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Philadelphia College of Osteopathic Medicine

Department of Psychology

AUTISM INTERVENTIONS IN EDUCATIONAL SETTINGS:
DELIVERY WITHIN A RESPONSE TO INTERVENTION FRAMEWORK

By Caitlin E. Gilmartin

Submitted in Partial Fulfillment of the Requirements for the Degree of

Doctor of Psychology

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DEPARTMENT OF PSYCHOLOGY

Dissertation Approval

This is to certify that the thesis presented to us by Caitlin E. Gilmartin on the 6th day of May 2014, in partial fulfillment of the requirements for the degree of Doctor of Psychology, has been examined and is acceptable in both scholarship and literary quality.

Committee Members' Signatures:

Terri Erbacher-Duff, PhD, Chairperson

George McCloskey, PhD

Daniel H Ingram, PsyD

Robert A DiTomasso, PhD, ABPP, Chair, Department of Psychology

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Abstract

Monitoring the progress of and delivering services to students with Autism present a unique challenge. Numerous interventions exist without a common, mandated progress monitoring system or service delivery system. The current study examined the principles of Response to Intervention (RTI) programs in the context of service delivery for students with Autism. An innovative service delivery system, the Autism Response to Systematic Intervention (ARTSI), was designed utilizing these principles. Outcomes of the study included a manual for the program, as well as forms and necessary materials to provide initial program implementation. Initial comment from stakeholders, future directives, and limitations are also discussed.

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AUTISM INTERVENTIONS IN AN RTI FRAMEWORK

Chapter 1: Introduction

Introduction

It is estimated that Autism Spectrum Disorders are identified in 1 of 88 children (Centers for Disease Control, 2012). Many children meeting the diagnostic criteria for Autism Spectrum Disorder (Autism) are being served in the public educational system with individualized education plans, modifications, and accommodations. Based upon the Individuals with Disabilities Education Act (IDEA), students with a classification of Autism are eligible for free and appropriate public education and an Individualized Education Plan (IEP) that offers educational benefit (Missouri Autism Guidelines Initiative, 2012).

In order to meet these legal requirements, public educational programs are tasked with providing frequent progress reports and progress monitoring, as well as providing ongoing assurances that students are receiving services within the least restrictive environments (Individuals With Disabilities Education Act, 2004). Requirements to fulfill these mandates include the fact that progress must be reported to parents on regular intervals, that the team meets yearly to update the IEP, and that the student is re-evaluated either tri-annually for many students, or bi-annually in the case of students with intellectual disabilities (IDEA, 2004).

A multitude of programs and intervention systems are available; many with limited data on outcome and student progress within the program as it relates to educational systems. There is no specific mandate on those programs that schools must choose in order to intervene in areas of need faced by these students. Analyzing

intervention systems and programs currently in use for disorders is crucial to further development of treatments in the educational system.

Statement of the Problem

The number of students with Autism has grown significantly since the inception of IDEA and special education in general. Three decades ago, Autism was designated as a rare disorder occurring in fewer than 4 in 10,000 (Baron-Cohen, 2008). This has increased over time to 15-20 per 10,000 and most recently 1 in 88 (Centers for Disease Control, 2012). Subsequently, increasing numbers of children with Autism are being reported to the federal government as receiving special education services per IDEA part B child count (Baron-Cohen, 2008).

This dramatic rise requires districts to provide unprecedented levels of service delivery in terms of cost and scope of services required. It is estimated that it costs approximately three times as much to educate a child with Autism as it does to educate a student in a general education program (US Department of Education, 2005) and this number is rising. Students with Autism often require higher levels of behavior support, more frequent re-evaluations, a lower student-to-staff ratio, and increased levels of related services. The extensive monetary cost alone supports the need for streamlining the delivery of mandated educational services.

Utilization of a common, streamlined program of services would ensure that service delivery occurs at the lowest cost without sacrificing quality, ensuring that services are not repetitious, and are targeted specifically towards individual student needs. Services for older individuals with Autism incurs the highest cost, followed by behavioral therapies, special education, and respite care (Ganz, 2007); this points to a

need for effective and impactful services at younger ages, because increasing progress and understanding student needs may have consequences reaching into adulthood. Growth is crucial because improved intervention may have effects reaching into adulthood.

In addition to the increased costs associated with educating children and adolescents with Autism, there are also significant concerns with determining program effectiveness and student outcomes. With hundreds of Autism interventions and no specific mandated programs, there is a lack of an integrated framework and a lack of a common language between programs. This leads to a wide variation in many educational factors: the amount and types of services that students receive, the types of progress monitoring and reporting that are utilized, and the types of determining and monitoring the intensity of services provided to students.

Purpose of the Study

The purpose of this study is to develop a problem-solving Response to Intervention (RTI) framework for an Autism education program (referred to by this author as ARTSI). Response to Intervention is a guiding set of principles for program design that is based on identification of student need and utilization of data-driven models to deliver quality, intensive and meaningful instruction. When considered in the context of Autism, the ARTSI model presents as a coordinated system based on the RTI principles. The crux of the program is to address identified and prioritized problems, efficiently utilizing evidenced based-practices and resources that are accessible by school settings. The intent of the current study is to evaluate the elements of a Response to Intervention program and to determine how the three tiered model applies to students

who are already identified for special education with an Autism classification. It also provides an overview of Autism best-practice interventions, determining how these can be delivered within the context of a three-tiered model.

The principles of a Response to Intervention program include (a) a proactive approach, (b) an instructional match, (c) problem-solving orientation and data based decisions, (d) effective practices, and (e) a systems level approach (Barnes & Harlacher, 2008, p. 421). As discussed previously, there is a great need at the current time within the educational system to ensure that effective practices are delivered within an efficient system to these students. It is proposed that the ARTSI framework, driven by these guiding principles, provides a more consistent and efficient system for intervention, leading to greater collaboration between and among team members, more effective use of resources, and greater student improvement in the areas addressed by the model. The current study focuses on using available information regarding best practices in Autism education, current clinical practices, and the Response to Intervention model to develop the framework and materials needed to implement this program in an educational setting.

Chapter 2: Review of the Literature

Introduction

Interventions are designed to influence communication, social, and behavioral symptoms experienced by children with Autism. A wide variation exists in the evidence underlying various practices in educational settings, as well as the ease of application and appropriate use in different levels of settings. Accurate diagnosis, progress monitoring, intervention selection, and efficacy are key factors in treatment and fulfillment of legal mandates.

Vast arrays of interventions are available and are in use for students classified with Autism. Often, interventions are combined to create a package designed to treat symptoms across domains. Significant challenges arise in ensuring that the selections of interventions included in these packages are appropriate to the specific needs of each individual student. After identifying student needs and applying appropriate intervention packages, schools are also tasked with reporting progress from these interventions and using the data to fulfill other legal mandates. This is further complicated by needing to ensure that evidence based practices are applied.

Studies have estimated that the highest cost of Autism is faced in levels of care needed when a person with Autism reaches adulthood. When the overall potential cost is considered within the context of the research on potential outcomes of early intervention and comprehensive interventions for younger students, it points to the necessity of higher quality and greater accountability for the interventions delivered to these school age students. Delivery of research based interventions during younger years has a potentially greater power to affect change in the later years and impact the student's life drastically.

The various components needed in a comprehensive Autism education program, along with the cost and involvement required by stakeholders, points to a need for an integrated system of service delivery. Ongoing concerns with adherence to legal mandates and ethical principles, ensuring equitable access for all students, and monitoring progress on an ongoing basis, further delineate this need.

In order to develop this integrated framework for delivery of interventions, a thorough understanding of Autism is required as well as knowledge of existing interventions, the Response to Intervention framework, and legal and educational mandates dictating the delivery of services to students. In addition, concerns regarding the identification, treatment, and progress monitoring of Autism include both multicultural and ethical concerns. As is inherent in disorders defined primarily by behavioral characteristics, variability exists in the identification of Autism across multicultural boundaries. This also impacts service access and intervention across diverse groups and will be discussed within the context of the existing literature.

Identification and Diagnosis

The presentation, diagnosis, and treatment of Autism cross over clinical and educational settings. In the clinical and medical settings, identifying a person with Autism Spectrum Disorder is referred to as a diagnosis. Within the educational settings, the term Autism is used and is referenced as a classification for educational purposes.

The diagnosis of Autism is performed using criteria from the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition [DSM-5] (American Psychiatric Association [APA], 2013). Core features of Autism Spectrum Disorder are described as "Persistent deficits in social communication and social interaction across multiple

contexts...[and] Restricted, repetitive patterns of behavior, interests, or activities" (APA, 2013, p.50). Both criteria are described in detail and specific examples are provided to aid in diagnosis.

In the area of social communication and social interaction, criteria may be met either by current or by historical information. The three major criteria include deficits in social-emotional reciprocity, deficits in nonverbal interactive behaviors, and deficits in the maintenance and understanding of relationships (APA, 2013, p.50). These criteria include socially-based behaviors including back and forth conversation, facial expressions, and friend seeking (APA, 2013, p.50).

In the area of restricted and repetitive behaviors, two of four criteria must be met. The criteria include "stereotyped or repetitive motor movements", "insistence on sameness, inflexible adherence to routines, or ritualized patterns of verbal or nonverbal behavior", "highly restricted, fixated interests that are abnormal in intensity or focus", and "hyper- or hyporeactivity to sensory input or unusual interest in sensory aspects of the environment" (APA, 2013, p. 50). These behaviors include a wide range of behaviors including repeating words or phrases, becoming upset at changes in a routine, a preoccupation with one specific interest, or indifference to pain (APA, 2013). These may also be met either currently or by historical information (APA, 2013).

In addition to identifying symptom criteria, DSM-5 allows clinicians to add additional information regarding severity levels. Severity is delineated into three levels, Level 1: Requiring support; Level 2: Requiring substantial support and Level 3: Requiring very substantial support (APA, 2013, p. 52). Each tier is described in detail in

the manual in terms of the severity level and impact both of the social communication deficits and restrictive/repetitive behaviors (APA, 2013).

In the previous iteration of the Diagnostic and Statistical Manual, the Fourth Edition, Text Revision [DSM-IV] (APA, 2000), disorders that are now considered to be in the category Autism Spectrum Disorder were included as a group, Pervasive Developmental Disorders. This group included Autism, Asperger's Syndrome, and Pervasive Developmental Disorder, Not Otherwise Specified, and clinicians were able to differentiate between and among these different diagnoses (American Psychiatric Association, 2000). The general classification for this group of disorders is described as a severe and pervasive impairment in several areas of development, including reciprocal interaction skills, communication skills, or the presence of stereotyped behavior, interests, and activities (American Psychiatric Association, 2000). The DSM-IV further delineated how to make differential diagnosis between and among the disorders contained within this group. The DSM-5 was published recently; therefore, many clinicians are beginning to learn the new manual. In addition, all past research differentiated Autism Spectrum Disorder into different diagnostic categories. This makes it important to have a conceptual understanding of these changes in order to interpret prior research in the context of the new diagnostic categories.

