for behavior analysts as follows:

1. Organizational Behavior Management
    - Behavior-based safety
    - Executive coaching
    - Instructional design
    - Performance management
    - Training

    - Behavioral systems analysis
2. Higher Education: Research & Teaching
3. Education
    - Behavior management
    - Consultation & training
    - Curriculum & instruction
    - Direct instruction
    - Emotional & behavior problems
    - General education
    - Positive behavior support
    - Precision teaching
    - Special education
    - Truancy & school refusal
4. Autism Spectrum Disorders
    - Academic skills
    - Augmentative & alternative communication
    - Case management & consultation
    - Communication
    - Feeding disorders
    - Functional assessment & treatment of severe problem behavior
    - Independent living skills (e.g., self-care, safety, habilitation, leisure)
    - Intensive behavioral intervention
    - School-to-work transition & vocational support
    - Sexuality
    - Social skills
5. Intellectual & Developmental Disabilities
    - Academic skills
    - Augmentative & alternative communication
    - Case management & consultation
    - Communication
    - Feeding disorders
    - Functional assessment & treatment of severe problem behavior
    - Independent living skills (e.g., self-care, safety, habilitation, leisure)
    - School-to-work transition & vocational support
    - Sexuality
    - Social skills
6. Behavioral Health/Behavioral Medicine
    - Emotional & behavior problems (e.g., ADHD, conduct disorder)
    - Healthcare regimen adherence
    - Health promotion & community health
    - Managing chronic illness & pain
    - Medication management
    - Repetitive movement disorders (e.g., tic disorders, hair pulling)
    - Substance abuse & addiction (e.g., smoking cessation, gambling)

    - Weight management
7. Behavioral Pediatrics
    - Behavior problems
    - Feeding disorders
    - Sleep disorders
    - Toilet training
8. Professional Supervision
9. Parent & Caregiver Training
10. Behavioral Gerontology
11. Brain Injury Rehabilitation
12. Child Welfare (e.g., foster care, prevention of child abuse & neglect)
13. Corrections & delinquency
14. Dissemination of Behavior Analysis (i.e., educating others about the field of behavior analysis)
15. Sports & fitness
16. Public Policy & Advocacy
17. Non-University Research

The proposed definition for Scope of Practice language for behavior analysts we are requesting be reviewed is at follows:

"Behavior Analysis" means the design, implementation and evaluation of environmental modifications, using behavior stimuli and consequences, including the use of direct observation, measurement and functional analysis of the relationship between the environment and behavior, to produce socially significant improvement in human behavior, but does not include: (A) Psychological testing, (B) neuropsychology, (C) cognitive therapy, (D) sex therapy, (E) psychoanalysis, (F) hypnotherapy, (G) cognitive behavioral therapy, (H) occupational therapy, (I) speech and language therapy, and (J) long term counseling as treatment modalities.

There is only one nationally recognized credential for behavior analysts, which is obtained through the Behavior Analyst Certification Board. This organization reviews the course work requirements and supervised fieldwork experience, and then provides a professionally developed and psychometrically valid and reliable written exam for those applicants who have met all qualifications. This credentialing organization and evaluation process has been utilized in all other states that currently have state licensure, and is also included in the all the other state licensure legislation currently under consideration in other states. This credentialing process has been utilized because it keeps the cost of licensure low, adheres to a universal standard that enables Board Certified Behavior Analysts® (BCBA®'s) to relocate to Connecticut and ensures that state requirements stay current with the periodic increases in educational and supervisory requirements enacted by the Behavior Analyst Certification Board based upon national

constituent surveys and subject matter expert panels. The BACB's credentialing programs are accredited by the National Commission for Certifying Agencies (NCCA) in Washington, DC. The NCCA is the accreditation body of the Institute for Credentialing Excellence.

The Behavior Analyst Certification Board defines the role of a BCaBA and an RBT as follows:

"An assistant behavior analyst is qualified by Behavior Analyst Certification Board certification and/or a license or other state-issued credential in behavior analysis to practice under the supervision of an appropriately credentialed professional behavior analyst. An assistant behavior analyst delivers services consistent with the dimensions of applied behavior analysis and supervision requirements defined in state laws or regulations and/or national certification standards. Common services may include, but are not limited to, conducting behavioral assessments, analyzing data, writing behavior-analytic treatment plans, training others to implement components of treatment plans, and direct implementation of treatment plans. Assistant behavior analysts are qualified to provide services to clients with a variety of needs, including improvements in organizational functioning (e.g., staff performance, management, and pay structure interventions), socially significant skill deficits (e.g., communication, activities of daily living), and socially significant behavioral excesses (e.g., aggression, self-injurious behavior), among others. Duties that may be delegated to the assistant behavior analyst by the supervising behavior analyst vary based on the assistant behavior analyst's training, experience, and competence. Those duties may include training and supervising behavior technicians."

"The behavior technician is a paraprofessional who practices under the close, ongoing supervision of a behavior analyst or assistant behavior analyst. The behavior technician is primarily responsible for the implementation of components of behavior-analytic treatment plans developed by the supervisor. That may include collecting data on treatment targets and conducting certain types of behavioral assessments (e.g., stimulus preference assessments). The behavior technician does not design treatment or assessment plans or procedures. It is the responsibility of the supervisor to delegate tasks to the behavior technician based on his or her training, experience, and competence. The behavior technician's supervisor is ultimately responsible for the work performed."

Twenty of the twenty-five states that license Behavior Analysts also license BCaBA's. The five states that exclude BCaBA's are Arizona, Maryland, Ohio, South Dakota and Wisconsin. The majority of states do include BCaBA's, and from a consumer protection stance it may be preferable to also license BCaBA's. However, these professionals appear to represent a very small sub-set, and the cost/benefit of licensing this group of professionals may be prohibitive. As of August 1, 2016, there were 54 BCaBA's who reside within the state of Connecticut listed on the BACB registry.

Should the Department of Public Health prefer to include BCaBA's in licensure, the Behavior Analyst Leadership Council would support that position.

Twenty-two of the twenty-five states exempt RBT's from their legislation. Oregon, Louisiana, and Washington do regulate technicians. We would not recommend that the Department of Health issue a license to RBT's because of the difficulty managing this transient population whose work is ultimately the responsibility of the Behavior Analyst supervising their work.

Impact to Public Access to Health Care

Licensure of behavior analysts would have a significant impact on the public's ability to easily access behavior analytic treatment through their health care providers. Even though Connecticut has passed legislation that mandates insurance coverage for treatment for children with Autism by BCBA's, some insurance companies are limiting families this coverage because they contend that providers must have a state license to practice, not just be credentialed by the BACB. Unless parents have the knowledge and ability to contest this decision, they are often denied this mandated insurance coverage. Additionally, licensure would allow consumers to access their self-funded plans and Medicaid more easily for Autism Spectrum Disorders, and other Neurodevelopmental disorders.

Perhaps even more importantly, licensure of Behavior Analysts would facilitate access to behavior analytic services for individuals with other disabilities that are currently unable to do so because existing state legislation is specific to only those individuals with a diagnosis of an Autism Spectrum Disorder.

Example: "David" is a 10-year-old boy with a primary diagnosis of Down Syndrome who lives in Fairfield County. "David" had high rates of aggression and made frequent attempts to elope from his classroom in a inner-city public school. "David" was denied access to a BCBA as part of his slate of services in spite of his high rates of problem behavior and other behaviors that interfered with his ability to learn even though the school district had BCBA's consulting to the district specifically for their students with Autism as per current legislation. The student experienced significant regression and increases in problem behavior throughout the fall of last year, and was regularly strapped into a Rifkin chair to prevent elopement until a Behavior Analyst conducted an observation and reported the situation to the Office of the Child Advocate. "David" was outplaced to a private ABA school program and within three weeks his problem behaviors where significantly reduced, and his rate of learning increased across domains. Had "David" had access to a BCBA in district he may not have needed to be outplaced to a more expensive private school.

Connecticut has one of the highest concentrations per capita of BCBA's in the country, and our state leadership has actively supporting the provision of ABA by passing laws to provide Autism insurance coverage, implementation in our public schools for students with Autism, and a title protection act. However, there are many other populations that would benefit from access to ABA services that are not included in these legislative initiatives.

Based on the most recent Connecticut State Department of Education statistics for the 2013-14 school year, the state census for our students with significant disabilities was as follows:

Autism: 11.4% of total, with 7,788 students.

Emotional Disturbances: 7.9% of total, with 5,400 students.

Intellectual Disabilities: 3.5% of total, with 2,380 students.

Other (which can include children with Traumatic Brain Injury): 8.0% of the total, with 5,457 students.

The total for the above 3 non-Autism categories is 13,237 students. This is 19.3% of all Connecticut students with disabilities. Although all of these students may not require behavior analytic instruction, it is certainly conceivable that at least 20% of this population would benefit from access to these services (e.g. approximately 2,650 children), yet there is limited access and little consumer protections in place for children in these other educational classifications.

The children represented in the statistics above also represent some of the most vulnerable children in our communities. The prevalence of abuse and neglect of this population is far higher than that of typically developing children. The estimated prevalence rates vary from a low of 22% (thearc.org) to a high of 70% based on a 2012 national survey of 7,289 people (disability-abuse.com). Based on the statistics above, and utilizing the lower estimate of 22%, then over 4,000 of Connecticut's children are at high risk of sexual and other abuses – many of who may be abused or neglected on multiple occasions.

Even though Behavior Analysts routinely work with these highly vulnerable and often non-verbal children they are not included on the Department of Children and Families' list of mandated reporters unless they are also direct school employees. While licensure of Behavior Analysts will not eliminate abuse of our children with special needs, it can help reduce the likelihood of abuse by Behavior Analysts, and would certainly facilitate a means of investigating and prosecuting abuses by a Behavior Analyst if suspected abuse did occur.

Example: In 2015, a federal jury returned a verdict finding that a special education aide employed by the Darien Board of Education sexually abused a 12-year-old Darien student with Down syndrome in a Darien elementary school. The aide is the nephew of Darien's then Director of Special Education.

Example: Behavior Analysts work in public school programs as consultants throughout the state. As consultants rather than employees, Behavior Analysts are not mandated DCF reporters, receive no training on when and how to report suspected abuse or neglect to DCF, and do not have to undergo a background check to prior to working in school or home-based programs unless they happen to work for a private program that has such a requirement.

Summary of State & Federal Laws

Currently, the Department of Disability Services (DDS), Department of Children and Families (DCF), Connecticut Birth to Three (B23), the State Department of Education (SDE), Medicaid, and other state agencies recognize behavior analysis services as one part of their available services and provide reimbursement to BCBAs and supervised BCaBAs treating individuals with Autism Spectrum Disorders. Additionally, the need for behavior-analytic services is underscored by the recent Connecticut legislative action proposed on behalf of children, adults and families: Special Act 08-5, Public Act 08-63, Public Act 09-115, Public Act 10-175, and Public Act 11-228. In recognition of the increasing needs of children and adults with behavioral needs and their families to have access to services provided by licensed and trained staff (including paraprofessionals), the Connecticut State Legislature has passed six bills in the recent years related to Autism Spectrum Disorders:

Special Act 08-5: An Act Concerning Special Education and Instructional Methods Concerning Autism and Other Developmental Disabilities, which called for a task force to be assembled to define Autism and Developmental Disabilities and develop recommendations for training needs of pre-service and in-service educators, administrators and paraprofessionals across the state and identify available resources for providing this training.

Public Act 08-63: An Act Concerning Expansion of the Pilot Program for Persons with Autism Spectrum Disorders created a pilot project and ensured that such a pilot project remained in effect through June 30, 2009 (this program continues today). This program aims to provide services through the Department of Developmental Services for individuals with an Autism Spectrum Disorder who do not have an intellectual disability.

Public Act 09-115: An Act Requiring Insurance Coverage for Autism Spectrum Disorder Therapies. The purpose of this bill is to provide insurance coverage for Autism Spectrum

Disorder therapies including Applied Behavior Analysis overseen by Board Certified Behavior Analysts.

Public Act 10-175: An Act Concerning Special Education, which requires programs offering behavior analytic services to individuals with Autism to be overseen by professionals with proper credentials including Board Certified Behavior Analysts.

Public Act 11-228: This act makes it a felony to present oneself as a Board Certified Behavior Analyst or Board Certified Assistant Behavior Analyst without proper credentials. Penalties include a $500 fine or up to 5 years of imprisonment or both.

Public Act 14-231 which reiterates that BCBA's and BCaBA's can provide ABA services in keeping with PA 10-175, and does not conflict with the scope of practice of Speech Language and Hearing professionals.

Current Regulatory Oversight of the Profession

Currently, the state of Connecticut provides regulatory oversight via PA 10-175, PA 11-228, and PA 14-231. If licensure is established for behavior analysts in Connecticut, Department of Public Health oversight may provide disciplinary action for those who have not met the training and ethical guidelines of a licensed behavior analyst in good standing. In addition, the Department of Public Health could implement disciplinary measures for those who fall outside of the ethical or legal boundaries (e.g., an individual who commits a felony).

Our proposed bill included with this scope of practice review request contains language that would modify PA 10-175 to conform with licensure of BCBA's rather than certification alone. This language was derived from discussions with representatives of the Department of Education earlier this year.

Recognition of BCBA's and BCaBA's within Connecticut

At the present time, there are six statutes in CT that identify BCBA's as professionals who can provide Applied Behavior Analysis (ABA) in the state.

Public Act 09-115 went into effect 1/1/2010. This is an insurance regulation defining coverage for ABA for children with Autism supervised by BCBA's. This statute provides the following definition:

"ABA means the design, implementation and evaluation of environmental modifications, using behavioral stimuli and consequences, including the use of direct observation, measurement and functional analysis of the relationship between environment and behavior, to produce socially significant improvement in human behavior."

Public Act 10-175, Section 2 went into effect 7/1/2010. This is an education regulation, which requires school districts to utilize BCBA's, BCaBA's or another professional with ABA within their scope of practice to supervise Individualized Education Plans or 504 plans for children with Autism when these plans identify ABA as a necessary component of educational services. This statute provides the following definition:

"ABA means the design, implementation and evaluation of environmental modifications, using behavioral stimuli and consequences, including the use of direct observation, measurement and functional analysis of the relationship between the environment and behavior, to produce socially significant improvement in human behavior."

Public Act 11-228 went into effect 10/1/2011. This is a title protection act, which makes it a felony offense punishable by fines and prison time up to 5 years per offense if someone misrepresents himself or herself as a BCBA/BCaBA. This statute defines the BACB, BCBA's and BCaBA's as follows:

"Behavior Analyst Certification Board" means the nonprofit corporation established to meet the professional credentialing needs of behavior analysts, governments and consumers of behavior analysis services and accredited by the National Council for Certifying Agencies in Washington, D. C., or any successor national accreditation organization;

"Board certified behavior analyst (BCBA)" means a person who has been certified as a behavior analyst by the Behavior Analyst Certification Board; and
"Board certified assistant behavior analyst (BCABA)" means a person who has been certified as an assistant behavior analyst by the Behavior Analyst Certification Board."

Public Act 14-231 restates the ability of BCBA's and BCaBA's to provide ABA services as follows:

"Sec. 42. Section 20-413 of the general statutes is repealed and the following is substituted in lieu thereof (Effective from passage): Nothing in this chapter shall be construed as prohibiting... (6) The provision of applied behavior analysis services in accordance with section 10-76ii."

DDS Regulation 14-07: This regulation originated with Governor Malloy's office. This new regulation which went into effect 1/1/15 provides Medicaid coverage for children

with Autism under the age of 21. Children with other disabilities or people over the age of 21 are not encompassed by this regulation.

Example: "Trish" is a 24-year-old woman with Autism and an Intellectual Disability who lives in New Haven County. She was placed in a residential program funded by DDS when she was eighteen, but continued attended a private ABA program. While she was in the school program a BCBA assisted the residential provider with staff training and program development, and "Trish" thrived in both environments. When "Trish" aged out of her school placement when she turned twenty-one, the "Behavior Specialist" employed by the residential provider took over supervision of her program. This "Behavior Specialist" was an accomplished Social Worker, but did not have behavior analysis within her scope of practice, and did not have any additional training in behavior analysis. "Trish" began to regress and had dramatic increases in problem behavior including aggression against other residents, shouting, and bolting in public places. "Trish's" decline accelerated when the health status of another resident in the home required a change in her room and bathroom situation. Staff became concerned that "Trish" was unsafe when she began bolting away from staff and running through parking lots. The "Behavior Specialist" was unable to reduce any of her problem behavior and "Trish" was put on several anti-psychotic medications in an effort to reduce her unsafe behavior. "Trish's" family paid for an independent BCBA consultant who is now systematically working on reducing her unsafe behavior, and training staff on program implementation and data collection with a goal of someday getting her back off medication.

Public Act 16-41: Effective 7/1/16, this statute is not specific to provision of ABA services but created alternative pathway for a BCBA or BCaBA to obtain certification as an initial educator.

Summary of Known Scope of Practice

Per our research, the scope of practice for behavior analysis is only described in PA 09-115, PA 10-175, PA 11 - 228, and PA-14-231 which only provides limited practice and consumer protections related to fraud specific to someone identifying themselves as a BCBA and does not include those implementing this scope of practice but who utilizes a different job title. As stated previously, most of the protections in place apply only to children with Autism. There is little protection in place for adult recipients of ABA services, children with other diagnosis, or children without a learning difference.

Current Education, Training and Examination Requirements

BCBA's must meet the eligibility standards established by the Behavior Analyst Certification Board. The BACB has established 3 options that would meet the requirements.

Option 1 includes the possession of a minimum a master's degree that was conferred in behavior analysis or other natural science, education, human services, engineering, medicine or a field related to behavior analysis and approved by the BACB. The course work requirements include the completion of 225 classroom hours of graduate level instruction in the following content areas and for the number of hours specified:

1. 1) Ethical considerations - 15 hours;
2. 2) Definition & characteristics and Principles, processes & concepts - 45 hours;
3. 3) Behavioral assessment and Selecting intervention outcomes & strategies - 35 hours;
4. 4) Experimental evaluation of interventions - 20 hours;
5. 5) Measurement of behavior and Displaying & interpreting behavioral data - 20 hours;
6. 6) Behavioral change procedures and Systems support - 45 hours;
7. 7) Discretionary behavior-analytic content - 45 hours

Acceptable course work must include college or university courses in behavior analysis that are taken from an institution that meet the requirements specified by the BACB. The BACB is currently increasing the coursework requirements and this will be in effect with the first examination of 2015. The experience requirements must be met as established and outlined in Appendix A by the BACB.

Option 2 includes a teaching option at a college level. The applicant must complete one academic year as a full time faculty member at a college or university during which the applicant must teach classes on basic principles of behavior, single-subject research methods, application of basic principles of behavior in applied settings, and ethical issues. In addition the applicant must publish research in the field of behavior analysis. The experience requirements must be met as established and outline by the BACB.

Option 3 includes a doctorate/BCBA review. The applicant must have a doctoral degree, conferred at least ten (10) years prior to applying. The field of study must be behavior analysis, psychology, education or another related field (doctoral degrees in related fields are subject to BACB approval). In addition, the applicant must have 10 years post-doctoral experience practicing behavior analysis. Experience must be verified independently by three Board Certified Behavior Analysts (BCBAs) and supported by information provided on the applicant's CV (curriculum vitae).

Applicants must complete course work requirements and supervised fieldwork experience, and then pass a professionally developed, psychometrically valid and reliable written exam.

It is important to note that BACB standards are not static and are enhanced on a regular basis, so it is important to have language in licensure legislation that ensures that Connecticut state regulations remain current with any future modifications implemented nationally. For example, modifications to BACB standards have/will occur as follows:

Enhanced supervision requirements of those in training to become BCBA's or BCaBA's went into effect 1/1/15.

A new BCBA degree requirements include possession of a minimum of a master's degree from an accredited university that was (a) conferred in behavior analysis, education, or psychology, or (b) conferred in a degree program in which the candidate completed a BACB approved course sequence went into effect 1/1/16.

Adherence to a new Code of Ethics went into effect 1/1/16.

A new BCaBA supervision policy goes into effect 1/1/17.

Affects on Existing Relationships within the Health Care System

Licensing behavior analysts would positively affect existing relationships within Connecticut's health care system. Currently, schools, families, hospitals, and others in need of services must spend valuable time and funds conducting their own research to identify qualified individuals, because there is no clearly defined standard acknowledged by the state. If the practice of behavior analysis required a license, qualified professionals would become easily identifiable. This would save families and organizations from what can be an exhausting process of independent verification of a provider's experience and credentials, with inconsistent results and allow them to identify qualified professionals more efficiently.

Anticipated Economic Impact and Budget Assumptions

As previously mentioned, there is no negative fiscal impact anticipated as BCBA's are already employed statewide in public schools, private schools, hospitals, home based service agencies, state agencies (e.g., DDS, DCF), and colleges and universities.

The fiscal note provided by DPH during the 2016 session demonstrated a positive net effect for the state of Connecticut, although the department would not be able to operate another licensure program without a budget allocation for implementation. It is important to note that the budget assumptions utilized an expense number that was based on utilization of part time personnel and/or contractors to implement the program, but it is uncertain whether such an arrangement can be implemented. However, the fiscal note provided by DPH during the 2015 session demonstrated a positive net effect for the State of Connecticut during the first year of implementation, and a very small loss during the second year, but because the number of BCBA's residing in the state has increased substantially over the last 2 years this calculation would also now show a positive net effect for the state.

The BACB independently verifies each applicant's coursework requirements and supervised experience prior to approving the applicant to complete the certificate exam. By continuing to utilize this process as outlined in the proposed licensure bill, this will allow for the BACB to continue providing such services for the state, Connecticut could avoid costly budget items such as:

i. Creating, administering, evaluating, and revising a licensure exam
ii. Creating and approving coursework requirements
iii. Creating standards for ethical conduct
iv. Creating and administering continued education policies and providers

As of August 1, 2016 there are currently 510 BCBA certificants (this is a total of BCBA's and BCBA-D's which is simply a designation that a BCBA also has a doctorate degree but since this doctorate but the same licensing requirements and process would apply to both groups) that are Connecticut residents who would qualify for licensure in Connecticut. It is not known exactly how many BCBA's who reside in other states regularly practice here, but we estimate that this would add approximately another 100 people, increasing the total number of BCBA's working in Connecticut to approximately 610 certificants at the present time.

The number of BCBA certificants worldwide has been growing at the annual rate 21-30% per year during the period of 2011 – 2015, with an average rate of 25% per year. Based on this rate of growth, it is anticipated that by January 2018 there will approximately 860 BCBA's working in Connecticut, including those that reside out of state but are regularly employed in Connecticut. Although licensure would have a significantly positive effect on the lives of children and families affected by ASD and other behavioral disabilities, the economic impact to Connecticut would be beneficial as follows:

The professionalization of BCBA's would ensure that insurance companies recognizing the profession relative behavior health treatment. At the present time, only children with Autism have insurance coverage for ABA services. Licensure may indirectly impact

children with other disabilities who would benefit from ABA services but removing a barrier to accessing insurance coverage.

It is estimated that the projected 860 Licensed Behavior Analysts would pay an initial licensing fee of $350.00 per year, and a bi-annual renewal fee of $175 for each subsequent year.

The number of new BCBA's has been increasing and is expected to continue to increase as the number of university programs grows. Eastern Connecticut State University, University of St. Joseph, Southern Connecticut State University and Western Connecticut State University are now providing BACB-approved course work for certification as a BCBA. In addition to these Connecticut-based brick and mortar programs, Connecticut residents can enroll in dozens of online courses and graduate training programs.

Based on current growth rates, continued growth of 25% each year has been utilized in development of the budget projection included with this application. Utilization of the BACB credential, testing, and administrative support will dramatically reduce the overall cost of administering a state license. It will also enable BCBA's who move to the state to readily enter the workforce. Income derived from licensure of BCBA's is estimated as follows:

2018: 860 BCBA's X $350.00 initial fee = **$301,000**

2019: 215 BCBA's X $350.00 initial fee = **$75,250** (no renewals)

2020: 269 BCBA's X $350.00 initial fee = $94,150 and

860 BCBA renewals X $175.00 fee = $150,500

Total 2019 fees = **$244,650**

2021: 336 BCBA's X $350.00 initial fee = $117,600 and

215 BCBA renewals X $175.00 fee = $37,625

Total 2021 fees = **$155,225**

2022: 420 BCBA's X $350.00 initial fee = $147,000 and

1,129 BCBA's renewals X $175.00 = $197,575

Total 2022 fees = **$344,575**

Five-year total state income**: $1,120,700**

We recognize that the fees collected do not go back to the Department of Health to cover the cost of administering this program. Therefore, we will advocate with the Governor, Appropriations Committee, Legislature and the Executive Branch for an appropriations for the cost of implementation.

Regional and National Trends

Twenty-five states have licensure in behavior analysis: Alabama, Alaska, Arizona, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Mississippi, Missouri, Nevada, New York, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Dakota, Tennessee, Utah, Virginia, West Virginia, Washington, and Wisconsin.

While the cost for a license is additional to costs associated with BACB certification, in most states, the annual cost for the license remained low, between $0.00 and $300.00 per year.

Seven others states have introduced licensure bills: California, Florida, Illinois, Michigan, Minnesota, North Carolina, and Texas; and three other states have will soon be initiating new legislative actions in the coming year: Indiana, Iowa, and Nebraska. Ontario is also pursuing licensure.

Licensing of BCBA's and BCaBA's in Other States

Each of the twenty-five states with licensure laws, as well as the other states in the process of seeking licensure specifically references the BACB credentials and/or the BACB standards (see Appendix C for the scope of practice language in each state). With the exception of New York, all of these licensure laws encompass the practice of behavior analysis across settings and populations. The New York legislation is currently specific to just provision of services for people with Autism. However, efforts are underway to modify this legislation to encompass the full range of populations who can benefit from ABA services.

Other Related Legislation

Other than Connecticut, there are now 43 other states plus the District of Columbia and the US Virgin Islands that have passed insurance legislation that covers ABA, the majority of which specifically identify BCBA's as appropriate provider; and Ohio has legislation pending.

Like Connecticut, Indiana has a Title Act protecting BCBA's.

Affect On Other Health Care Professions

We anticipate that licensed psychologist and school psychologist, as well as special education teachers, occupational therapists, speech and language therapists, parents of children with autism and other disabilities, parent advocates, private school administrators, the Connecticut Association for Behavior Analysis, and college and university professors who teach courses in behavior analysis, will want to participate in the dialogue regarding potential licensure of BCBA's.

As is probably the case whenever a new scope of practice for a profession is proposed, there may be concerns on the part of some individuals that any new scope of practice could potentially infringe on established professions. Over the last two years, we have communicated with each of those professional disciplines that we thought might have concerns, and have made some minor modifications to the scope of practice previously proposed to address those concerns. We believe we have fully addressed the concerns of these other health care professionals who have an interest in this proposal, and do not anticipate any other professional group having an issue with the proposed bill or scope of practice definition proposed as no other profession testified against our bill during the 2016 session. However, we would recommend the following exceptions, as suggested by the proposed licensure act to protect the scope of practice of other professional disciplines:

- Other professionals providing behavior analysis or assisting in the practice of behavior analysis while acting within the scope of practice of the person's license and training, provided the person does not hold himself or herself out to the public as a behavior analyst;
- A matriculated college or university student whose applied behavior analysis activities are part of a defined program of study, course, practicum, internship, or postdoctoral fellowship, provided that the applied behavior analysis activities under this exemption are directly supervised by a licensed behavior analyst in this state, an instructor in a course sequence approved by the Behavior Analyst Certification Board, or another qualified faculty member. Such individuals must not represent themselves as professional behavior analysts and must use titles

that clearly indicate their trainee status, such as “student,” “intern,” or “trainee”;

- Those teaching behavior analysis or conducting behavior analytic research, provided that such teaching or research does not involve the direct delivery of applied behavior analysis services;
- Board certified assistant behavior analysts working under the supervision of a licensed behavior analyst in accordance with the standards established by the Behavior Analyst Certification Board;
- A person implementing an intervention based on behavior analysis under the direction and supervision of a licensed behavior analyst;
- A family member, guardian or caretaker implementing a behavior analysis treatment plan under the direction and supervision of a licensed behavior analyst;
- A person pursuing supervised experience in applied behavior analysis consistent with the experience requirements of the Behavior Analyst Certification Board, provided that such experience is supervised in accordance with the requirements of that Board;
- A person providing organizational behavior management services designed for the benefit of organizations rather than individuals.

Scope of Practice Language in Other State Laws

Alabama Scope of Practice

PRACTICE OF BEHAVIOR ANALYSIS. The design, implementation, and evaluation of instructional and environmental modifications to produce socially significant improvements in human behavior. The practice of behavior analysis includes all of the following: The empirical identification of functional relations between behavior and environmental factors, known as functional assessment and analysis. Interventions based on scientific research and the direct observation and measurement of behavior and environment, which utilize contextual factors, establishing operations, antecedent stimuli, positive reinforcement, and other consequences to help individuals develop new behaviors, increase or decrease existing behaviors, and elicit behaviors under specific environmental conditions. The practice of behavior analysis does not include psychological testing, psychotherapy, cognitive therapy, sex therapy, psychoanalysis or hypnotherapy, or long-term counseling as treatment modalities. The practice of behavior analysis does not include preventing or alleviating or curing of diseases or injuries. Nothing in this act shall be construed as permitting or allowing a licensed behavior analyst to prescribe or administer any drug, make a medical diagnosis, provide medical treatment, or manage a medical condition. A licensed behavior analyst may not attempt to diagnose, prescribe for, treat, or advise a client with reference to any problem, complaint, or condition falling outside the boundaries of behavior analysis.

Alaska Scope of Practice

"Behavior analysis" means the design, implementation, and evaluation of instructional and environmental modifications to produce socially significant improvements in human behavior, the empirical identification of functional relations between behavior and environmental factors, and the utilization of contextual factors, motivating operations, antecedent stimuli, positive reinforcement, and other consequences to help people develop new behaviors, increase or decrease existing behaviors, and engage in behaviors under specific environmental conditions; "behavior analysis" does not include psychological testing, diagnosis of a mental or physical disorder, or the practice of neuropsychology, psychotherapy, cognitive therapy, sex therapy, psychoanalysis, hypnotherapy, or long-term counseling.

Arizona Scope of Practice

“Behavior analysis" means the design, implementation and evaluation of systematic environmental modifications by a behavior analyst to produce socially significant improvements in human behavior based on the principles of behavior identified through the experimental analysis of behavior. Behavior analysis does not include cognitive therapies or psychological testing, neuropsychology, psychotherapy, sex therapy, psychoanalysis, hypnotherapy and long- term counseling as treatment modalities.

"Behavior analysis services" means the use of behavior analysis to assist a person to learn new behavior, increase existing behavior, reduce existing behavior and emit behavior under precise environmental conditions. Behavior analysis includes behavioral programming and behavioral programs.

Hawaii Scope of Practice

"Practice of behavior analysis" means the design, implementation, and evaluation of instructional and environmental modifications to produce socially significant improvements in human behavior. Practice of behavior analysis includes the empirical identification of functional relations between behavior and environmental factors, known as functional assessment and analysis. Practice of behavior analysis also includes the use of contextual factors, motivating operations, antecedent stimuli, positive reinforcement, and other consequences to help people develop new behaviors, increase or decrease existing behaviors, and emit behaviors under specific environmental conditions. Practice of behavior analysis expressly excludes psychological testing, diagnosis of a mental or physical disorder, neuropsychology, psychotherapy, cognitive therapy, sex therapy, psychoanalysis, hypnotherapy, and long-term counseling as treatment modalities.