Diagnosis typically takes place through the efforts of physicians, psychologists, and other healthcare practitioners who are licensed and are practicing within their areas of specialty (Missouri Autism Guidelines Initiative, 2012). These diagnoses may be utilized in healthcare and mental health programs, and state funding sources.

Educational presentation and classification. In comparison with clinical criteria, within the school setting, Autism Spectrum Disorder is subsumed under the category "Autism", as defined by IDEA (2004). This is not considered a clinical diagnosis, but rather an educational classification for service delivery. This delineation between a clinical diagnosis of Autism Spectrum Disorder, and an educational classification of Autism, is important due to the qualification level and purpose of these two distinct areas. In the clinical setting, a licensed and qualified provider may make a the diagnosis for reasons relevant outside of an educational setting ; however, classification of Autism within the educational setting is able to be conducted by a non-licensed School Psychologist who is appropriately certified by his or her state educational entity. This classification typically does not qualify students for services outside of the educational setting.

The educational classification of Autism is defined as "a developmental disability significantly affecting verbal and nonverbal communication and social interaction, generally evident before age three, which adversely affects a child's educational performance. Other characteristics often associated with Autism are engagement in repetitive activities and stereotyped movements, resistance to environmental change or change in daily routines, and unusual responses to sensory experiences" (IDEA, 2004, n.p.).

The educational classification of Autism presents with less specified criteria than a clinical diagnosis, but is typically thought to be inclusive of Pervasive Developmental Disorders as defined by the DSM-IV, thus the category Autism Spectrum Disorder is now in DSM-5. Classification is governed by IDEA and a medical diagnosis is not required

for a student to receive special education services under the educational classification of Autism, although this may vary by state guidelines (Missouri Autism Guidelines Initiative, 2012). For the purposes of the following sections, both educational classification and clinical diagnosis will be referenced under the term "diagnosis", as it refers to the identification of symptoms of Autism in school-age children.

Assessment instruments. The difference in severity and wide range of symptoms also frequently create difficulty in differential diagnosis and progress monitoring of Autism. A wide range of instruments for diagnosis, classification, and progress monitoring are utilized.

Diagnosis. Autism diagnosis typically comes as a result of observation, interview, and rating scales to determine a person's symptoms as these align with the criteria in the DSM-5. Several rating scales and systems are available, having been developed to assist in diagnosing and assessing symptoms. A two-pronged approach is often strongly advised, including development monitoring and indicated assessment where needed; this may include screening questionnaires to determine the need for further investigation (Filipek, et al., 2000). The American Psychiatric Association (2013) advocates for the use of multiple sources of information in diagnosis; this includes clinical observation and information from parents and guardians, as well as from the individual when possible. In the educational setting, members of the Individualized Education Plan team, including the parent, the clinician, and the professionals working with the student, contribute multiple forms of data to determine student eligibility (Missouri Autism Guidelines Initiative, 2012).

Some instrumentation has gained support for use as more standardized assessments for diagnosing Autism. The Autism Diagnostic Observation Schedule, Second Edition (ADOS-2) is described as a “semi-structured, standardized assessment of communication, social interaction, and play or imaginative use of materials” (Lord, Rutter, DiLord, Risi, Gotham, & Bishop, 2012, p. 1), and is utilized in both educational and clinical settings in order to observe behaviors that may be consistent with educational or medical criteria for Autism. Additional instruments reported from a survey include the Childhood Autism Rating Scale (CARS), the Autism Behavior Checklist, and the Autism Diagnostic Interview-Revised (Luiselli, et al., 2001). Although these instruments can be useful, diagnosis is complex due to the need to ensure that the person meets multiple criteria; this is verified through multiple sources of information; however, the greatest emphasis remains on observation by a trained clinician.

Progress monitoring. Educational settings are tasked via IDEA with ensuring that progress of a student is reported at regular intervals (IDEA, 2004); IDEA specifies that “appropriate, measurable post-secondary goals and the transition services to be provided”, along with “A statement of how the child's progress towards the annual goals will be measured” (IDEA, 2004). This legal guideline points to a need for progress monitoring. The issue is further compounded by the findings that IEP teams most frequently lose in legal proceedings due to lack of measurable IEP progress monitoring plans or to not understanding whether or not adequate educational progress has been made by the student (Etscheidt, 2006). Suggestions for improving the progress monitoring of IEP goals include monitoring academic and behavioral goals, utilizing multiple types of progress monitoring goals, and specifying the progress monitoring

systems and people involved in them (Etscheidt, 2006). Currently, there are no common monitoring systems available for recording progress.

Commonalities between Educational and Clinical Entities

Across both clinical and educational classifications, commonalities exist because all criteria emphasize deficits in social and communication related areas. Criteria set forth within the DSM-5 demonstrate closer alignment with the educational criteria in the Individuals with Disabilities Education Act of 2004 (IDEA, 2004), because it now reflects a single disorder of Autism Spectrum Disorder as opposed to a category of differential diagnosis within an umbrella of disorders. This alignment may increase the utility of use of the DSM-5 within educational settings.

Many choose to pursue treatment for Autism in the clinical setting, including a range of therapies and services. Interventions within the school setting are also often designed to address academic and skill deficits and also to address social, communication, and behaviors associated with Autism. Because children are within educational settings for large periods of time, schools are in a unique position to have access to students in order to provide intervention.

Interventions

Identifying and utilizing research based interventions is an aim of Autism providers in educational settings. Discussion of interventions is lengthy because of the wide variability in the types of research performed on different interventions and because of the hundreds of interventions, strategies, and suggestions that exist for students with Autism. The most relevant interventions chosen for review in the context of this current research are interventions that are designed for utilization within educational settings;

these fall under evidenced based or emerging practices and common use interventions, as identified by prior studies of the prevalence of different teaching strategies.

Educational Mandates

Just as Autism is a continuum of disorders with varying intensity levels, educational entities are mandated to provide a continuum of services to educate students in the environment that provides them the least restriction. Some examples include: Itinerant (such as services provided within the context of a typical day in a regular educational setting, on a part-time basis); Supplemental (services that may afford a student a longer program than would be afforded, such as a half day placement in a special education Kindergarten, supplemental to their regular education Kindergarten); Part-Time (such as a one-period per day Autism Support placement); Full-Time (such as full time within an Autism Support placement in their district), and Out of District placements. Services for secondary students may include vocational (job training) and transition (daily living skills) programs for older students.

Out of District placements are defined by a greater student need than is able to be programmed or is able to be made available in a child's home school district. These include center based programs and approved private schools (specially designed, intensive programs to address student disabilities), residential programs (when a student lives out of the home and attends an educational program during the day, often with mental health services delivered throughout the 24-hour period), and partial hospitalization programs (mental health programs that may also offer an educational component).

These placements are mandated by federal and state law to educate students in the least restrictive placement; that is, to provide student services beside typical peers when possible. Best practices dictate the use of evidence-based interventions across these settings; to that end, analyses and research provides information regarding the effective use of interventions. Educational mandates are discussed in further detail in the following paragraphs.

Large Scale Analyses

National Standards Project on Autism Spectrum Disorders. Numerous organizations have undertaken comprehensive reviews of the literature in order to determine practices that are evidenced based and have proven effective for Autism. The National Standards Project on Autism Spectrum Disorders (ASD), completed by the National Autism Center (NAC, 2009), underwent an analysis of the body of literature regarding ASD intervention and set forth specific criteria in order to identify treatments as falling within categories either of established, of emerging, of unestablished, or of ineffective/harmful (NAC, 2009). Established treatments included antecedent packages, behavioral packages, comprehensive behavioral treatments for young children, joint attention interventions, modeling, naturalistic teaching strategies, peer training packages, pivotal response treatments, schedules, self-management, and story based intervention packages (NAC, 2009). Emerging treatments were identified in over 20 areas, and although a multitude of unestablished treatments were also identified, there were no current practices that were determined to be actively ineffective or harmful (NAC, 2009).

National Professional Development Center Report. The National Professional Development Center (NPDC) on ASD performed a similar analysis spanning 22 years of

literature (NPDC, 2010). Evidence based practices overlapped some of those identified by NAC and other large scale analyses. The highest level of positive evidence was found in the following areas: prompting, antecedent based interventions, time delay, reinforcement, task analysis, discrete trial training, functional behavior analysis, functional communication training, response interruption/redirection, differential reinforcement, social narratives, video modeling, naturalistic interventions, peer mediated intervention, pivotal response training, visual supports, structured work systems, self-management, parent implemented interventions, social skills training groups, speech generating devices, computer aided instruction, picture exchange communication, and extinction (NPDC, 2010).

Missouri Autism Initiative. Most recently, the Missouri Autism Initiative combined the results of these two aforementioned large-scale projects, along with the ASD Services Final Report on Environmental Scan performed by Centers for Medicare and Medicaid Services; Therapies for Children with ASD, performed by Vanderbilt Evidenced-based Practice Center; Management of Symptoms in Children with ASD report: a comprehensive review of pharmacological and complementary-alternative treatments, performed by Stanford Autism Research Team, and an analysis by Odom, et al., in the Journal of Autism and Developmental Disorders (Missouri Autism Guidelines Initiative, 2012). The intention of this project was to provide data from each of these analyses and to determine recommendations regarding interventions. Results of the Missouri Autism Guidelines Initiative divided Autism interventions into comprehensive intervention sets, or into full programs designed for use in addressing a variety of needs; Focused Interventions, or strategies that can be used in isolation or in conjunction with

other strategies, and Pharmacological Interventions (Missouri Autism Guidelines Initiative, 2012).

Regarding Comprehensive intervention packages, the Comprehensive Behavioral Intervention Programs for Young Children and the Structured Teaching model were identified as effective ASD interventions.

In the focused interventions category, antecedent packages, behavioral packages, cognitive behavioral interventions, joint attention interventions, modeling, naturalistic interventions, parent implemented interventions, peer mediated interventions, picture exchange communication intervention, pivotal response training, schedules, self-management, social communication intervention, social narratives, social skills intervention, speech generating devices, structured work systems, supported employment, technology based treatment, and visual supports were identified as effective ASD interventions (Missouri Autism Guidelines Initiative, 2012).

These multiple, large scale projects demonstrate the difficulty in determining true evidence based practices; although there are overlaps, there is not always consensus regarding inclusion of research criteria. In addition, interventions that are research based may not always be in use or be acceptable for educational settings.

Educational Use of Interventions

A vast array of interventions has been identified as showing effectiveness or promise; however, there is a continual question from the educational setting regarding their actual application or usage within school settings. A survey of educational providers across public schools in the state of Georgia found that less than 10% of the interventions being utilized were considered effective or empirically based (Hess, Morrier, Heflin, &

Ivey, 2008); however, this comparison was based upon previous literature reviews and not on larger surveys of the literature such as those carried out by NPDC or NAC.

This study also identified the fact that significantly large scale studies of the use of interventions have not, to date, been carried out very frequently, therefore making it difficult to determine those changes that are needed within educational settings (Hess et al., 2008). Across all literature that has been reviewed, interventions are generally grouped as behavioral and social interventions, with additional interventions regarding communication, cognitive skills, and other areas also occurring and overlapping across categories. Both large-scale treatment review projects and the small body of research regarding interventions applied in educational settings were utilized in selecting interventions for review; these are broadly grouped into behavioral interventions, social interventions, and communication interventions. These three areas were chosen for the current review because their alignment with treating core features of Autism.

Behavioral Interventions

The core and primary diagnostic criteria for Autism include behavioral concerns in repetitive and stereotyped behavior; this may also include difficulties in transitions between activities, change and routine, and other areas and are addressed specifically in the IDEA criteria (IDEA, 2004). In the most general sense, behavioral interventions are defined as those that are working towards reducing behaviors that are problematic or not functional for a learner (NAC, 2009). When applied more specifically, behaviorally-oriented approaches teach specific skills for student use.

The majority of behavioral techniques fall under a skill-building umbrella, which has been reported as the intervention type most commonly in use in educational settings

(Hess et al., 2008). Behavioral and skill based techniques are reported across the continuum of services from general educational classrooms to special education classrooms and represent a wide variation in intensity of service as well as evidence basis in practice. Although many commonalities exist across behavioral approaches, there are identified philosophical differences and variation in the use of these types of programs. Behavioral programs, including applied behavioral analysis techniques and work-based programs such as the Training and Education of Autistic and related Communication Handicapped Children (TEACCH) have found some level of social validity in the techniques that overlap both types of behavioral interventions. It was also found that a combination of best-practices and techniques that are applicable across settings are a preferred method of intervention across stakeholders (Callahan, Shulka-Mehta, Magee, & Wie, 2010).

Applied behavioral analysis. Applied behavioral analysis (ABA) interventions focus on looking at the precursor factors influencing behaviors (defined as distal factors and antecedents), as well as what occurs immediately following the behavior (consequences), in order to design a variety of changes needed to shape or change behavior (Simpson, 2001). ABA is not a specific intervention itself, but rather a designed methodology of interventions using different techniques in order to elicit the desired behaviors from students (Foxy, 2008). Many elements of ABA programs have been identified as evidenced-based and established practices (NAC, 2009; NPDC, 2011).

Evidence-based practices within applied behavioral analysis. Evidence based practices within an applied behavioral analysis program include discrete trial training, prompting, differential reinforcement, and time delays. These are often used in

conjunction with one another. Discrete trial training (DTT), utilizes a manipulation of what occurs immediately before or after a behavior (antecedents and consequences), within the context of a short, structured trial to attempt to reinforce learner behavior to learn a discrete skill (Bogin, 2008). Prompting is the use of additional support given to aid in student response, and may include a verbal (spoken directive), visual (picture or cue), gestural (pointing), or physical (providing guidance using a hand-over-hand approach) prompt in order to indicate to the student the behavior to perform (Neitzel & Wolery, 2009). Time delay is used in conjunction with prompting, and involves gradually increasing the amount of time between a directive and a prompt to give a learner additional time to perform a behavior before assistance is given, in order to increase student proficiency and decrease the use of prompts over time (Neitzel, 2009). Differential reinforcement is a procedure in which a student is given reinforcement in order to increase the frequency of a desired behavior (Brogin & Sullivan, 2009). These foundational ABA principles, combined with other principles, are often utilized in behavioral intervention packages as well as in specifically designed ABA based programs such as Verbal Behavior.

Verbal Behavior. The verbal behavior approach is a type of applied behavior, analytic intervention that emphasizes the development of language in increasing skills and reducing problem behavior in children with Autism (Sundberg, 2008). This is based upon work by B.F. Skinner on the active parts of language, defined as mand (requesting), tact (labeling), echoic (repeating sound), imitation (repeating gesture), intraverbal (responding to conversation or question), textual (understanding written language), transcriptive (responding to speech using a written language response), and copying a

text (producing a written verbal response that is a direct correspondence to another written verbal response.)

This approach attempts to break down these parts of communication and use principles of applied behavioral analysis to reinforce desired behaviors and extinguish non-desired behaviors (Sundberg, 2008). Although few studies have taken place on the verbal behavior approach and researchers have called for more specificity in determining the efficacy of this particular intervention package (Carr, 2005), elements such as discrete trial training and natural environment teaching utilized within the verbal behavior approach have been identified as having empirical support.

Current Issues within ABA/Behavioral Intervention. In a major analysis regarding the place of ABA in Autism intervention, Foxx (2008), cited the support of the Surgeon General in ABA as a treatment for Autism, the 40-year knowledge base, and the benefit gained from students. Because the effectiveness of ABA has been established, research has focused on those elements that make ABA interventions the most effective, including how to incorporate the elements of ABA into intervention packages (Weiss, 2001). Issues identified with the application of ABA on a larger scale include determining suitable intervention packages, appropriate outcome goals, how or if to incorporate into larger programs, and the number of trained staff needed (Simpson, 2001). It is possible that despite the rich research basis of ABA interventions, some of these factors can prohibit the widespread use of ABA interventions in educational settings.

TEACCH. The Treatment and Education of Autistic and Related Communication Handicapped Children (TEACCH) model is described as an intervention package that

provides structure in the form of a work system for children that uses visual supports, structured teaching, and detailed schedules to capitalize on the strengths of children with Autism in order to allow them to participate in educational opportunities (Meisbov, 1997). TEACCH has gained a large research base in its ability to allow students to gain functional skills and a great amount of outcome data, when compared with other approaches (Meisbov, 1997); it has also been found effective when compared with non-specific approaches, in inclusion settings, and with students considered on the lower-functioning end of the spectrum (Panerai, Ferrante, & Zingale, 2002; Panerai et al., 2009).

Elements of the TEACCH program, such as the schedules and structured work systems, have met criteria for inclusion as established or evidenced based practices (NAC, 2009; NPDC, 2011). Visual schedules and structured teaching were determined to be in use by approximately 15% of respondents to a survey regarding the use of interventions in Georgia Public schools (Hess et al., 2011).

Social Skill Interventions

Social skills interventions are those interventions that are aimed primarily at addressing social deficits in Autism, including diagnostic criteria such as the deficits in nonverbal social behaviors (eye gaze, gestures), development of peer relationships, sharing joy and interest, and emotional reciprocity (APA, 2000). Although many of these skills are addressed from a behavioral standpoint in behavioral intervention packages, additional interventions are considered primarily as social skills interventions. Synthesized research of social skills interventions found that both video modeling and social skills groups met criteria as evidenced based practices (Reichow & Volkmar,

2010). Social skills groups were also found to be effective in other analyses (NPDC, 2010).

Cognitive behavior therapy. Cognitive therapy is a focused, structured psychotherapy which has empirical support for treating a wide variety of psychological disturbances (Beck, 1995). The cognitive model posits the idea that the relationship between a client's thoughts and beliefs will ultimately affect his or her mood and actions. Cognitive therapy becomes cognitive behavior therapy when the cognitive model is combined with behavioral treatments such as relaxation training, behavioral replacement, and cognitive restructuring.

Early research linking CBT and Autism posited the idea that this type of intervention was impossible to carry out with persons who have pervasive developmental disorders, because the understanding and self-insight necessary to complete this type of treatment was seen as non-existent in these children (Anderson & Morris, 2006). Some research indicates that CBT may not be effective for clients with Autism who are considered lower functioning or with more severe symptoms (Tsai, 2006); however, numerous research based reviews and single case studies identified interventions that have shown success including computer-based CBT, stress reduction training, and visually supported CBT interventions (Attwood, 2003; Greig & MacKay, 2005; Anderson and Morris, 2006).

Estimates for the rate of co-morbidity of Autism and other disorders range from 17-74% throughout literature (Tsai, 2006). When considering these possible co-morbid diagnoses, CBT has also been identified as successful in anxiety reduction when behavioral training was emphasized along with parent and school involvement (Wood, et

al., 2009). Although most frequently emphasized in treating co-morbid mood or anxiety disorders in Autism, social skill building also demonstrated potential efficacy in reducing core symptoms of Autism, in an exploratory study. Conclusions from this study were limited overall, based on the use of parental report in determining symptom reduction (Wood, J., Drahota... & Spiker, M., 2009). In terms of inclusion as a treatment within the context of a larger intervention package, current research supports the use of CBT for reduction of secondary symptoms and some skill building techniques. Cognitive behavioral therapy has a significant cross over with other social skill building techniques.

Social stories. Social Stories are a trademarked intervention term developed by Carol Gray (Gray & Garland, 1994). They represent a technique that utilizes specific explication of a social situation, with the original program suggesting that a variety of sentences be included in each story, in order to describe the situation, give perspective of the people in the situation, and provide a directive about those behaviors that someone should perform (Gray & Garand, 1994). For example, a Social Story about a birthday party might include a description of the activities, or the fact that the person whose party it is might feel excited or happy, and the specific rules that the reader should follow while at the birthday party (such as to wait your turn, or to sing "Happy Birthday".)

Research on Social Stories has varied, with some of the body of work pointing to decreasing problematic behaviors; less specific research on Social Stories has been generated regarding actual skill building capacity in social situations (Hanley-Hochdorfer, Bray, Kehle, & Elinoff, 2010). Quirnbach, et al. (2008) found Social Stories effective for increasing game play skills in children with Autism; however, fewer

efficacies were found for non-pictorial based stories for children with lower verbal comprehension skills, indicating that this strategy may not have a wide application across different levels and subtypes of Autism.

Social narratives and story-based intervention packages are included in lists of evidence based and effective practices (NAC, 2009; NPDC, 2011). In conflict with previous findings, a meta-analysis of 64 more recent studies utilizing social stories found overall limited effectiveness (Kokina & Kern, 2010). Across the review of the research and in comparison with previously performed meta-analyses, findings indicated that social stories may be more effective for simple rather than complex behaviors. Limited generalizability was also found because the majority of the studies that were conducted took place in self-contained settings versus inclusion settings, which would also point to a limited sample in the variability of types of students who participated in these studies.

Power cards. Power cards are identified as a social skill method which emphasizes the specific interest of an individual to teach social skills, following a prescribed procedure that utilizes determining student interest, the function of their behavior, and ways to help a student solve a particular social problem (Gagnon, 2001). This strategy was specifically developed to capitalize on the specific interests and stereotyped behaviors inherent in Autism. Regarding its application within school settings, case study formats have served as the primary research body for this type of intervention, due, in particular, to the highly specific nature of individual student interests (Campbell & Tincani, 2011).

A case study strategy utilizing three specific students with Autism in a public school classroom demonstrated the fact that Power Cards were seen as an accessible

intervention by classroom teachers, and that it demonstrated effectiveness in the maintenance phase following treatment for direction following (Campbell & Tincani, 2011). Similar results were also found for three students utilizing a Power Card strategy to decrease latency times for transitions in a public school classroom (Angell, Nicholson, Watts, & Blum, 2011). Cartooning is a similar intervention that involves drawing comic strips of social situations to fill out ideas of what the characters say and do and what behaviors to exhibit in an given situation. In one study of utilization in Georgia Public schools, Power Cards were reported, along with cartooning, at a utilization rate of 3.95% across educational classrooms (Hess et al., 2008).