Kentucky Scope of Practice

"Applied behavior analysis" means the design, implementation, and evaluation of environmental modifications, using behavioral stimuli and consequences, to produce socially significant improvement in human behavior, including the use of direct observation, measurement, and functional analysis of the relationship between environment and behavior;

"Applied behavior analysis interventions" means interventions that are based on scientific research and the direct observation and measurement of behavior and environment which utilize contextual factors, establishing operations, antecedent stimuli, positive reinforcement, and other consequences to help people develop new behaviors, increase or decrease existing behaviors, and elicit behaviors under specific environmental conditions;

Kansas Scope of Practice

‘‘Applied behavior analysis’’ means the design, implementation and evaluation of environmental modifications, using behavioral stimuli and consequences, to produce socially significant improvement in human behavior, including the use of direct observation, measurement and functional analysis of the relationship between environment and behavior.

Louisiana Scope of Practice

"Applied behavior analysis" means the design, implementation, and evaluation of systematic instructional and environmental modifications by a behavior analyst, to produce socially significant improvements in behavior.

Maryland Scope of Practice

“Practice of Behavior Analysis” includes: (1) The empirical identification of functional relations between behavior and environmental factors, known as functional assessment and analysis; and (2) Interventions based on scientific research and the direct observation and measurement of behavior and Environment. (3) “Practice of Behavior Analysis” does not include psychological testing, diagnosis of a mental or physical disorder, neuropsychology, psychotherapy, cognitive therapy, sex therapy,

psychoanalysis or hypnotherapy, or long-term counseling, or any sub-disipline of psychology as treatment modalities.

Massachusetts Scope of Practice

“Scope of practice of applied behavior analysis”, the design, implementation and evaluation of systematic instructional and environmental modifications, using behavioral stimuli and consequences, to produce socially significant improvements in human behavior, including the direct observation and measurement of behavior and the environment, the empirical identification of functional relations between behavior and environmental factors, known as functional assessment and analysis, and the introduction of interventions based on scientific research and which utilize contextual factors, antecedent stimuli, positive reinforcement and other consequences to develop new behaviors, increase or decrease existing behaviors and elicit behaviors under specific environmental conditions that are delivered to individuals and groups of individuals; provided, that such practice of applied behavior analysis shall only be conducted upon referral from a licensed mental health or medical professional whose scope of practice includes diagnosis and evaluation; and provided further, that ”scope of practice of applied behavior analysis” shall not include psychological testing, neuropsychology, diagnosis of mental health or developmental conditions, psychotherapy, cognitive therapy, sex therapy, psychoanalysis, psychopharmacological recommendations, hypnotherapy or academic teaching by college or university faculty.

Mississippi

"Practice of applied behavior analysis" means interventions based on scientific research and the direct observation and measurement of behavior and the environment. Behavior analysts utilize contextual factors, motivating operations, antecedent stimuli, positive reinforcement, and other consequences to help people develop new behaviors, increase or decrease existing behaviors, and emit behaviors under specific environmental conditions. The practice of behavior analysis expressly excludes psychological testing, diagnosis of a mental or physical disorder, neuropsychology, psychotherapy, cognitive therapy, sex therapy, psychoanalysis, hypnotherapy, and long-term counseling as treatment modalities.

Missouri Scope of Practice

"Applied behavior analysis", the design, implementation, and evaluation of environmental modifications, using behavioral stimuli and consequences, to produce socially significant improvement in human behavior, including the use of direct observation, measurement, and functional analysis of the relationships between environment and behavior. Applied behavior analysis does not include cognitive therapies or psychological testing, personality assessment, intellectual assessment, neuropsychological assessment, psychotherapy, cognitive therapy, sex therapy, psychoanalysis, hypnotherapy, family therapy, and long-term counseling as treatment modalities.

Nevada Scope of Practice

“Practice of applied behavior analysis” means the design, implementation and evaluation of environmental modifications using behavioral stimuli and consequences to produce socially significant improvement in human behavior, including, without limitation, the use of direct observation, measurement and functional analysis of the relations between environment and behavior. The term includes the provision of behavioral therapy by a behavior analyst, assistant behavior analyst or autism behavior interventionist.

New York Scope of Practice

Practice of applied behavior analysis means “the design, implementation and evaluation of environmental modifications, using behavioral stimuli and consequences, to produce socially significant improvement in human behavior, including the use of direct observation, measurement, and functional analysis of the relationship between environment and behavior... for the purpose of providing behavioral health treatment for persons with autism, autism spectrum disorders and related disorders.”

North Dakota Scope of Practice

"Practice of applied behavior analysis":

a. Means the application of the principles, methods, and procedures of the experimental analysis of behavior and applied behavior analysis, including principles of operant and respondent learning. The term includes applications of those principles, methods, and

procedures to: 1) Design, supervise, evaluate, and modify treatment programs to change the behavior of individuals diagnosed with an autism spectrum disorder;

1. 2) Design, supervise, evaluate, and modify treatment programs to change the behavior of individuals;
2. 3) Design, supervise, evaluate, and modify treatment programs to change the behavior of groups; and
3. 4) Consult with individuals and organizations.

b. The term does not include diagnosis, counseling, psychological testing, personality assessment, intellectual assessment, neuropsychological assessment, psychotherapy, cognitive therapy, sex therapy, family therapy coordination of care, psychoanalysis, hypnotherapy, and long-term counseling as treatment modalities.

Ohio Scope of Practice

"Practice of applied behavior analysis" means the design, implementation, and evaluation of instructional and environmental modifications to produce socially significant improvements in human behavior and includes the following: a) The empirical identification of functional relations between behavior and environmental factors, known as functional assessment and analysis; b) Interventions based on scientific research and the direct observation and measurement of behavior and the environment;

c) Utilization of contextual factors, motivating operations, antecedent stimuli, positive reinforcement, and other consequences to help people develop new behaviors, increase or decrease existing behaviors, and emit behaviors under specific environmental conditions.

"Practice of applied behavior analysis" does not include psychological testing, diagnosis of a mental or physical disorder, neuropsychology, psychotherapy, cognitive therapy, sex therapy, psychoanalysis, hypnotherapy, and long-term counseling as treatment modalities.

Oklahoma Scope of Practice

"Applied behavior analysis" means the design, implementation, and evaluation of instructional and environmental modifications to produce socially significant improvements in human behavior through skill acquisition and the reduction of problematic behavior.

Oregon Scope of Practice

"Applied behavior analysis" means the design, implementation and evaluation of environmental modifications, using behavioral stimuli and consequences, to produce significant improvement in human social behavior, including the use of direct observation, measurement and functional analysis of the relationship between environment and behavior. The practice of applied behavior analysis expressly excludes psychological testing, neuropsychology, psychotherapy, cognitive therapy, sex therapy, psychoanalysis, hypnotherapy and long-term counseling as treatment modalities.

Rhode Island Scope of Practice

"Practice of applied behavior analysis" means the design, implementation and evaluation of environmental modifications by a behavior analyst to produce socially significant improvements in human behavior. It includes the empirical identification of functional relations between environment and behavior, known as functional assessment and analysis. Applied behavior analysis interventions are based on scientific research and the direct observation and measurement of behavior and environment. They utilize contextual factors, establishing operations, antecedent stimuli, positive reinforcement and other consequences to help people develop new behaviors, increase or decrease existing behaviors, and emit behaviors under specific environmental conditions. The practice of applied behavior analysis expressly excludes psychological testing, neuropsychology, psychotherapy, cognitive therapy, sex therapy, psychoanalysis, hypnotherapy, and long-term counseling as treatment modalities. Such services are provided by a person licensed under this chapter only when applied behavior analysis services are prescribed by a child psychiatrist, a behavioral developmental pediatrician, a child neurologist or a licensed psychologist with training in child psychology pursuant to section 27- 20.11-4.

South Dakota Scope of Practice

The term, practice of applied behavior analysis, is the application of principles, methods, and procedures of the analysis of behavior including principles of operant and respondent learning. The term includes applications of those principles, methods, and procedures to:

(1) Design, supervise, evaluate, and modify treatment programs to change the behavior of individuals diagnosed with an autism spectrum disorder;

(2) Design, supervise, evaluate, and modify treatment programs to change the behavior of individuals;

(3) Design, supervise, evaluate, and modify treatment programs to change the

behavior of groups; and

(4) Consult with individuals and organizations.

Tennessee Scope of Practice

The “practice of applied behavior analysis” as the design, implementation, and evaluation of environmental modifications by a behavior analyst to produce socially significant improvements in human behavior.

Utah Scope of Practice

"Practice of behavior analysis" means the design and evaluation of instructional and environmental modifications to produce socially significant improvements in human behavior and includes the following: the empirical identification of functional relations between behavior and environmental factors, known as functional assessment and analysis; interventions based on scientific research and the direct observation and measurement of behavior and environment; and utilization of contextual factors, motivating operations, antecedent stimuli, positive reinforcement, and other consequences to help people develop new behaviors, increase or decrease existing behaviors, and emit behaviors under specific environmental conditions. "Practice of behavior analysis" does not include: diagnosis of a mental or physical disorder; psychological testing; educational testing; neuropsychology; neuropsychological testing; mental health therapy; psychotherapy; counseling; biofeedback; neurofeedback; cognitive therapy; sex therapy; psychoanalysis; or hypnotherapy.

Vermont Scope of Practice

“Practice of applied behavior analysis” means the design, implementation, and evaluation of systematic instructional and environmental modifications for the purpose of producing socially significant improvements in and understanding of behavior based on the principles of behavior identified through the experimental analysis of behavior. It includes the identification of functional relationships between behavior and environments. It uses direct observation and measurement of behavior and environment. Contextual factors, establishing operations, antecedent stimuli, positive reinforcers, and other consequences are used, based on identified functional relationships with the environment, in order to produce practical behavior change.

Virginia Scope of Practice

"Practice of behavior analysis" means the design, implementation, and evaluation of environmental modifications, using behavioral stimuli and consequences, to produce socially significant improvement in human behavior, including the use of direct observation, measurement, and functional analysis of the relationship between environment and behavior.

Washington Scope of Practice

The practice of ABA includes the following:

The design of instructional and environmental modifications based on scientific research, observation, and measurement of behavior; empirical identification of functional relations between behavior and environment factors; and utilization on contextual factors, motivation, stimuli, positive reinforcement, and other consequences to assist individuals. The practice of ABA does not include psychological testing, diagnosis of mental or physical disorders, neuropsychology, psychotherapy, cognitive therapy, sex therapy, psychoanalysis, hypnotherapy, or counseling as treatment modalities.

Wisconsin Scope of Practice

"Behavior analyst" means a person who is certified by the Behavior Analyst Certification Board, Inc., as a board-certified behavior analyst and has been granted a license under this subchapter to engage in the practice of behavior analysis.

"Practice of behavior analysis" means the design, implementation, and evaluation of systematic instructional and environmental modifications to produce socially significant improvements in human behavior, including the empirical identification of functional relations between behavior and environmental factors, known as functional assessment and analysis, including interventions based on scientific research and the direct observation and measurement of behavior and environment. "Practice of behavior analysis" does not include psychological testing, neuropsychology, psychotherapy, cognitive therapy, sex therapy, marriage counseling, psychoanalysis, hypnotherapy, and long-term counseling as treatment modalities.

No person may use the title "behavior analyst" or represent or imply that he or she is a behavior analyst unless the person is licensed under this subchapter. This section may not be construed to restrict the practice of behavior analysis by a licensed professional

who is not a behavior analyst, if the services performed are within the scope of the professional's practice and are performed commensurate with the professional's training and experience, and the professional does not represent that he or she is a behavior analyst.

How this Request relates to the Health Care Professions' Ability to Practice to Full Extent of Profession

Licensure is critical to behavior analysts' ability to practice to the full extent of our profession. Without licensure behavior analysts have a limited ability to assist many children and adults who could benefit from the services as we are trained to provide to a broad array of constituents. There are children and adults throughout the state today who cannot access services, or who cannot obtain insurance coverage for services because they do not have a primary diagnosis of Autism. And for those who do receive services, licensure is critical to ensure that people obtain good quality behavioral programming from qualified, fully vetted professionals.

Thank you for considering our request, please do not hesitate to contact us if you would like any additional information regarding this request.

Yours truly,

Suzanne Letso

Suzanne Letso, M.A., BCBA, President

Behavior Analyst Leadership Council

www. Balcllc.org

letso@cccdinc.org

(203) 376-6038

Appendix D
Impact Statements

Connecticut Association of School Psychologists
An affiliate of the National Association of School Psychologists

9/18/2016

Karen G. Wilson, HPA
Practitioner Licensing and Investigations Section
Department of Public Health
410 Capitol Avenue, MS#12APP
P.O. Box 340308
Hartford, CT 06134

Dear Ms. Wilson:

My name is Karla Vazquez and I am the current president of the Connecticut Association of School Psychologists [CASP]. We are a professional association who represent the practice and interests of school psychology in the state. In accordance with Public Act 11-209, we are submitting this impact statement in response to the Connecticut Association of Behavior Analysis (CABA) submission for a scope of practice review request to the Department of Public Health.

If the Department of Public Health moves forward with CABA's request for a scope of practice review, CASP respectfully requests participation in the scope of practice review committee. CASP would like to participate in the scope of practice review committee to better understand how the licensing of behavior analyst will better protect the public. School psychologists and behavior analysts have complimentary skills that are utilized in the schools. There are many similarities and also distinct differences for both providers. With our experience working with behavior analysts who are district employees and outside consultants, we feel our knowledge will be essential to the scope of practice review committee. We respectfully ask to be included at the table if DPH decides to move forward with request.

I can be contacted at casp.president1@gmail.com or at (203) 689-6958.

I want to thank you in advance for your consideration of this request.

Sincerely,

Karla N. Vazquez, Psy.S.
CASP President

Cc: Michael Dugan, Capitol Consulting (CASP Lobbyist)

CONNECTICUT NURSES' ASSOCIATION

Karen G. Wilson, HPA
Practitioner Licensing and Investigations Section
Department of Public Health
410 Capitol Avenue, MS#12APP
P.O. Box 340308
Hartford, CT 06134

September 24, 2016

Dear Ms. Wilson:

The Connecticut Nurses' Association, a professional association for Registered Nurses, respectfully submits this impact statement for the Behavioral Analyst BCBA request for a Scope of Practice Determination.

There are over 60,000 licensed Registered Nurses in CT. Nurses are a member of the health care team and may work with or refer to Behavioral Analysts in clinics, schools, primary care and outpatient settings, to name a few. In addition, many nurses practice within the field of mental health and developmental disorders. This is a growing population requiring intensive care.

While we strongly believe oversight through licensure is important for accountability of the profession and protection of patients, it is important to ensure that the licensure requirements take into consideration other members of the health care team that collaborate and coordinate care of the patients.

As advocates for the public health and their expectation that they are using a well coordinated and informed health care system, we request to be part of a discussion to advocate for and ensure there are no barriers to collaboration within nursing's scope of practice.

Thank you and we look forward to the discussion.

Sincerely,

Mary Jane Williams
Chair, Government Relations

Kimberly A. Sandor
Executive Director, CT Nurses' Association

1224 Mill St. Bldg B
East Berlin, CT 06023

(203) 980 2011
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Karen G. Wilson, HPA
Practitioner Licensing and Investigations Section
Department of Pubic Health
410 Capitol Ave, MS #12APP
P.O. Box 340308
Hartford, CT 06134
Email: Karen.Wilson@ct.gov

10/03/16

Dear Ms. Wilson,

ConnOTA would like to take this opportunity to respond to the proposed scope of practice revisions being proposed by the Connecticut Association for Behavior Analysis for 2016.

Let me start my providing a brief explanation of Occupational Therapy. As of September 30, 2016 , there were 2450 licensed Occupational Therapists and 948 licensed Certified Occupational Therapy Assistants in the state of CT.

Occupational Therapy is a science-driven, evidence based profession that enables people of all ages to live life to its fullest by helping them promote health and prevent – or live better with their illness, injury or disability. Patients (clients) who receive our services range in age from the pre-mature infant to the geriatric patient and all ages in-between. When we evaluate a patient (client) we take into account the complete person including his or her psychological, physical, emotional and social makeup so they can function at the highest possible level.

As outlined on the AOTA website, "Common occupational therapy interventions include helping children with disabilities to participate fully in school and social situations, helping people recovering from injury to regain skills, and providing supports for older adults experiencing physical and cognitive changes. Occupational therapy services typically include:

- an individualized evaluation, during which the client/family and occupational therapist determine the person's goals,
- customized intervention to improve the person's ability to perform daily activities and reach the goals, and
- an outcomes evaluation to ensure that the goals are being met and/or make changes to the intervention plan.

Occupational therapy services may include comprehensive evaluations of the client's home and other environments (e.g., workplace, school), recommendations for adaptive equipment and training in its use, and guidance and education for family members and caregivers. Occupational therapy practitioners have a holistic perspective, in which the focus is on adapting the environment to fit the person, and the person is an integral part of the therapy team.

On behalf of the licensed Occupational Therapists and Certified Occupational Therapy Assistants in Connecticut we are asking for further specific clarification of how the proposed definition of behavior analysis practice does not

infringe upon the practice of Occupational Therapy, the scope of Occupational Therapy in the State of Connecticut and of course the impact of services on recipients of Occupational Therapy.

In May 2015 we engaged in dialogue with the CT ABA organization regarding the definition of behavior analysis; at that time the CT ABA agreed to add Occupational Therapy in regards to which practices and health care professionals applied behavior analysis excluded.

- The current CT ABA scope of practice proposal on Page 1, paragraph 2 does not include Occupational Therapy assessment, treatment and modalities in defining what the scope proposal *"expressly excludes"* as discussed and agreed upon in May 2015.
- Comparatively speaking, The Behavior Analyst Leadership Council of Connecticut submitted a scope of practice and licensure response this year in which the language on page 6 paragraph 2 clearly states that Occupational Therapy is excluded.

CT ABA scope proposal concerns regarding content and language page 9, paragraph 2 of the proposed scope of practice:

"ABA means the design, implementation and evaluation of environmental modifications, using behavioral stimuli and consequences, including the use of direct observation, measurement and functional analysis of the relationship between the environment and behavior, to produce socially significant improvement in human behavior.

- In May 2015 dialogue between ConnOTA and CT ABA regarding the use of the language *"functional analysis"* as noted above was agreed upon to be removed from the definition of ABA yet it remains in this most recent submission by the CT ABA as well as in the proposed definition of ABA on page 6 paragraph 3.
- ConnOTA has taken concern with this proposed language since May 2015 as licensed occupational therapists currently use similar scope of practice language to direct sensory integration, mental health, environmental, physical disability and aging in place assessments and treatment (See C.G.S. Sec. 20-74(a)(1)). Licensed occupational therapists complete functional assessments, which specifically include functional analysis, that include the role and impact of the environment on a person's valued occupations which in turn directly affects the person's behaviors, social interactions, physical abilities, engagement in their environment and their perception of success in valued activities.

At this time, ConnOTA respectfully submits ongoing concerns, as noted above, regarding the need for continued dialogue regarding language and content clarification of the proposed practice scope by the CT ABA and The Behavior Analyst Council of Connecticut.

Sincerely,

Judith Sheehan, OTR/L

ConnOTA President

Morgan Villano, MPA/MSPS, OTR/L

ConnOTA Member for Government Affairs

Appendix E

State Laws Governing Behavior Analysts

CHAPTER 382a
BEHAVIOR ANALYSTS

Table of Contents

Sec. 20-185i. Board certified behavior analyst. Board certified assistant behavior analyst. Use of title. (a) As used in this section:

(1) "Behavior Analyst Certification Board" means the nonprofit corporation established to meet the professional credentialing needs of behavior analysts, governments and consumers of behavior analysis services and accredited by the National Council for Certifying Agencies in Washington, D.C., or any successor national accreditation organization;

(2) "Board certified behavior analyst (BCBA)" means a person who has been certified as a behavior analyst by the Behavior Analyst Certification Board; and

(3) "Board certified assistant behavior analyst (BCABA)" means a person who has been certified as an assistant behavior analyst by the Behavior Analyst Certification Board.

(b) No person, unless certified by the Behavior Analyst Certification Board as a board certified behavior analyst or a board certified assistant behavior analyst, shall use in connection with his or her name or place of business: (1) The words "board certified behavior analyst", "certified behavior analyst", "board certified assistant behavior analyst" or "certified assistant behavior analyst", (2) the letters, "BCBA" or "BCABA", or (3) any words, letters, abbreviations or insignia indicating or implying that he or she is a board certified behavior analyst or board certified assistant behavior analyst or in any way, orally, in writing, in print or by sign, directly or by implication, represent himself or herself as a board certified behavior analyst or board certified assistant behavior analyst. Any person who violates the provisions of this section shall be guilty of a class D felony. For the purposes of this section, each instance of contact or consultation with an individual which is in violation of any provision of this section shall constitute a separate offense.

(P.A. 11-228, S. 1; P.A. 13-258, S. 81.)

History: P.A. 13-258 amended Subsec. (b) to change penalty from fine of not more than $500 or imprisonment of not more than 5 years to a class D felony.

(Return to Chapter Table of Contents) (Return to List of Chapters) (Return to List of Titles)

Appendix F

State of Connecticut Department of Developmental Services
FY15 Funding Guidelines

Dannel P. Malloy Governor

State of Connecticut Department of Developmental Services

FY15 Funding Guidelines

Terrence W. Macy, Ph.D. Commissioner

Joseph W. Drexler, Esq. Deputy Commissioner

LON	
Minimum	1-2
Moderate	3-4
Comprehensive	5-7
Individual Program Budget	8

Priority Check List	
0-14	P3
15-21	P2
22-<	P1

VSP Budget	
Minimum	N/A
Moderate	$48,000
Comprehensive	$55,000

- • Residential budget of $225,000 or higher need to be referred to the Deputy Commissioner
- • A combination of Residential and Day budget totaling $250,000 or higher need to be referred to the

  Deputy Commissioner

  DAY SERVICES

GSE/DSO Rates			
LON Overall Day or Behavior (which ever is higher)	Annual Full-Time *does not include transportation	Day Rate	Hourly Rate
1	$11,286	$50.16	$8.36
2	$15,053	$66.90	$11.15
3	$18,806	$83.58	$13.93
4	$20,696	$91.98	$15.33
5	$22,572	$100.32	$16.72
6	$24,449	$108.66	$18.11

7	$26,339	$117.05	$19.51
8	$28,215	$125.40	$20.90

* AO & Grad transportation estimated cost is $3,744

Phone: 860 418-6000◆TDD 860 418-6079◆Fax: 860 418-6001 460 Capitol Avenue◆Hartford, Connecticut 06106 www.ct.gov/dds◆e-mail: ddsct.co@ct.gov
An Affirmative Action /Equal Opportunity Employer

DAY SERVICES (continued)

FY15 Funding Guidelines

Pro-Rated LON Based Rates for GSE/DSO					
LON	1 Day (45/yr)	2 Days (90/yr)	3 Days (135/yr)	4 Days (180/yr)	5 Days (225/yr)
1	$2,257	$4,514	$6,772	$9,029	$11,286
2	$3,011	$6,021	$9,032	$12,042	$15,053
3	$3,761	$7,522	$11,283	$15,044	$18,806
4	$4,139	$8,278	$12,417	$16,556	$20,696
5	$4,514	$9,029	$13,543	$18,058	$22,572
6	$4,890	$9,779	$14,669	$19,559	$24,449
7	$5,268	$10,535	$15,803	$21,071	$26,339
8	$5,643	$11,286	$16,929	$22,572	$28,215

1:1 Titration Rates for Day	
LON	Annualized Rate for each hour of 1:1 supports
1	$5,479
2	$4,941
3	$4,404
4	$4,134
5	$3,866
6	$3,598
7	$3,328
8	$3,060

2:1 Titration Rates for Day

URR Required for a 7 hour Day (6.5 hours is allowed until 6/30/2015)	
1:1 in a group day setting	$49,637
2:1 in group day setting	$78,553
Individual Day	$47,565

LON

ISE: Hours of Follow Along Supports ($47.47/hr)

1. 1 Maximum of 3 hours per week
2. 2 Maximum of 4 hours per week
3. 3 Maximum of 5 hours per week
4. 4 Maximum of 5 hours per week
5. 5 Maximum of 5 hours per week
6. 6 Maximum of 5 hours per week
7. 7 Maximum of 5 hours per week

2

LON

1 2 3 4 5 6 7 8

Annualized Rate for each hour of 2:1 supports
$ 9,610
$ 9,071 $8,535 $8,265 $7,997 $7,729 $7,459 $7,191

TRANSPORTATION

FY15 Funding Guidelines

Residential and Day rates for transporting individuals to their day program with an accessible vehicle	
$ 1,872	<= to 3.5 miles
$ 3,744	3.6 to 6 miles
$ 5,616	6.1 to 8.5 miles
$ 7,488	8.6 to 11 miles
$ 9,360	11.1 to 13.5 miles
$11,232	13.6 to 16 miles
$13,104	16.1 to 20 miles
$13,104	20 miles and up

Residential and Day rates for transporting individuals to their day program	
$ 1,872	<= 7 miles
$ 3,744	7.1 to 12 miles
$ 5,616	12.1 to 16 miles
$ 7,488	16.1 to 20 miles
$ 7,488	20 miles and up

RESIDENTIAL IHS

IHS Hours for Own Home ($29/hr) Safety Net $4,380	
LON	Hours/wk
1	14
2	17
3	20
4	23
5	28
6	36
7	42
8	48

IHS Cluster Hours for Own Home	
LON	Hours/wk
1	N/A
2	N/A
3	17
4	20
5	25
6	33
7	39
8	45

IHS Behavior Hours (use as a guide only)	
LON	Annual Hrs
1-2	0
3-4	2
5-6	4
7	8
8	12

Health Care Coordination ($71.71/hr)
+LON Score
--health/medical score 4 or higher
-- score of 6 or higher for combination of: health/medical and either the behavior (home) or psychiatric (home) domains, whichever is higher.

Score of 4-6 Score of 7-9 Score of 10-14

Authorized hrs of service per year

24 hrs 36 hrs 48 hrs

3

CLA/CRS

FY15 Funding Guidelines

Residential Initial Rates								
LON								
Beds	1	2	3	4	5	6	7	8
1	$25,256	$33,665	$67,260	$89,681	$117,734	$180,314	$194,702	$207,891
2	$25,256	$33,665	$67,260	$89,681	$117,734	$123,730	$136,519	$152,583
3	$25,256	$33,665	$67,260	$89,691	$102,470	$116,090	$132,522	$150,185
4	$25,256	$33,665	$67,260	$75,454	$88,481	$102,101	$128,326	$147,787
5	$25,256	$33,665	$57,046	$68,260	$80,688	$98,504	$126,527	$145,389
6	$25,256	$29,253	$51,450	$63,863	$77,690	$94,907	$122,930	$139,394
7	$21,420	$26,855	$46,768	$57,383	$66,899	$82,917	$109,741	$133,398
8	$20,221	$25,656	$42,657	$54,385	$63,302	$78,121	$103,746	$126,204

LON Score

4 5

6 7

8

Raw One to One (138 hours per week * $ 23.24 hourly rate *52 weeks)

166,771.00 166,771.00

166,771.00 166,771.00

166,771.00

Average Contribution from Person's LON funding towards the One to one staff

25,378.00 30,212.00

33,838.00 42,297.00

50,756.00

Funding above the individual’s LON for the one to one staff and to contribute to the regular staffing in the house

141,393.00 136,559.00

132,933.00 124,474.00

116,015.00

Raw One to One (82 hours per week * $ 23.24 hourly rate *52 weeks)

99,096.00 99,096.00

99,096.00 99,096.00

99,096.00

Average Contribution from Person's LON funding towards the One to one staff

15227 18127

20303 25378

30454

Funding above the individual’s LON for the one to one staff and to contribute to the regular staffing in the house

Average Hourly Rates (Minimum of 7 hours of one to one per day)

24 Hr One to One
Additional

16 hr Awake One to One Additional

CLA/CRS ONE TO ONE

4

83,869.00 19.7 80,969.00 19.03

78,793.00 18.52 73,718.00 17.35

68,642.00 16.17

CCH

RESPITE

FY15 Funding Guidelines

CCH Annualized Amounts								
	LON 1	LON 2	LON 3	LON 4	LON 5	LON 6	LON 7	LON 8
Service Rate	1,422.77	1,422.77	4,543.42	4,543.42	8,615.62	8,615.62	8,615.62	8,615.62
Support Payment	2,690.88	4,490.88	3,501.96	7,002.00	10,973.04	10,973.04	17,973.00	17,973.00
Total DDS	$4,114	$5,914	$8,045	$11,545	$19,589	$19,589	$26,589	$26,589
CTV Rate	6,921	7,856	8,794	10,663	11,812	11,812	14,274	14,274
Total with CTV Rate	$11,035	$13,770	$16,839	$22,208	$31,401	$31,401	$40,863	$40,863

RESPITE SUPPORTS

Service	Waiver	Procedure Codes	Units/ Smallest unit increment	Provider Rate
Respite Agency, In home, Individual	EDS	5151 d	Per diem	302.06/day
	IFS/Comp	S 5151		
Respite Agency, In home, Individual	EDS	1404 z	Hour / 15 minutes	25.17/hour
	IFS/Comp	S 5150		
Respite Agency, out of home, Individual	EDS	1402 z	Per diem	329.44/day
	IFS/Comp	S 5151		
Respite Agency, out of home, Individual	EDS	1406 z	Hour / 15 minutes	26.31/hour
	IFS/Comp	S 5150		
Respite Agency, Group Rate 1	IFS/Comp/EDS	S 5151	Per diem	128.07/day
Respite Agency, Group Rate 1	EDS	5152 z	Hour/15 minutes	9.53/hour
	IFS/Comp	S 5150		
Respite Agency, Group Rate 2	EDS	5151 a	Per diem	162.68/day
	IFS/Comp	S 5151		
Respite Agency, Group Rate 2	EDS	5153 z	Hour/15 minutes	12.40/hour
	IFS/Comp	S 5150		
Respite Agency, Group Rate 3	EDS	5151 b	Per diem	220.27/day
	IFS/Comp	S 5151		
Respite Agency, Group Rate 3	EDS	5154 z	Hour/15 minutes	17.21/hour
	IFS/Comp	S 5150		
Respite Agency, In home, 2 person	IFS/Comp/EDS	S 5151	Per diem	188.79/day
Respite Agency, In home, 2 person	IFS/Comp	S 5150	Hour / 15 minutes	15.76/hour
Respite Agency, Out of home, 2 person	IFS/Comp/EDS	S 5151	Per diem	216.17/day
Respite Agency, Out of home, 2 person	IFS/Comp	S 5150	Hour / 15 minutes	16.89/hour

OVERNIGHT CAMP

Rates for Overnight Camp	Rates are based on the 24 hr group respite
Residential LON of 1 or 2	$128.07 per day (includes transportation)
Residential LON of 3, 4 or 5	$162.68 per day (includes transportation)
Residential LON of 6 or 7	$220.27 per day (includes transportation)

Appendix G

Cost – Benefit Journal Articles

Behavioral Interventions
Behav. Intervent., 13, 201–226 (1998)

COST–BENEFIT ESTIMATES FOR EARLY INTENSIVE BEHAVIORAL INTERVENTION FOR YOUNG CHILDREN WITH AUTISM—GENERAL MODEL AND SINGLE STATE CASE

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Clinical research and public policy reviews that have emerged in the past several years now make it possible to estimate the cost–benefits of early intervention for infants, toddlers, and preschoolers with autism or pervasive development disorder—not otherwise specified (PDD—NOS). Research indicates that with early, intensive intervention based on the principles of applied behavior analysis, substantial numbers of children with autism or PDD—NOS can attain intellectual, academic, communication, social, and daily living skills within the normal range. Representative costs from Pennsylvania, including costs for educational and adult developmental disability services, are applied in a cost–benefit model, assuming average participation in early intensive behavioral intervention (EIBI) for three years between the age of 2 years and school entry. The model applied assumes a range of EIBI effects, with some children ultimately participating in regular education without supports, some in special education, and some in intensive special education. At varying rates of effectiveness and in constant dollars, this model estimates that cost savings range from $187,000 to $203,000 per child for ages 3–22 years, and from $656,000 to $1,082,000 per child for ages 3–55 years. Differences in initial costs of $33,000 and $50,000 per year for EIBI have a modest impact on cost–benefit balance, but are greatly outweighed by estimated savings. The analysis indicates that significant cost-aversion or cost-avoidance may be possible with EIBI.

INTRODUCTION

As expenditures for social welfare, public health, and specialized human services have increased dramatically over the past two decades, there has been an increasing impetus for understanding the costs and consequences (i.e., benefits) of

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CCC 1072-0847/98/040201–26$17.50

the investment of public resources in specific programs and services for children with, or at risk for, disabilities. Welfare reform, Medicaid reform (through such initiatives as managed care and home and community-based services waivers), and scrutiny of the rising costs of early intervention, special education, and adult disability services are all manifestations of the need to contain costs and direct resources in the most efficient and effective ways possible. In the area of early intervention and preschool services as a whole, there has been mounting concern regarding cost–benefit (Guralnick, 1998). This concern has most likely arisen because of the perceived wide variations in costs for seemingly similar services available through public providers and private contractors (see, e.g., Schopler, 1998). There are additional likely concerns that possible economies may be lost when substitute financing mechanisms (for example, Medicaid fee-for-service) are used in lieu of system-wide cost-related rates within educational or other specialized public services (see, e.g., Division of Health, 1997; Eisenhofer, Grant, DiPersio, & German, 1998).

The costs and benefits of services for young children with autism or pervasive developmental disorder—not otherwise specified (PDD—NOS, hereafter abbreviated PDD) have come under particularly intense scrutiny of late (see, e.g., Gresham & MacMillan, 1997; Schopler, 1998). Following the publication of research reports indicating that substantial proportions of children with autism or PDD who received early intensive behavioral intervention (EIBI) achieved normal or near-normal functioning (Lovaas, 1987; McEachin, Smith, & Lovaas, 1993), demand for this intervention has increased. The research findings have been controversial, however, for several reasons: they are relatively recent; the studies are subject to methodological criticisms; they have emerged from a small number of research and service projects; and the intervention is intensive, specialized, highly directive, and expensive. Moreover, these findings have emerged at a time when leaders of some philosophical movements in special education are advocating apparently incompatible practices of unproven efficacy, especially under such rubrics as 'total inclusion' and 'developmental appropriateness' (Kauffman & Hallahan, 1995).

Direct and indirect criticisms of EIBI by some of these advocates have focused on alleged negative side effects (see, e.g., Autism National Committee, 1995a; 1995b; Greenspan & Weider, 1997; Wetherby, Schuler, & Prizant, 1997). Despite their frequent citation, these criticisms are not grounded in sound research or established facts; they involve misinterpretations of behavioral intervention, incomplete or inaccurate understanding of behavioral principles and procedures, or are otherwise suppositional and groundless (Cameron & Pierce, 1994; Eisenberger & Cameron, 1996; Lovaas, 1995; 1996; Luce & Dyer, 1996). Additionally, treatments for autism or PDD most often recommended in lieu of

EIBI typically lack demonstrated efficacy for achieving large and lasting gains (Eaves & Ho, 1996; Freeman, 1997; Green, in press; Smith, 1993; 1996). Thus, for many clinicians and researchers, the question is not whether children with autism or PDD can achieve substantially improved functioning, but what practices lead to the best outcomes for these children and whether the methodology underpinning the research findings on EIBI is sound (see, e.g., Foxx, 1993; Guralnick, 1998; Gresham & MacMillan, 1997; Schopler, Short, & Mesibov, 1989).

This report presents a cost–benefit analysis of EIBI for children with autism or PDD. We estimate costs and benefits of services for children with autism or PDD who receive EIBI relative to those of children without disabilities in general, and children with autism or PDD who do not receive effective intervention or who otherwise continue to need intensive supports. The analysis provides a projection of cost-aversion, that is, the financial costs to society avoided through provision of EIBI services.

Prior Cost–Benefit Analysis

Although critics of EIBI stress philosophical concerns, from a public policy standpoint, the scientifically validated achievement of normal functioning by many children with autism or PDD has profound implications for analysis of the relative costs and benefits of EIBI for these children (see Barnett & Escobar, 1990, for a prospective cost–benefit analysis model). Until recently, benefits could be estimated exclusively in terms of savings that might be associated with decreased, but still persisting, dependency on special service requirements (e.g., supervision) in later childhood and into adulthood. Considering the high cost of specialized educational services for children with autism or PDD compared to regular education or to other categories of special education, potential benefits were confined to relative savings at different levels of care during adulthood. Possible savings reflected comparison of total educational, supportive, and adult services costs with and without EIBI. Because no basis was generally evident for estimating these cost differentials (such as those used by Barnett & Escobar, 1990), the cost–benefit of EIBI for these children has remained unspecified.

EIBI for Autism or PDD

First identified in the 1940s (Kanner, 1943), autism is a disorder of brain development arising before age three, and often identified by that age or shortly thereafter (Bailey, Phillips Rutter, 1996; Rapin, 1997). It is diagnosed

behaviorally, by observing a child for qualitative impairments in three main areas: disordered social interactions, delayed or disordered communication, and restriction in range of interests and activities. It is also characterized by stereotyped behavior, such as ritualistic or repetitive acts (APA, 1994). Historically, it has generally been found that 50–75% of individuals with autism also have some degree of mental retardation (Freeman, 1997; Rapin, 1997), but the rate at which mental retardation is present among people with autism may be somewhat higher because of difficulties in ascertainment among people with profound mental retardation, and inconsistent access for young children with mental retardation to clinicians familiar with autism spectrum disorders.

The relationship between autism and mental retardation is not well understood. Some children with autism have intellectual abilities within the normal—and, in a small number of cases, the superior—range. However, research clearly indicates that children with both autism and mental retardation tend to enter adulthood with these conditions still present (Eaves & Ho, 1996; Jacobson & Ackerman, 1990; Janicki & Jacobson, 1983; Locke, Banken, & Mahone, 1994). They require lifelong care, services, and supervision. Spontaneous recovery and highly successful rehabilitation through special educational processes are very rare. Educational services for children with autism are among the most intensively staffed and expensive forms of special education available under provisions of the Individuals with Disabilities Education Act. The picture is similar for children diagnosed with PDD—NOS, which has many characteristics in common with autism.

During the past 15 years research has begun to demonstrate that significant proportions of children with autism or PDD who participate in early intensive intervention based on the principles of applied behavior analysis (ABA) achieve normal or near-normal functioning (Lovaas, 1987; McEachin, Smith, & Lovaas, 1993) or significant gains in measured intelligence or other aspects of development (Anderson, Avery, DiPietro, Edwards, & Christian, 1987; Birnbrauer & Leach, 1993; Fenske, Zalenski, Krantz, & McClannahan, 1985). Prior to and concurrent with these studies of EIBI, more than 500 studies were published demonstrating the efficacy of numerous ABA techniques for building a wide range of skills in people with autism of all ages (according to the selection criteria used by DeMyer, Hingtgen, & Jackson, 1981; Hingtgen & Bryson, 1972; Matson, Benavidez, Compton, Paclawskyj, & Baglio, 1996). While this collection of studies does not represent a unitary program model for children with autism, in the aggregate it is the empirical foundation on which most home- and center-based EIBI programs are built.

The most comprehensive research on EIBI was published by Lovaas and colleagues at UCLA (e.g., Lovaas, 1987; McEachin *et al.*, 1993), but other

independent investigators confirmed that it is possible for children with autism or PDD to achieve large, comprehensive, and lasting gains (e.g., Birnbrauer & Leach, 1993; Fenske *et al.*, 1985; Perry, Cohen, & DeCarlo, 1995; Sheinkopf & Siegel, 1998). It is important to note that many children in the study samples whose skills did not reach normal levels nonetheless made substantial, functional gains in several core areas, such as everyday living and communication skills. A small proportion (about 10%, across studies) appeared to continue to need intensive intervention beyond the early childhood years. Research is ongoing to better identify the specific child characteristics and instructional and programmatic practices that are related to differential outcomes in these children (Green, 1996b; Guralnick, 1998; Smith, Eikeseth, Klevstrand, & Lovaas, 1997).

With the emergence of research documenting substantial improvements for some children with autism or PDD following EIBI, and confirmatory reports that the effects can endure into later childhood (e.g., McEachin *et al.*, 1993; Perry *et al.*, 1995) and adulthood (Smith, 1998), it has become possible to estimate costs and utilization more specifically. Such estimations are aided by the compilation of costs for adult services in the developmental disabilities service sector by contemporary researchers, data that were not previously available. Thus, costs and benefits for EIBI for autism or PDD may be estimated with reasonable confidence in terms of (i) children who achieve normal functioning, participate in regular education with little or no support, and are vocationally productive as adults, (ii) children who derive sufficient benefit that they are then able to participate in less intensive special education, and evidence persisting but reduced dependency in adulthood (referred to hereinafter as partial effects), and (iii) children who achieve meaningful functional improvements but still require specialized and intensive educational and adult services (referred to as minimal effects).

In the present analyses, costs from the Commonwealth of Pennsylvania are used to develop overall cost comparisons in the calculation of cost–benefit (see appendix A). The model used by Barnett and Escobar (1990) was a prospective analysis of cost and effect associated with early intervention services for a heterogeneous group of at-risk pre-schoolers. The model used for the present analyses, in contrast, entails projection of costs based on economic extrapolations and trends in allocation of services and costs in educational and adult developmental services. Because this method entails economic forecasting rather than cost tracking, it is important to articulate the assumptions that form the basis for the present forecast. The 16 assumptions required to structure these analyses are detailed in appendix B and are indicated as analytic considerations or elements below.

METHODS

Assumptions in the Present Analysis

The assumptions underpinning the general cost model in this paper are the following:

(i) Current research does not identify characteristics of children with autism or PDD that reliably predict their response to EIBI.
(ii) The proportion of children who achieve normal functioning in all areas is probably somewhat lower than the proportion reported in the literature to date (just under 50%).
(iii) In any group of children with autism or PDD who receive competently delivered EIBI, between 20 and 50% will achieve normal functioning; about 40% will achieve meaningful but moderate gains; and about 10% will continue to require intensive special education and adult services.
(iv) For these reasons, cost–benefit should be couched in terms of marginal benefit, as well as the attainment of normal functioning.
(v) Without EIBI the majority of children with autism or PDD will manifest enduring dependency on special education and adult developmental disability services.
(vi) The mix of costs for EIBI services used here is assumed to be a representative average for both center-based and home-based services.
(vii) Children with autism or PDD who ultimately develop normal functioning are assumed to participate in regular education; those who make moderate gains are assumed to participate in special education; and children who make minimal gains are assumed to participate in intensive special education.
(viii) Because no generalizable mortality data exist for people with autism or PDD, cost–benefit analyses including the adult years are made only to age 55.
(ix) Present costs are used as indicators of future costs, with recognition that future reforms in welfare and public health services may result either in decreased per person rates or expenditures, or in substitution of services.
(x) SSI/ADC costs are used as a summary cost for all utilization of general public benefits outside of the early intervention, educational, and developmental service sectors.
(xi) The average duration of EIBI is assumed to be three years.
(xii) Children with autism or PDD who achieve normal functioning are assumed to use family support services only during participation in EIBI;

those who make moderate gains or realize minimal effects are assumed to use 18 years of these services.

(xiii) During adulthood, those who achieve moderate gains are assumed to use 18 years of Medicaid waiver (or equivalent) services and 15 years of supported work services. Similarly, for those who achieve minimal gains, 80% are assumed to use waiver services for 20 years, 20% are assumed to use intensive community services for 23 years, and 40% are assumed to use supported work services for 15 years.

(xiv) Supported employment wages are estimated at 20% of the median household annual income.

(xv) This analysis uses costs reported in several sources for the Commonwealth of Pennsylvania (from Table 1).

(xvi) The service costs and inflators used will tend to underestimate costs slightly; the earnings projected will tend to overestimate income slightly.

All savings shown are net of the expense of providing EIBI.

RESULTS

Gross Cost Differentials

Table 2 shows the estimated costs from age 3 years to 22 years for a non-disabled child, a child with an initial diagnosis of autism or PDD for whom EIBI

Table 1. Present (1996) costs for services and income estimates— Pennsylvania model

Estimate or variable	*Value*
Present age of the child with autism	3 years
Beginning calendar year	1996
Early intervention annual cost	$3,284
Family support services annual cost	$1,110
Intensive early intervention annual cost	$32,820
Regular education annual cost	$7,543
Special education annual cost	$12,935
Intensive special education annual cost	$28,806
Home and community based services (adult) annual cost	$31,818
Intensive community services (adult) annual cost	$46,838
Institutional services (or equivalent, adult) annual cost	$56,775
Supplemental security income/aid to dependent children annual cost (estimate for all generic public support costs)	$5,379
Median household annual income	$33,714
Supported wages annual value (% of median income)	$6,743

Note: This table presents a listing of the 1996 costs used in the analysis.

Table 2. Estimated costs age 3 to 22 years—Pennsylvania model

	Costs with inflation	*Costs in 1996 $*
Nondisabled Child		
Eighteen years of SSI/ADC (10%)	11,768	9,682
Thirteen years of regular education	128,731	98,061
Net	(140,459)	(107,743)
Autism—with normal range effects of early intervention		
Three years of family support services	3,433	3,330
Three years of SSI/ADC	16,380	16,137
Eighteen years of SSI/ADC (10%)	11,768	9,682
Three years of intensive early intervention	101,445	98,460
Thirteen years of regular education	128,731	98,061
Net	(261,717)	(225,670)
Autism—with partial effects of early intervention		
Eighteen years of family support services	27,873	19,980
Eighteen years of SSI/ADC	117,244	96,822
Three years of intensive early intervention	101,445	98,460
Fifteen years of special education	284,916	194,025
Net	(531,478)	(409,287)
Autism—with minimal effects of early intervention		
Eighteen years of family support services	27,873	19,980
Eighteen years of SSI/ADC	117,244	96,822
Three years of intensive early intervention	101,445	98,460
Fifteen years of intensive special education	634,486	432,090
Net	(881,048)	(647,352)

Note: Table shows (expense) only. This table presents findings regarding costs to age 22 years. These include costs for regular education, family support services, SSI/ADC, intensive early intervention, and regular, special, and intensive special education. Costs are attributed according to whether a child is nondisabled, or achieves functioning in the normal range, partial benefit, or minimal benefit from EIBI. Costs are shown separately with inflation and in 1996 dollars.

results in normal functioning, a child with an initial diagnosis of autism or PDD for whom EIBI results in partial (habilitative or remediative) effects, and a child with an initial diagnosis of autism or PDD for whom EIBI results in minimal effects. Costs for nondisabled children include those for regular education and a 10% rate of use of public services (shown as SSI/ADC). Costs for the children with autism or PDD who achieve normal range effects from EIBI include these costs plus costs for family supports, public services, and intensive early intervention. Costs for the children with autism or PDD who realize partial effects from EIBI include the costs for family supports, public services, intensive early intervention, and special education. Costs for the children with autism or PDD with minimal effects from EIBI are the same as those for children with partial effects from EIBI, except that costs for intensive special education are included.

Table 3. Costs from age 22 to age 55 years—Pennsylvania model

	Costs with inflation	*Costs in 1996 $*
Nondisabled child		
Thirty-three years of SSI/ADC and all other public benefits (10%)	(31,358)	(18,434)
Thirty-three years of wages and other income (75%)	1,768,866	801,039
Net	1,737,508	782,605
Autism—with normal range effects of early intervention		
Thirty-three years of SSI/ADC and all other public benefits (10%)	(31,358)	(18,434)
Thirty-three years of wages and other income (75%)	1,768,866	801,039
Net	1,737,508	782,605
Autism—with partial effects of early intervention		
Five years of family support services	(10,331)	(5,550)
Thirty-three years of SSI/ADC	(313,579)	(184,335)
Twenty-eight years of waiver services	(2,860,063)	(821,734)
Twenty-five years of supported work	346,982	145,121
Net	(2,836,991)	(866,498)
Autism—with minimal effects of early intervention		
Five years of family support services	(10,331)	(5,550)
Thirty-three years of SSI/ADC	(313,579)	(184,335)
Thirty years of waiver services (80%)	(2,390,031)	(610,906)
Thirty-three years of intensive community services (20%)	(948,285)	(309,131)
Twenty-five years of supported work (40%)	138,792	67,430
Net	(3,523,434)	(1,042,492)

Note: Table shows income (expense). This table presents findings regarding costs from age 22 to 55 years. These include costs for family support services, SSI/ADC, home and community based services (waiver services), or intensive community services, and income from regular or supported work. Costs are attributed according to whether a person is nondisabled, or achieves normal skills or functioning, partial benefit, or minimal benefit from EIBI. Costs (expenses) and income are shown separately with inflation and in 1996 dollars.

The sources of costs, public expenditures, are shown in Table 2 and in subsequent tables with inflation (i.e., 'Costs with inflation') and without (i.e., 'Costs in 1996 $'). Throughout the tables, net income is shown without brackets and net expenses or costs are shown with brackets. Costs with inflation are $140,459 for a nondisabled child, $261,717 with normal range effects, $531,478 with partial effects, and $881,048 with minimal effects. Corresponding present values (the amount of money invested in US treasury bonds at 6.0% annual interest at age 3 to 22 years equal to the total costs) are approximately $46,423, $86,501, $175,660, and $291,198.

Table 3 shows the estimated costs from age 22 to 55 years for nondisabled individuals, individuals with an initial diagnosis of autism or PDD for whom EIBI results in normal functioning, individuals with an initial diagnosis of autism

or PDD for whom EIBI results in partial (habilitative or remediative) effects, and individuals with an initial diagnosis of autism or PDD for whom EIBI results in minimal effects. For nondisabled children and children with autism or PDD who realize normal range effects from EIBI, as adults, both a 10% rate of use of public services (i.e., costs) and income (e.g., wages) are included in the analysis. For adults with partial effects from EIBI, costs are shown for family supports, public services, Medicaid waiver services (including residential services), and supported work. For adults with minimal effects from EIBI, costs or income are shown for family supports, public services, Medicaid waiver services, supported work, and intensive community services.

Estimated costs with inflation are $1,737,508 for a nondisabled adult or adult initially diagnosed with autism or PDD for whom EIBI results in normal functioning, $2,836,991 with partial effects, and $3,523,434 with minimal effects. Corresponding present values (money invested in US treasury bonds at 6.0% annual interest for ages 3 to 55 years) are approximately a retained value (i.e., net income equivalent to investment) of $83,950 and costs of $137,073 and $170,240. Throughout the remainder of this analysis present value (amount of money that would have to be invested by a family at the outset to pay for services over a specified time period), uninflated value (uninflated costs to place costs in the context of the expense of current goods and services), and inflated value (the number of dollars projected to be spent) are presented to allow broad interpretation of the projected costs.

The estimates of cost in Tables 2 and 3 are consolidated in Table 4 to provide a cost–benefit model for ages 3 to 55 years. With inflation, the net income for a nondisabled individual is estimated at $1,597,049 (based on the median income value shown in Table 1) and that for an individual with an initial diagnosis of autism or PDD for whom EIBI results in normal functioning, $1,475,791; corresponding present amounts for retained value invested from age 3 to 55 are approximately $77,163 and $71,305. With inflation, the net expenditures are $3,368,469 for an individual with autism or PDD for whom EIBI results in partial effects and $4,404,482 for an individual for whom EIBI results in minimal effects, with present values of about $162,753 and $212,809. Again, these represent the amount of money to be invested at the onset of services to cover the costs of services for the entire span of time.

Costs at Differing Levels of Effectiveness

In addition to comparisons of potential costs for services to age 55 with respect to differing outcomes of EIBI, it is also important to recognize the

Table 4. Financial cost–benefit of early intervention—pennsylvania model—ages 3–55 years

	With inflation	*Costs in 1996 $*
Nondisabled child		
Childhood costs	(140,459)	(107,743)
Adult cost or benefit	1,737,508	782,605
Net	1,597,049	674,862
Autism—with normal range effects of early intervention		
Childhood costs	(261,727)	(225,670)
Adult cost or benefit	1,737,508	782,605
Net	1,475,791	556,935
Autism—with partial effects of early intervention		
Childhood costs	(531,478)	(409,287)
Adult cost or benefit	(2,836,991)	(866,498)
Net	(3,368,469)	(1,275,785)
Autism—with minimal effects of early intervention		
Childhood costs	(881,048)	(647,352)
Adult cost or benefit	(3,523,434)	(1,042,492)
Net	(4,404,482)	(1,689,844)

Note: Table shows income (expense). This table combines net costs for ages 3–22 and 22–55 years from Tables 2 and 3. These costs are shown separately with inflation and in 1996 dollars.

varying levels of cost–benefit. Table 5 shows the estimated cost savings that accrue from EIBI services at rates of 20, 30, 40, and 50% achievement of normal functioning. At each level the marginal effects—i.e., the difference in costs between groups for normal range effects or partial effects from EIBI, or between groups for partial or minimal effects from EIBI—are aggregated for 100 people, and then disaggregated to a weighted average (i.e., in the columns titled 'student'). These estimates reflect service effects possibly associated with fidelity of implementation of treatment or with differing case mix. At each level, it is assumed that for 10% of children with autism or PDD, EIBI achieves minimal effects. EIBI is assumed to achieve partial effects for the remaining children.

As Table 5 shows, the average net benefit, as represented by the measure of marginal benefit (e.g., partial versus minimal effects) decreases slightly with an increase in the proportion of children for whom EIBI results in normal functioning. This finding is attributable to the greater difference in cost between nonintensive special education and intensive intervention, compared to the cost difference between nonintensive special education and regular education in this model, based on Pennsylvania cost values. For ages 3–22 years, average per student inflated marginal dollar savings range from $298,651 at 20% effectiveness to $274,709 at 50% effectiveness.

The relationship of level of treatment effectiveness to marginal benefits is markedly reversed for ages 3–55 years, and increased average marginal savings

Table 5. Financial benefits at different levels of effectiveness, age 3 to 22 years, per 100 children and per child served—Pennsylvania model

	Inflated total	*1996 $ total*	*Inflated/ student*	*1996 $/ student*
At 20% normal range				
20 norm range vs. partial effect	5,395,220	3,672,340	269,761	183,617
70 partial vs. minimal effect	24,469,900	16,664,550	349,570	238,065
10 minimal effect	0	0	0	0
Net	29,865,120	20,336,890	298,651	203,369
At 30% normal range				
30 norm range vs. partial effect	8,092,830	5,508,510	269,761	183,617
60 partial vs. minimal effect	20,974,200	14,283,900	349,570	238,065
10 minimal effect	0	0	0	0
Net	29,067,030	19,792,410	290,670	197,924
At 40% normal range				
40 norm range vs. partial effect	10,790,440	7,344,680	269,761	183,617
50 partial vs. minimal effect	17,478,500	11,903,250	349,570	238,065
10 minimal effect	0	0	0	0
Net	28,268,940	19,247,930	282,689	192,479
At 50% normal range				
50 norm range vs. partial effect	13,488,050	9,180,850	269,761	183,617
40 patial vs. minimal effect	13,982,800	9,544,200	349,570	238,065
10 minimal effect	0	0	0	0
Net	27,470,850	18,725,050	274,709	187,251

Note: This schedule presents a comparison of financial benefits at different levels of achievement of normal skills or functioning achieved by EIBI, for children ages 3–22 years, ranging from 20% of children achieving normal skills or functioning (an assumed minimal rate) to 50% of children. At each level, differing rates of achievement of normal range skills or functioning, as well as partial benefit are estimated. Costs are shown in terms of the aggregate of 100 children served, and averages per person served, with inflation and in 1996 dollars.

are associated with increased levels of effectiveness (see Table 6). The format of Table 6 is identical to that of Table 5, and differs only in that marginal costs (i.e., benefits) are shown for childhood and adulthood combined. Estimated average inflated marginal savings range from $656,385 at 20% effectiveness to $1,081,984 at 50% effectiveness. Corresponding present values for these inflated marginal savings are $31,714 and $52,279.

Summary

At a rate of normal functioning achieved by 40–50% of children with autism or PDD who receive EIBI (see, e.g., Lovaas, 1987) compared to virtually ineffective intervention, cost savings per child served are estimated to be from

Table 6. Financial benefits at different levels of effectiveness, age 3–55 years, per 100 children served and per child served—Pennsylvania model

	Inflated total	*1996 $ total*	*Inflated/ student*	*1996 $/ student*
At 20% normal range				
20 norm range vs. partial effect	96,085,200	36,654,400	4,804,260	1,832,720
70 partial vs. minimal effect	72,520,910	28,984,130	1,036,013	414,059
10 minimal effect	0	0	0	0
Net	168,606,110	65,638,530	1,686,061	656,385
At 30% normal range				
30 norm range vs. partial effect	144,127,800	54,981,600	4,804,260	1,832,720
60 partial vs minimal effect	62,160,780	24,843,540	1,036,013	414,059
10 minimal effect	0	0	0	0
Net	206,288,580	79,825,140	2,062,886	798,251
At 40% normal range				
40 norm range vs. partial effect	192,170,400	73,308,800	4,804,260	1,832,720
50 partial vs. minimal effect	51,800,650	20,702,950	1,036,013	414,059
10 minimal effect	0	0	0	0
Net	243,971,050	94,011,750	2,439,710	940,118
At 50% normal range				
50 norm range vs. partial effect	240,213,000	91,636,000	4,804,260	1,832,720
40 partial vs. minimal effect	41,440,520	16,562,360	1,036,013	414,059
10 minimal effect	0	0	0	0
Net	281,653,520	108,198,360	2,816,535	1,081,984

Note: This table presents a comparison of financial benefits at different levels or rates of achievement of normal skills or functioning achieved by EIBI, for people ages 3–55 years, ranging from 20% of children achieving normal range skills or functioning (an assumed minimal rate) to 50% of children. At each level of effectiveness, differing rates of normal range functioning, as well as partial benefit are estimated. Costs are shown in terms of the aggregate of 100 children served, and averages per person served, with inflation and in 1996 dollars.

$274,709 to $282,689 with inflation to age 22 and from $2,439,710 to $2,816,535 with inflation to age 55.

At $32,820 initial annual cost, the total cost–benefit savings of EIBI services per child with autism or PDD for ages 3–22 years ranges from $187,251 to $203,369 without inflation and from $274,709 to $298,651 with inflation. The majority of savings to schools accrue from children who achieve partial benefit rather than normal functioning, and savings decrease slightly on average with increased rates of children achieving normal functioning. At $50,000 initial annual cost, the corresponding cost–benefit savings of EIBI services per child with autism or PDD ages 3–22 years averages from $131,018 to $151,829 without inflation and from $214,801 to $246,551 with inflation.

At $32,820 initial annual cost, the total cost–benefit savings of EIBI services per child with autism or PDD for ages 3–55 years averages from $656,385

to $1,081,984 without inflation and from $1,686,061 to $2,816,535 with inflation. The majority of savings to the lifespan-oriented developmental disabilities sector accrue from children who achieve normal functioning rather than partial benefit. Savings increase substantially on average with increased rates of children achieving normal functioning. At $50,000 initial annual cost, the corresponding cost–benefit savings of EIBI services per child with autism or PDD ages 3–55 years averages from $605,385 to $1,030,984 without inflation and from $1,635,061 to $2,765,535 with inflation.

These findings are summarized in Figures 1 and 2. Figure 1 displays the net cost for services for the four childhood groups that were presented in Table 2: nondisabled, EIBI with recovery effects, EIBI with partial effects, and EIBI with minimal (i.e., 'Nil') effects. Figure 2 displays the net income or net cost for services for the same four groups, as adults, that were presented in Table 3.

DISCUSSION

Limitations of Forecasting

Although the model used here is based on a series of reasoned assumptions that are consistent with the state of the current literature on treatment and practice (see the Methods section and appendix B), several limitations should be highlighted. First, the cost differential forecasts assume that current service trends are indicative of developmental disability service trends that may extend as long as 50 years hence. Specifically, these consist of trends toward community-based adult services, and are based on differences in expenditures associated with variations in levels and intensities of services for people with disabilities. These trends appear to be reasonable in the near term but may not hold up in the long term in the context of health care reform and challenges to disability services presented by competition for resources. Further, increasing costs as the general population ages during the next 20–30 years can be expected to present unique demographic challenges to the present system of resource allocation for the community support of people with handicaps of all ages. Specific rational alternative scenarios that lend themselves to quantitative modeling, however, are not readily apparent.

Second, alternative scenarios might involve stringent cost containment practices that would limit service eligibility and tend to lower expenditures for adults with autism or PDD over the long term. In projecting costs (or expenditures) for care to age 55 we have used a compound rate of 3%. This rate, which is lower than recent past rates of growth in health care and related costs,

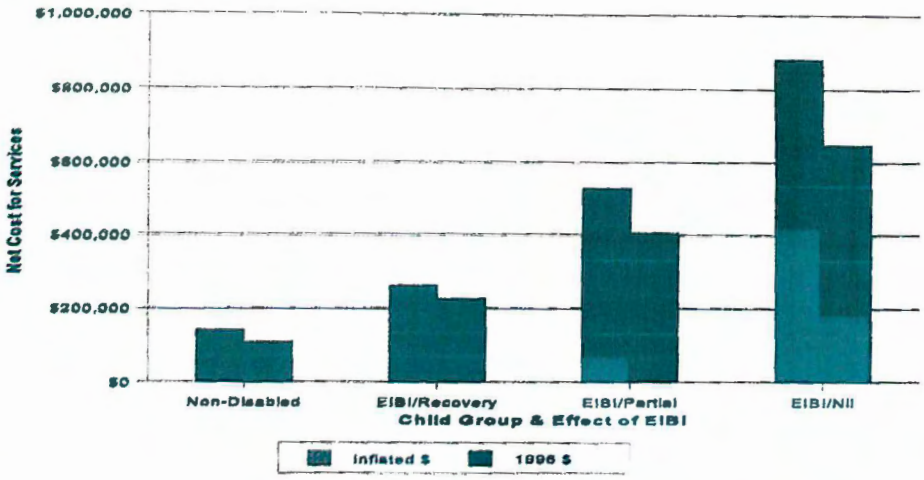

Figure 1. Net average individual cost for early intensive behavioral services ages 3–21 for nondisabled, recovered, partial benefit, and nil benefit groups. Cost is shown as with inflation and in 1996 dollars.