Communication Interventions

Communication interventions are those interventions that are considered to have a primary objective of allowing the student to use vocalization or another type of communication. Interventions across social skill and behavioral methodologies frequently address communication skills as part of the intervention package (see descriptions of Verbal Behavior and Applied Behavior Analytic interventions).

Although language delays are a hallmark of Autism, recent research has found that the majority of students with Autism do develop some type of speech (Wodka, Mathy, & Kalb, 2013). Communication-specific interventions are utilized in order to promote the use of functional speech, as well as provide a communication system for students who do not develop speech. Speech and language interventions are typically divided into functional approaches (which aim to increase the student's ability to use language for purposes related to everyday living) and pragmatic approaches (which emphasize social information and communication between individuals.)

Total communication approaches. The total communication approach emphasizes the use of spoken words and American Sign Language when communicating with the child in every day settings, with the idea that maximum access to the communicative environment will be afforded by this approach. Review of the literature finds that there is success in this approach in teaching vocabulary as it relates to labeling objects in the environment, but it is not as influential for spontaneous speech (Mirenda, 2003).

Picture exchange communication system. The Picture Exchange Communication System (PECS) is a functional communication system. Functional communication systems are intended to aid students who are nonverbal or who have limited word retrieval skills in communicating with others in their environment (Frost & Bondy, 2002). PECS utilizes behavioral principles in promoting speech and works on mechanisms of reinforcing students for appropriate attempts at communication using pictorial stimuli (Frost & Bondy, 2002). Small icons, which may include line drawings or actual photos, are available to the student in a book format. The student is then trained to request specific items, actions or activities using the pictures. This can be expanded to the use of pictures to indicate an internal state, such as happiness or illness; a participant may also use several icons in a row to form full sentences or requests.

A case study on three students utilizing multiple baseline design was among the first studies to identify a link between the use of PECS and the emergence of speech and social communicative behaviors (Charlop-Christy, Carpenter, Le, LeBlanc, & Kellet, 2002). However, it is reported that the PECS system is now utilized in schools as evidence based practice (NPDC, 2011). Across total communicative and aided

approaches, such as PECS, the emphasis is on functional speech rather than on spontaneous speech. There is limited utility reported in the use of this approach for teaching spontaneous speech; for example, in commenting or utilizing for social purposes.

Multicultural Concerns within Intervention Selection

Specific research has pointed to the compounded difficulty of multi-cultural learners with Autism becoming educated in U.S. schools, pointing to the linguistic and cultural boundaries they must overcome, in conjunction with their inherent behavioral difficulties (Wilder et al., 2004). Cultures have differing views of behaviors and the acceptability of different interventions which may lead to differences in those behaviors and symptoms that families of diverse backgrounds may want to focus on initially (Wilder et al., 2004), as well as those interventions that are utilized. Overall factors identified through the literature include cultural understanding, teacher expectations, language issues, and cultural pluralism within the curriculum. Suggestions for change include change at the teacher and educational program preparation level and a more diverse and established research and knowledge base.

An additional analysis of race, culture and diversity on Autism services performed by Tincani, Travers, and Boutot (2010) reached similar conclusions regarding the influence of family perception on disability and the under-identification of specific groups. Additional suggestions for practice from this analysis included conducting a strengths based assessment, considering parental perception of disability, consideration of the family system, and involving the family within the intervention process (Tincani et al., 2010).

Response to Intervention

A Response to Intervention (RTI) framework is described by the National Center on Response to Intervention (2010) as identifying student needs, utilizing ongoing data collection to ensure student progress, and changing interventions based upon data collected at regular intervals. RTI aims to provide interventions that are grounded in evidence bases and sound educational practices, individualizing these to student needs. Although more commonly applied as a method to assist in identification of educational disabilities, at the heart of RTI is a problem-solving methodology to provide consistency in a system in which a variety of interventions are utilized. RTI also aims to reach as many students as possible as early as possible, and to provide the appropriate amount of intervention to students in need. It is described as an educational process similar to the multi-tiered approach within the public health domain, in which the tiers are defined as primary, secondary, and tertiary interventions (Carney & Steifel, 2008).

Description. Response to Intervention (RTI) is an educational and behavioral framework that provides a comprehensive package of best practice interventions, along with more targeted or intensive interventions as student needs are identified. RTI is most typically defined as a three-tiered model: the primary tier involves universal best practices that are applied to all students (Tier 1); a secondary tier provides more targeted interventions to students who are identified as at-risk (Tier 2), and an intensive tier provides service delivery to students who have the greatest need (Tier 3). The focus is not only on student achievement, but also on contextual and ecological concerns, and as student needs increase and necessitate higher tier interventions, resource allocation is also increased (Ardoin, Witt, Connell, & Koenig, 2005).

The RTI model has also been defined as a set of principles and features, rather than as a prescribed intervention system (Barnes & Harlacher, 2008). Core principles identified across RTI programs include (a) a proactive approach, (b) an instructional match, (c) problem-solving orientation and data-based decisions, (d) effective practices, and (e) a systems level approach (Barnes & Harlacher, 2008, p. 421). The features of RTI include (a) multiple-tiers, (b) assessment system, (c) protocol, and (d) the use of evidence-based instruction (Barnes & Harlacher, 2008, p. 421).

Current applications. RTI is typically applied as an alternative to immediate referral for special education evaluations, and has been identified as a way to provide effective interventions to learners who may be struggling but may not be in need of special education. The goal ultimately is to reduce the number of students who are unnecessarily referred for special education services. When utilized in this manner, an RTI framework also aids in providing assistance to struggling learners immediately, rather than waiting for an evaluation period which may last 60 days or longer before interventions are put in place. This also omits what is often criticized as a “wait-to-fail” approach, because a student must be struggling to a certain extent before additional supports are put in place; RTI allows interventions to be implemented immediately. The most common application of RTI is in general education settings where it can be utilized to assist in academic problems such as reading or math, as well as behavior problems within the classroom.

Use of RTI framework with autism. Applications for RTI have been increasing beyond academic disorders, into areas of behavioral intervention, classification of other disorders, and provision of preschool services (Lindstrom, 2013). It has been suggested

that social skill interventions for Autism fits into the three-tiered model of service provision as a possible aid for schools in intervention selection (Sansosti, 2010); in addition to intervention, the use of RTI has also been indicated as a possible route for classification. Hammond, Campbell, and Ruble (2013) commented that educational providers may either fully adopt RTI for the use of identification and service provision of students with Autism, adopt a hybrid model that incorporates specific elements into a three-tiered delivery model, or determine that students with Autism may not fit within the RTI model. Hammond, et al. (2013) suggests that an alignment already exists between evidenced-based practices in Autism and core components of RTI. In addition, some of the principles of positive behavioral supports and RTI have also been identified as being aligned with one another because positive behavioral support has demonstrated success with students who have Autism; this may point to promise in the use of RTI practices (Crosland & Dunlap, 2012).

Although there is some caution that the use of an RTI model should not delay service provision to those suspected of having Autism, there is potential for the use of this framework in service delivery (Hammond, et al., 2013). Identification using an RTI model may need interpretation with caution, because many states have not expanded their definitions of identification to include RTI approaches for this area and legal mandates take precedence (Lindstrom, 2013). Interest in the use of an RTI structure for Autism intervention is growing. In 2011, a literature search revealed only one article detailing this type of service delivery specific to Autism interventions. A similar review in 2013 revealed two additional articles specific to Autism and RTI, with additional literature making mention of the possibility of using this framework.

Legal Mandates

In an analysis of existing laws, case law, and legal standards, Mandlawitz (2002) suggests that programs should be designed specifically with legal aspects considered. In addition, programs should address progress across areas of academics and social progress and be tailored to the unique needs of the child (Mandlawitz, 2002). Several legal mandates exist within the context of the Individuals with Disabilities Education Act (2004) to protect students with disabilities and ensure their access to the educational environment. These legal mandates were designed to ensure the fact that students receive appropriate education, and have been delineated into seven major principles including (a) informed consent, (b) zero reject, (c) free and appropriate public education, (d) non-discriminatory evaluation, (e) least-restrictive environment, (f) individualized education plans, and (f) due process safeguards (National Association of Special Education Teachers, n.d.). Several of these principles are discussed in greater detail as they relate to service provision under the RTI model, as well as to additional legal mandates in the educational system.

Informed consent and zero reject. Informed consent and the zero reject policy mandate that parents must be made aware not only of an evaluation of their child who is suspected to have a disability, but also of their parental rights. Students cannot be excluded from schools or denied access to education on the basis of a disability.

Free and appropriate public education. The guiding principle of IDEA is the principle of free and appropriate public education (FAPE). FAPE states that a student must be able to access an educational program, regardless of disability at no cost to the parent, (IDEA, 2004).

Non-discriminatory evaluation. This principle of IDEA (2004) provides protection to students and their families that the procedures used in identifying a student's disability will not discriminate. No single source of data can be used in identification of a student's disability, and assessments must be administered in a student's native language or language-free, and without cultural bias.

Principle of least restrictive environment. The principle of Least Restrictive Environment (LRE), mandates that students be educated with non-disabled peers to the extent possible (IDEA, 2004). If this is not possible, educational entities are charged with providing a continuum of services and placements. Placement decisions must be made by a team and should be re-evaluated annually.

Individualized education plans. IDEA mandates the creation of Individualized Education Plans (IEP's) that detail how a student's disability will be addressed in the school system in order to provide progress in an educational program (US Department of Education, 2007). The IEP must contain specific information regarding a student's current level of performance, annual goals, the special education and related services that are needed, and opportunities the student may have to participate with non-disabled peers (US Department of Education, 2007). Schools must also outline how state achievement tests will be addressed, and where and when services will be delivered (US Department of Education, 2007). IDEA (2004) contains additional mandates indicating that after a student turns 14, he or she must be provided with any services that may be needed to assist in a meaningful transition post-graduation.

Progress monitoring. An important aspect of IEPs as mandated by IDEA is progress monitoring. The school entity must be able to measure whether or not the

student is meeting goals as outlined in the IEP. Progress must be reported to parents at regular intervals. The special education services utilized to achieve goals, as mandated by the No Child Left Behind (NCLB) Act, must be grounded in research based methodology and school entities are held accountable for ensuring that they fulfill these mandates (Yell, 2006). An analysis of issues around progress monitoring revealed commonalities in legal decisions around progress monitoring, including the fact that teams frequently fail to design and implement progress monitoring; that these responsibilities are not appropriately carried out; that progress monitoring does not take place for behavior intervention plans; that inappropriate measures are used to look at student progress towards graduation, and that it does not occur frequently enough to meet legal requirements (Etscheidt, 2006).

Accountability. The IDEA update of 2006 also included a provision for Educational Benefit Reviews (EBR). These reviews mandate that a school entity randomly sample the IEPs of students in their care and determine if they are designed to provide benefit to the student and that they meet regulations (Pennsylvania Training and Technical Assistance Network, 2012). This includes a three-step process for schools to track IEP information over a three-year period, analyze the progress made and the change over time in the design of goals and progressions, and then determine if benefit was derived by the student from the educational plan (PATTAN, 2012).