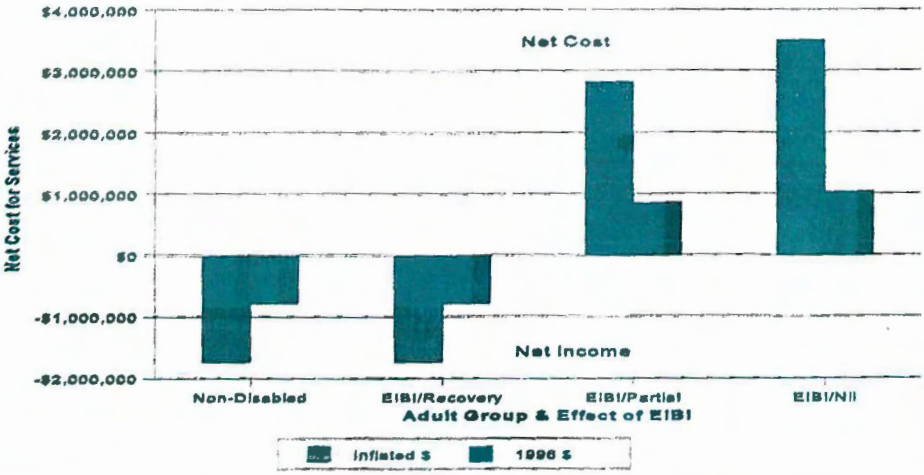

Figure 2. Net average individual cost for early intensive behavioral services ages 3–55 years for nondisabled, recovered, partial benefit, and nil benefit groups. Negative values indicative net earnings (income) and positive values indicate net costs for services. Cost is shown with inflation and in 1996 dollars.

will tend to underestimate future costs; therefore, it is possibly compatible with more stringent cost containment or imposition of limited service eligibility. Moreover, use of a rate of 10% participation in economic supports as a surrogate for all public services at any point in time for nondisabled and normal range effect groups probably represents a substantial underestimate of both

present and future population cohorts. This will tend to underestimate differences in overall cost between these cohorts and people with autism or PDD who realize partial or minimal treatment effects, but the differences in costs among these groups derive primarily from the use of special education, intensive special education, or adult developmental disability services. SSI costs (the economic supports surrogate cost in the present model) were trended forward at 1.5%, which will also tend to be consistent with more stringent cost containment or limited service eligibility.

At another level, it should also be noted that we used a linear model of EIBI effects, in that gains realized from EIBI by primary school entry were assumed to maintain over the long term. There is no indication that the effects of EIBI are evanescent or ephemeral. On the contrary, existing evidence points to the durability of these effects (McEachin *et al.*, 1993; Perry *et al.*, 1995; Smith, 1998). It is understandable how this can occur if the children enter regular primary school with the skills required to benefit from regular education. The skills and susceptibility to social reinforcement acquired during EIBI would likely be maintained by the contingencies inherent in participation in regular educational, family, and community life. On the other hand, if some children who realize normal range or partial effects from EIBI do not sustain these gains, then our model accommodates this by providing cost and benefit estimates in the range of 20% to 30% normal range effects. The cost–benefits at these levels of outcome remain substantial. However, there is no question that the issues that derive from a simulation can only be resolved effectively by prospective tracking of comparative costs for groups of children over time. Such cost tracking has not been a major focus of research in past analyses of early intervention or preschool services, as is evident by its scarcity in the professional literature.

The Intersection of Cost and Quality

The widely accepted view of autism is that it is a severe lifelong disability (see, e.g., Cohen & Volkmar, 1997; Freeman, 1997; Siegel, 1996). Like effective interventions for other severe or chronic disorders, such as cancer or diabetes, EIBI for autism can be characterized as aggressive and invasive. It most likely does not work well when it is performed piecemeal, briefly, or by individuals with inadequate training and experience. Like effective early intervention for children at risk for various other disabilities, EIBI needs to begin early, be provided for many hours per week and many weeks per year for an extended period, be delivered directly to children, address a wide range of needs, and accommodate individual differences (Guralnick, 1998, Ramey & Ramey, 1998).

In short, EIBI is relatively costly when it is done properly, and even then it does not produce complete recovery in every case.

On what basis, then, can investment in EIBI for children with autism or PDD be justified? A primary consideration is the availability of other interventions that have been demonstrated to produce comparable outcomes in scientifically sound studies. Countless therapies for autism have been touted to produce beneficial effects, ranging from the small to the near-miraculous (Green, 1996a; Gresham & MacMillan, 1997; Klin & Cohen, 1997; Maurice, 1996; Smith, 1993; 1996). Contemporary proponents of various other treatments and critics of EIBI state that other approaches can produce dramatic improvements (e.g., Gresham & MacMillan, 1997; Greenspan, 1992; Koegel, Koegel, Frea, & Smith, 1995; Mesibov, 1997; Strain & Cordisco, 1994), yet there is little empirical support for these assertions from methodologically sound research (i.e., studies that included direct, objective, valid and reliable measurement of treatment effects; demonstrations of improvements in multiple skill areas; controls for alternative explanations; replication; and long-term maintenance of treatment gains; see DeMyer *et al.*, 1981; Green, 1996a; Schreibman, 1988; Smith, 1993; 1996).

Our analysis suggests that another justification for investing in EIBI is long-term monetary savings for families and for society. Today, however, the resources required to begin EIBI are not always readily available. Even when they are, short-term financial and other considerations often force termination of treatment or reduction in treatment intensity sooner than might be optimal (see, e.g., Graff, Green, & Libby, 1998). Some maintain that the limited resources available for EIBI should be invested only in young children with autism or PDD who are most likely to respond dramatically (e.g., Siegel, 1996). We suggest there is not yet an adequate scientific database on which to base either predictions of treatment responsiveness, or decisions to reduce treatment intensity after relatively brief periods.

While the converging evidence from studies of EIBI suggests that it can produce benefits unmatched by other interventions for autism and PDD, careful research is needed to answer a number of burning questions:

Will the 40–50% rates of attainment of normal or near-normal functioning reported in the initial studies hold up in further replication and follow-up studies?

What child and programmatic variables reliably predict responsiveness to EIBI?

What are the long-term outcomes for the children in the initial studies who did not achieve normal functioning?

Might some children like them attain better outcomes with intensive intervention of longer duration, or intervention that incorporates additional well-tested behavior analytic techniques?

How intensive does EIBI have to be to produce optimal effects?

What is the operational definition of 'intensive'?

Do other early intervention models that involve high rates of one-to-one interactions between adults and children with autism (see, e.g., Rogers & Lewis, 1989) produce outcomes comparable to EIBI?

Can biomedical research shed light on the limiting factors that might militate against a large and sustainable outcome, or contribute to the effectiveness of behavioral intervention?

A second, related set of questions pertains to the nature of EIBI and who is capable of delivering this intervention competently. Some have suggested that only individuals who follow the 'Lovaas model' and have been trained directly by the Lovaas clinic at UCLA should be considered qualified (Buch, 1996; Families for Intensive Autism Treatment, 1996). However, other behavior analysts have achieved outcomes comparable to those of Lovaas and colleagues, including normal functioning in some children with autism or PDD (Birnbrauer & Leach, 1993; Maurice, 1993; Perry *et al.*, 1995) and other significant outcomes (Anderson *et al.*, 1987; DeMyer *et al.*, 1981; Fenske *et al.*, 1985; Matson *et al.*, 1996; Maurice, Green, & Luce, 1996; Mulick & Meinhold, 1994).

At present, the number of professional-level applied behavior analysts is far too small to meet the growing demand for behavioral intervention for children with autism of all ages. As a result of the demand and supply imbalance, as well as nationwide pressure stemming from implementation of the federally mandated early intervention infrastructure under P.L. 105–17, a kind of cottage industry has developed; large numbers of individuals are simply proclaiming themselves 'Lovaas therapists', 'behavior analysts', or 'behavioral therapists' and extracting large fees from families and other sources for directing and providing EIBI. Fortunately, actions are being taken on several fronts to attempt to remedy this problem. Legally sanctioned, competency-based procedures for certifying professional behavior analysts that have been in place in the state of Florida for many years (see, e.g., Shook, 1993; Shook & Favell, 1996; Shook & Van Houten, 1993; Shook, Hartsfield, & Hemingway, 1995) are being implemented or considered by several other states at this writing. Representatives of several national professional associations have initiated efforts to establish a specialty and proficiency in applied behavior analysis (e.g., Hopkins & Moore, 1993) for licensed psychologists.

In listening to parents, we have discovered that fewer and fewer wish to trust their children with autism and PDD to unproven fad treatments and inadequately prepared service providers (Jacobson, Mulick, & Schwartz, 1995). Many have become astutely discerning consumers once they have learned the relevant dimensions by which to judge treatment effectiveness and professional

competence (Green, 1996a; Van Houten, 1994). Discerning consumers also recognize that long-term treatment effects are at least as relevant as short-term costs, and that the most expensive treatment is that which is ineffective regardless of the monetary price.

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APPENDIX A: SOURCES OF FINANCIAL INFORMATION FOR PER RECIPIENT EXPENDITURE ESTIMATES—PENNSYLVANIA MODEL

This appendix presents information regarding the sources used in order to develop the estimates used in the cost analysis.

The source for early intervention, family support services, home and community based services waiver estimates, institutional costs, and community services costs is D. Braddock, R. Hemp, L. Bathchelder, & G. Fujiura (1995). *State of the states in developmental disabilities.* Washington, DC: American Association on Mental Retardation.

The source for intensive community services is annual expenditures for six persons or fewer ICF/MR plus one-half of the difference between this amount and the annual institutional expenditure, from Braddock *et al.* (1995), as above.

The source for special education expenditures is average for all special education types from Barnett & Escobar (1990, p. 566).

The source for regular education expenditures is USDOE (1992). *The condition of education* (NCES 92-096), p. 334.

The source for intensive early intervention is the average cost of seven model programs reported by S. Harris & J. Handleman (1994). *Preschool education programs for children with autism.* Austin, TX: PRO-ED.

The source for median household income is the 1990 Federal Census of the United States. Supported wages are indexed at 20% average of median household income for Pennsylvania.

All amounts are trended at 3%, except SSI/ADC (AFCD or TANF) which is trended at 1.5%.

APPENDIX B: ASSUMPTIONS UNDERPINNING THE GENERAL COST MODEL

(i) Current research does not identify characteristics of children with autism or PDD that predict their response to EIBI (e.g., initial I.Q. within the moderate to mild range of mental retardation is not a good predictor) during the years before school entry, funded as either early intervention or preschool services. Thus, benefit must be gauged upon outcomes as identified in the literature (e.g., Smith *et al.*, 1997).

(ii) The proportion of children who achieve normal functioning in all areas is probably somewhat lower than the proportion reported so far in the behavioral research literature (i.e., just under 50%) because (a) in very young children, when severe or profound mental retardation is present, a conclusive diagnosis of autism or PDD may not be made, and (b) other local or nonspecific factors probably affect whether children are diagnosed or, especially, referred for EIBI.

(iii) In any group of children with autism or PDD who receive competently delivered EIBI, between 20 and 50% will achieve normal functioning.

About 40% will achieve substantial gains that will result in reduced dependency on special services, but they will continue to need some specialized services and supports throughout their school and adult lives. Ten percent (10%) will continue to require intensive special education and intensive adult services, and the remainder will evidence benefit sufficient to reduce the intensity of required educational and adult services.

(iv) For these reasons, cost–benefit should be couched in terms of marginal benefit, as well as the attainment of normal functioning. Analyses should encompass comparison of costs for children with autism or PDD who achieve normal functioning with costs for serving children without disabilities, and with costs for serving children with autism or PDD who make large gains but do not move into the normal range. The latter group should also be compared with children who make minimal gains.

(v) Without EIBI the majority of children with autism or PDD will manifest enduring dependency on adult developmental disability services. This is consistent with the literature on child, adolescent, and young adult development for people with autism or PDD.

(vi) The costs of EIBI center-based services for children with autism or PDD (including those with a home-based, parent-directed component) may not be comparable or equivalent, on average, with the costs of EIBI home-based services when instruction is comparably intensive, but relative costs and utilization mix are not well established. The mix of costs for EIBI services used here is assumed to be a representative average for both center-based and home-based services. Future research will be needed to clarify this assumption.

(vii) Children with autism or PDD who ultimately develop normal functioning are assumed to participate in regular education; those who make large gains but not sufficient for them to participate successfully in regular education are assumed to participate in special education; and children who make minimal gains are assumed to participate in intensive special education (or the equivalent from a cost perspective). Special education alternatives (e.g., intensive special education) are assumed to be equivalent in cost regardless of whether they are delivered in segregated, partially integrated, related service, or fully inclusive models, based on requisite instructional load requirements for comparable instructional and educational effects. In short, comparable instruction is assumed to cost the same regardless of whether an inclusive approach is used or not. This is done only in the absence of data indicating a rational basis for assigning such costs in another manner despite the possibility that such data may subsequently emerge.

(viii) Because no generalizable mortality data exist for people with autism or PDD (owing mainly to the advent of the diagnosis in the 1940s and lack of population cohort data), cost–benefit analyses including the adult years are made only to age 55. There is no compelling evidence of marked mortality prior to age 55 years for children surviving to adulthood, and the lifespan of people with autism or PDD may well be similar to that of the general population and appreciably greater than this cutoff age. Therefore, the cutoff point will tend to underestimate adult income from supported or regular employment, utilization of general public entitlements or benefits during adulthood, utilization costs for adult developmental disabilities services, and costs for utilization of aging services and public retirement or income transfer programs for elders.

(ix) Present costs are used as indicators of future costs, with recognition that future reforms in welfare and public health may either result in decreased per person rates or expenditures, or in substitution of services. To compensate, costs have been trended forward at 3% per annum, except for SSI/ADC (Aid for Dependent Children), or the equivalent such as Temporary Assistance for Needy Families (TANF), which is trended at 1.5%. These trend factors probably represent an underestimate of long-term inflationary factors. For example, the average cost inflator for health-related services from 1986 to 1996 was about 4.5%.

(x) SSI/ADC costs are used as a summary cost for all utilization of general public benefits outside of the early intervention, educational, and developmental service sectors (e.g., public housing subsidies, food stamps, child care, temporary assistance, all forms of public assistance, higher-education grants, vocational assistance, public transportation, and Medicaid card services). Although these are not entered as costs for nondisabled children to age 22 years, they are entered as costs for all children with autism or PDD who achieve normal functioning (three years' cost), and partial or minimal effects (18 years' cost). SSI/ADC is also entered as a cost for 33 years to age 55 years for 20% of nondisabled children and children with autism or PDD who achieve normal functioning, and for 100% of children with autism or PDD who make substantial improvements or who benefit minimally.

(xi) The average duration of EIBI is assumed to be three years, a period that is associated in the literature with apparent best outcomes (Green, 1996a). The existing literature suggests that two years of intervention can result in normal functioning for some children, but in this analysis it is recognized that children may participate in 2–6 years of EIBI, and three years is stipulated to be a reasonable average duration.

(xii) Children with autism or PDD who achieve normal functioning are assumed to use family support services during participation in EIBI. Children who make moderate gains and those for whom minimal effects are attained are assumed to use 18 years of family support services, to age 22 years.

(xiii) During adulthood, those who achieve substantial improvements, but not normal functioning, are assumed to use 18 years of Medicaid waiver (or equivalent) services and 15 years of supported work services. During adulthood, for adults for whom minimal effects are obtained, 80% are assumed to use waiver services for 20 years, 20% are assumed to use intensive community services for 23 years, and 40% are assumed to use supported work services for 15 years. These utilization patterns are a function of variations in individual service needs and potential delays between requests for services and service enrollment associated with waiting lists. With the possible exception of adults with whom intervention has been minimally effective during the preschool years, the cost mixes used are lower than those that are presently typical for intensive comprehensive community services for adults with autism or PDD (e.g., ICF/MR and ambulatory clinic services or equivalent levels of care).

(xiv) Supported employment wages are estimated as comparable for individuals with autism or PDD who achieve substantial or minimal gains, at 20% of the median household annual income. It should be noted that although this probably overestimates income (and thus offset of service costs) for people with minimal benefits, it nonetheless reflects a single-person income level that remains below current poverty level indicators, and a full-time employment (40-hour week) hourly rate of $3.24 hourly in the 1996 base year.

(xv) This analysis uses costs reported in several sources for the Commonwealth of Pennsylvania. Annual regular education costs were $7,543 per year in 1996, special education $12,935, and intensive special education $28,806 (from Table 1). The initial annual cost of EIBI is set at $32,820. To calculate the cost–benefit of this intervention set at a higher level of $50,000, readers may simply subtract $53,100 from inflated benefit totals and subtract $51,540 from uninflated benefit totals.

(xvi) Finally, in composite, the service costs and inflators used will tend to underestimate cost slightly relative to current expenditure patterns, whereas the earnings projected will tend to overestimate income slightly, providing a relatively conservative overall estimate of cost–benefit. All savings shown, however, are net of the expense of providing EIBI.

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ORIGINAL PAPER

Cost Comparison of Early Intensive Behavioral Intervention and Special Education for Children with Autism

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Abstract The financial implications of the increased prevalence of autism, though rarely discussed, will be extremely important to society. We compared the costs associated with 18 years of special education to the costs associated with the implementation of an average of 3 years of Discrete Trial Training as an Early Intensive Behavioral Intervention (EIBI) in an effort to minimize the need for special education. Our results indicate that the state of Texas would save $208,500 per child across eighteen years of education with EIBI. When applied to the conservative estimate of 10,000 children with autism in Texas, the State would save a total of $2.09 billion with EIBI. Implications for taxpayers, policymakers, and treatment are discussed.

Keywords Autism · Cost · Early intensive behavioral intervention · Special education · Discrete trial training

The prevalence of autism is a topic currently receiving a great deal of attention, since evidence indicates an exponential rise in autism over the last decade. It was generally considered stable and rare with a .05% prevalence rate in the population for decades after Lotter (1966) conducted one of the first epidemiological studies of autism, but the DSM-IV-TR (2000) revised the prevalence rate by reporting a range from 2 to 20 per 10,000 people. This range is a reflection of the more recent reports of higher prevalence of autism around the globe, implying an overall increase in autism diagnoses over the years. For example, Bryson, Clark, and Smith (1988) indicated a prevalence of 10 per 10,000 individuals in Canada, and Webb et al. (1997) reported a prevalence of 9.2 per 10,000 in a Welsh district, a change from the 3.3

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per 10,000 of 10 years earlier. In an elegant study of prevalence in Northern Finland, autism was seen in 12.2 of 10,000 individuals, a reported increase from the 4.75 individuals from only nine years earlier (Kielinen, Linna, & Moilanen, 2000). California perhaps represents the most drastic increases in prevalence rates, with a Department of Developmental Services (2003) report indicating a 634% increase in autism prevalence from 1987 to 2002.

While the causes of this substantial increase in the prevalence of autism are unknown (for an excellent review, see Wing & Potter, 2002), the consequences are far reaching. For example, the rise in prevalence elicits the need for additional services and places a substantial burden on governments to fund programs for the epidemic number of children with autism. Unfortunately, this upward trend does not appear to be decreasing anytime soon, portending substantial costs in the future. A large financial implication of the rapidly increasing rate of diagnoses of Autism Spectrum disorders includes growing costs associated with special education, which is the focus of the current study.

The standard educational service for children with autism is special education, a term that generally reflects an eclectic assortment of educational and therapeutic techniques that are as varied as the school districts from which they come. Special education generally serves a highly heterogeneous group of children, such as a mix of children with autism, Down Syndrome, learning disabilities, mental retardation, or other developmental disabilities. In addition, some populations of children benefit from the programs more so than others, since the typical services are more appropriate for specific deficits or dysfunctions. For instance, for children with autism, empirical evidence concerning the effectiveness of special education, in any of its forms, is difficult to locate. However, based on a select few studies that test the effectiveness of special education or eclectic treatments, children with autism in special education do not demonstrate significant improvement in adaptive, social, cognitive, or language functioning (Eikeseth, Smith, Jahr, & Eldevik, 2002; Freeman et al., 1991; Freeman, Ritvo, Needleman, & Yokota, 1985; Howard, Sparkman, Cohen, Green, & Stanislaw, 2005; Smith, Groen, & Wynne, 2000). Furthermore, special education generally costs thousands of dollars per year in addition to funds designated for regular education. For example, in Texas, the 2002 state budget included approximately $11,000 per child per year for special education (Houston Independent School District, personal communication, 2004).

Independent of special education, many treatment services have offered promising gains in combating the impairments associated with autism. There exists a myriad of interventions for autism, which range from dietary manipulation to intensive psychodynamic therapy. There are only a few, however, that have empirically demonstrated efficacy. Among those with empirical support, a particular class of treatments for autism incorporates principles of Applied Behavior Analysis (ABA), which emphasizes environmental associations and contingencies. While ABA treatments vary in intensity and structure, they all share similar principles. In addition, when discussed within the context of treating young children, these techniques are also referred to as Early Intensive Behavioral Interventions (EIBI).

One prototypical EIBI, which has garnered a tremendous amount of support, is Discrete Trial Training (DTT; Lovaas, 1987; McEachin, Smith, & Lovaas, 1993). DTT consists of an average of 35 h per week of one-to-one behavior intervention that occurs in the child's home. The intervention is implemented by a team of 5 to 7 therapists, who each work for 6 h per week in two-to-three hour sessions. Ideally, the child receives 5 to 7 h of treatment per day, for 5 to 7 days per week. DTT generally lasts from 2 to 6 years with the average child requiring services for 3 years (Jacobson, Mulick, & Green, 1998). In addition, DTT is relatively costly, averaging $40,000 per year with a range from $20,000 to $60,000 per child per year. Economy of scale, parent and family involvement, and other factors influence the specific cost of a program. There is a parent-directed model of DTT, which utilizes the

parents as resources, that costs an average of $22,500 per child per year and has demonstrated comparable effectiveness to the intensive DTT (Sallows & Graupner, 2005).

In an initial investigation, 40 h a week of DTT were implemented with young children with autism, and the outcome of these children was compared with two control groups, one of which received ten hours a week of DTT while the other received an eclectic treatment within the community (Lovaas, 1987). Evidence indicates that the experimental group demonstrated significant gains in IQ and educational placement at the end of treatment compared to the control groups, which both remained virtually unchanged from pre- to post-assessment (Lovaas, 1987). The gains in educational placement included successful mainstreaming into a typical education classroom and remaining in that setting. Additionally, these findings have been fully replicated and maintained despite modifications to the treatment (Eikeseth et al., 2002; Sheinkopf & Siegel, 1998), and the follow-up study provided evidence that these gains were preserved over time (McEachin et al., 1993). More recently, Sallows and Graupner (2005) published data that replicated Lovaas' (1987) results.

Evidence from these investigations demonstrates that DTT has yielded a range of outcomes for children with autism. Slightly less than half of the participants achieved normal or near normal functioning, allowing them to complete school with little or no assistance (Lovaas, 1987; Sallows & Graupner, 2005). About a third of the children achieved substantial gains, allowing significantly reduced levels of care and assistance (Lovaas, 1987; Sallows & Graupner, 2005). The remaining 10–15% of children did not achieve significant gains in functioning and continued to require the expected (non-treated) levels of assistance (Lovaas, 1987; Sallows & Graupner, 2005). Thus, while costs for EIBI per year are higher than the costs for special education, EIBI only lasts for an average of three years with a substantial portion of the children mainstreaming into regular education, minimizing the need for additional special education funds for the remainder of childhood.

The potential for saving money by implementing EIBI is important only in light of the economic and financial implications of an autism epidemic. Much like financial forecasting in a business setting, national economies often incorporate the goal of investing today in order to yield a net gain tomorrow. While this tenet does not necessarily influence all governmental economic decisions, it certainly provides information for the funding of many of the services provided by a government, including education. In the United States, federal, state, and local governments budget considerable funds for education. From a purely financial standpoint, this is simply an investment with the goal of yielding monetary gains in the future. By investing in children's education for 18 years, the government expects that the children will, on average, assimilate into society as "productive" adults (those who stimulate the economy by paying taxes, investing in stocks, facilitating the development of goods, and providing labor). Thus, when a child grows up to become a productive member of society, he or she proceeds to match and exceed the original 18-year educational investment by the government.

When it comes to special education, such reasoning poses a problem. In addition to the funds reserved for regular education, additional funds are provided to children requiring special education. Without initial treatment, however, children with autism often require special education services for their entire academic career, yielding adults that not only have trouble being productive, but also continue to require additional governmental funds throughout their lifespan. From a strictly financial standpoint, funding education for children with autism is a risky investment. Not only is the government potentially losing money on the investment of typical education for these children, but also on the additional investment of special education. Granted, this investment does not exist in a vacuum. Much of a government's budget reflects a myriad of differing investments, and economic decision-making often incorporates

expected, albeit necessary, losses that are recuperated with unrelated gains. Thus, funds designated for special education might be considered a loss from the outset, but does this investment really need to be an expected loss? How much money could be saved with a new strategy?

Is there any evidence that an intervention for special education populations can produce a positive monetary return on an educational investment instead of an expected loss? While there is a relative paucity of literature examining the cost savings associated with implementing specific treatments instead of special education, there are a few oft-cited studies that present cost-benefit analyses of EIBI (Barnett & Escobar, 1989; Warfield, 1994). These analyses, however, fail to specifically address autism. Furthermore, cost-benefit analyses are not the same as projected cost comparisons. Cost-benefit analyses generally assess previous costs and benefits to evaluate a program's financial outcome. Thus, little projection is necessary. Projected cost comparisons are generally used when there is a lack of historical data on the precise costs and benefits of a program and are utilized to predict costs and benefits in the future. Each type of analysis has its own set of assumptions and inherent limitations and generally answers a different type of question.

Two notable studies addressed the costs associated with autism. Järbrink and Knapp (2001) assessed the costs of autism in Britain with a wide scope, incorporating ancillary elements such as family time costs, medication, and day care. In addition, the scope extended through the child's lifetime, as opposed to a narrower education timeframe. With costs associated with typical development not included, the authors determined that the lifetime costs for one individual with autism is greater than $2.5 million (Järbrink & Knapp, 2001). While this study highlighted the tremendous costs associated with an individual with autism, it did not consider the costs associated with caring for the entire population of individuals with autism in Britain, nor did it compare the costs of different treatment approaches.

Jacobson et al. (1998) conducted an investigation of the costs associated with autism in Pennsylvania. Their methodology provided a projected cost comparison between children who received EIBI and those who did not. Their investigation was wide in scope, spanning the lifespan and taking into account such factors as public services, regular education, and family support services. Their analysis of EIBI benefits revealed a savings ranging from $656,000 to $1,082,000 per child across the lifespan, depending on the effectiveness of EIBI. They then extended these findings to 100 individuals with autism to illustrate the additive savings. The current investigation utilized similar logic with some minor modifications.

Marcus, Rubin, and Rubin (2000) responded to the Jacobson et al. (1998) article with some criticism. They suggested that the Jacobson et al. (1998) cost-benefit analysis was flawed because it was based on Lovaas' (1987) outcome results, which had not yet been replicated. Sallows and Graupner (2005), however, recently published data that replicated results for children with autism who received DTT. One could even argue that the results from the Sallows and Graupner (2005) study were more encouraging than those of Lovaas (1987). Marcus et al. (2000) criticized the Jacobson et al. (1998) article because other intervention approaches were not considered in the model. They stated, "There has not been (and may never be) a comprehensive comparison study of different intervention approaches" (p.595), suggesting that other approaches may be equally effective for maximizing cost savings and treatment gains. As Howard et al. (2005) recently pointed out, however, "there is little empirical evidence regarding the efficacy of non-behavior analytic treatment models..." (p. 4). In addition, in the Howard et al. (2005) study, behavioral intervention was compared to two groups of children receiving eclectic-based approaches. Not only do the data suggest that behavioral intervention was superior to the other approaches, but the results also suggest

that the eclectic-based approaches were ineffective and possibly even deleterious (Howard et al., 2005).

In addition, Marcus et al. (2000) incorporated a professional perspective from a school administrator in a metropolitan area. The administrator reported that among children with autism who have received a variety of intensive interventions (including Lovaas-based interventions) through the school system, she had never seen a child progress to the point of not needing additional support. Viewed from a different perspective, the administrator's comments actually could support some of the assumptions in the Jacobson et al. (1998) model. By suggesting that children with autism often experience a number of different intensive interventions (including some non-behaviorally oriented approaches) in special education, the administrator essentially is commenting on the aforementioned eclectic nature of special education. Some evidence suggests that DTT requires a substantial number of treatment hours per week to be maximally effective (Lovaas, 1987). If DTT and other behavioral approaches are interspersed among a variety of non-behavioral approaches, it is unlikely that the number of hours of DTT is sufficient to yield the gains necessary to advance a child from special education to typical classes. The administrator's comments also could be interpreted in light of the recent negative evaluation of eclectic early intervention for children with autism (Howard et al., 2005).

Our study follows from the Jacobson et al. (1998) study, but with slight modification. We present the first assessment of the projected costs and benefits of EIBI in Texas. It also simplifies the Jacobson et al. (1998) analysis by using a dichotomous outcome. In addition, since projected EIBI cost-savings per child have never been extended to a population, our findings will be discussed in terms of the entire population of children with autism in Texas. With the current investigation, projected costs associated with special education are directly compared to Discrete Trial Training as a feasible EIBI. It is hypothesized that the comparison will highlight a considerable cost differential between services. More specifically, we believe that providing EIBI to all children with autism in Texas, in an effort to prevent the children from attending special education, will result in millions, and possibly billions, of dollars in savings. In addition, the results will highlight a cost-efficient service model that maximizes the potential for the recovery of children with autism.

Method

We utilized a method from Jacobson et al. (1998) for hypothetically comparing the costs of special education to the costs of EIBI for children with autism in Texas. The formula incorporates special educations costs, EIBI costs, EIBI effectiveness, population estimates of children with autism in Texas, and the expected number of years required for each type of service. The formulas are outlined in Equation 1 and Equation 2 below.

Equation 1: Formula for computing projected savings associated with EIBI per child with autism in Texas

$$C = S(18) - [E(3) + S(.28)(15)]$$

C = Per-child savings
S = Annual special education costs (either state-budgeted or actual)
E = Annual EIBI costs
18 = Necessary years of special education for children who do not receive EIBI (age 4–22)
3 = Average number of years of EIBI (age 4–22)

.28 = Proportion of children who receive EIBI but fail to mainstream into regular education (72% offset)

15 = Necessary years of special education for children who receive EIBI but fail to mainstream into regular education (age 4–22).

Equation 2: Formula for computing projected savings associated with EIBI for all children with autism in Texas

$$C = S(18)(10,000) - [E(3)(10,000) + S(.28)(15)(10,000)]$$

C = total savings for all children with autism in Texas
S = Annual special education costs (either state-budgeted or actual)
E = Annual EIBI costs
10,000 = Conservative estimate of children with autism in Texas
18 = Necessary years of special education for children who do not receive EIBI (age 4–22)
3 = Average number of years of EIBI (age 4–22)
.28 = Proportion of children who receive EIBI but fail to mainstream into regular education (72% offset)
15 = Necessary years of special education for children who receive EIBI but fail to mainstream into regular education (age 4–22)

As with the Jacobson et al. (1998) study, our analysis requires certain assumptions. The assumptions are vital to the projected cost-benefit analysis, and there is sufficient justification for their use. Outlined below are explanations for each of the assumptions.

Assumption 1: 72% of children who receive EIBI eventually mainstream into regular education. Of children receiving EIBI, approximately 50% achieve normal or near-normal functioning (Lovaas, 1987; Sallows & Graupner, 2005). Approximately 40% of the children achieve moderate gains, allowing significantly reduced levels of care and assistance (Lovaas, 1987; Sallows & Graupner, 2005). Approximately 10% of the remaining children do not achieve significant gains in functioning and continue to require assistance (Lovaas, 1987; Sallows & Graupner, 2005). Jacobson et al. (1998) used all three outcomes to demonstrate projected costs and benefits. Our investigation, however, simplifies the analysis by removing the group reflective of the moderate gains outcome.