Due process safeguards. Due process safeguards protect the rights of the parent and include protections such as the right to file complaints regarding the IEP process, conflict resolution, and timelines for the resolution of complaints.

Summary of Literature Review

Students with Autism face significant challenges within the educational setting. As the prevalence of Autism increases, educational entities face additional pressures to provide educational services to their students and to continue to meet legal mandates. A vast number of legal mandates and protections exist to ensure that students receive meaningful educational programs, and a number of interventions exist to address the needs of students across areas. However, schools may utilize numerous means to achieve student progress and to comply with legal mandates, leading to a lack of coordination between educational entities. A more cohesive approach is clearly needed.

Current Study

Research question. The current study aimed to examine the research basis for Autism, the interventions for students with Autism Spectrum Disorder, and the structure of Response to Intervention programs. The author sought to determine if this information can be combined into a cohesive program to develop a manual for intervention and also to provide supports with a problem-solving RTI framework for students with Autism. The following research question was addressed:

(1) What would a tiered service delivery model and interventions, combined with additional programmatic elements in a comprehensive, tiered service delivery system for serving students with Autism in educational settings look like?

Hypothesis. Combining research in Autism, interventions, and Response to Intervention framework will result in a comprehensive procedural manual for intervention provision within a problem-solving RTI framework.

Chapter 3: Method

Overview

The current study aims to develop the manual and procedures for an innovative program designed to deliver effective Autism interventions through a Response to Intervention Framework (ARTSI). Methodology includes review of the existing literature and programs, analysis of the conceptual framework of RTI programs, and development of an Autism Response to Intervention program and supporting materials. The program includes elements such as resources for intervention selection, strategies for educational staff and parent involvement, progress monitoring of students, and use of supports and related services staff. In addition, the completed program was available to interested stakeholders for volunteer comments. The intention in design is to provide programs with the conceptual framework and materials necessary to utilize the program.

Measures and Materials

No measures were utilized in the development of the program. Materials utilized include research literature as described in the references section. Stakeholders within the Autism field will provide an initial review to begin the process of expert validity.

Procedure

A comprehensive literature review was conducted in order to understand the legal mandates, current research in Response to Intervention, and widely utilized Autism interventions. This information, along with the author's original ideas, was compiled into a comprehensive manual designed to provide the basis for program design and implementation. Supporting handouts and materials were also designed and included

within the manual. The manual was available to interested stakeholders for a public comment period; these comments are included in Appendix A.

Chapter 4: Results

This chapter will provide a brief overview of the results of the program design, including essential elements devised. The program manual is included in its entirety in Appendix A of this document. The purpose of this study was to utilize elements and principles of Response to Intervention to create a cohesive program for the delivery of Autism interventions in educational settings. It also attempts to determine how an ARTSI model could be structured and packaged in order to provide efficient and cost-effective interventions for children with Autism within the structured framework of an educational setting.

Program Overview

The outcome of this project resulted in a 67-page manual. The manual is organized into seven sections; each of the first five sections includes section content, key points, and discussion questions. Section one provides an overview of the project, as well as an introduction to the layout of the manual. Section two provides details on the principles and applications of the Response to Intervention model. This includes the essential features of RTI programs and how RTI models have previously been applied to Autism. Sections one and two have already been discussed in detail in the introductory and literature review sections of this study; the reader should refer to those sections for further information.

The Autism-Response to Intervention model (ARTSI) is introduced in section three, and specific logistics of the program are discussed in section four. Two unique case studies comprise section five. Section six includes innovative forms that aid in both initial program development and in ongoing implementation of the program. Section

seven includes a review of interventions and resources that were gleaned from a review of large-scale, best practices studies and are suggested as resources for teams, to assist them in selecting supports and interventions for their settings. Information from sections three, four, five, and six are described in further detail because they are essential to understanding the program. The program manual is included in Appendix A of this study in its entirety.

Section three: Introduction to the ARTSI model. Section three of the manual begins with a discussion of how the ARTSI model is a program for students who have already been identified as receiving special education services; the emphasis is on the idea that although a student may require special education and specially designed instruction, it will not necessarily be delivered with the same intensity throughout a student's educational career. Conversely, the program may help identify students who require changes in intensity across their educational careers. Assumptions and guiding principles include 1.) Students have already been identified as students with Autism, 2.) Not every student always needs the most intensive level of support, even if he or she is in a very intensive setting, 3.) Supports that are in place are not necessarily forever and should not be forever unless warranted by data to help the student, and 4.) The general goal is to prepare students for participation in less restrictive settings.

The procedures defining interventions and supports are described in this section. Tier one includes overall universal interventions that are applicable to all students in the setting in which the model is being applied. Symptom intensity in this tier was defined by the author as disturbing to the child's education, utilizing the definition: "behaviors that may be annoying but could cause a person to be teased or limit interactions with

others” (PA Department of Public Health, n.d.). Tier two includes interventions that are selected for the setting, and targets symptom intensity that is disruptive to the student’s education, as defined by “behaviors interfering with inclusion, acceptance, and overall quality of life” (PA Department of Public Health, n.d.). Tier three, the most intensive tier of support, includes interventions that are considered as being indicated or targeted. This tier of support was designated by the author as symptom intensity that is **destructive** to the student’s health and wellbeing, to participation in the environment, and to overall learning. A suggested general definition of this tier is “behaviors that are affecting the safety of self and others or serious property destruction” (PA Department of Public Health, n.d.).

Because the emphasis is on overall best practices, students who receive higher tier (two or three) interventions continue to receive all interventions from lower tiers as well. Service delivery can either increase or decrease, depending on student needs. Reassessment is indicated at two times: when students are not responding to the most intensive interventions (tier three) available in their settings in order to reassess program or goal related needs, or when a student has received tier one interventions and continues to demonstrate progress over time, in order to assess for least restrictive environment or eligibility for certain services.

Section four: Setting up and running the ARTSI model. Section four includes information both on designing the program to fit a particular educational setting, and on ongoing program implementation. The initial program design is outlined using a flow chart for ease of understanding.

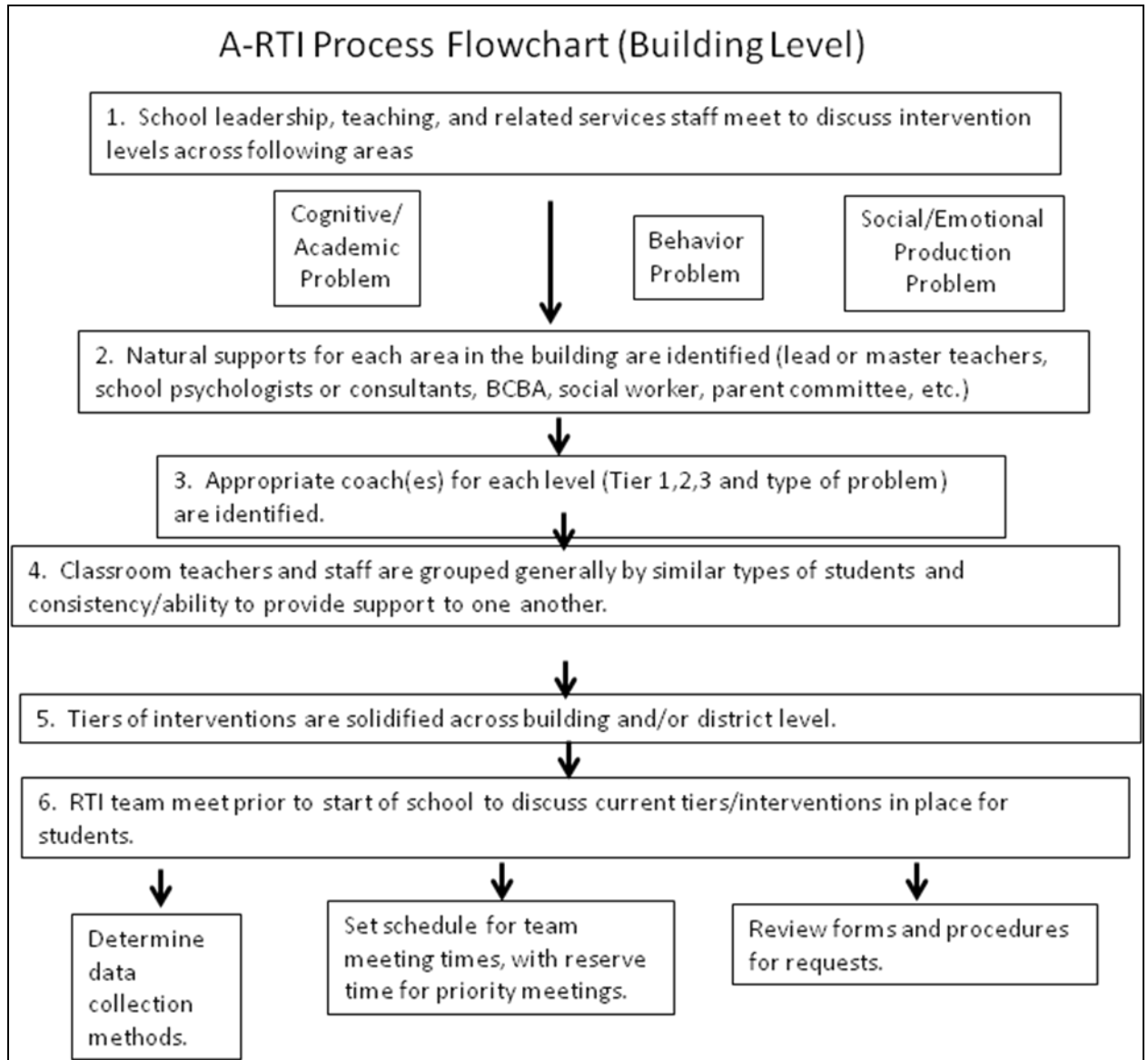


Figure 1. Building level design of ARTSI. Adapted from George McCloskey, PhD.

Initial steps include determining those interventions that are currently in use for each area served by the model, and creating a hierarchy of interventions from most restrictive to least restrictive. This provides the initial definition of tiers for intervention. Supports for the team at each level, called “Coaches”, are determined for each tier and area of need to assist in providing problem-solving consultation. Program staff is grouped into teams

based on commonalities of student needs. This allows school staff to utilize each other as consultancy partners in order to provide efficient consultation and collaboration across the environment.

The ongoing use of the program, including how it is applied to individual students, is also displayed through the use of a flow chart. The process for day-to-day implementation of the program includes: staff defining student needs by tier prior to the start of the school year, referring student for a team meeting when progress is not noted, and completing the ARTSI process in order to assist in addressing student needs. When a student problem is initially noted, a teacher requests an ARTSI Initial Team Meeting during which they define the problem and provide baseline data. Brainstorming and initial interventions at the same tier are implemented. After this, two follow up meetings are held, called Progress Monitoring Review Meetings. At the Progress Monitoring Review Meetings, if interventions were successful, the information is reviewed and a follow-up date is determined. If interventions were not successful, additional interventions are determined through team discussion and these are implemented. A second Progress Monitoring Review Meeting is held. After the second progress monitoring meeting, a team may determine to increase intensity (move up tiers in service delivery), or reassess the student if he or she is already receiving the most intensive services for their setting.

In addition to the meeting and coaching structure, home and school collaboration suggestions are also components of the manual. It is suggested that tier one interventions include a home-school committee, parent centered meetings, and home contacts; tier two supports include home contacts from coaches, and weekly consult from school team, and

tier three interventions include daily data reports and home-school visitation where allowed.

Program evaluation is also discussed in section four. Areas for data consideration include: the number of team meetings held throughout the year, number of ARTSI team meeting referrals, number of students at each tier at the beginning and end of the year, and stakeholder satisfaction. This data is in addition to any outcome measures on student success that the school is implementing.

Section Five: Case Studies

Two composite case studies are provided for readers in section five of the manual. The purpose of the case studies is to provide the reader with information regarding both the implementation of the program, as well as program application for students.

The first case study, the case of Alex, discussed the application of an ARTSI model in a district wide setting. The district initially defined the coaches and services available within the tiered model. In Alex's specific case, he was referred to the team for a tier two behavioral intervention meeting. Information is discussed as it relates to how the team would proceed if Alex responded to the interventions, or if he continued to experience difficulty.

In the second case study, the application of the model is discussed in an approved private school that is considered to be a more restrictive placement. The school sets the levels of intervention and coaching support prior to the start of the school year. Sally, a first grader, is referred to the ARTSI team for assistance due to a lack of progress on her social skills goals. The process of supports is discussed, as are two outcome possibilities and the overall benefits to Sally.

Section Six: Forms

In addition to the procedures, policies, and outlines contained in the manual, a number of forms are included within the manual to ease implementation and use. These forms are intended to assist school entities in both initial program design, and ongoing implementation. The following is a list of forms available within the manual:

1. Summary Forms and Checklists

- **Pre-Implementation Checklist**
- **Program Intervention Tiers Summary Form**
- **Student Summary Form**
- **ARTSI Program Level Outcome Summary**

2. Meeting Forms (Adapted from George McCloskey, PhD)

- **ARTSI Initial Team Meeting Summary Form**
 - This form is to be used when a student is initially referred
- **ARTSI Initial Team Meeting Procedures**
 - Suggested times and talking points for initial team meetings
- **ARTSI Team Progress Monitoring Review Summary Form**
 - This form is to be used for subsequent follow-up meetings
- **ARTSI Progress Monitoring Review Meeting Procedures**
 - Suggested times/talking points for progress monitoring meetings
- **ARTSI Tier 3 Team Meeting Data Form**
 - A separate form for meetings that require tier 3 support.
- **ARTSI Tier 3 Team Meeting Procedures**
 - Suggested times and talking points for tier 3 meetings.

Program Feedback

The ARTSI manual was available to interested community members for a public review comment period from March 1, 2014 to April 1, 2014. Voluntary respondents included: a supervisor of special education/principal/and teacher of twenty years, a retired superintendent of schools/superintendent mentor/and teacher of twenty years, a parent of a student with Autism, and an occupational therapist. Commentary from these stakeholders is provided in Appendix B of this study.

Chapter 5: Discussion

The purpose of this study was to design a Response to Intervention program for the delivery of services to students with Autism. Research is emerging in the area of utilizing Response to Intervention programs for students with Autism; however, to date, no specific program exists that addresses the delivery of Autism interventions through a Response to Intervention framework. Development of such a program became the primary aim of the current study.

The research question examined was, “What would a tiered service delivery model and interventions, combined with additional programmatic elements in a comprehensive, tiered service delivery system for serving students with Autism in educational settings look like?” Programmatic design resulted in a 67-page manual, intended to assist educational entities in implementing an Autism Response to Intervention (ARTSI) program. Following programmatic design, a period for a public comment was provided, during which the manual was made available to interested members of the Autism community, including special education supervisors, a parent, and related service providers.

Discussion of Findings

The major finding of the study was that the elements of a Response to Intervention program did provide a structure applicable for Autism service delivery. The overall result was a manual that initial readers described as having a logical and cohesive flow. The outline of the program included strategies and suggestions for implementation, ongoing use of the program, case studies of program application, and forms and materials for readers to use. Findings were examined in terms of legal requirements, diagnostic

changes in Autism, and impact of initial stakeholder comments, described in detail in the following paragraphs.

Legal requirements. Assisting schools and families in meeting legal requirements to students was a primary goal of the program. Two areas that were actively reviewed throughout the program design included the principle of Least Restrictive Environment, and the progress monitoring mandates of Individualized Education Programs.

The theory underlying the program provides a strong foundation for fulfilling Least Restrictive Environment mandates. A core feature of the program is the ongoing team discussion (including families) on the intensity of interventions being utilized. As a student progresses through the program, a purpose of the program is to move the student to less restrictive interventions and settings when dictated by data indicating his or her needed level of support. This change in intensity based on need supports the least restrictive environment principle, and would be well addressed by the ARTSI program if delivered as outlined in the manual.

The progress monitoring mandates of Individualized Education Plans are also addressed throughout the program. Although no specific progress monitoring is prescribed within the context of ARTSI, overall progress monitoring and use of data is a hallmark of the program. In order to implement ARTSI, an educational entity would need a well-defined progress monitoring system in order to determine the service delivery tier. Both of these mandates, including the ability of both to be fulfilled through the ARTSI program, directly affect the delivery of a Free and Appropriate Public Education (FAPE).

Accountability is also addressed through the ARTSI program. Because the author has personal experience in performing Educational Benefit Reviews (EBR) to determine student progress over a three year period, having a systematic progress review monitoring system would increase the ability to demonstrate student progress over time. Rather than comparing students over years across different progress monitoring systems, the ARTSI system would allow an opportunity to observe student progress across tiers, including how student needs were addressed over time.

Diagnostic changes. Recent changes to the diagnosis of Autism do not directly affect educational environments. However, families and educational entities may incorporate elements of the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), into their thought processes and service deliveries.

The definition of symptom intensity outlined in DSM-5 represents a significant departure from previous iterations of the manual. This change is the addition of defining the symptom tiers as those requiring support, those requiring substantial support, and those requiring very substantial report. When providing a clinical diagnosis, providers are now asked to assign a symptom severity qualifier onto the two major areas (Social/Communication and Restrictive/Repetitive Behavior) (APA, 2013). These tiers of support in the DSM-5 look similar to the tiers of service delivery as outlined in the ARTSI program.

Definitions of symptom tiers in the Social communication area are: causing noticeable impairments (level 1), causing marked deficits (level 2), and causing severe deficits/impairments (level 3). In the area of restricted, repetitive behaviors, they are defined as significant interference with one or more daily activities (level 1), interfering

with functioning in a variety of contexts (level 2), and markedly interfering in all areas (level 3) (APA, 2013). These demonstrate some similarity to the ARTSI tiers. There is some significance to the fact that the scientific community is embracing the idea that defining and addressing Autism needs through a multi-tiered system may be beneficial. As more is known about how the DSM-5 changes will impact the overall delivery of services for Autism, the ARTSI program may even increase in relevance as a model program for determining the intensity of interventions across varying levels of need.

Stakeholder comments. The initial comment period included contributions from volunteers who have fulfilled several different roles, including those of parent, special education/general education teacher, school administrator, and occupational therapist. In general, comments regarding the program from school staff were positive. Identified areas of strength of the model from these individuals included the methods outlined for team interaction, the use of coaches to provide support to staff, and the general underlying theories of the program. These comments from educational staff lend support to the idea that the model represents a cohesive and logical service delivery system; it is one in which they would be interested in participating or implementing.

Needs identified from stakeholders who were school staff included concerns regarding the amount of time such a program would require as well as general considerations regarding data collection. Although these are not new concerns in the field of special education, this is important in relation to the model because both of these were areas that the model is designed to address; this implies a need for more specificity in use of time and data collection procedures in order to provide rationale for use of the model. The intention of the model was to provide the supports needed to staff and students,

utilizing time efficiently by providing a streamlined service delivery and decision making system.

In contrast to comments from educational staff, comments provided by a parent stakeholder identified numerous concerns with the use of this type of model. In particular, this parent's comments indicated that the identification of behaviors and needs in terms of tiers was particularly disconcerting, because the idea of defining supports in terms of behavior was not desirable. This is of particular interest because current changes to the diagnosis of Autism as defined in the DSM-5 are moving towards a tier definition for support. The DSM-5, and the tiers of support defined in the DSM-5, are relatively new and information on how stakeholder groups (and in particular, parents and self-advocates) have received the changes is not yet available. Because the ARTSI model is aligned somewhat closely with these changes to the DSM-5, there may be some differences in how parents and how educational staff view this model. If changes to the DSM-5 are not perceived as favorable by these groups, that perception may affect the reception of the ARTSI model, although the educational setting is not dictated by the clinical setting. However, general use of three tiers in Response to Intervention programs pre-dates the DSM-5.

Comments from the parent reviewer also led to a question considering the involvement of parents in curricular decisions and their role in the access of supports in the educational setting to aid students. The parent reviewer indicated that in her previous experience as a teacher, as well as her present experience as a parent, changes to interventions utilized happen more naturally and do not require extensive team meetings. In contrast, all of the educational staff expressed interest in utilizing this type of program

and viewed it as helpful for themselves and staff they work with, indicating that some educators do see the merit in this type of program. Depending on the type of program, some may have staff that are skilled in making more immediate changes, and staff that are more interested in team-based decision making; these are programs that do not necessarily apprise the parents of the decisions.

Implication of Findings and Future Work

The findings of this study lend support to the hypothesis that the use of Response to Intervention principles in designing a program would lead to a cohesive program. Given issues identified in selecting interventions and communicating progress, a common monitoring system designed to communicate the progress of these diverse learners may assist in meeting student needs. The ARTSI program, mirroring other Response to Intervention programs, may influence the way services are delivered and the culture of the educational environment. Adopting this type of program, particularly on a large scale, would represent a significant effort on the part of educational entities in allocating resources to a team-based, problem solving approach.

Initial expert and stakeholder commentary provided the foundation for gaining support for the program. A logical second step is implementation of the program. Initial program implementation would likely need to focus both on student outcomes as well as on program evaluation outcomes in order to determine strengths and necessary changes.

Limitations may warrant further definition of the model and also an investigation into the efficacy of different uses of the model. One potential investigation may include its use in making decisions about student placement. Because educational entities are charged with providing a continuum of services, this continuum could be defined within

the context of the ARTSI model in order to assist in decision making. Another potential use of the program may be in determining the progress of students who are placed out-of-district. If this program were implemented in a center-based program, there may be an opportunity to define the time when a decision would be made to move from tier 1 at the center-based program to a less restrictive environment in an inclusive setting.