In the Jacobson et al. (1998) method, special education costs were reduced by 55% for the 40% of children who demonstrate moderate gains. Thus, to illustrate with 100 children with autism, 50 would require no additional special education services after EIBI, 40 would require special education services at 45% of its cost, and 10 would require special education services at 100% of its cost. For simplification, the moderate benefits group can be diffused into either the successfully mainstreamed or the unsuccessfully mainstreamed groups by finding the equivalent costs after dichotomization. Incorporating a 55% reduction in costs for services for the moderate gains group results in $198,000 in aggregated annual special education costs for the 40 out of 100 children with autism demonstrating moderate gains (see Equation 3). Equivalently, again using 100 children with autism, with 22 of the 40 children with moderate gains successfully mainstreaming and 18 unsuccessfully mainstreaming, the total annual special education costs are $198,000 ($11,000 times 18 children). Thus, successfully mainstreaming 22 out of the 40 children who achieve moderate gains with EIBI is monetarily equivalent to incorporating a 55% offset in special education costs for the 40% of children with moderate gains. With 50 of 100 children successfully mainstreamed, and

22 of the 40 children with moderate gains successfully mainstreamed, a total of 72 out of 100 children (or 72%) can be included in the success category, with 28 requiring additional special education at 100% of the costs.

Equation 3: Formula for computing special education costs for the 40% of 100 children receiving EIBI who achieve moderate gains

$$198,000 = 11,000(.45)(40)$$

11,000 = Annual state-budgeted special education costs per child
.45 = 45% (55% reduction) of special education service costs associated with the moderate gains group (Jacobson et al., 1998)
40 = Approximate number of children out of 100 that achieve moderate gains

Assumption 2: There is no way to predict the outcome of children engaged in EIBI. Many investigations have explored predictors and moderators of outcome of EIBI (Bibby, Eikeseth, Martin, Mudford, & Reeves, 2001; Fenske, Zalenski, Krantz, & McClannahan, 1985; Harris & Handleman, 2000; Luiselli, Cannon, Ellis, & Sisson, 2000). Despite their results, there are still no definitive child, family, or treatment characteristics that predict outcome. In the future, research on predictors of outcome of EIBI may highlight certain characteristics that help clinicians determine whether a specific child should receive EIBI or not.

Assumption 3: Children with autism, who only receive special education but successfully mainstream into regular education, have a negligible influence on the costs associated with special education. This assumption is reflective of a common belief that is echoed in Jacobson et al. (1998), "Without EIBI the majority of children with autism or PDD will manifest enduring dependency on special education and adult developmental disability services" (p. 206). This statement endorses the common belief that special education services do not provide the necessary gains for successful mainstreaming. Indeed, children with autism who mainstream might do so because they were originally misdiagnosed or erroneously placed in special education. In addition, evidence indicates that special education is not very effective for eliciting significant gains in adaptive, social, cognitive, or language functioning (Eikeseth et al., 2002; Freeman et al., 1991; Freeman et al., 1985; Smith et al., 2000). Evidence might even suggest that "eclectic" interventions have a negative effect (Howard et al., 2005). Similarly, there is some indication that the spontaneous recovery rate of autism is very low (Lovaas, 1987). In fact, in a study of special education by Freeman et al. (1985), less than 5% of the participating children with autism mainstreamed into regular education. Therefore, for the sake of argument, it is safe to assume that a child with autism who enters special education without EIBI intervention will most likely remain there throughout childhood.

Assumption 4: The annual cost associated with EIBI is $22,500; the annual state-budgeted cost for special education is $11,000, and the *actual* annual costs for special education is approximately $20,000. The current study proposes the implementation of the parent-directed model of DTT (Sallows & Graupner, 2005). For this reason, $22,500 will represent the annual EIBI cost. In addition, the investigators placed a call to the Houston Independent School District (HISD) to obtain information on the education budget, revealing that approximately $11,000 per child is set aside for special education by the state of Texas (HISD, personal communication, 2004). In addition, there is a distinction between state-budgeted and *actual* costs. The $11,000 represents state-budgeted costs, or the literal funds supplied by the state of Texas for each child's special education. The *actual* costs, however, represent the overall costs necessary for providing special education services, approximately $20,000 per year (HISD, personal communication, 2004). *Actual* costs are generally comprised of state-budgeted,

local, federal, and private funds. Thus, by definition, *actual* costs contain state-budgeted costs. Please also note that special education costs do not include regular education costs. A child receiving special education generally receives both special education and regular education funds. As a result, regular education costs are omitted from the analysis since it is balanced evenly across all children and offers little to the analysis.

Assumption 5: Population estimates and costs associated with services do not change over time. The current analysis maintains a static model of projected cost comparison by omitting inflation and the time value of money, ignoring increases in autism prevalence, and arguing a constant cost of services. The model assumes that current prevalence rates of autism in Texas will remain constant over the years. A 2002 report of prevalence rates indicates there are approximately 10,000 school age children with autism in Texas (Fighting Autism, 2004). The model hypothetically assesses a single school age cohort of children with autism. Thus, savings are applicable to that specific cohort of 10,000 children with autism recognized by the state of Texas. This is a conservative decision, since prevalence rates are skyrocketing at epidemic rates and not all children with autism are necessarily recognized by the state of Texas. Thus, any discovered savings would likely underestimate the money that would be saved with future cohorts. Also, the model assumes that the costs of services will remain stable over 18 years.

Results

Based on a child receiving three years of EIBI, then realizing a 72% offset in special education costs over the remaining 15-year period (due to a 72% reduction in services required following EIBI), a total savings of $84,300 per child in state-budgeted funds is achieved over the total school years. Comparing the reported *actual* cost of a special education program to a three-year EIBI program (and a 72% special education offset), savings of $208,500 per child are achieved. These results are illustrated in Table 1. Clearly, there is a higher up-front cost for EIBI with $67,500 over a three-year period versus a state-budgeted cost of $33,000 for special education services over the same three-year period. However, that early additional cost is recovered within five years, and the savings over the remaining years are substantial. Similarly, in the *actual* cost example, the additional costs for three years of EIBI, compared to the cost of the first three years of Special Education, is $7,500. This amount is more than recouped in the first year following EIBI by the reduced need for special school services.

The costs also can be broken down into differential child outcomes. For example, 28% of children who receive EIBI unsuccessfully mainstream into a typical classroom. The costs

Table 1 Projected special education cost savings per child with autism in Texas (Spanning 18 Years)

	State-budgeted annual costs	Total state-budgeted costs age 4 to 22	Actual annual costs	Total actual costs age 4 to 22
Funds provided by the state of Texas for special education	$11,000	$198,000	$20,000	$360,000
Early intensive behavioral intervention	$22,500	$67,500	$22,500	$67,500
28% (72% reduction) of special education services for 15 years		$46,200		$84,000
Total cost per child who receives EIBI		$113,700		$151,500
Savings using EIBI per child		$84,300		$208,500

Table 2 Using children who do not receive EIBI as baseline, projected special education cost savings per child with autism in Texas (Spanning 18 Years)

Child outcome	Total state-budgeted costs age 4 to 22	Total actual costs age 4 to 22
Mainstreamed EIBI	130,500	292,500
Not mainstreamed EIBI	−34,500	−7,500
Combined EIBI child	84,300	208,500

for these children are much higher than for both the successfully mainstreamed children and the children who only receive special education. These costs are broken down in Table 2, which uses children who do not receive EIBI as baseline and shows net gains and losses for each outcome. For example, there is a net loss of $34,500 in state-budgeted funds and $7,500 in *actual* funds attributed to those children who are unsuccessfully mainstreamed. These losses, however, are recouped with the substantial savings from the successfully mainstreamed children, who each yield a net gain of $130,500 in state-budgeted funds and $292,500 in *actual* funds across 18 years of education. Note that the costs for the two EIBI outcomes do not average or add up to the "Combined EIBI" condition, which is a function of percentages.

These costs and savings were subsequently extended to the conservatively estimated population of 10,000 children with autism in Texas. A total savings of over $843 million in state-budgeted funds and $2.09 billion in *actual* funds is achieved over the total school years. These calculations are demonstrated in Table 3.

Similar to the per-child analysis, the costs for each type of outcome can be extended to the population. Using children who do not receive EIBI as baseline, the gains and losses associated with each of these outcomes are illustrated in Table 4. Contrary to the per-child analysis, which was derived from percentages, the "Combined EIBI" condition for the population represents an additive effect for both EIBI outcomes. Thus, the population costs for unsuccessful mainstreaming plus the costs for successful mainstreaming add up to the total costs for all EIBI children. Aggregating the 2,800 children who unsuccessfully mainstream into regular education over 18 years of education, there is a loss of $96.6 million and $21 million in state-budgeted and *actual* funds, respectively. Again, this loss is

Table 3 Projected special education cost savings for all children with autism in Texas (Spanning 18 Years)

	State-budgeted annual costs	Total state-budgeted costs age 4 to 22	Actual annual costs	Total actual costs age 4 to 22
Funds provided by the state of Texas for special education	$110,000,000	$1,980,000,000	$200,000,000	$3,600,000,000
Early intensive behavioral intervention	$225,000,000	$675,000,000	$225,000,000	$675,000,000
28% (72% reduction) of special education services for 15 years		$462,000,000		$840,000,000
Total cost for all children receiving EIBI		$1,137,000,000		$1,515,000,000
Savings using EIBI for all children		$843,000,000		$2,085,000,000

Table 4 Using children who do not receive EIBI as baseline, projected special education cost savings for all children with autism in Texas (Spanning 18 Years)

Child outcome	Total state-budgeted costs age 4 to 22	Total actual costs age 4 to 22
Mainstreamed EIBI	939,600,000	2,106,000,000
Not mainstreamed EIBI	−96,600,000	−21,000,000
Combined EIBI children	843,000,000	2,085,000,000

recovered with the savings from the 7,200 successfully mainstreamed children, which as a group yield a net gain of $939.6 million and $2.11 billion in state-budgeted and *actual* funds, respectively.

Discussion

Projected cost comparisons reveal that the state of Texas has the potential to save over $2 billion in *actual* costs associated with special education services over an 18-year period. Moreover, this estimate of savings errs on the conservative side of calculation, since epidemiological data indicate an increase in autism prevalence worldwide. Furthermore, the United States Government Accountability Office (GAO; 2005) released a report that indicated that the average federal funds reserved for each child with autism in the United States is $18,790 per year, which includes $6,556 for regular education. Thus, regular education costs notwithstanding, an average of $12,234 per year in federal funds are spent on each child with autism in special education across the country. We used an estimate of $11,000 for each child per year in Texas state-budgeted funds, indicating that our estimate of saved governmental funds was conservative. The GAO (2005) report also provides support for our findings generalizing to other states. Although each state varies in the amount of state-budgeted funds provided to children with autism, and the state of Texas covers most of the costs associated with this population, it is clear that a significant amount of federal funds would be saved in other states.

In addition, the analysis was limited to special education savings alone; the calculations did not incorporate secondary benefits from mainstreaming children with autism into regular education, such as savings on specialized daycare and medical bills. These secondary benefits extend into adulthood as well. Children who are successfully integrated into typical education settings likely require fewer supportive funds than do adults, since there is a reduced need for adult care services and for supplementing lost income due to unemployment.

The adulthood benefits also reflect a return on an economic investment. As previously discussed, state governments invest in the ability of education to yield productive adults who stimulate the economy. With special education and children with autism, however, this investment is an expected loss, since there is no indication that children with autism who receive special education services for 18 years assimilate into society as productive citizens. In fact, the government likely continues to provide funds for this population throughout the lifespan. Thus, this particular educational investment not only yields a net loss at maturation, but the decision also ensures continual losses thereafter. By implementing EIBI with all children with autism, as a way to prevent the need for special education, the investment not only produces a sizeable savings after 18 years, but it maximizes the likelihood that most of these children will return a profit long after maturation.

Our study also contributes to an additional facet of the criteria needed for labeling an intervention an Empirically Supported Treatment (EST). A task force from Division 12 of the American Psychological Association (1995) established criteria for assessing the integrity of psychological interventions. Chambless and Hollon (1998) elaborated the criteria and discussed the efficacy, effectiveness, and efficiency of psychological treatments. Efficacy and effectiveness of DTT have been addressed in the literature, but efficiency has received little attention. Efficiency refers to the treatment's utility, cost-efficiency, and feasibility (Chambless & Hollon, 1998). The current investigation contributes to knowledge regarding its efficiency, demonstrating that DTT is cost-efficient compared to one alternative service option.

The heterogeneity of children enrolled in special education may explain its apparent lack of effectiveness. For example, a child with autism may not benefit from services designed for children with Down Syndrome, and vice versa, since each type of disorder reflects different types of dysfunctions and deficits that require specific attention. Just as children with autism should receive EIBI, different populations might benefit from receiving treatments deemed effective for that specific population. For this reason, it would behoove policy makers to reconsider the role of educational services with children with developmental disabilities. Indeed, it may mean a minimization of the education system's role in providing services and a maximization of population-specific treatment implementation by mental health practitioners. Following from this, special education would then have expanded resources to serve children who failed to mainstream into typical education despite implementation of appropriate interventions.

Some of the concerns about the Jacobson et al. (1998) model brought forth by Marcus et al. (2000) require comment for our study. For one, Marcus et al. (2000) suggest that Jacobson et al. (1998) were insensitive to the restricted resources found in most school systems. It might be the case that school systems are limited with resources, but our study might provide one solution for freeing up many of those resources. Marcus et al. (2000) also suggest that the Jacobson et al. (1998) model implies that there is only one effective treatment for autism. Our study makes no such implication. We simply are comparing one approach to another in terms of potential cost savings (eclectic special education approaches vs. DTT) and not suggesting that there is only one effective treatment for autism. In fact, many of the children likely will require some special education services after the implementation of DTT. There are many empirically supported alternative behavioral treatments that could be considered as part of the special education curriculum. Further, this study is not an attempt to "fan the flames" (Marcus et al., 2000, p. 597) of divide between families of children with autism and treatment providers. We simply are offering a potential plan for saving money and maximizing recovery by utilizing one of the most empirically supported treatments for autism to date. Finally, our investigation acknowledges that children with autism who receive early intensive behavioral intervention often do not fully recover. We agree with Marcus et al. (2000) in that many of these children continue to exhibit residual symptoms of autism through the lifespan and that achieving status in regular education classrooms does not necessarily imply that these children are symptom-free.

Our analysis has its limitations. One limitation is that spontaneous recovery and special education successes are not incorporated into the formula. Some may argue that this is a liberal decision, but it is important to note that this projected cost-benefit analysis is not precise, since approximate numbers are incorporated throughout the calculations. For example, there are not exactly 10,000 children with autism in Texas, nor does it cost exactly $11,000 per year for special education. The current analysis is an approximation of the costs saved by implementing EIBI, and the influences of spontaneous recovery and special

education successes were deemed negligible. Similarly, as with any projected cost-benefit analysis, expected values are not going to match reality when the events unfold. For example, state-budgeted funds allocated for special education may change, or percentages of success may vary due to differential EIBI implementation. While this limitation is warranted, the magnitude of cost savings affords some margin of error, especially when *actual* instead of state-budgeted costs are considered. Finally, some may argue that a change in policy and implementing a new service plan has tremendous start-up costs. Like most financial endeavors, initial start-up costs are recouped over time. While difficult, it would be helpful for future projected cost comparisons to incorporate start-up costs into the calculations. In addition, a demonstration project can address all of these limitations by longitudinally tracking cost savings in a sample of children randomly assigned to either a group only receiving special education or to a group receiving EIBI plus special education as needed.

Ultimately, it is the goal of our paper to demonstrate a financial point, but there is naturally something uneasy about reducing children to a monetary value. Lack of cost-efficiency notwithstanding, special education does little to ameliorate the impairments exhibited by children with autism, and EIBI has yielded moderate to considerable gains in functioning in a substantial portion of children. The bottom line is that a simple change in policy could drastically improve functioning and quality of life for thousands of children with autism in Texas. As a bonus, the taxpayers could potentially save over $2 billion across 18 years.

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Appendix H

BACB Certification Trends

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DISCUSSION AND REVIEW PAPER

BACB Certification Trends: State of the States (1999 to 2014)

Neil Deochand[1] · **R. Wayne Fuqua**[1]

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Abstract Since the Behavior Analyst Certification Board (BACB) was officially created in 1998 (Shook, 2005), the number of individuals certified by the BACB has grown significantly, particularly in the USA. Some states have witnessed a steady growth in the number of certificants, whereas others have witnessed exponential growth. Many factors could account for these overall growth patterns, including (a) geographic variations in distribution of certificants across states, (b) the passage of autism insurance reform laws or state licensing laws that influence the professional practice of applied behavior analysis (ABA) services, and (c) the presence of major academic or practicum training programs. This report documents the growth and geographic distribution of Board Certified Behavior Analysts (BCBAs) and Board Certified Assistant Behavior Analysts (BCaBAs) from 1999 to 2014 and also discusses some of the factors that might have influenced the documented growth patterns.

Keywords Autism spectrum disorder · BCBA · Certification · Insurance reform · Supervision

Neil Deochand and R. Wayne Fuqua are credentialed by the Behavior Analysis Certification Board® Inc. (BACB®), but this project is not affiliated with the BACB.

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The professional discipline of applied behavior analysis (ABA) has grown at an unprecedented rate over the past two decades. Although some individuals in the field have expressed concerns that a considerable amount of this growth can be attributed to focusing almost exclusively on the treatment of autism spectrum disorder (ASD), there is still a general approval that ABA is being legitimately accepted as an authority in at least one capacity (Poling, 2010). Organizations that focus on behavior analytic research and practice, such as the Association of Behavior Analysis International® (ABAI) and the Association for Professional Behavior Analysts® (APBA), have provided evidence pertaining to the accelerated growth pattern for the discipline of ABA. There was a relatively steady growth in the attendance at the ABAI® annual convention over the first 25 years of its operation, a yearly trend that accelerated after 1998, the year the Behavior Analysis Certification Board® (BACB®) was established (Kangas & Vaidya, 2007). Total membership to ABAI experienced a similar shift in growth, albeit 2 years later. Noticeably in Fig. 1, there was a steady increase in total ABAI membership from 1977 to 2000, after which membership climbs more rapidly (Association for Behavior Analysis International, 2015). While there are occasional declines in total ABAI membership throughout the period of 1977 to 2015, the growth of the field is evident. These data are insufficient to denote a causal relationship between the creation of the BACB and growth of the field of ABA; it is nonetheless noteworthy. The discipline's growth is further reflected in the growing number of presentations and workshops offering continuing education credits at ABAI (Kangas & Vaidya, 2007), with an increasing focus on topics related to the service of individuals with ASD (Leblanc, Heinicke, & Baker, 2012).

Beyond growth in conference attendance, membership, continuing education opportunities for practitioners, and a shift in presentation topics, an additional indicator of the

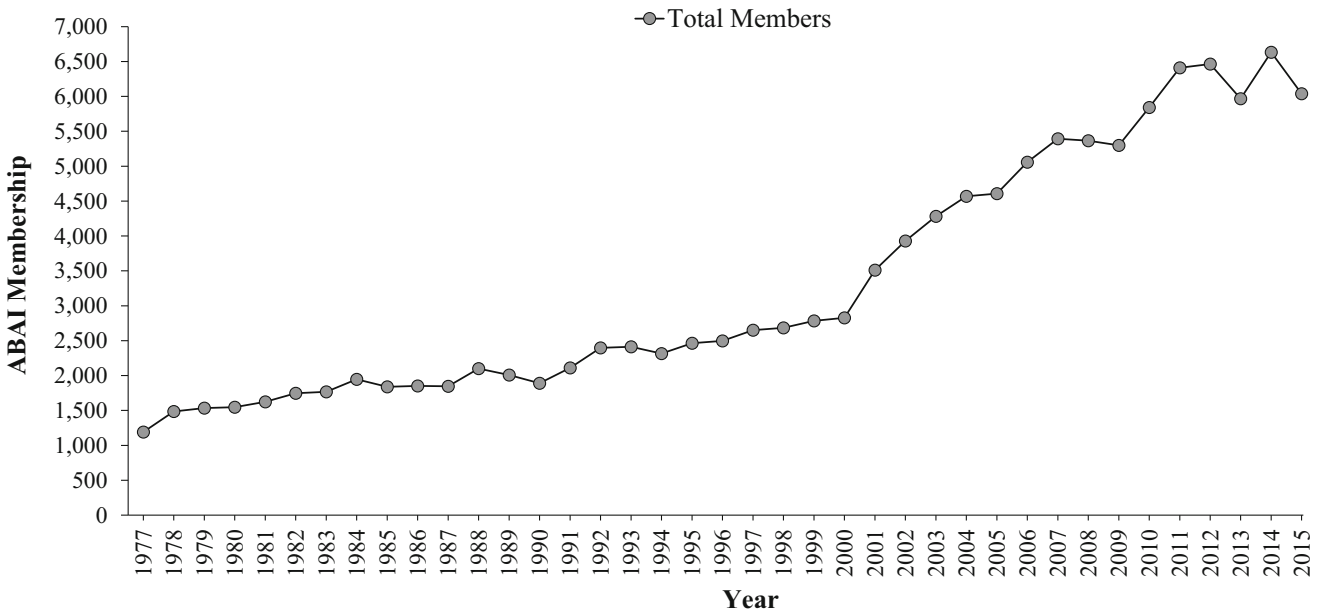


Fig. 1 Total ABAI membership from 1977 to 2015

disciplinary growth of ABA is the growing number of professionals who are credentialed by the BACB. A survey conducted by APBA noted that newly credentialed BACB certificants (less than 5-year experience) are compensated well for their services (Leblanc, Heinicke, & Baker, 2012). Additionally, the number of job postings from 2012 to 2014 appears to be increasing for BACB-credentialed practitioners (Burning Glass Technologies, 2015). In this article, we examine data on changes in the number of BACB-credentialed professionals from 1999 to 2014, a period that coincides with the largest expansion the field has witnessed.

This article is broken down into five analyses: (1) overall certificant trend(s) in the USA, (2) geographical distribution of certificants, (3) ABA services in relation to population data, (4) Autism Insurance Reform and ABA licensure laws, and (5) institutions providing coursework and supervision.

Method

For the sake of this article, we will use the term BACB certificants to refer collectively to three categories of professionals who have met BACB credentialing standards: Board Certified Behavior Analysts-Doctoral® level (BCBA-Ds®), Board Certified Behavior Analysts® (BCBAs®), and Board Certified Assistant Behavior Analysts® (BCaBAs®). The Registered Behavioral Technician (RBT) certification is not included in our analyses because it is a relatively recent creation.[1] Although BACB certificants are present in a growing number of countries, the vast majority of BACB certificants reside in the USA. Thus, we elected to exclude data on the growing but relatively smaller number of international certificants.

Data were requested from the BACB on the number of certificants living in each state of the USA between 1999 and 2014. It is important to note that data on the number of certificants does not necessarily reflect the location in which the individual was certified but their most recently recorded residence. Additionally, the current data do not include individuals who have let their certification lapse. However, the attrition rate of certificants is relatively low. For example in 2013, the annual attrition rate of BACB certifications was approximately 1.5 % (James E. Carr, personal communication, November 11, 2014). Unless otherwise noted, the state data will include all 50 states and the District of Columbia.

Overall Trend in BACB Certificants in the USA

Growth in the number of BACB certificants in the USA was analyzed by totaling the number of BACB certificants per year for all states and depicting the results graphically.

Figure 2 depicts the cumulative number of BACB certificants across all US states from 1999 to 2014. Figure 2 depicts a relatively constant growth from 1999 to 2009, besides a slight decrease in growth in 2005. Interestingly, the noted decrease in growth rate coincides with the introduction of more demanding certification standards in the spring of 2005 (Shook & Neisworth, 2005). After 2010, there is a more noticeable increase in the annual rate of certificants.

[1] See the BACB web site (www.BACB.com) for additional details regarding requirements and professional roles of each certification category.

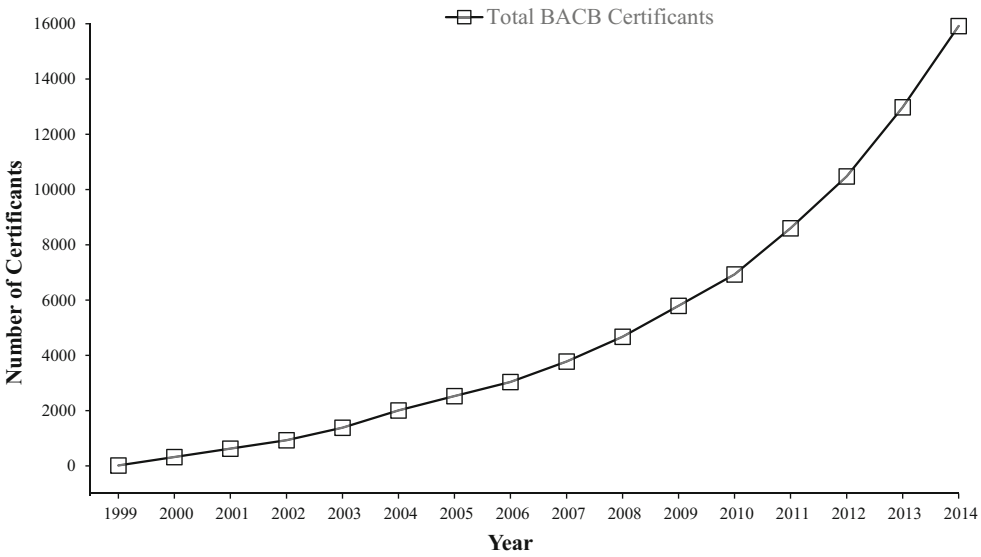


Fig. 2 The cumulative number of BACB certificants across all US states from 1999 to 2014

Figure 3 presents similar cumulative data broken down for each category of BACB certificant. This figure clarifies the source of the growth documented in Fig. 2. The vast majority of growth can be attributed to the increase in the number of BCBAs. The number of BCBA-Ds and BCaBAs accounts for only a relatively small portion of the overall growth in certificant numbers. Growth in the number of BCaBAs appears to have slightly accelerated after 2009, compared to the slower growth of BCBA-Ds. Figures 2 and 3 document the steady and accelerating growth in the overall number of BACB certificants since the inception of the BACB credentialing system until 2014.

Geographic Distribution of BACB Certificants

In an effort to ascertain if the distribution of certificants is spread evenly throughout the USA, certificant data were geographically separated. Table 1 presents 2014 data of total BACB certifications for each region, division, and state. Notably, the east side of the USA contains a large proportion of the total BACB certificants, which might be unsurprising considering that the BACB certification model originated in Florida (Shook & Neisworth, 2005) and because the overall population density of the Eastern Seaboard of the USA exceeds that of other geographic regions with the exception of California. The Florida certification model used an examination to credential its behavior analysis practitioners as early as 1985 (Shook, 2005). The Florida credentialing model formed the basis of what would later become the national credentialing model that is now administered under the auspices of the Behavior Analysis Certification Board. Some states adopted an early certification model based on the Florida model that preceded the emergence of the national certification board (the Behavior Analysis Certification Board) in 1998. Some of these early adopter states (Florida, Oklahoma, Texas, California, Pennsylvania, and New York) also have the highest BACB certificants in the USA. In fact, five of the six early adopter states appear in the top seven states for highest number of BACB certifications in 2014 (see Table 1).

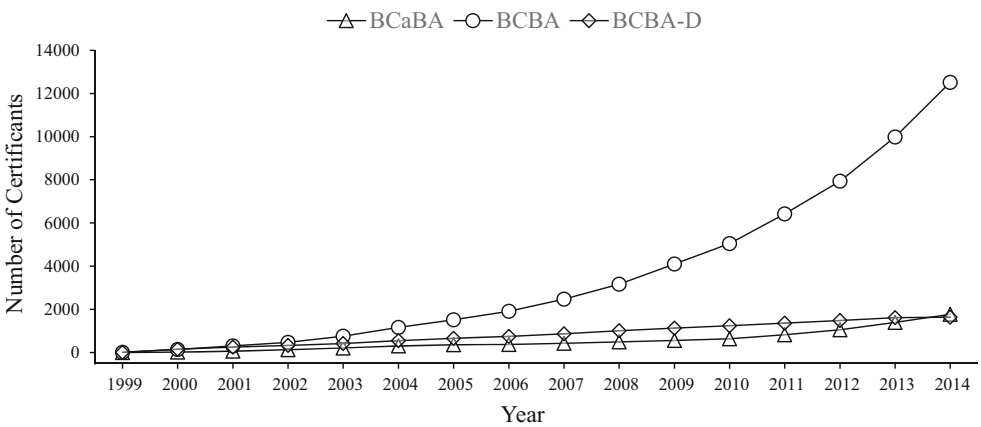


Fig. 3 Cumulative data for each category of BACB certificant

Table 1 The 2014 data of total BACB certifications for each region, division, and state in the USA. The proportion of BACB certificants comprised by each certificant category are outlined for each state respectively.

Region	Rank (no.)	Division	Rank (no.)	State/territory	Rank (no.)	BCBA	BCBA-D	BCaBA
Northeast	2 (4952)	New England	4 (2102)	Connecticut	10 (427)	79.16 %	9.37 %	11.48 %
				Maine	27 (111)	79.28 %	10.81 %	9.91 %
				Massachusetts	3 (1286)	88.10 %	8.48 %	3.42 %
				New Hampshire	25 (128)	87.50 %	7.03 %	5.47 %
				Rhode Island	33 (93)	81.72 %	9.68 %	8.60 %
				Vermont	37 (57)	87.72 %	1.75 %	10.53 %
		Middle Atlantic	3 (2850)	New Jersey	5 (904)	80.64 %	9.85 %	9.51 %
				New York	4 (1044)	83.62 %	12.16 %	4.21 %
				Pennsylvania	6 (902)	86.59 %	8.98 %	4.43 %
Midwest	4 (1940)	East North Central	5 (1303)	Indiana	16 (251)	77.69 %	5.98 %	16.33 %
				Illinois	9 (447)	85.46 %	7.83 %	6.71 %
				Michigan	15 (262)	81.30 %	13.36 %	5.34 %
				Ohio	18 (240)	70.00 %	12.92 %	17.08 %
				Wisconsin	29 (103)	70.87 %	20.39 %	8.74 %
		West North Central	9 (637)	Iowa	36 (63)	77.78 %	12.70 %	9.52 %
				Kansas	32 (100)	61.00 %	25.00 %	14.00 %
				Minnesota	26 (116)	68.10 %	10.34 %	21.55 %
				Missouri	14 (263)	76.81 %	7.22 %	15.97 %
				Nebraska	35 (67)	73.13 %	25.37 %	1.49 %
				North Dakota	49 (11)	81.82 %	9.09 %	9.09 %
				South Dakota	48 (17)	47.06 %	29.41 %	23.53 %
South	1 (5170)	South Atlantic	1 (3467)	Delaware	46 (22)	77.27 %	13.64 %	9.09 %
				District of Columbia	42 (32)	78.13 %	9.38 %	12.50 %
				Florida	2 (1982)	60.39 %	8.27 %	31.33 %
				Georgia	17 (242)	72.73 %	14.88 %	12.40 %
				Maryland	19 (230)	71.30 %	21.30 %	7.39 %
				North Carolina	20 (204)	73.53 %	13.24 %	13.24 %
				South Carolina	21 (165)	64.85 %	10.30 %	24.85 %
				Virginia	8 (536)	78.36 %	6.53 %	15.11 %
				West Virginia	38 (54)	75.93 %	20.37 %	3.70 %
		East South Central	8 (647)	Alabama	22 (154)	74.03 %	15.58 %	10.39 %
				Kentucky	24 (133)	84.21 %	10.53 %	5.26 %
				Mississippi	41 (35)	51.43 %	25.71 %	22.86 %
				Tennessee	11 (325)	86.77 %	11.69 %	1.54 %
		West South Central	6 (1056)	Arkansas	42 (32)	75.00 %	15.63 %	9.38 %
				Louisiana	28 (110)	75.45 %	18.18 %	6.36 %
				Oklahoma	39 (49)	75.51 %	14.29 %	10.20 %
				Texas	7 (865)	82.08 %	8.67 %	9.25 %
West	3 (3853)	Mountain	7 (662)	Arizona	23 (153)	82.35 %	12.42 %	5.23 %
				Colorado	13 (267)	75.28 %	6.37 %	18.35 %
				Idaho	50 (9)	66.67 %	22.22 %	11.11 %
				New Mexico	45 (27)	59.26 %	25.93 %	14.81 %
				Montana	47 (21)	90.48 %	9.52 %	0.00 %
				Utah	34 (80)	67.50 %	13.75 %	18.75 %
				Nevada	31 (101)	59.41 %	22.77 %	17.82 %
				Wyoming	51 (4)	100.00 %	0.00 %	0.00 %
		Pacific	2 (3191)	Alaska	44 (28)	82.14 %	10.71 %	7.14 %
				California	1 (2716)	84.61 %	9.83 %	5.56 %
				Hawaii	30 (102)	80.39 %	4.90 %	14.71 %
				Oregon	40 (41)	70.73 %	14.63 %	14.63 %
				Washington	12 (304)	79.28 %	12.83 %	7.89 %

The nation's distribution of certification type is 79 % BCBA, 10 % BCBA-D, and 11 % BCaBA. In Table 1, the most variability in the BACB certification type generally occurs in the states with the lowest number of certifications. There are noteworthy exceptions, like Florida for example, where the existing Medicaid waiver infrastructure could partially account for the disproportionate amount of a BCaBAs (31 %).

ABA Services in Relation to Population Data

Clearly, there is a relationship between the number of BACB certificants in a state and that state's population, with some of the states with low numbers of BACB certificants (Idaho, New Mexico, Montana, Alaska, or Wyoming) also having smaller populations compared to the larger states, like California, which has the largest state population in the USA and also the largest number of BACB certificants of any state in 2014.

Data regarding the number of BACB certificants for each state (gray-filled bars) and the number of certificants per 1000 state population size (dark-filled bars) are represented in Fig. 4. The histograms in this figure are ordered from those states with the highest population (e.g., California is at the top of this figure) to those states with the lowest (Wyoming is depicted at the bottom) based on 2014 state population size estimates (U.S. Census Bureau, 2015). There is a strong positive linear relationship between state population size and number of BACB certificants within that state, $r(50) = 0.86$, $p = 0.00000008$. Not surprisingly, states with higher populations have higher numbers of BACB certificants. After all, states with larger populations might also be expected to have greater demand for ABA service providers, considering that ASD is reported to occur in all racial, ethnic, and socioeconomic groups (Durkin et al. 2010). Additionally, these states might also have a larger pool of professionals who are pursuing a career in behavior analysis.

Despite the high correlation between state population and the number of BACB certificants there, are some interesting individual cases that cannot be anticipated from the overall correlation. Perusal of Fig. 4 shows that the some states have disproportionately high per capita distributions of BACB certificants. For example, New Jersey, Massachusetts, and Connecticut have a larger number of BACB certificants per capita than other states relative to other states with similar population sizes. Figure 4 also documents relatively high per capita numbers of BACBs for some states with smaller populations, a trend that may reflect the impact of small increase in the absolute number of BACBs on the per capita measure when the overall state population is relatively small. These per capita distribution patterns suggest that factors other than a state's population might be having an impact on the number of BACB certificants.

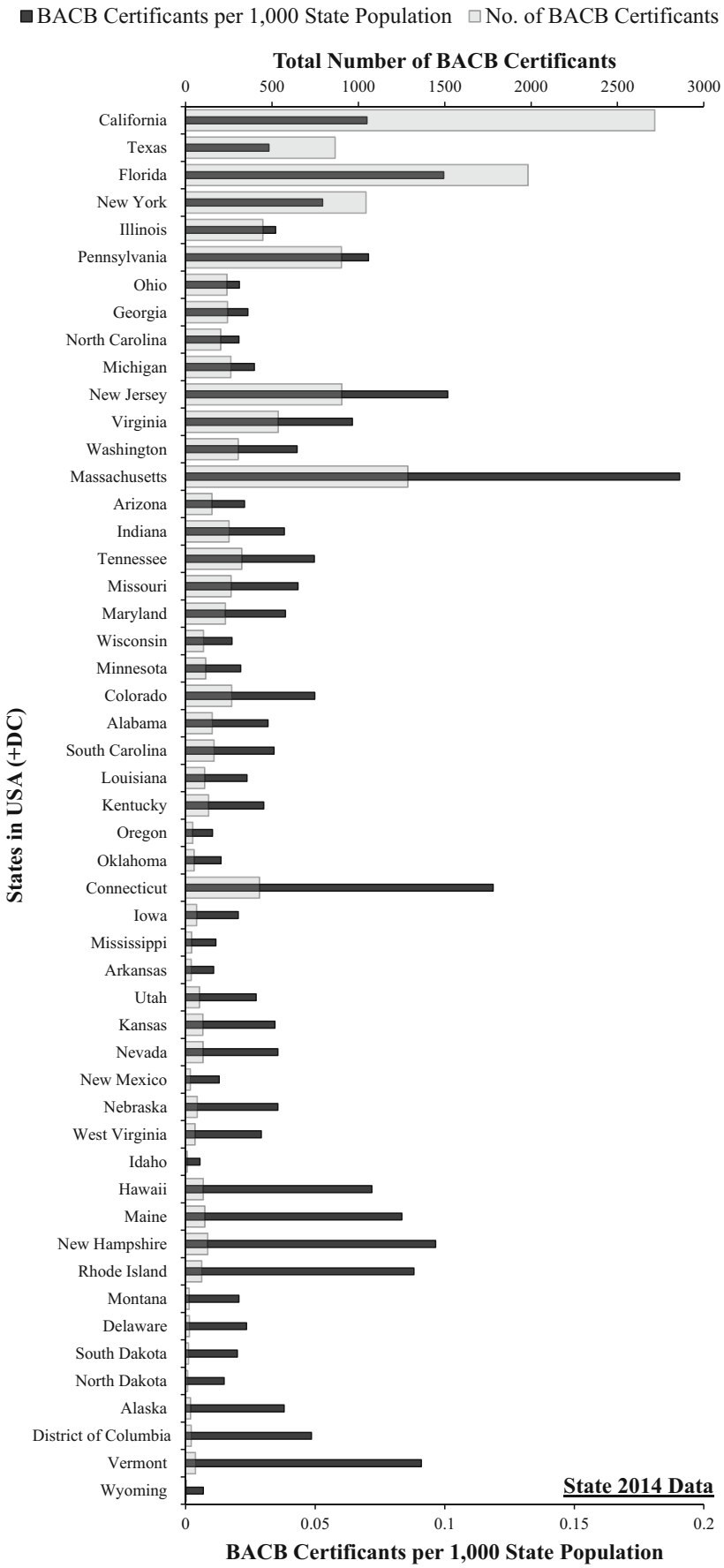
There is a higher demand for jobs for credentialed behavior analysts in some of those states. The uneven distribution of BACBs across the states is reflected in a report on national demand for behavior analysts which documented that three states, California, Massachusetts and New Jersey, account for almost half of all behavior analytic job postings (Burning Glass Technologies, 2015). These data suggest that factors other than population size might be driving the growth and distribution of BACB certificants.

Autism Insurance Reform and ABA Licensure Laws

A number of states have enacted reforms that have extended insurance coverage to autism. Dates in which various states enacted insurance reforms were collected from the Autism Speaks website (Autism Speaks® State Initiatives, 2014). In addition to insurance reforms, a smaller number of states have also enacted state-level BCBA licensure or credentialing requirements which usually occur after insurance reform. The dates for state legislation enactments of this nature were collected from the Association of Professional Behavior Analysts website (APBA® State Laws to License, 2014).

Although it was not feasible to include all state data, the full set of graphs depicting the growth of BCBAs between 1999 and 2014 for each state are available upon request from the first author. Due to the significant variability across states regarding the adoption of insurance reform, we selected representative states to depict various stages of legislative reform: states that rejected insurance reform midway in 2014 ($n = 6$) and early insurance reform adopters ($n = 6$). Figures 5 and 6 depict the total cumulative number of BACB certificants for these six representative states over time. Phase change lines were inserted within each figure representing the year of legislative enactments (insurance or license bills). Figure 5 depicts the cumulative number of BACB certificants for states that rejected insurance reform in 2014 (Alabama, Idaho, North Dakota, Oklahoma, Washington, and Wyoming). Figure 6 contains the six states that enacted insurance reform earlier than all other states (Arizona, Florida, Indiana, Louisiana, South Carolina, and Texas).

In general, these graphs document an increase in the number of BACB certificants over time, with the most rapid growth occurring in states that were early adopters of insurance reform, although these changes do not always temporally correspond to the reform. However, of some interest in Fig. 5 is the adopting of BCBA licensure reform, which appears to be associated with an increase in certificants for two states (Oklahoma and North Dakota). Interestingly, some of the states that rejected insurance reform in 2014, such as Idaho


BACB Certificants per 1,000 State Population
No. of BACB Certificants
Total Number of BACB Certificants
0
500
1000
1500
2000
2500
3000
California
Texas
Florida
New York
Illinois
Pennsylvania
Ohio
Georgia
North Carolina
Michigan
New Jersey
Virginia
Washington
Massachusetts
Arizona
Indiana
Tennessee
Missouri
Maryland
Wisconsin
Minnesota
Colorado
Alabama
South Carolina
Louisiana
Kentucky
Oregon
Oklahoma
Connecticut
Iowa
Mississippi
Arkansas
Utah
Kansas
Nevada
New Mexico
Nebraska
West Virginia
Idaho
Hawaii
Maine
New Hampshire
Rhode Island
Montana
Delaware
South Dakota
North Dakota
Alaska
District of Columbia
Vermont
Wyoming
States in USA (+DC)
State 2014 Data
0
0.05
0.1
0.15
0.2
BACB Certificants per 1,000 State Population

◀ **Fig. 4** The number of BACB certificants for each state (*gray-filled bars*) and the number of certificants per 1000 state population size (*dark-filled bars*)

and Wyoming, also have the lowest BACB certificants per state population.

Influencing policy and state-level regulations can determine the extent of a professions right to practice (Shook & Favell, 2008), and this may depend on having a critical number of behavior analysts within a state. Lobbying power potentially could be dependent on the proportion of BACB certificants per state population. There might be some support for this interpretation of the data, considering that Washington altered its position and accepted autism insurance reform at end of 2014, and it incidentally had the highest BACB certificants per state population in the group that rejected insurance reform. Using this logic, Alabama might be the next state to reverse its position on the rejection of autism insurance reform.

Multiple states had marked increases in BACB® certificants after 2010 regardless of insurance reform (data available upon request). Indiana enacted insurance reform earlier than all other states, yet there is a significantly delayed increase in BACB® certificants after the reform (see Fig. 6). Some other variable(s) appear to be operative after 2010. The causes for the accelerating trend are only speculative at this time, but it coincides with a time period where there was widespread recognition that ABA was the treatment of choice for autism-related behavioral challenges. Increased national media attention and reports from independent panels could have been influential during this period. It is worth noting that the National Standards Project first published their systematic review of established treatments for autism-related behavioral challenges in 2009 (National Autism Center, 2009). Although this does not appear to be national variable level effect, as some states do not show the same effect, it does implicate the importance of some other variable influencing multiple state data.

This analysis is admittedly complicated by the logistical challenges of rolling out reform that impacts the delivery of ABA services. More specifically, it may take a while to fully hire or train a sufficient number of BACB certificant providers to meet the increased service demand that might accompany the passage of autism insurance reform. Moreover, different types of reform like license reform might impact BCBA certificants differentially. For example, license reform does

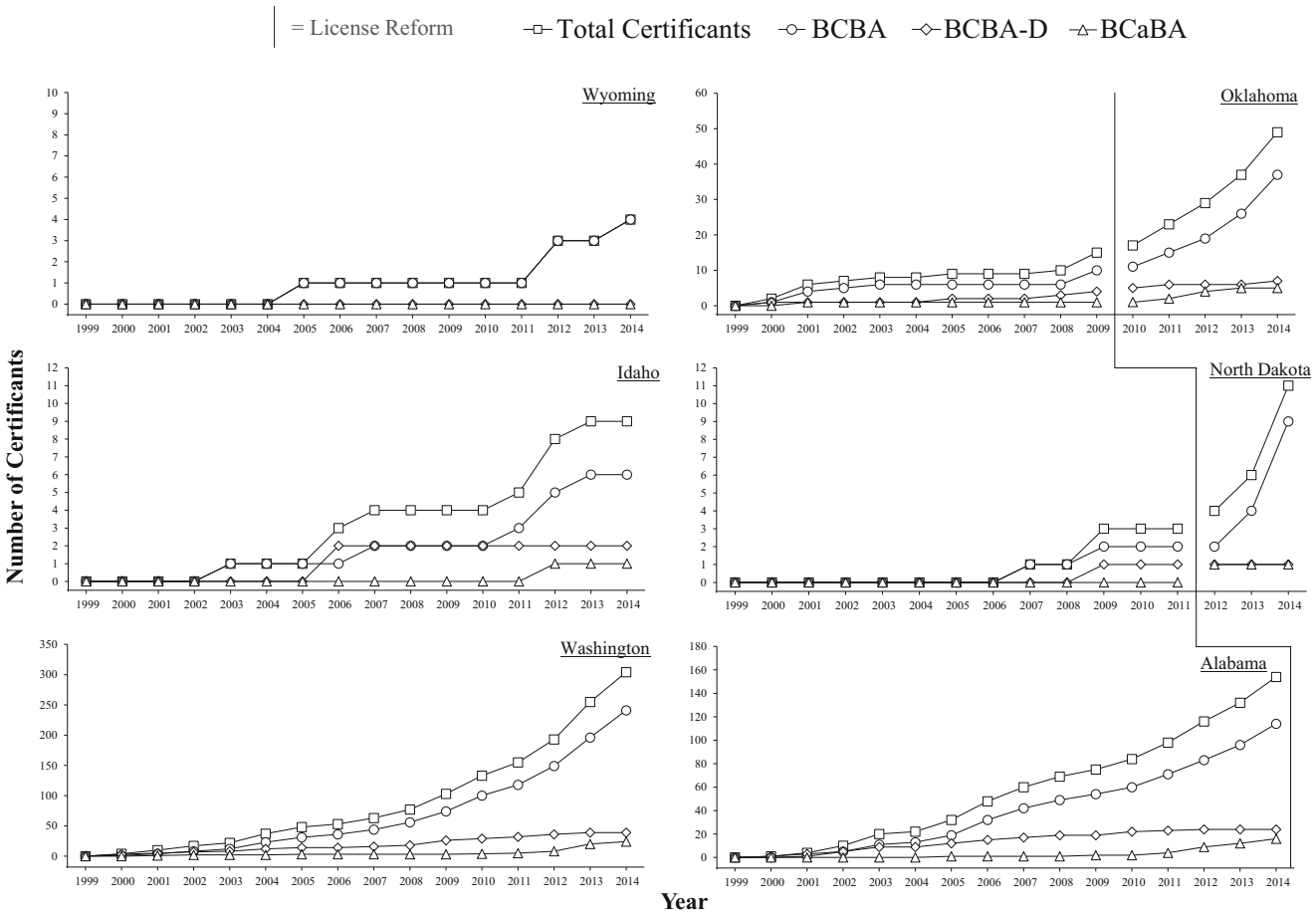


Fig. 5 Cumulative number of BACB certificants and BACB certificant types for states that rejected insurance reform in 2014

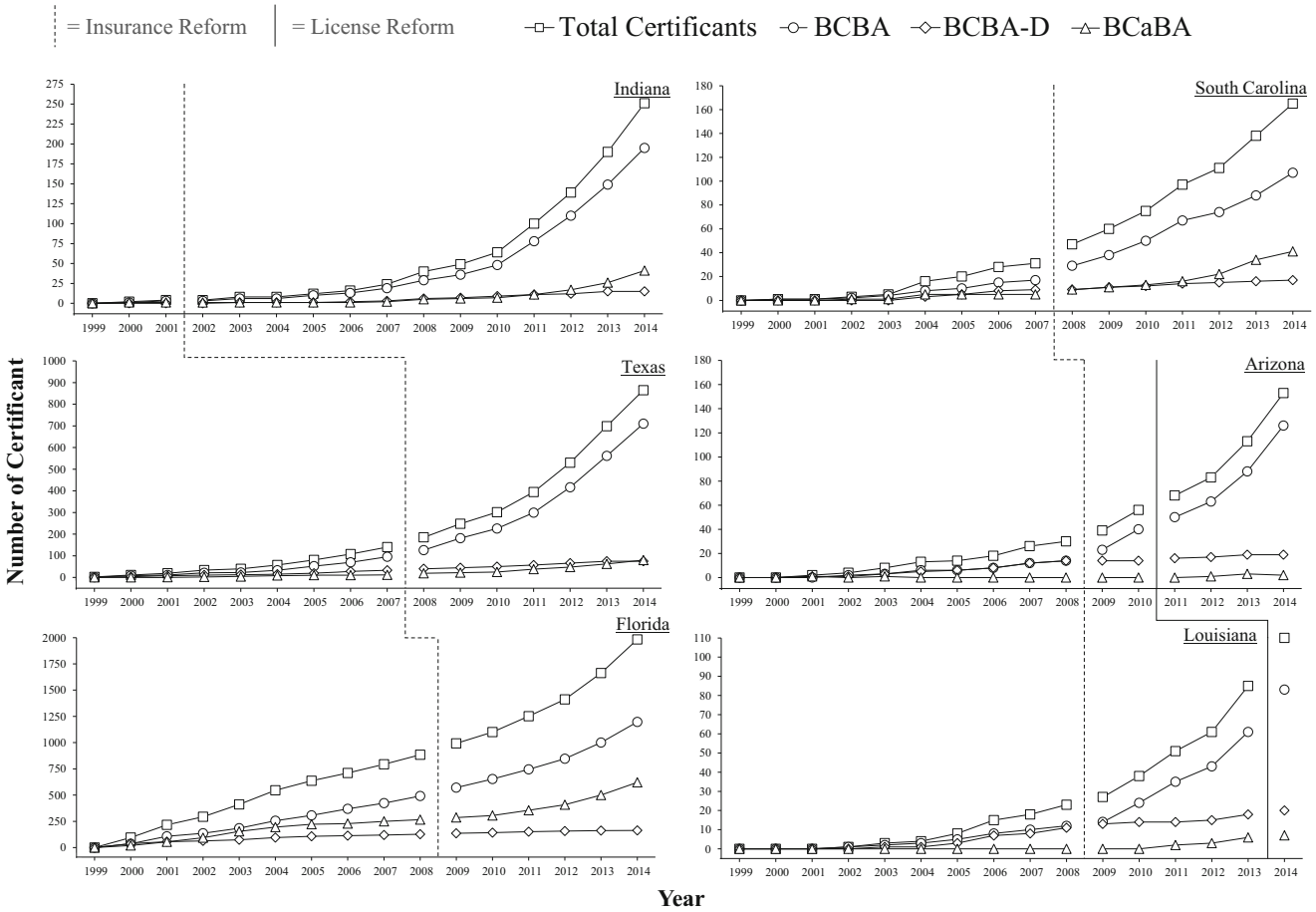


Fig. 6 Cumulative number of BACB certificants and BACB certificant types of the six states that enacted insurance reform earlier than all other states

not always extend to BCaBA certificants, and each state might have a different requirement of BCaBA practitioners such as fulfilling the technician role (program delivery) rather than having them as involved in program development. The training requirements for each certificant type vary, but one consistent factor is the oversight from the BACB. One factor worth considering is how the number of training sites in a state offering approved BACB course sequences relates to the number of BACB certificants.

Location of Approved BACB Coursework and Supervision Sites

Previous research has demonstrated that as the number of approved BACB® course sequences increase, so do the number certificants (Shook & Favell, 2008). To examine if this relationship between BACB certificants and the availability of approved training programs also extends to the state level, we collected the number of approved BCBA, BCaBA coursework locations, and approved supervision sites that were located in each of the 50 states from the BACB website (www.BACB.com). We then clustered the states into five groups of ten based on their respective number of BACB® certificants and depicted the data graphically (see Fig. 7). Notably, the ten states with the highest number of BACB certificants contained an average of ten approved BCBA coursework locations, whereas the ten states with the lowest BACB certificants had an average of 0.6 approved BCBA coursework locations. It appears that as BACB certificant numbers decrease, so do the number of locations offering approved BCBA and BCaBA course sequences.

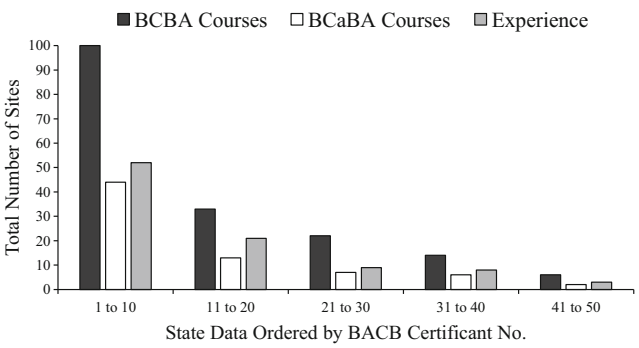


Fig. 7 Number of sites offering BACB approved course sequences or experience standards based on state data ordered by their respective number of BACB certificants

Statistical analyses revealed a large positive linear correlation with number of sites in a state offering approved BCaBA coursework ($r(49) = 0.91$, $p = 0.000066$) with all BACB certificants for each state. Interestingly, the number of BCBA approved coursework locations shared a similar large positive linear correlation ($r(49) = 0.88$, $p = 0.000069$) with all BACB certificant types, but the number of sites offering approved BCBA coursework in a state co-varied more ($r(49) = 0.86^2$) with state population than BCaBA coursework ($r(49) = 0.77^2$). Perhaps the number of approved BCaBA coursework locations in each state will become an informative index of future growth of the field, especially if this certification level experiences an exponential growth in numbers comparable to that which the BCBA credential is currently undergoing.

Discussion

Limitations of the Data

There are many extraneous variables that impact analyses of the historical trends of behavior analyst certifications in the USA. For one, it is important to recognize that even if data appear to match the population proportionally in a state, this does not mean that the geographic distribution of BACB® certifications is evenly spread in that state, i.e., there might be fewer BACB certificants in remote rural areas.

In addition to the staggered nature in which states have adopted legislative reform, there can also be a great deal of variability in the specifics of the autism reform and professional regulations (e.g., the age ranges and maximum annual caps for insurance coverage, permitting third party reimbursement, details of licensing regulations, and whether they extend to the BCaBA certificant type). Unfortunately, these details are challenging to include in a graphical displays and could detract from visually interpreting the data. However, there are still data that could still be included regarding other types of legislative reforms. Education reform recognizes behavior analysts certified by the BACB as authorized providers of services within a state's education system. While fewer states have adopted education reform, analyzing their impact could provide further resolution to the data.

Lastly, the analysis on coursework and supervision sites as they relate to states' locations becomes complicated due to increases in the use of distance learning through the offering remote online programs. This blurs the boundaries of a state-level analysis. In the same manner, academic institutions vary in the number of certificants they graduate and the expected certification pass rate.

Concluding Remarks

In spite of the state by state differences, we contend that there are enough similarities in legislative reform and academic institutions across states to draw some meaningful conclusions about their impact on the growth of the BACB® certifications.

The mean growth for all US states (and DC) across two 8-year periods, in 1999–2006 and 2007–2014, went from 379 to 1610 incoming BACB® certificants per year. This is over a 400 % increase in certification growth.

It seems safe to conclude that the forecast for the ABA field appears favorable, barring any unanticipated factors that might mitigate the continued growth of the field (e.g., a major downturn in prevalence of autism, the reversal of autism insurance reform, or an abrupt increase in the requirements for certification). Based on these data, we can also offer some rough predictions about future growth.

After conducting a regression analysis, residual plot data revealed a non-random inverted U curve, indicating that a non-linear regression transformation would best account for the trajectory of the current data. The non-linear options that yielded the highest R^2 values were exponential and polynomial trend lines (see Fig. 8 in supplementary material). According to these projections midway in 2020, the number of BACB® certifications in the USA could reach up to 42,000 or 60,000 if the exponential trend is more accurate.

Most likely, the factors discussed work in concert, and there are important variables that have not been considered or are unavailable. Regardless, the data are worthy of regard in their own right. Recognizing this fact, two supplementary three-dimensional videos (https://youtu.be/B0J6jyRoxcg; https://youtu.be/RZ6s7DfrSKY) showing the interactive growth of cumulative BACB® certifications and certification types across 1999–2014 in the USA have been created so that the reader can glean some general information about BACB certificant trends over the years. The current environment is sustaining the growth of applied behavior analysts, and we hope that the field continues to live long and prosper.

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Appendix I

National Commission for Certifying Agencies

National Commission for Certifying Agencies

Standards for the Accreditation of Certification Programs

Approved February 2002
Revised September 2004
Revised November 2006 (editorial only)
Revised December 2007 (editorial only)
Revised January 2010 (editorial only)
Revised November 2014

Table of Contents

INTRODUCTION

In 1977, a Congressional mandate under President Jimmy Carter called for the creation of the National Commission for Health Certifying Agencies (NCHCA). Federally funded by a grant from the Department of Health, Education, and Welfare (now the Department of Health and Human Services), NCHCA was established to develop standards for quality certification programs in the allied health fields and to accredit programs that met those standards.

In 1987, NCHCA was restructured and expanded to include accreditation of certification programs for all professions. As part of the restructure, NCHCA became the National Organization for Competency Assurance (NOCA) under which National Commission for Certifying Agencies (NCCA) was formed. NOCA was structured as a membership association for certification organizations providing technical and educational services concerning certification practices. NCCA was structured as the accreditation body, developing accreditation standards and granting accreditation to certification programs that met these standards.

In 2009, the NOCA Board of Directors moved to change to a new name and became the Institute for Credentialing Excellence (ICE). NCCA's structure and role remained the same as the certification program accreditation body of ICE.

Accreditation is both a process and a status. The NCCA's accreditation process uses peer review to evaluate a certification program's compliance with these standards, recognizes programs which demonstrate compliance, and serves as a resource on certification quality. NCCA *Standards* address the structure and governance of the certifying agency, the characteristics of the certification program, the information required to be available to applicants, certificants, and the public, and the recertification initiatives of the certifying agency. The NCCA's *Standards for the Accreditation of Certification Programs* used as a foundation the *Standards for Educational and Psychological Testing*, promulgated by the American Psychological Association, American Educational Research Association, and the National Council on Measurement in Education. The guidelines of the US Equal Employment Opportunity Commission were used as a foundation also.

As a status, NCCA's accreditation recognizes and provides public notification that the certifying program is committed to self-study and external review by one's peers, meets *Standards*, and seeks continuous improvement to maintain the quality of examination and certification of its constituent professionals. Upon achieving accreditation, it is essential that the certifying program embrace transparency and accountability to its stakeholders, certificants, and public through communications that are publicly available and readily accessible.

PRIOR REVISIONS OF *STANDARDS*

Since the 1970s when the *Standards* were first issued, NCCA has observed fundamental changes in the nature, scope, and importance of certification:

- First, the certification community has significantly expanded to include a broader diversity of occupational and professional credentials offered by non-profit organizations, for-profit entities, governmental agencies, and industries.
- Second, it is increasingly common for an organization to offer multiple certification programs.
- Third, the certification community has expanded internationally.

- Fourth, the certification and testing communities use computer technology to develop examination items and new examination formats, administer the examinations, and score and scale them with new methodologies.
- Fifth, an increasing number of certification programs are recognized by state and provincial regulatory authorities, a practice that expands the traditional definition of certification.
- Sixth, increased interest by professions for greater ease of mobility across jurisdictions, and greater access by the public for the services provided by the professions.

Upholding its mandate to serve and protect the public and stakeholders by maintaining accreditation standards for certification programs and to address fundamental changes in certification, NCCA implemented continuous improvement processes to review and revise its accreditation *Standards*. In 1997, NCCA initiated efforts to revise the accreditation *Standards*. After the proposed *Standards* were made available for public comment, the revised *Standards* were presented in 2002 to the organizations whose programs were accredited by the NCCA for ratification and approval

CURRENT REVISION OF *STANDARDS*

As part of its continuous process of quality improvement, NCCA initiated another review and update of the *Standards* in 2013. A Steering Committee and three Task Forces were established for this purpose. In addition to determining that the *Standards* retained their currency and relevance, another purpose was to add clarity, particularly as change in the certification industry has created greater complexity. As a result, several standards were added or expanded and require additional evidence to demonstrate compliance. These additions reflect practices, policies, and procedures that accredited programs should have had in place previously and therefore, are **not** intended to increase the difficulty of attaining accreditation. Rather, by adding clarity, NCCA anticipates that organizations will better understand expectations of certification program quality.

The proposed *Standards* were submitted for public comment On September 6, 2014. The *Standards* were presented to the NCCA accredited agencies for vote on October 24, 2014 and approved on November 26, 2014.

The revised *Standards* retain their focus on certification programs and continue to be organized into five sections: (1) Purpose, Governance, and Resources, (2) Responsibilities to Stakeholders, (3) Assessment Instruments, (4) Recertification, and (5) Maintaining Accreditation.

To earn or maintain accreditation by NCCA, the certification program must meet *each* Standard and provide evidence of compliance through the submission of required documentation. Accompanying each Standard are ***Essential Elements***, which are directly related to the Standard and specify what a certification program must do to fulfill requirements of the Standard.

The Essential Elements are accompanied by ***Commentary.*** The Commentary sections clarify terms, provide examples of practice that help explain a Standard, or offer suggestions regarding evidence that may be provided to demonstrate compliance. NCCA reserves the right to revise the Commentary sections to provide further clarity and guidance as might be needed. A **Glossary** of

terms has been updated to define and describe terms within the document with the related purpose of enhancing clarity.

The 2013-2014 revision process was guided by the following tenets:

1. The *Standards* must embody the fundamentals required for protection of the public.

2. Many different types of credentialing programs will seek NCCA accreditation. The *Standards* and the terminology used must be adaptable to a wide variety of programs in order to achieve NCCA's public service mission.

3. The *Standards* must present requirements that are still valuable and relevant to the mission of NCCA accreditation.

4. The documentation required for accreditation must be explicit and minimize redundancy and repetition.

The *Standards* must be consistent, relevant, and distinctive, and reflect current practice.

Standard 1: Purpose

The purpose of the certification program must be to recognize each individual who meets established criteria. These criteria must uphold standards for practice in a profession, occupation, role, or specialty area.

Essential Elements:

A. The certification program must identify the population(s) being certified.

B. The certification program must make publicly available the purpose of the certification and the designation or mark issued to those certified. The certification program must provide the rationale for the appropriateness of its requirements. If the program does not issue a designation, a reasonable explanation must be provided.

Commentary:

1. Certification can be offered for a specific profession, occupation, role, or specialty area across multiple disciplines. The program should specify the audience(s) it is targeting for certification as well as the scope and purpose of the certification program. The scope should identify the level of experience for the targeted practitioner.

2. Suggested evidence to document that the Standard has been met includes a mission statement, bylaws, candidate handbook, policy and procedures document, and other publicly available documents.

Standard 2: Governance and Autonomy

The certification program must be structured and governed in ways that are appropriate and effective for the profession, occupation, role, or specialty area; that ensure stakeholder representation; and that ensure autonomy in decision-making over all essential certification activities.

Essential Elements:

A. The certification program must have established policies and procedures showing that the governance structure and the process for selection and removal of certification board members protects against undue influence that could compromise the integrity of the certification process.