Future work may also consider the use of the ARTSI model in identifying students with Autism, particularly at the Early Intervention or younger stages. Because students with Autism, particularly students who fall within the DSM-5 support categories of one or two, may be identified later and be more difficult to diagnose, collection of data on student response to support diagnosis empirically may provide much-needed initial intervention while gathering data to assist providers and families in making decisions. It also may provide assistance to teams determining if a student needs an individualized education plan versus a 504 plan in an educational setting, because data collected in the process may assist in determining student need.

There may be utility in further development of the model to specific settings. Although underlying principles are constant, differences in how the model is implemented in different settings, based on size, intensity of needs, and other characteristics, may be large enough to warrant slight changes in program outlines or manuals to provide additional guidance to highly specialized settings. Strengthening of the academic components of the program, along with additional inclusion of research on academically-based interventions, is another necessary step in assisting in application of the model for diverse groups of students.

It has been recognized throughout the programmatic design that the ARTSI model does not address every symptom or educational need of Autism, nor does it define tiers for different disciplines that may also be involved in the education. Involvement of speech-language pathologists, occupational therapists, physical therapists, and other therapeutic professionals may be a future direction in broadening the use of the model and promoting further team collaboration.

Limitations of the Current Study

The major limitation to the current study is the lack of implementation-based data. Although initial comments from stakeholders provide validity for the general use of the model, it is not proven until implemented as intended and outcomes are measured. Due to the design of the current study, outcome data were not available; these would be the most significant measure of the actual viability of the program.

The heterogeneity of needs demonstrated in Autism may affect the overall use and generalizability of the model. Although the program was designed by utilizing key elements, rather than prescribed interventions, the nature of differing intensity levels and concerns across the ARTSI program may present an implementation difficulty not addressed in the context of the current study. As suggested, future work may require the tailoring of certain elements of the model to more specific settings.

The program manual does not directly address differences in staff training and program resources. The manual may be difficult for educational entities with less experienced staff because coaching and consultation are hallmarks of the program. This would present a significant limitation in the ability to implement the program. Conversely, some educational entities may review the program and identify the fact that

they already implement many or all of these elements, and therefore do not need to adopt this specific program.

Comment from stakeholders also identified limitations to the study. Resource allocation, including time allotted and time management, is a significant area of concern and great disparities exist between programs in the amount of preparation and team collaboration time available for school staff. Significant differences also exist in the training and professional development available across varied settings. The lack of needs analysis specific to different settings may prove a limitation of the current study. A needs analysis of a building or educational setting may assist in tailoring parts of the model to the needs of that setting. It may be helpful, prior to implementing the model, to do an analysis of the needs as they relate to different aspects of the model, including current classroom team meetings, the amount of consultation time from non-teaching professionals, and the needs identified by parents that would contribute to use of the model in different settings.

Summary and Conclusions

A vast majority of research to date has focused on specific interventions, as opposed to the systems available to assist educational entities in delivering interventions and making decisions about service delivery. The current study utilized the underlying theory behind Response to Intervention to design an innovative program to assist in service delivery. In addition, the program was meant to aid in increasing the quality of services provided to students and in helping to fulfill educational mandates.

The ARTSI program manual was the result of the current study. It is a 67-page manual that contains information for educational entities to design and to implement this

type of service delivery system in their settings. To achieve this end, the program was outlined in detail and included forms and directives for staff. The overall structure of the program follows a problem-solving Response to Intervention structure that includes three tiers of intervention and support from staff designated as “coaches.”

The current project fulfilled its aims and objectives. In essence, the results of the project demonstrated the fact that one could design a Response to Intervention system for the delivery of services to students with Autism. The overall strength of the program is the system-level change in initiating student change and preventing student plateau or stagnation of progress. Comments from review by initial stakeholders lent overall support to the program, and evaluation of program components indicated that it does meet the mandates of IDEA, in addition to aligning the educational system closely with the DSM-5. Several future directives for research, including preliminary implementation and changes to the program, were identified following stakeholder comment.

Autism is a disorder with great heterogeneity in the needs experienced by the students, as well as a great variation in the supports and resources available. Further examination of the use of this program, to align with educational trends and best practices, will assist in providing the highest quality services to students.

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Appendix A

Autism Response to Systematic Intervention (ARTSI):

Delivering Services across the Spectrum

Program Development & Implementation Manual

Developed by Caitlin Gilmartin, EdS, NCSP

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Section 1: Introduction

It has been estimated that Autism Spectrum Disorders are identified in 1 of 88 children (Centers for Disease Control, 2012). Many children meeting the diagnostic criteria for Autism Spectrum Disorder (Autism) are being served in the public educational system with individualized education plans, modifications, and accommodations. Based upon the Individuals with Disabilities Education Act (IDEA), students with a classification of Autism are eligible for free and appropriate public education and an Individualized Education Plan (IEP) that offers educational benefits (Missouri Autism Guidelines Initiative, 2012). This IEP eligibility is under the same regulations as are all students with disabilities, but is specific to the needs of these students to assist them in making educational progress.

In order to meet these legal requirements, public educational programs are tasked with providing frequent progress reports and progress monitoring, as well as ongoing assurances that students are receiving services within the least restrictive environments; this means that they are being educated as closely as possible with peers without disabilities (Individuals With Disabilities Education Act, 2004). Requirements to fulfill these mandates include the fact that progress must be reported to parents on regular intervals, that the team meets yearly to update the IEP, and that the student is re-evaluated tri-annually for many students, or bi-annually, in the case of students with intellectual disabilities (IDEA, 2004).

A multitude of programs and intervention systems are available; many have limited data on outcome and student progress within the program as it relates to educational systems. There is no specific mandate on those programs in which schools must choose to intervene in areas of need faced by these students. It falls to the educational entities to choose interventions, to determine appropriate ways to measure progress, to report progress and to share information with relevant stakeholders.

The number of students with Autism has grown significantly since the inception of IDEA and special education in general. Three decades ago, Autism was designated as a rare disorder, occurring in fewer than 4 in 10,000 (Baron-Cohen, 2008). This has increased over time to 15-20 per 10,000 and most recently 1 in 88 (Centers for Disease Control, 2012). Subsequently, increasing numbers of children with Autism are being reported to the federal government as receiving special education services per IDEA part B child count (Baron-Cohen, 2008).

This dramatic rise precipitates an unprecedented level of service delivery in terms of cost and scope of services required. It is estimated that it costs approximately three times as much to educate a child with Autism as it does to educate a student in a general education program (US Department of Education, 2005) and this number is rising. Students with Autism often receive higher levels of behavior support, more frequent re-evaluations, a lower student-to-staff ratio, and increased levels of related services. The extensive monetary cost alone points to a need for the streamlining of services. Families are entitled to assurances that their student is being educated in the least restrictive environment and

that educational mandates are being fulfilled to ensure the highest level of achievement for their students.

Utilization of a common, streamlined program of services would ensure that service delivery occur at the least available cost without sacrificing quality, ensuring that services are not repetitious, and are targeted specifically towards student needs. Care for older individuals with Autism has incurred the highest cost for the treatment of these individuals, followed by costs for behavioral therapies, special education, and respite care (Ganz, 2007); therefore, cost effective and impactful special education to promote student growth is crucial because improved intervention delivery may have consequences reaching into adulthood.

Purpose of This Manual

School systems are the largest providers of mental health and rehabilitative services to students. The educational services offered as part of a student's plan have the possibility of far-reaching effects on the student's future. It is crucial that students receive the interventions they need, and at the same time, that students continue to move through less restrictive interventions and environments as they demonstrate improvements, and more intensive interventions as higher levels of need are noted. Just as Autism encompasses a wide range of strengths and needs with constant fluctuations, intervention systems need to provide a similarly wide range, using a set of procedures that can respond to fluctuations and improvements.

The purpose of this manual is to attempt to meet the student's individualized needs in the most effective way possible. This manual provide a starting point to utilize a tiered intervention system within the school setting and provide a systems-level change approach, rather than a set of prescriptive interventions. A tiered system provides a practical and logical approach to providing student services based on unique needs. This manual provides the outline for a model program, as well as suggestions for adapting this program in different settings.

Changing Delivery Systems

Many interventions already exist to aid in the treatment of Autism; furthermore, many evidence-based and successful interventions do exist. It is widely acknowledged that ongoing research into effective interventions and development of new interventions remains crucial to ensuring the success and future of our students. However, at the educational and school-based level, systems rely upon the scientific community to assist them in intervention development, selection, and the dissemination of information.

Typically, the resources involved in the day-to-day operation and education of students with Autism are best aimed at providing high quality interventions to students, rather than researching or designing new interventions. Provision of high-quality services within the school following a protocol and format allows school-based teams to operate as "mini research teams", collecting data on the effectiveness of these programs for individual students and making data-based decisions for these students every day.

Within school systems, significant concerns are associated with rating program effectiveness and student outcomes. With hundreds of Autism interventions and no specific mandated programs, there is a lack of an integrated framework and lack of a common language between and among programs. This leads to a wide variation involving many educational factors: the amount and types of services students receive, the type of progress monitoring and reporting, and determining and monitoring the intensity of services provided to students.

Legal Requirements

Changing systems, rather than intervention design alone, has a direct impact on assisting programs in fulfilling their legal and ethical requirements to students. Several legal mandates exist within the context of the Individuals with Disabilities Education Act (2004) to protect students with disabilities and to ensure their access to the educational environment. These legal mandates were designed to ensure that students receive appropriate education, and have been delineated into seven major principles, including (1) informed consent, (2) zero reject, (3) free and appropriate public education, (4) non-discriminatory evaluation, (5) least-restrictive environment, (6) individualized education plans, and (7) due process safeguards (National Association of Special Education Teachers, n.d.).

Informed consent. Informed consent and the zero reject policy mandates that parents must be made aware of an evaluation of their child who is suspected to have a disability; this also protects their parental rights.

Zero reject. Students cannot be excluded from schools or denied access to education on the basis of a disability.

Free and appropriate public education. The guiding principle of IDEA is the principle of free and appropriate public education (FAPE). FAPE states that a student must be able to access an educational program at no cost to the parent, regardless of disability (IDEA, 2004).

Non-discriminatory evaluation. This principle of IDEA (2004) provides protection to students and their families, stating that the procedures used in identifying a student's disability will not discriminate. No single source of data can be used in the identification of a student's disability, and assessments must be administered in a student's native language or language-free, and without cultural bias.

Principle of least restrictive environment. The principle of Least Restrictive Environment (LRE) mandates that students be educated with non-disabled peers to the extent possible (IDEA, 2004). If this is not possible, educational entities are charged with providing a continuum of services and placements. Placement decisions must be made by a team and should be re-evaluated annually. This is one of the most **critical** aspects of the ARTSI program. Educational entities are mandated to provide a continuum of services to educate students in the environment that provides them the least restriction; that is, the least intensive and “most like” a general education setting in which the student can still make progress.