B. The certification organization must identify its status as a legal entity (or part of a legal entity) and demonstrate that the certification board has autonomy in decision-making for all essential certification policies and activities.

C. The composition of the certification board must include individuals from the certified population and may include other appropriate stakeholder groups. The certification program must identify its stakeholders and provide an ongoing mechanism to solicit their input.

D. The certification board must include at least one member, with voting rights, that represents the public or non-employer consumer interest. The certification program must document how the public interest is routinely represented and protected.

E. The certification program must demonstrate that members of the certification board do not have a conflict of interest in their overall capacity to serve that could compromise the integrity of the certification program.

Commentary:

1. The appropriate structure and governance of a certification program should reflect the interests of the general public in the availability and implementation of the credential. In traditional forms of professional or occupational certification, the public interest requires direct protection of essential certification decisions from undue or improper influence. Such protection is especially important when a certification program is sponsored by a professional membership association or proprietary entity. The certification program may be a stand-alone legal entity or part of an existing legal entity. The authority of the certification board or governing body should be clearly defined. The tax status of the legal entity should be documented.

2. Essential certification decisions refer to the core aspects of a certification program, such as eligibility standards; standards for initial certification and maintaining certification; disciplinary determinations; the development, administration, and scoring of examinations; and the selection of subject-matter experts (SMEs).

3. Decisions that are NOT considered essential include those decisions related to employee selection, office location, marketing and communications efforts, and final budget or contract approval as long as sufficient financial resources are provided for the certification program and policies and procedures are in place to provide for autonomy in essential certification decisions.

4. To ensure a balance of stakeholder input, a system of rotating membership on the certification board over a reasonable period of time may be implemented.

5. Undue influence may result from pressures that diminish or negate the certification program's ability to act freely on behalf of the interests of the certification program. Undue influence may also be caused by a lack of balanced representation on the certification board. Examples of undue influence can include pressure from a parent organization or outside entity to adjust certification standards, limit the number of certificants, or either reduce or elevate the established standard or requirements. Appointment of a significant number of certification board members by a parent organization or related entity may be considered to constitute undue influence. The certifying organization must explain how selection of the certification board, whether by appointment, election, or nomination, protects the certification board from undue influence.

6. Each certification program has its own set of stakeholder groups that have an interest in the quality, governance, and operation of the certification program. Certificants are a stakeholder group for all certification programs. The public is a stakeholder group for all certification programs whose certificants provide goods or services to the public.

7. When a certification program involves unique factors, such as a proprietary product and/or service, sensitive intellectual property issues, and/or issues related to national security, these issues may be taken into account when determining the certification program's stakeholder groups. The certification program may limit involvement by some stakeholder groups in such cases. In such situations the certification program must develop and document alternate means for collecting and considering appropriate stakeholder input and perspective.

8. A public or consumer member's role is to bring a perspective to the decision-making of the certification program that is broader than the certificants and to help balance the certification program's role in protecting the public while advancing the interests of the certificants. Effective public or consumer members also represent the public's, consumer's, or user's perspective and interest; bring new ideas and goals to the certification board to ensure the public's interest is valued; contribute an unbiased perspective; encourage consumer-oriented positions; and bring additional public accountability and responsiveness. The public member's regular involvement in board actions and decisions should be documented.

9. The public or consumer member preferably should be a consumer or potential consumer of the certificants' skills or services. Because the certification program may serve various public groups and/or interests, a rotating system may be established to ensure that these interests are fairly represented by the public or consumer member role over time. The public or consumer should **NOT** be any of the following:

    - A current or previous member of the profession, occupation, role, or specialty area encompassed by the certification program;
    - A supervisor, manager, direct co-worker, or an employee or subordinate of individuals in the profession encompassed by the certification program;
    - An employee of an individual certified by the certification program or of an employer of individuals in the profession encompassed by the certification program;
    - A person who currently receives or within the last five years has received income from the profession encompassed by the certification program.

10. Suggested evidence to document that the Standard has been met may include a mission statement, bylaws, articles of incorporation, business plans, a policy and procedures document, a governing committee charter, certification board roster, or organizational chart.

Standard 3: Education, Training, and Certification

Appropriate separation must exist between certification and any education or training functions to avoid conflicts of interest and to protect the integrity of the certification program.

Essential Elements:

A. Clearly delineated policies and procedures, with defined roles and responsibilities, must demonstrate that all functions performed by the certification board, its certification staff, certification committee members, and all subject-matter experts (SMEs) are impartial related to education/training leading to initial certification.

B. If the certification organization or a related entity offers examination review courses or materials to prepare for the certification examination, or education/training that meets the eligibility requirements, it must meet the following requirements:

    - The organization or related entity must not state or imply that the examination review courses and/or preparatory materials are the best or only means for preparing adequately for the certification examination;

- There must be no advantage given to candidates who participate in examination review courses or education/training that meets the eligibility requirements;
- The purchase of these courses and materials must be optional; and
- The certification organization or related entity must not state or imply that its education or training programs are the only or preferred route to certification.

Commentary:

1. If education/training is a prerequisite for taking the certification examination, a certification program may require graduation from, or completion of, a program accredited or approved by an accrediting or approval body independent from the certification board.

2. A certification board, its members, certification staff, and volunteers who have access to examination content cannot be involved in the creation, accreditation, approval, endorsement, or delivery of examination review courses, preparatory materials, or training programs designed to prepare for the certification examination. Appropriate firewalls should be in place to avoid an appearance of a conflict of interest. In certain situations, it may be appropriate for faculty from an educational program that leads to certification eligibility to participate in limited item writing. In addition, a certification board can determine what education (if any) is required for initial certification, and what continuing education (if any) is required for recertification.

3. The certification organization may offer sample items, a practice examination and a bibliography of textbooks and other references to help candidates prepare for certification, but the practice examination cannot be required or endorsed as a preferred method of preparation for the certification exam.

4. Suggested evidence to document that the Standard has been met includes organizational chart (clearly showing certification staff and roles, certification board, education staff, and a parent organization board of directors, if applicable), conflict of interest statements, and publicly available documents describing the relationship between training and certification.

Standard 4: Financial Resources

The certification organization must have sufficient financial resources to conduct ongoing, effective and sustainable certification and recertification activities.

Essential Elements:

A. The certification program's financial reports must demonstrate adequate resources available to support ongoing certification and recertification activities.

B. For programs that are not independently financially viable and are supported by another entity, written agreements with that entity and documentation of financial viability of that supporting entity must be included with the application.

Commentary:

1. Evidence should include two years of certification-related financial statements (e.g., balance sheets, income statements, and any tax filings). Statements are not required to be audited.

2. If in existence less than two years, the certification program should provide available financial statements and projections of likely revenues and expenses based on a reasonable, good-faith estimate for the next two years.

Standard 5: Human Resources

Essential Elements:

A. The certification program must identify primary personnel responsible for conducting certification activities (e.g., staff, consultants, psychometricians, vendors) along with their roles and qualifications for those certification activities.

B. The certification program must demonstrate appropriate oversight and monitoring of those personnel performing certification activities.

Commentary:

1. The certification program should have sufficient human resources to conduct certification activities. These activities could be adequately handled with services from a testing company, consultants, or a management service.

2. Suggested evidence to document that the Standard has been met include staff job descriptions, lists of volunteers (non-subject-matter experts) and their qualifications, curriculum vitae or biographies, policies and procedures related to oversight and monitoring of staff, organizational charts, and lists of contracted vendors.

Standard 6: Information for Candidates

The certification program must publish certification information that concerns existing and prospective certificants.

Essential Elements:

The certification program must make the following information publicly available:

A. Materials outlining all processes and procedures regarding application and eligibility;

B. A description of the examination used to make certification decisions;

C. Descriptions of examination processes, including all modes of examination delivery and the circumstances in which they are offered to potential candidates;

D. Procedures for candidates requesting a testing accommodation;

E. A nondiscrimination and fairness policy;

F. A policy for retesting of failing candidates;

G. Policies related to reconsideration of adverse certification decisions; and

H. Annual reports of the total number of candidates examined, pass/fail statistics, and the number of individuals currently certified for each program.

Commentary:

1. "Examination" may refer to a single examination, multiple methods of assessment, or more than one examination.

2. The description of the examination should include a detailed listing and/or outline of the content domains and weightings. Other information should include examination format and time allowed.

3. Policies related to fairness should describe adequate protection against discrimination in access to certification under all applicable jurisdictional laws and regulations.

4. The procedures through which candidates request accommodations should be written and published, with clear directions concerning the submission of documentation supporting the request.

5. Adverse certification decisions include but are not limited to disciplinary actions, or denial of eligibility or recertification.

6. Suggested evidence to document that the Standard has been met includes a policy and procedures manual, a candidate handbook, website links, annual reports to stakeholders, or other publicly available documents or forms.

Standard 7: Program Policies

The certification program must establish, enforce, and periodically review certification policies and procedures related to certification and challenges to certification decisions.

Essential Elements:

A. A certification program must enforce and periodically review policies and procedures for determining an applicant, candidate, or certificant's compliance with established certification requirements.

B. In establishing the eligibility requirements for taking the certification examination, the certification board must provide a rationale, either qualitative and/or quantitative, for all eligibility requirements.

C. The certification program must not unreasonably limit access to certification.

D. The rationale for the retesting policy for candidates who have failed the examination must be provided.

E. The process for reviewing requests for accommodation must follow all applicable jurisdictional laws and regulations.

F. Information must be available to interested parties for all requirements to obtain and maintain certification. The process to request reconsideration of an adverse decision must be made available to applicants, candidates, and certificants affected by the decision.

Commentary:

1. Programs should provide documentation about how candidate policies are established and reviewed.

2. Prerequisites may be used to set a minimum requirement to be eligible for certification. There should be a clear explanation, along with any relevant data if available, as to why the requirements (e.g. educational, experiential, holding another credential or a combination) are established.

3. Policies and procedures used by the certification program to judge candidates' compliance with each certification eligibility requirement should be documented. Acceptable forms of verification may include an attestation on an application form, submission of transcripts or other verification by the applicant, auditing of applicant information, and direct verification conducted by the certification program. The methods and procedures selected should reflect the potential risk to the program if the candidate has not accurately reported their compliance with the eligibility requirements. The certification program policy should include both the verification procedures used and the rationale for the selected procedures.

4. Policies and procedures restricting access to certification, which include the requirement of membership in an association, exclusion of nonmembers, required purchases of other products or services, differential pricing for members, or other potentially anticompetitive conduct, will be carefully reviewed for justification and reasonableness. However, it is permissible for a certificant to be granted membership in a membership organization by virtue of receiving and maintaining the certification.

5. Maintaining certification includes abiding by standards of practice, code of ethics, or other certification policies. Policies for filing and handling complaints, taking disciplinary actions, and allowing reconsideration or appeal of adverse certification decisions should be included. The reconsideration process for adverse decisions should be appropriate and promote fairness to the applicant, candidate, or certificant.

6. Procedures for requesting accommodations for candidates with a disability should be stated clearly and be publicly available. The process should include mechanisms that will ensure that proper evidence is submitted to the program to assist it in making a determination regarding the requested accommodation.

7. Any accommodation provided should be reasonable and not compromise the fundamental nature of assessment or the validity of the certification decision. Certification programs should not reveal on score reports or certificates that any accommodation was provided during the administration of the examination.

8. Examples of applicable laws and regulations include the Americans with Disabilities Act for organizations operating in the United States and American entities operating outside of the United States, nondiscrimination laws, antitrust laws, applicable laws that govern the industry or profession, and other relevant provisions.

9. Suggested evidence to document that the Standard has been met may include policies and procedures, forms, meeting minutes, a candidate handbook, and the organization website.

Standard 8: Awarding of Certification

The certification program must award certification only after the knowledge and/or skill of the individual candidate has been evaluated and determined to be acceptable.

Essential Elements:

A. If any current certificants were granted certification without having to meet the examination requirements established for certification, a rationale must be provided to explain how the knowledge and/or skill of those individuals was evaluated and found sufficient. Any procedure for granting a credential in the absence of evaluating the knowledge and/or skill of an individual by a program's examination is not permitted once the program has applied for accreditation.

B. Once a program has been accredited, it may grant reciprocal certification to individuals who hold a similar certification only if the program can demonstrate content and empirical equivalence between its examination and the examination of the other program. It must also provide evidence of comparability between its certification and recertification requirements and the other program's requirements.

C. If a certifying body issues a trademark, service mark, or certification mark ("mark") to recognize achievement of a particular credential, the certifying body must have in place policies to ensure appropriate use of any such mark.

Commentary:

1. It is common practice for only those subject matter experts who developed the initial examination form to be granted the credential without meeting examination requirements.

2. Granting reciprocal certification presupposes that the sponsors of both programs are in agreement about the arrangement. In some cases, a certification program may cease to exist or an organization is dissolved, and their certificants may be able to recertify with another organization if there is adequate demonstration of equivalence as outlined.

3. Only individuals who have been granted the certification and appropriately maintained the certification may use the mark. Use of the mark may only be made consistent with the scope for which the certification was granted and all applicable use policies of the certifying body, and not in a misleading or fraudulent manner. The certifying body's policies should provide that it shall take all appropriate steps including legal or other action, such as requiring discontinuation of use of the marks or suspension or revocation of the certification, to protect its rights in the marks from unauthorized use.

Standard 9: Records Retention and Management Policies

The certification program must have a records management and retention policy for all certification related records.

Essential Elements:

A. Programs must maintain records of applicants, candidates, current certificants, and previous certificants for the period of time appropriate for the legal environment applicable to the

certifying program. At a minimum, programs must verify the names of current certificants and certificate numbers (if applicable) as requested.

B. The policy must indicate the length of time records are retained for certificant information, personal information, and examination results.

C. The policy must indicate the length of time records of examination data and reports required to provide evidence of validity and reliability of the examination are retained.

D. The policy must be consistent with any applicable laws or agreements for retention, disposal, and destruction of documents.

Commentary:

1. Unless there are extenuating circumstances, such as national security, upon request from any member of the public, the certification program should provide and verify that a certificant possesses currently valid certification. Policies governing verification should allow disclosure of whether the certificant is currently in good standing, without communicating other information that may violate the confidentiality rights of certificants. However, it is permissible for programs to allow certificants to opt out of public listings for various reasons, including security, employer concerns, etc.

2. It is generally advised, but not required, that current certificants be listed in a publicly available directory.

Standard 10: Confidentiality

The certification program must have policies and procedures that cover all personnel involved in the certification program for the access, maintenance, and release of privileged and confidential examination and candidate information.

Essential Elements:

A. Signed confidentiality or nondisclosure agreements from all personnel (including staff, certification board members, proctors, examiners, consultants and vendors, SMEs, and applicants/certificants) involved in the certification program must be maintained on record and enforced for protection of privileged information for current and prospective certificants.

B. The certification program must identify all authorized personnel with access to confidential examination, applicant, candidate, or certificant information.

C. Applicant, candidate, and certificant privacy must be maintained and any records policies established must protect confidential information of the individual.

D. Personnel with access to confidential examination items must be restricted from eligibility for the examination or developing or delivering preparatory courses or materials for a reasonable period after access has ended.

E. Access to individual records must be restricted to the applicant, candidate, certificant, or authorized personnel unless express written permission has been obtained to release any part

of the information or a court order or other legal process requires the release of such information.

Commentary:

1. All information related to the certification examination, including but not limited to the examination, the detailed job analysis report (as opposed to a summary of the job analysis, which must be publicly available), candidate information, proposed or selected examination items, confidential examination administration information, confidential examination construction information, item-level psychometric information related to the examination (other than aggregate examination results, which must be made publicly available), and the like may be considered to be the confidential and proprietary information of the certification program. However, although not required, a program may choose to make its detailed job analysis report available to stakeholders without violating this standard.

2. Written confidentiality agreements should be signed by all persons having access to examination information of any kind, including but not limited to the program's board members, staff, volunteers, committee members, SMEs, vendors, proctors, and the candidates themselves. These confidentiality agreements should contain covenants protecting the secrecy of such information by containing an express agreement as to the confidentiality of such examination information and an express agreement as to the nondisclosure of any such confidential examination information by the person executing the agreement.

3. Any individual with access to the examination items, including staff, board members, SMEs, and consultants, should not be allowed to sit for the examination or provide training to prepare for the examination for a justifiable period after they no longer have such access, unless their access to examination items is very limited within a robust item bank. This period will depend on the extent to which the individual had access to the item bank and may also depend on examination update criteria, such as frequency of updating the examination items, the size of the item bank, and the number of examination forms.

4. Policies or other documentation that includes provisions for confidentiality may be provided as evidence to demonstrate compliance with this standard, such as vendor/consultant contracts, proctor manuals, and staff and volunteer confidentiality forms.

Standard 11: Conflict of Interest

The certification program must demonstrate that policies and procedures are established and applied to avoid conflicts of interest for all personnel who are involved in certification decisions or examination development, implementation, maintenance, delivery, and revision.

Essential Elements:

A. The certification program must have a record of and enforce signed conflict of interest agreements with all personnel involved in certification decisions or examination development, implementation, maintenance, delivery, and updating. The certification program must identify who may serve as a proctor, examiner, or judge for any examinations, and documentation must specify the rules and conditions for serving in these capacities.

B. The certification program must have and enforce policies and procedures for recusing related personnel from certain tasks, discussions, or decisions if there is a conflict of interest in a particular circumstance but not in their overall capacity to serve.

Commentary:

1. Proctors, judges, and examiners should not have a vested interest (either clear, potential, or perceived) in the outcome of any examination. Therefore, they are considered third-party professionals who have signed confidentiality and conflict of interest agreements.

2. There may not be a disqualifying conflict of interest (either clear, potential, or perceived) in an individual's overall capacity to serve, but limited situations may arise where that individual's participation may raise concerns about a potential conflict of interest. In these situations, the organization should follow policies and procedures to recuse the individual from part or all of the discussion or vote.

3. Suggested evidence includes sample conflict of interest agreements, policies and procedures, proctor manuals, bylaws, and employee and operations manuals.

Standard 12: Security

The certification program must establish, apply, and periodically review policies and procedures for the secure retention of candidate and examination information.

Essential Elements:

A. The certification program must have policies and procedures that address the secure maintenance of all applicant, candidate, and certificant personal information, applications, and scores.

B. The certification program's policies and procedures must have provisions for secure methods for examination development and maintenance, including item security and examination security.

Commentary:

1. Certification programs are responsible for protecting the integrity of examination information. This responsibility requires a security program that restricts access to examination information to authorized personnel.

2. Suggested evidence includes policy and procedure manuals and signed confidentiality and conflict of interest agreements.

Standard 13: Panel Composition

The certification program must use panels of qualified subject-matter experts (SMEs) to provide insight and guidance and to participate in job analysis, standard setting, and other examination development activities.

Essential Elements:

A. Each panel must represent the relevant characteristics of the population to be certified as the program defines them. The process of recruitment and involvement of SMEs must prevent the undue or disproportionate influence of any individual or group.

B. The certification program must document information about the qualifications of all panel members.

C. The certification program must document the responsibilities entrusted to panels and panelists.

D. Documentation of panel meetings must include decisions and recommendations of panelists.

Commentary:

1. A system of terms of service that includes a rotation schedule for panel membership is a useful means of ensuring broad input into the examination program.

2. The members of each panel should be provided with information regarding the purpose of the examination, the role of the panel, the rules governing panelists' participation, and a general description of the activities in which they will be involved.

3. Most members of a panel should be certified in the discipline; however, individuals who are qualified in other disciplines may serve as panelists. Examples of such individuals include supervisors, university faculty members, and regulators.

4. Individuals may serve on more than one panel, and they may serve for several years; however, certification programs should ensure that there is fair opportunity for a broad range of SMEs to participate over time.

5. Suggested evidence to document that the Standard has been met may include the following: procedures and requirements for the selection of qualified individuals for the panels; lists of panelists along with their key characteristics related to the purpose of the panel on which they are serving, and panel meeting minutes.

Standard 14: Job Analysis

The certification program must have a job analysis that defines and analyzes domains and tasks related to the purpose of the credential, and a summary of the study must be published.

Essential Elements:

A. The job analysis must lead to clearly delineated domains and tasks that characterize proficient performance.

B. A job analysis must be conducted in accordance with sound psychometric practice. If a validation survey is not conducted, sufficient justification for relying only on non-quantitative data must be provided.

C. The report of the job analysis must describe the methods, results, and outcomes of the job analysis study, including supporting documentation for each element and sufficient information to justify the study's findings and conclusions.

D. A job analysis must be conducted frequently enough to ensure that the content specifications accurately reflect current practice.

Commentary:

1. Multiple methods exist to define domains, tasks, and associated knowledge and/or skill. Appropriate strategies may include the following:

    - Use of committees of qualified subject-matter experts representing key professional characteristics;
    - Review of related practice-or job-based information, or a review of information from a previous study;
    - Collection of information using logs, observations of practice, interviews, and/or focus panels;
    - Review of curricula and training materials; and
    - Other recognized methods.

    The certification program should document the methods by which it defines the content domains, tasks, and associated knowledge and/or skills and its rationale for selecting these processes and methods.

2. Validation of the delineated domains, tasks, and associated knowledge and/or skills is typically accomplished by surveying current certificants and/or a representative sample of the population that is the intended target audience for the certification.

3. Validation surveys should include rating scales specifically selected and tailored as necessary to assess the critical domains and tasks (and associated knowledge and/or skills if included) to be examined.

4. It is important for surveys to sample broadly within the population as defined by the program to ensure representation by key characteristics, such as major practice area, job title, work setting, geography, ethnic diversity, gender, years of work experience, geographic region (including international, if applicable), and other demographic variables. Stakeholders such as educators, supervisors, and employers may be included, if appropriate. The population from which the sample is drawn should be clearly defined, justified, and related to the purpose of the credential. The sample size and methods by which it is drawn should be psychometrically defensible.

5. Analysis of survey ratings data should determine how and to what degree the performance domains and tasks (and associated knowledge and/or skills if included) relate to the purpose of the credential. A description of the criteria that determine how ratings data are used to assess

the validity of the domains and tasks (and knowledge and/or skills if included) should be provided. The rationale for any departures from empirical data should be documented.

6. Analysis of the demographic and professional characteristics of the survey respondents should validate that respondents are representative of the population as defined by the program. Certification programs should identify any patterns in responses based on respondent characteristics that differ substantially from the known characteristics of the population. They should also describe the methods used to mitigate such findings (e.g., weighting of results, subgroup comparisons).

7. Certification programs should ensure that the job analysis is current. Although there is no definitive rule about how often a review or analysis should be conducted, each certification program should establish its own policy, procedure, time frame, and rationale underlying these decisions. As a general guideline, a job analysis should be conducted every five years. However, for fast-changing professions, occupations, roles, or specialty areas, an analysis every one to three years may be more appropriate. Similarly, when content is not expected to change rapidly, certification programs may find it appropriate to wait as long as seven to eight years between job analyses. Regardless of the frequency of job analyses, programs should have an ongoing mechanism in place to periodically review and confirm relevance of content specifications.

8. Evidence to document that the Standard has been met requires a complete report describing the conduct and results of the job analysis. This report may include the following items:

    - A description of the background and experience of subject-matter experts and professionals who participated in various phases of the job analysis;
    - Identification of the psychometric consultants or organization used to conduct the job analysis or important phases of it;
    - A description of methods used to delineate domains and tasks, (and associated knowledge and/or skills if included);
    - A description of the survey sampling plan and its rationale;
    - Documentation of survey results, including return rate, analysis of ratings data, algorithms, or other psychometric methods used to analyze or combine ratings data, and a rationale supporting representativeness of survey findings;
    - A copy of the job survey(s); and
    - Date range or year of the study.

9. The complete report may be considered a confidential document. However, in these cases, programs should make publicly available a summary of the study or a statement regarding the job analysis.

Standard 15: Examination Specifications

The certification program must establish specifications that describe what the examination is intended to measure as well as the design of the examination and requirements for its standardization and use, consistent with the stated objectives of the certification program.

Essential Elements:

A. The examination specifications must clearly state the objective of the examination, including what the examination is intended to measure (e.g., cognitive knowledge, psychomotor skills, general competency) and the level of practice (e.g., entry, advanced, specialty, or as defined by the program) being measured.

B. Specifications must address the critical elements of the whole examination program along with clear rationales. Examination design considerations must be specified and explained clearly.

C. The plan for weighting sections of an examination must be based on a job analysis; the plan must provide precise direction regarding the weighting structure for each section.

Commentary:

1. The stated objective may include references to practice level (e.g. entry, advanced, or specialty). The type of items to be used and the scoring of those items should align with the objective.
2. Essential examination design considerations should be described in the specifications for the examination, including the following items, which the certification program may explain in detail in relation to other psychometric standards:

    - The method for scoring candidates' responses;
    - The method for establishing the passing standard and for assessing the accuracy of scores and the decisions made on the basis of scores;
    - Methods for ensuring equivalence among forms of the examination; and
    - Procedures intended to ensure that forms of the examination that are developed over time continue to assess relevant competencies in light of changes that may occur in the profession.

3. Specifications should describe the method for the assembly of items into forms of the examination. When examinations are subdivided into sections based on constructs being assessed and item types used, programs should describe the relative weight for each section, and the explanation should be supported by a rationale from the job analysis. Other features of each form of an examination that should be specified include the following:

    - Examination length;
    - Administration time;
    - The number and/or proportion of scored and non-scored (pretest) items, if any; and
    - The number and/or proportion of new and used items.

4. Because a typical goal of examination assembly is the production of an equivalent challenge for candidates of equal proficiency across multiple forms, precise specifications are expected. Any latitude permitted in the assembly and/or scoring of new forms, which should also be defined, should support the conclusion that each candidate was assessed on the same content.

5. Suggested evidence to document that the Standard has been met is an examination specifications document that presents the objective for the examination, a description of the target audience for the examination, a description of the construct(s) and item types to be used, the weighted content outline, expectations for the assembly of the examination, examination administration requirements, and a general description of the plan for scoring and equating the examination and for conducting the psychometric analysis.

Standard 16: Examination Development

Certification examinations must be developed and assembled in accordance with the established examination specifications and with sound examination development principles and practices.

Essential Elements:

A. A written and systematic item development plan must be developed and followed to ensure that examination content is accurate, current, and appropriate for candidates, regardless of format and candidate demographics.

B. All versions of a certification examination must be the product of an appropriately designed, documented, and executed examination construction process.
   - The sampling plan for the examination items must correspond to the examination specifications.
   - When forms are to be translated into another language, the process must be designed to ensure that content is equivalent.
   - The established process must be documented to provide evidence of the comparability and integrity of content across forms of the examination.
   - When the nomenclature used to classify items (e.g., content outline) changes, then items must be reclassified.

C. The development of subjectively scored items (scored by raters) and scoring rubrics must employ rigorous methods that maximize validity. When raters are used to score items, rater qualifications, training materials, and rubrics must satisfy the established specifications for standardization and the validity of scores.

Commentary:

1. Evidence in support of the validity of examination results is demonstrated by documenting conformity to specifications for every form of the examination. Conformity to examination specifications is fundamental to comparability in the content of forms that are replaced over time.

2. Evidence of alignment to specifications provided for different examination formats (e.g., performance, simulation, and multiple-choice examinations) may be different. For example, evidence provided for performance-based tests may indicate the classification of prompts and the elements of a scoring rubric, while evidence for multiple-choice examinations may be the number of items in each category.

3. Steps involved in the examination development process may include but are not limited to:

    - Training of SMEs;
    - Developing items;
    - Documenting the accuracy, currency, and relevance of examination items and scoring rubrics and their congruence with the purpose of the examination;
    - Using empirical item performance data to inform decisions related to the evaluation, revision, and use of items;
    - Assembling new forms of the examination by selecting appropriate items, revising selected items when appropriate, evaluating and refining scoring rubrics (for subjectively scored examinations), and adhering to examination specifications;
    - Structuring, delivering, and documenting training provided to item writers, item reviewers, and others who produce examination content in a professional and consistent manner; and
    - Documenting the development and assembly process for forms of an examination.

4. Suggested evidence to document that the Standard has been met may include the following: training materials; agendas; reports on item development; procedures for the assembly of forms; procedures and criteria used to examine the performance of examination items or other examination components for inclusion, revision, or removal from the certification process; and technical reports.

Standard 17: Standard Setting

A certification program must perform and document a standard setting study that relates performance on the examination to proficiency, so that the program can set a passing score appropriate for the certification.

Essential Elements:

A. The procedures used to establish performance standards must be based on generally accepted measurement principles consistent with the purpose of the examination and item format(s) used.

B. The certification program must document the standard-setting study in sufficient detail to allow for replication, including descriptions of the procedures followed, results, and appropriate interpretations. If the report is considered confidential, the organization must make a general description of the methods it used in the standard-setting study publicly available.

C. The certification program must evaluate standards of proficiency frequently enough to reflect current practice.

Commentary:

1. Multiple methods exist for standard setting. Appropriate strategies include a review of content or empirical data. Content-based methods may use subject-matter experts to make judgments about an intact form, a representative sample of examination items, or candidates' completed examinations. Empirical methods use differences in candidate group performance and/or the performance of candidates on other measures linked to relevant standards of proficiency to establish performance standards.

2. The facilitator of a standard-setting study should use item-level and test-level statistics, when available, to monitor the judgment of participants. When feasible, participants may be provided with these statistics. This may mean that the performance standard(s) cannot be set until after an examination has been administered to a sufficient number of candidates. If item difficulty values are relevant to the standard setting method used, they should be provided to judges during the standard setting process. Estimates of the impact on the passing rate for hypothetical performance standards at various points may be shared with participants as appropriate during the standard-setting process if total-score data are available. Information about candidates (such as education and years of experience) underlying the statistical information should be provided because it helps to determine how closely the sample represents borderline candidates. In some situations, little or no relevant statistical information is available (e.g., a new certification program, a small number of candidates, or a significant change in eligibility requirements).

3. The judges in a standard-setting study should be provided with information and training regarding the purpose of the assessment, a conceptual description of the standard of proficiency, eligibility criteria, and how to apply standard-setting process(es) to be used. Judges should be trained in the interpretation of any statistics that are shown to have a sound basis for making required judgments. Judges should be informed that they will make a standard-setting recommendation to the governing body or other policymakers who have the authority to establish it.

4. If the conceptual description of the standard of proficiency is changed, then the performance standard should be re-evaluated.

5. The certification organization should examine, and revise if necessary, the performance standard whenever significant content or specification changes occur for an examination. A standard setting study should be conducted following completion of each job analysis study at a minimum but can be conducted more frequently to support programmatic requirements.

6. Suggested evidence to document that the standard has been met includes a standard-setting study report that addresses the following, as appropriate:

    - The rationale for selecting the method used;
    - The rationale for the number of panelists, the manner of selecting the panelists, and their qualifications;
    - Qualifications of the psychometric consultants or organization designing and implementing the process;

- Procedures and/or materials used;
- A conceptual description of the level of proficiency required for certification;
- Descriptions or conceptualizations developed by the panelists;
- Data-collection activities and procedures;
- Analysis of the results of the standard-setting study;
- Standard-setting recommendations as developed by the panel;
- Any adjustments made to the standard-setting recommendation by a governing body or policy group;
- The effective date of the standard;
- If available, the resulting pass rate(s), and if multiple hurdles are used, the pass rate for each.

Standard 18: Examination Administration

The certification program must develop and adhere to its policies and procedures for each examination administration. The procedures must ensure that all candidates take the examination under comparable conditions, safeguard the confidentiality of examinations, and address security at every stage of the process.

Essential Elements:

A. Examinations must be administered under secure and confidential protocols that restrict access to examination content to authorized individuals throughout examination storage, conveyance, administration, and disposal. Program policies must be in place to hold examinees accountable for improper behavior before, during, and after examination administration. The program must make a summary of security policies, incident review processes, and disciplinary procedures available to examinees.

B. Examinations must be administered using standardized procedures that have been specified by the certification program to ensure comparable conditions for all candidates and promote the validity of scores. The program must document and follow standardized examination administration procedures, including verification of candidate identity, regardless of the examination delivery or proctoring method. The program must establish and document procedures stating what it expects of examination administration personnel and the procedures to follow to ensure adherence to these requirements.

C. Trained proctors must be used in the proper administration of examinations to minimize the influence of variations in examination administration on scores, regardless of the examination delivery method or examination format. Proctor training must include the management and reporting of irregularities. Proctors must have no conflict of interest or any ability to influence examination results. Proctors must ensure that approved accommodations have been provided. Proctors must confirm they have read and agreed to abide by the procedures outlined in the examination administration manual. For performance examinations, proctors must be provided with specifications for site layout and required tools and equipment to ensure standardized administration.

D. The certification program must have processes to monitor ongoing compliance with examination administration and security procedures.

Commentary:

1. Thorough security protocols help contribute to the reduction of construct-irrelevant variance in scores. It is important that security policies and nondisclosure agreements be in force and documented for every party participating in the examination administration process. Certification program should monitor the administration of its examination, whether administered through its own staff or volunteers or outsourced.

2. Administration sites should offer similar conditions, such as adequate lighting, comfortable seating, and a quiet environment free from distractions, to ensure examinees have a fair opportunity to demonstrate their knowledge, skills, and ability. Working space must be sufficient, and spacing between examinees or workstation divider requirements must be defined to minimize cheating opportunities.

3. The certification program should document and review irregularities. The program should take appropriate preventive action to address foreseeable problems in examination administration and security procedures to ensure fairness and guard against breaches.

4. The publication of policies, rules, and sanctions may contribute to the certification program's rights and ability to enforce security and examination administration requirements, take corrective action, and impose sanctions.

5. Suggested evidence to document that the Standard has been met may include the following:

    - Candidate handbook or similar document
    - Examination administration manual
    - Quality-control policy and procedure documents
    - Security procedures manual
    - Nondisclosure agreements (NDAs)

Standard 19: Scoring and Score Reporting

The certification program must employ and document sound psychometric procedures for scoring, interpreting, and reporting examination results.

Essential Elements:

A. The certification program must compute scores in a manner that is appropriate, given the design and format of the examination and the purpose of the certification.

B. For performance examinations, the certification program must minimize the degree to which candidates' scores may be affected by having a particular rater or performance task.

C. The certification program must document the procedures used in scoring, interpreting, and reporting examination results.

D. All candidates must be provided information on their overall performance on an examination.

E. Failing candidates must be provided with information about their performance in relation to the passing standard. If the program provides feedback to candidates such as domain-level information, candidates must be provided guidance about limitations in interpreting and using that feedback.

Commentary:

1. Certification programs should establish and describe quality-control procedures for monitoring the accuracy of calculations used to produce scores and the conversion of raw scores to standardized, equated, or scaled scores. The organization should clearly document the weighting of items or tasks. The scale on which scores are reported should support interpretations that are consistent with the purpose of the examination

2. For performance and other examinations where responses are scored by judgment, developers should document methods for developing scoring rubrics, judging responses, reducing rater bias, and increasing inter-rater agreement and consistency to ensure an acceptable level of consistency in scoring judgment-based items. Types of documentation to support these items may include the following:

    - Criteria used for selecting judges;
    - A description of the materials and methods for training judges;
    - Evidence demonstrating that the primary source of variation in candidate scores comes from candidate performance, not rater error;
    - Summaries and results of process, rater, or score audits or other technical controls to ensure that the candidates' performances are the primary determinant of whether they pass or fail examinations.

3. The certification program should provide candidates with an explanation of the types of scores reported, appropriate uses, and potential misuses of reported score information. Feedback should be appropriate for the type of examination.

4. If domain-level information has low reliability, programs are advised against reporting it to candidates and other stakeholders. When domain-level or other specific feedback is given to candidates, the certification program should provide estimates of its precision and/or other guidance.

5. The certification program should ensure the fairness of the examination for all populations. If the program detects potential for unfairness, it should take steps to understand its causes and, if possible, remedy it.

6. Suggested evidence to document that the Standard has been met may include descriptions of scoring procedures, training documents, and quality-control procedures, such as the following:

    - Security procedures pertaining to scoring, reporting scores, and maintaining score records;

- Quality-control procedures pertaining to scoring, reporting scores, and maintaining score records (checklists, policies, narrative);
- Sample score reports for passing and failing candidates, including instructions on interpreting feedback that is provided;
- Policies, procedures, and supporting materials for scoring objectively scored examinations;
- Policies, procedures, and supporting materials for judgment-based scoring (e.g., procedures, required number of judges, development of and training on scoring rubrics).

Standard 20: Reliability

The certification program must ensure that scores are sufficiently reliable for the decisions that are intended.

Essential Elements:

A. Certification programs must calculate and report estimates of score reliability, decision consistency, and standard errors of measurement using methods that are appropriate for the characteristics of the examination.

B. Estimates of score reliability and decision consistency must be reasonable to support accurate pass/fail decisions. If the certification program makes pass/fail decisions based on subscores (i.e., the assessment is multiple-hurdle, or non-compensatory), the reliability of each subscore for which a pass/fail decision is rendered must be reasonable.

Commentary:

1. The selection of reliability statistics required for an examination depends on the type of assessment and the purpose of the scores. Programs should document the reliability estimate(s) and provide a rationale for the methods used (e.g., inter-rater agreement and/or inter-rater consistency for performance examinations; internal consistency estimates for multiple-choice examinations).

2. If a program makes decisions using domain-level information, it should demonstrate that the reliability of that information is sufficient and provide a rationale for how it weights and uses domain-level information.

3. When candidate volumes are so small or there are other factors which lead to reliability estimates that are not meaningful (e.g., coefficient alpha less than 0.80), programs should describe the procedures used to demonstrate that the decisions made on the basis of scores are reasonable and fair.

4. Suggested evidence to document that this Standard has been met includes the following:
   - Reliability coefficients, overall standard error of measurement, information function, and/or other statistics pertaining to the consistency of scores;

- Indices of classification consistency, conditional standard errors of measurement, or other measures of score consistency around the cut score; and
- Information about how non-compensatory domain-level scores and other measures are evaluated and combined.

Standard 21: Examination Score Equating

The certification program must demonstrate that different forms of an examination do not advantage or disadvantage candidates because of differences in the content framework and/or difficulty of particular forms.

Essential Elements:

A. Each active form of the examination must align to currently applicable content specifications, consistent with the requirements of the equating model.

B. The certification program must use statistical equating procedures grounded in accepted psychometric practices.

C. When examinations are adapted across languages, certification programs must demonstrate that results obtained from adapted and source versions are comparable.

D. For examinations that are subjectively scored (i.e., using raters), certification programs must demonstrate that results are equivalent across raters and assessment tasks.

Commentary:

1. Certification programs should monitor form equivalence on an ongoing basis. The equating procedures employed should be the most rigorous permitted by such factors as candidate volume, item type, and the established construct for the examination. Programs should report the procedures they use to ensure ongoing equivalence of forms and/or scores. The use of standard-setting procedures in place of equating procedures is generally unacceptable. A program should demonstrate that construct-irrelevant factors do not advantage or disadvantage candidates.

2. There are many reasons that a form may not match the content specifications, such as when items are deleted following preliminary item analysis during key validation. Deviation from content specifications may not require further consideration or additional review if the deviation is within the tolerance established in examination specifications. When the content distribution of scored (not pre-examination items) items falls outside the acceptable range, the procedures used to decide how the results will be treated should be documented.

3. When changes that may affect equating occur, such as the revision of examination specifications because of an update to the job analysis, a modification in the passing standard, or some other policy change, organizations should apply effective psychometric strategy(ies) to control or mitigate the impact of these events.

4. The program should document the equating procedures with a description that includes the following:

- The examination or examinations being equated;
- The rationale for the design and method of equating;
- The equating data collection design (e.g., common items, common people, random groups);
- The statistical model used to accomplish the equating (e.g., Rasch, other item response theory, and classical models); and
- The number of items and the number of examinees used in the equating procedure.

5. There should be evidence that translated or adapted examinations are testing the same construct as in the original examination. Simple translation and back-translation are not adequate. When candidate volume is sufficient to permit the analysis, differential item function studies should be used to demonstrate that the construct as manifested in the hierarchy of item difficulty is equivalent across the two versions.

Standard 22: Maintaining Certification

The certification program must require periodic recertification.

Essential Elements:

A. The certification program must have a statement of purpose for the recertification requirements that is consistent with the Commission's definition of recertification.

B. The certification program must have a definition of continuing competence that is consistent with the Commission's definition of continuing competence.

C. Certification must be time limited with a specified beginning and end date to the period of certification. The recertification period selected must be supported by a rationale that reflects how the relevant knowledge and skills for the certificants and for the field may change over time.

D. Programs applying for accreditation must require periodic recertification for all certificants.

E. The certification program must have a mechanism to verify that certificants have met the recertification requirements.

F. The certification program must make all recertification policies and procedures (including statements of purpose, definitions, and rationales) publicly available.

Commentary:

1. The Commission defines recertification as "requirements and procedures established as part of a certification program that certificants must meet to maintain competence and renew their certification."

2. The recertification requirements can either measure and/or promote continued competence.

3. The Commission defines continuing competence as “demonstrating specified levels of knowledge, skills, or ability not only at the time of initial certification but throughout an individual’s professional career.”

4. The public may interpret continuing competence to mean that the services provided by certificants will always be delivered at the highest-quality level regardless of practical limitations for what certification and recertification can realistically achieve. The certification program should provide an explanation of the limitations of a certification program’s definition of continuing competence relative to the public’s likely understanding of continuing competence.
5. Continuing competence may be defined differently than initial competence to account for role differentiation over time. For example, the range of services provided by a certificant may narrow over time due to concentration in a specialized area of service, and the certificant’s range of competence may narrow.

6. Lifetime certification is not consistent with the requirement for periodic recertification.

7. The rationale for the recertification period should be based upon an estimation of the shelf life of the knowledge and/or skills fundamental to the certification as affected by knowledge degradation over time (e.g., forgetting) and the effects of technological change (e.g., obsolescence). Evidence regarding how quickly the required knowledge base changes (e.g. job analysis data) is an example of appropriate supporting evidence. Selection of a time period based solely upon convenience or historical precedent (i.e., “it has always been this way”) is not an evidence-based rationale.

8. If a certification program issues a limited-duration certification with a specified termination date and with no option for an individual continuing to claim the certification beyond that date, recertification does not apply.

9. Recertification requirements may differ for more recent certificants as compared to certificants from earlier years, but all certificants must be held to some form of recertification requirements that support the goal of maintaining competence. Different requirements may be the result of the need to balance the desire to advance requirements for the future of the profession with the need to maintain the contract made with earlier certificants.

10. If any certificants are exempted from current recertification requirements, the certification program should provide a rationale to explain how the current knowledge and/or skills of those individuals will be maintained. The period during which such recertification exemptions were granted must have been terminated before the certification program applies for accreditation.

11. If a certification program allows certificants to select from among multiple recertification options, then the certification program should document how each option links to the common goal of maintaining competence.

12. If continuing education (CE) is the recertification requirement, then the certification program should address the typical limitations of CE (e.g., self-selected CE, focus on convenience and cost over need, points-oriented rather than learning-oriented, commercial or sponsorship bias) and

document how it evaluates whether the CE activities support continuing competence (e.g., quality and relevance of content, effectiveness of delivery method).

13. If an examination is the recertification requirement, then the certification program should document that the examination meets the psychometric quality criteria of the *NCCA Standards*, including reliability and validity evidence, and how the examination supports continuing competence.

14. If self-assessment is the recertification requirement, then the certification program should describe how it addresses the typical limitations of self-assessment (e.g., lack of objectivity) and how it translates the results of the self-assessment to a verifiable professional development plan.

15. If third-party assessment is the recertification requirement, then the certification program should document that the assessment mechanism serves its intended purpose and how the assessment supports continuing competence.

16. If portfolio review is the recertification requirement, then the certification program should document the criteria for portfolio development and evaluation as well as the linkage to continuing competence.

17. If certificants self-attest to compliance with the recertification requirements, then an audit process that selects a sample of all certificants and verifies their documentation of compliance is an example of an acceptable recertification mechanism.

18. If the certification program uses a sampling audit model, the program should provide the rationale for the percentage of certificants audited as well as a description of the audit process itself.

19. Forms of evidence supporting compliance could include the following:

    a. Policies that specify that all certificants are required to comply with recertification requirements.

    b. Policies and procedures that specify the consequences for certificants who do not meet recertification requirements within the specified period.

    c. Policies and procedures explaining the process for regaining certification discontinued for noncompliance with recertification requirements.

Standard 23: Quality Assurance

The certification program must have a quality-assurance program that provides consistent application and periodic review of policies and procedures.

Essential Elements:

A. Mechanisms must be in place to promote delivery of program activities as intended, including such activities as application processing, examination preparation and publication, scoring, documentation, and financial management.

B. Processes must be in place to deal with errors found in program activities.

C. Certification organizations must have policies and procedures requiring the regular review of examinations and the results obtained from their use, including the management and correction of examination-related errors.

Commentary:

1. The certification program should document evidence of regular training of staff, orientation and training of board members, and training of SMEs to demonstrate compliance with this standard.
2. Error handling involves both prevention of error through routine quality-assurance procedures and procedures to correct errors discovered after program activities are implemented or active.
3. Many organizations have an examination committee responsible for the periodic evaluation of the examination used in a program and often have staff members who work with the examination committee. These committees and staff should recommend improvements in the psychometric strategy, given that they monitor changes that may develop over time in the number and/or qualifications of candidates, the nature of the examination, and the types of decisions the examination supports.
4. The policies and procedures pertaining to the evaluation of the examination program should indicate which quality indicators the certification organization uses and how it decides upon recommendations for improvement.
5. Policies and procedures should identify the parties who have primary responsibility for monitoring examination quality and making recommendations for improvement, as well as the types of information these parties will review and the frequency of review activities.
6. Evaluation information may include item analysis, reliability, decision consistency, speededness, and candidate feedback.
7. Suggested evidence may include quality-assurance policies, meeting minutes, calendars or schedules, and training materials/logs.

Standard 24: Maintaining Accreditation

The certification program must demonstrate continued compliance to maintain accreditation.

Essential Elements:

A. The certification program must annually complete and submit information requested of the certification agency and its programs for the previous reporting year.

B. The certification program must submit any information that the Commission may require to investigate allegations of lack of compliance with NCCA Standards. The Commission reserves the right to conduct an audit to verify the integrity of the information submitted.

C. The certification program must notify the Commission in writing prior to making any material changes in the program.

Commentary:

1. Changes that are considered routine operations may be reported through the NCCA annual report process.
2. Programs should present material changes to the ICE office in writing PRIOR to implementation because of the possibility that the implementation of the change could violate current Standards. These may include major changes in any of the following:

    - Legal status or governance structure of the certification agency;
    - Purpose, scope, or activities of the certification program;
    - Purpose, scope, or objectives of any certification examinations;
    - Examination development, administration and/or evaluation procedures.

3. The Commission reserves the right to investigate (whether onsite, virtually, or through a third party) if questions arise about the integrity of the information submitted or concerns are raised about compliance to any of the NCCA Standards, whether during the initial application review or throughout the five-year accreditation cycle.

NCCA Standards Glossary

Accommodation—

A modification in the administration of an examination to compensate for the effects of a documented disability without altering the interpretation of the examination results.

Accreditation—

- **USE IN EDUCATION:** Approval of an educational institution or program according to defined standards.
- **AS RELATED TO NCCA:** Status awarded to a certification program that has demonstrated compliance with the *Standards for the Accreditation of Certification Programs* set forth by the National Commission for Certifying Agencies (NCCA).

Adaptation—

The process by which a segment of text is converted to another language and/or cultural context, preserving equivalence of meaning, level of difficulty, and conceptual complexity from the original version to the new (adapted) version.

Anti-Competitive Conduct—

Actions constituting an unreasonable restraint of trade under antitrust law.

Appeal—

The opportunity provided to an applicant, candidate, or certificant to review a decision made with regard to certification activities.

Applicant—

An individual who declares interest in earning a credential offered by a certification program, usually through the submission of materials for qualification to take the examination. See *candidate*.

Autonomy—

Management and administration of all essential certification decisions without being subject to approval by or undue influence from any other body. Also known as administrative independence.

Bias—

Regardless of context (see below) and lack of intent, bias is to be avoided.

- **IN THE CONTEXT OF EXAMINATION FAIRNESS:** Inappropriateness of content in the assessment instrument, either in terms of its irrelevance, overemphasis, or exclusion.

- **IN THE CONTEXT OF SCORING**: Scores and outcomes that are the result of the opinion of the rater rather than the performance of the candidate.
- **IN THE CONTEXT OF ELIGIBILITY AND RECERTIFICATION REQUIREMENTS:** Inappropriateness or irrelevance of requirements for certification or recertification if they are not reasonable prerequisites for competence in a profession, occupation, role, skill, or specialty area. See *fairness*.

Candidate—

An applicant who has met the eligibility qualifications for but has not yet earned a credential awarded through a certification program. See *applicant.*

Certificant—

An individual who has earned a professional certification awarded through a certification program.

Certification—

A standardized process, often voluntary, by which individuals who have demonstrated the level of knowledge and/or skill required in the profession, occupation, role, skill, or specialty area are recognized and identified to the public and other stakeholders.

Certification Agency/Organization—

The organizational or administrative unit that offers and/or operates a certification program.

Certification Board

A group of individuals appointed or elected to govern one or more certification programs and to be responsible for all certification decision-making, including governance. Also referred to as a certification committee, certification council, or *governing committee*.

Certification Program—

The standards, policies, procedures, examinations, and related products and activities through which individuals are publicly identified as qualified in a specified profession, occupation, role, skill, or specialty area.

Classical Test Theory—

The traditional psychometric methods of developing and evaluating examinations that are based on examinee raw and/or percentage scores. The two most commonly used classical item statistics are the difficulty index (*p* value) and discrimination index (typically the point biserial correlation [$r_{pbis]}$). In contrast, refer to *item response theory*.

Commentary—

As used in the *Standards*, refers to comments, remarks, and observations that clarify terms, provide examples of practice that help explain a standard, or offer suggestions regarding evidence that should be documented to demonstrate compliance.

Commission—

Refers to the National Commission for Certifying Agencies (NCCA), a body that develops accreditation standards for certification programs and awards accreditation to certification programs that apply for and comply with its standards.

Compensatory Scoring—

A model for scoring in which a candidate's pass/fail status is determined by the total score on the examination rather than section by section, as in *conjunctive scoring.* High scores in one content area can compensate for low scores in another content area.

Competence—

The ability to perform a task, function, or role at a level that meets or exceeds prescribed standards in the work environment. *Competencies* are the observable behaviors that encompass the knowledge, skills, and personal characteristics that are at or above acceptable levels of performance in the work environment.

Conditional Standard Error of Measurement—

An estimate of how accurate an attained score is in relation to the theoretical "true score" across score levels.

Confidentiality Agreement—

A confidentiality agreement is a legal contract between at least two parties that specifies rules governing confidential material, knowledge, or information that the parties wish to share with one another for certain purposes but wish to limit access by other parties. Also known as a nondisclosure agreement (NDA).

Conflict of Interest—

A situation in which an individual has private or professional interests that conflict with his/her other professional interests or responsibilities. These types of conflicts may make it difficult for a person to fulfill his/her professional responsibilities impartially. The perception of a conflict of interest may be as serious as an actual conflict of interest.

Conflict of Interest in Capacity to Serve—

A value, obligation, or priority of an individual that is fundamentally incompatible with the purposes, policies, or operations of the certification program, and that consequently precludes the individual from serving as a member of the certification board.

Conjunctive Scoring—

A model for scoring in which a candidate's pass/fail status is determined by the total score on the examination rather than section by section, as in *conjunctive scoring.* High scores in one content area can compensate for low scores in another content area.

Construct—

The trait(s), usually recall or application of knowledge or demonstration of skill, that is the assessment objective of an examination.

Construct Equivalence—

The degree to which qualitative and quantitative evidence demonstrate that two examinations measure the same traits.

Construct Irrelevant Factors—

Factors that affect examination scores or outcomes that are not intended to be part of the assessment (e.g., a noisy, poorly lit examination room or candidate reading level).

Content Domains—

A set of organized categories characterizing subject matter within which knowledge and skills may be represented.

Content Specifications—

How the content and characteristics of a test are described based on the results of a job analysis. The specifications may be structured as an outline of knowledge areas (*content domains),* a list of *tasks,* or other formats. The specifications may also include the relative emphasis of the content domains by listing their number or percentage of examination items. The number or percentage of items may be expressed as ranges. Content specifications are often referred to as a *test blueprint* or *test content outline.*

Continuing Competence—

Demonstrating specified levels of knowledge, skills, or ability throughout an individual's professional career. Related to *recertification, maintaining competence,* and *continuing education.*

Continuing Education—

Education and training activities that certificants engage in to receive credit for the purpose of maintaining competence and renewing certification. Related to r*ecertification* and *continuing competence*.

Cut Score—

A specific score on an examination at or above which candidates pass and below which candidates fail. Also known as a cutoff score or a pass/fail score.

Decision Consistency—

A measure of reliability that answers the question, "If the same examinees were administered equivalent forms of the same examination, to what extent would the pass/fail outcomes be in agreement?" Also referred to as *classification consistency.*

Disciplinary Process—

A formal, published process for the enforcement of standards governing the professional behavior (e.g., ethics) of certificants. Also related to the determination of disciplinary actions and the provision of due process.

Eligibility Requirements—

Published criteria for specified levels of education, training, and/or experience that applicants must meet to qualify for taking the certification examination(s).

Entry Level / Practice Level—

Entry level refers to the threshold that defines having a "just sufficient" or "just adequate" level of knowledge or skill to be credentialed as being safe and effective, regardless of the occupation, profession, role, skill, or specialty, or whether the credential assesses basic or advanced knowledge or skill. Entry level should be the intended *practice level* for all certification examinations.

Equating—

A statistical process used to convert scores on two or more alternate forms of an examination to a common scale for purposes of comparability and equivalence.

Error Handling—

The process for resolving errors identified during the administration scoring of an examination, or reporting of the results.

Essential Element—

A statement that is directly related to a Standard and that specifies what a certification program must do to fulfill the requirement of the Standard.

Examination—

Any assessment process, method, or instrument used to determine whether a candidate meets the established criteria of standards for practice in a profession, occupation, role, skill, or specialty area. Multiple examinations and/or formats may be used to make this determination.

Examination Blueprint—

See *content specifications*. Also called examination outline or examination content outline.

Examination Committee—

An appointed or elected body of subject matter experts (SMEs) responsible for developing certification examinations and related activities, possibly including standard setting and scoring. Also known as an assessment committee or certification blueprint committee.

Fairness—

The principle that all applicants and candidates will be treated in an equitable and consistent manner throughout the entire certification process. See *bias.*

Governing Committee—

See *certification board.*

Grandfathering—

The process by which individuals are granted certification without being required to meet formal examination requirements. This process has limited defensibility.

Information Function—

A curve displaying the candidate performance levels that an item or examination is most effective at measuring. This curve can be generated at the item or examination level using *item response theory.* It is not produced by *classical test theory*.

Internal Consistency—

A measure of reliability that answers the question, "If the same examinees were administered equivalent forms of the same examination, to what extent would the scores be in agreement?"

Inter-Rater Reliability

The opposite of *rater bias*. In the context of scoring subjective items, high levels of inter-rater reliability indicate that raters are judging candidate performance in the same manner, based on its quality rather than on any preconceived personal opinions. Also known as *inter-rater agreement*.

Item—

Questions and/or tasks in examinations to which candidates must respond or perform.

Item Analysis—

A quality-control process of determining that items meet acceptable psychometric parameters as defined by the certification program. This can include both classical test theory and item response theory analyses.

Item Bank—

The system by which test items are stored, classified, maintained, and retrieved to facilitate item review, item development, and examination assembly.

Item Response Theory (IRT) —

A mathematical model of measurement (also known as latent trait theory) in which candidate ability and item difficulty are converted to a single common scale that provides a standardized way of comparing candidate performance and item difficulty over multiple versions of an examination. Several IRT models are acceptable for use.

Item Type or Format—

The structure of a question or task in an examination (e.g., multiple-choice, performance task).

Job Analysis—

Any of several methods used singly or in combination to identify the performance domains and associated tasks, knowledge, and/or skills relating to the purpose of the credential and providing the foundation for examination validation. Also known as task or practice analysis, job task analysis, or role delineation study.

Legal Status—

Formal legal recognition granted to organizations by the process of filing articles of incorporation or other required documents identifying them as a legal entity.

Multiple Hurdle—

The requirement to pass multiple sections of a single examination or separate examinations to earn a certification.

Open Access—

Access to certification should be available to anyone who meets the established criteria for practice in a profession, occupation, role, skill, or specialty area.

Panel—

Group of subject-matter experts (SMEs) convened to complete a certification examination-related task.

Parent Organization—

The legal entity under which a certification program is established when the certification program is part of a larger organization. The certification governing board must have autonomy from the parent organization for essential certification decisions.

Performance Examination—

A test of a candidate's ability to perform skills in a simulated or real job environment; Also known as a *practical examination*.

Policy Maker —

Usually the certification body or organization is the policy maker. However, in some credentialing contexts, an external organization (e.g., federal, state, or local government agency) may function as a policy maker by setting standards and/or policies to which a certification program must comply.

Portfolio Review—

A body of work submitted by candidates that represents their skills and abilities in the content domain being evaluated.

Prerequisite—

Documented activity or achievement required as a prior condition for next action to occur (e.g., completion of an educational program before taking a corresponding examination).

Proprietary Product or Service—

A product or service that is specifically licensed and exclusively owned by a company or person. There are specific rights associated with proprietary ownership that protect the owner from the creation of imitation products that possess the same features and functions.

Public Member—

A representative of the consumers of services provided by a certificant population serving as a voting member on the governing body of a certification program, with all rights and privileges, including holding office and serving on committees. The public member should bring a perspective to the decision and policy making of the organization that is different from that of the certificants and should help to balance the organization's role in protecting the public while advancing the interests of the profession.

Publicly Available—

Easily available and accessible, with or without request.

Publish—

To provide information and/or documents in printed or electronic format.

Quality Assurance—

Systematic organizational policies, procedures, and processes that ensure ongoing compliance and accuracy through regular reviews and monitoring to promote quality.

Rater Bias—

A distortion in the scoring of subjective items where a rater's disposition affects how a candidate's performance is judged. The existence of rater bias is inconsistent with fairness and objectivity.

Raw Score—

The number of correct responses or points earned on an examination.

Recertification—

Requirements and procedures established as part of a certification program that certificants must meet to maintain competence and renew their certification. Related to *continuing competence* and *continuing education*.

Reciprocal Certification—

Reciprocity occurs when a certification program grants its certification to an individual holding a similar certification that has been deemed comparable.

Reliability—

The degree to which the scores and pass/fail outcomes on an examination are replicable or repeatable.

Representative—

The extent to which a sample of individuals contains the same background characteristics as the population it represents. This applies to the panel of subject-matter experts (SMEs) who participate in examination development and the certificants who respond to a survey.

Revocation—

The cancellation of an individual's right to use a certification marking, acronym, and/or designation due to disciplinary action**.**

Role—

A more specific or narrower set of knowledge and skills than may be encompassed by the term *profession* or *occupation*. May be the focus of certification for a particular product or service to the public.

Scaled Score—

A raw score that has been transformed so that different forms of the same examination can be reported on a common metric, allowing comparisons of scores across examination administrations.

Score Consistency—

See *reliability*.

Scoring Rubrics—

A set of guidelines for scoring examinations and examination items, including point values, rater instructions (for performance examinations), and how scores are combined and scaled.

Scope—

The definition and extent of the knowledge, skills, and abilities expected of a certificant.

Self-Assessment—

A process by which an assessment is self-administered for the specific purpose of performance feedback rather than a pass/fail decision or certification outcome.

Simulation—

The imitation of the operation of a real-world process or system used" in a performance examination.

Speededness—

When an examination does not provide sufficient time for test takers to complete all of the items. When intentional, both candidate ability and speed of response are important to the examination's purpose. When unintentional, speededness may lead to score bias and detrimentally affect validity.

Stakeholders—

Groups and individuals with an interest in the quality, governance, and operation of a certification program, such as the public, certificants, candidates, employers, customers, clients, and third-party payers.

Standard—

A benchmark of quality that is an accreditation requirement of a certification program submitting an application to the National Commission for Certifying Agencies (NCCA).

Standard Error of Measurement—

Estimates how accurate the attained score is in relation to the theoretical "true score."

Standardization—

- **IN THE CONTEXT OF EXAMINATION ADMINISTRATION:** Conducting the examination according to a specified plan to provide the same conditions for all candidates (e.g., seat spacing, lighting).

- **IN THE CONTEXT OF SCORING:** Ensuring that candidate responses are judged using predefined criteria to provide a consistent basis for evaluating all candidates.

Standard Setting—

A systematic method for determining the passing score on an examination based on characteristics of the examination, particularly its level of difficulty. The result of this process is a pass/fail cut score that represents the lowest level of acceptable performance in the content area being assessed by an examination.

Subject-Matter Expert (SME)—

A person with documented expertise in a profession, occupation, role, skill, or specialty area whose input into the development and validation of examination helps to establish validity.

Subjectively Scored Items—

Items that require a degree of judgment from *subject-matter experts (SMEs)* in their scoring. Methods should be applied to ensure that SME judgment is criteria-driven, and not biased.

Subscore—

Scores for *content domains*, *performance domains*, or other *content areas*. Subscores are typically used for candidate feedback, not for determining pass/fail outcomes.

Sufficient Financial Resources—

Having an adequate amount of liquid assets (e.g., cash, debt or equity instruments, and credit lines) available to operate the program effectively.

Sufficiently Reliable—

Levels of reliability that would theoretically result in the same scores and pass/fail outcomes being produced if the examination were to be re-administered to the same candidates under the same conditions. Examination length (i.e., number of items) and candidate heterogeneity affect reliability.

Target Audience—

The group of individuals who can meet or who have met the primary eligibility requirements (vs. alternate pathways) and who are qualified to take an examination or participate in a validation study.

Tasks—

Items in a performance or practical examination or activities or actions conducted while performing one's job. In the latter context, tasks are items in a job/practice analysis that respondents are asked to rate, typically with regard to the frequency, criticality, and/or importance of the tasks.

Technical Report—

A summary of the design, development, and psychometric procedures used to develop and administer the examinations used in a certification program. The report often addresses issues such as job task analysis, validity, item writing, examination development, reliability indices, cut score determination, scoring, and equating.

Third-Party Assessment—

Any assessment that is part of the certification or recertification process that is developed, administered, or managed by any organization other than the certification agency or body.

Time-Limited—

Certification that has a defined beginning and ending date or period beyond which a individual's certification expires unless the individual meets recertification requirements.

Translation—

The process of converting examination items and examination-related text (e.g., instructions) into other languages. Refer also to *adaptation*.

Undue Influence—

Control of decision-making over essential certification policy and procedures by stakeholders or other groups or individuals outside the autonomous governance structure of a certification program.

Validity—

The process and outcome of determining that elements of a certification program are fair and accomplish their intended purpose. Validation is applicable to eligibility requirements, examination content and scoring, and pass/fail outcomes.

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