In order from least to most restrictive, some examples include: Itinerant (such as services provided within the context of a typical day in a regular educational setting on a part-time basis, such as a special education teacher coming to a regular education class to provide individual direction in one area), Supplemental (services that may afford a student a longer program than would be afforded, such as a half day placement in a special education Kindergarten, supplemental to their regular education Kindergarten), Part-Time (such as a one-period per day Autism Support placement), Full-Time (such as a full time Autism Support placement in their districts), and Out of District placements.

Out of District placements are defined by a greater student need than is able to be served in the school that a student would attend, based on geographic location. These include center based programs and approved private schools (specially designed, intensive programs to address student disabilities), residential programs (where a student lives out of the home and attends an educational program during the day, often with mental health services delivered throughout the 24-hour period), and partial hospitalization programs (mental health programs that may also offer an educational component. Vocational (job training) and transition (daily living skills) programs are also frequently available for secondary students.

These placements are mandated by federal and state law to educate students in the least restrictive placement; that is, to provide student services along with typical peers when possible. Best practices dictate the use of evidence-based interventions across these settings. Within the context of this manual, it should be recognized that **what is least**

restrictive will vary for each individual learner. The least restrictive environment for one student may be a general education setting; the least restrictive environment for another may be an approved private school setting with only one individual aide (instead of two!). More intensive does not necessarily mean better, more appropriate, or more helpful to a learner; rather, it is about to **meeting students' needs where they are** and **attempting to provide what they need.**

Individualized education plans. IDEA mandates the creation of Individualized Education Plans (IEP's) that detail how a student's disability will be addressed in the school system in order to provide progress in an educational program (US Department of Education, 2007). The IEP must contain specific information regarding a student's current level of performance, annual goals, the special education and related services that are needed, and opportunities the student may have to participate with non-disabled peers (US Department of Education, 2007). Schools must also outline how state achievement tests will be addressed, and where and when services will be delivered (US Department of Education, 2007). IDEA (2004) contains additional mandates after a student turns 14 to provide any services that may be needed to assist in a meaningful transition post-graduation.

Progress monitoring. An important aspect of IEPs as mandated by IDEA is progress monitoring. The school entity must be able to measure whether or not the student is meeting goals as outlined in the IEP. Progress must be reported to parents at regular intervals. The special education services utilized to achieve goals, as mandated by the No Child Left Behind (NCLB) Act, must be grounded in research based

methodology, and school entities are held accountable for ensuring that they fulfill these mandates (Yell, 2006). An analysis of issues around progress monitoring revealed commonalities in legal decisions, including the facts that teams frequently fail to design and implement progress monitoring methods; these responsibilities are not appropriately carried out; progress monitoring does not take place for behavior intervention plans; inappropriate measures are used to observe student progress towards graduation, and that it does not occur frequently enough to meet legal requirements (Etscheidt, 2006). IDEA specifies that "appropriate, measurable goals and the services to be provided", along with "A statement of how the child's progress towards the annual goals will be measured" (IDEA, 2004). This legal guideline points to a need for progress monitoring. This issue is further compounded by the findings that IEP teams most frequently lose in legal proceedings because of IEP progress monitoring plans that are not measurable or because there is lack of clarity on whether or not adequate educational progress has been made by the student (Etscheidt, 2006). Suggestions for improving the progress monitoring of IEP goals include monitoring academic and behavioral goals, utilizing multiple types of progress monitoring goals, and specifying the progress monitoring systems and the people involved in them (Etscheidt, 2006). Currently, no common progress monitoring systems exist for Autism.

Accountability. The IDEA update of 2006 included a provision for Educational Benefit Reviews (EBR). These reviews mandate that a school entity randomly sample the IEPs of students in their care and determine if they are designed to provide benefit to the student and if they meet regulations (Pennsylvania Training and Technical Assistance Network, 2012). This includes a three-step process for schools to track IEP information

over a three-year period, to analyze the progress made and the change over time in the design of goals and progressions, and then to determine if benefit was derived by the student from the educational plan (PATTAN, 2012).

Due process safeguards. Due process safeguards protect the rights of the parent and include protections such as the right to file complaints regarding the IEP process, conflict resolution, and timelines for the resolution of complaints.

How to Use this Manual

The intention of this manual is to provide a starting point for schools or for educational entities to utilize a response to intervention framework in the delivery of Autism interventions that assists in meeting legal requirements as outlined previously; it also provides the most efficacious and research-based interventions to students. The ARTSI model was devised in order to assist educational teams in delivering interventions across areas of behavioral, academic, and social-emotional needs for these students. The ARTSI system that will be introduced throughout this manual promotes transparency between stakeholders (?) through team-based involvement and aims to utilize educational resources to the most benefit of students.

Following this introductory chapter, manual content begins in section two with a discussion of the Response to Intervention model and its contribution to the ARTSI model; it also describes how researchers have been investigating the use of Response to Intervention in educational settings. In section three, we learn about the ARTSI model, in particular, how it fits into an overall larger educational entity; there is also a discussion of

the core elements: team meetings and collaboration, coaching, and building effective home and school partnerships. In addition to the content in chapter three, a multitude of resources are offered in section seven to assist in adapting the model to individual settings. Section four contains case study examples. This is an opportunity for you to analyze how the program would work both in a general education setting as well as in a highly specialized setting. Following this, section six provides handouts, forms, and flow charts to assist in understanding the sections; section seven provides an overview of where-to-go to find resources and interventions, as well as a brief research review conducted by the author to assist in making intervention decisions in an individual setting.

As this manual was developed, it is recognized that, generally speaking, Autism is a complex disorder. Delivery of high-quality and meaningful interventions to students requires flexibility, a commitment to ongoing professional development, and often, a sense of humor. The purpose of this manual is not to prescribe a one-size-fits-all treatment to these students, but rather to provide the initial foundation to utilize a practical, tiered intervention system within your school setting for these learners. The overall aim is to suggest how to use existing resources within this new framework, maintain legal guidelines, and improve service delivery within the school system. The safety of students, along with legal and ethical guidelines, becomes first and foremost when considering any type of programming.

Although the interventions discussed are aimed at the treatment and monitoring of

behavior, academic progress, and social-emotional concerns for students with Autism, it is recognized that other disciplines (speech and language therapy, occupational therapy, recreational therapy) contribute greatly to the overall treatment of students with Autism. The lack of attention to strictly communication (total communication or PECS) or sensory based (such as sensory diet) approaches within this manual was not an oversight, but rather a nod to the specificity of these disciplines and the need for highly specialized skills in these areas. Inclusion of these disciplines within the ARTSI team structure, as well as inclusion of these interventions, would be considered an excellent contribution to the overall ARTSI structure were staff available to do so; however, it is not discussed directly in this manual.

The manual is organized to provide ease of practice in order to aid your organization in designing and implementing this type of program. Each section includes key points which are intended to provide a chapter snapshot. A list of questions to prompt team discussion in applying the program to your educational setting are also included at the end of the chapter.

Section Key Points:

1. The incidence and prevalence of Autism is increasing; this directly impacts educational settings as the numbers of students qualifying for special education under these provisions also increase.
2. Numerous legal mandates are required of school-based educational teams.
3. What is considered **least restrictive environment** looks different for all students and all settings.
4. Changing systems, rather than focusing solely on intervention selection, allows educational settings to utilize resources appropriately.

Team Questions:

1. What systems and methods are currently in use within your school building to assist in fulfilling legal requirements?
2. What continuum of services does your school offer?

Section 2: Principles and Applications of Response to Intervention

Prior to understanding the ARTSI framework, a general understanding of the principles of Response to Intervention is crucial. First, it is **not** a prescribed set of interventions. A Response to Intervention (RTI) framework is described by the National Center on Response to Intervention (2010) as identifying student needs, utilizing ongoing data collection to ensure student progress, and changing interventions based upon data collected at regular intervals. It is an overall framework that provides evidence based interventions, sound educational practices, and interventions based on individual student needs.

Most commonly, RTI is applied in educational systems to assist struggling learners, and ultimately, identify students who may require special education. It looks at who “responds to the interventions” and what students continue to have trouble, as a way to identify disabilities and provide interventions to students. From a broader sense, RTI is a problem-solving methodology. The goal is to provide students with the level of support they need to make progress without applying too restrictive of interventions. RTI aims to provide consistency in a system where a variety of interventions are utilized. RTI also aims to reach as many students as possible as early as possible, and provide the appropriate amount of intervention to students in need. It is described as an educational process similar to multi-tiered approaches within the public health domain (Carney & Steifel, 2008).

RTI programs look different in every setting in which they are applied. In a general sense, it is an educational and behavioral framework that provides a comprehensive delivery system of best practice interventions, along with more targeted or intensive interventions as student needs are identified. RTI is most typically defined as a three-tiered model, with a primary tier being universal best practices that are applied to all students (Tier 1); a secondary tier that provides more targeted interventions to students who are identified as at-risk (Tier 2), and an intensive tier that provides service delivery to students who have the greatest need (Tier 3). The focus is not only on student achievement, but also contextual and ecological concerns, and as student needs increase and necessitate higher tier interventions, resource allocation is also increased (Ardoin, Witt, Connell, & Koenig, 2005).

Principles and Features

The RTI model has been defined as a set of principles and features, rather than a prescribed intervention system (Barnes & Harlacher, 2008). Core principles identified across RTI programs include:

(a) a proactive approach: utilizing best practices across the system, attempting to provide preventative services rather than reactive services.

(b) an instructional match: utilizing interventions that match student needs, strengths, and preferences.

(c) problem-solving orientation and data based decisions: approaching problems in order to work collaboratively to reach a solution and making changes based on data

reviewed.

(d) effective practices: utilizing research based interventions and interventions that have demonstrated effectiveness for the student.

(e) a systems level approach: attempting to change and utilize programmatic principles across the system, rather than on a case-by-case basis (Barnes & Harlacher, 2008, p. 421).

The features of RTI include:

(a) multiple-tiers: providing different levels of intensity of intervention.

(b) assessment system: utilizing benchmarks and assessment.

(c) protocol: following the principles.

(d) using evidence-based instruction: following research and evidence based protocols (Barnes & Harlacher, 2008, p. 421).

Uses of RTI

RTI is typically applied as an alternative to immediate referral for special education evaluations, and has been identified as a way to provide effective interventions to learners who may be struggling but may not be in need of special education. The goal is ultimately to reduce the number of students who are referred for special education services unnecessarily. When utilized in this manner, an RTI framework also aids in providing assistance to struggling learners immediately, rather than waiting for an evaluation period which may be 60 days or longer before interventions are put in place-

typically referred to as avoiding the "wait-to-fail" conundrum. The most common application of RTI is in general education settings where it can be utilized to assist in academic problems such as reading or math, as well as behavior problems within the classroom.

Figure 1 demonstrates how the principles of an RTI program typically work in general education settings. Note that Tier 1 includes generally accepted strategies that are “best practices”- including strategies as positive reinforcement to students, drill and practice for mathematics fluency, or school-wide positive behavior support program to support school behaviors. Tier 2 includes interventions that are more specifically targeted and individualized, such as small group academic instruction or targeted social skill interventions built into the school day. Tier 3 is the area in which special education interventions take place, including the re-evaluation process, accommodations and modifications, and IEP goals and planning.

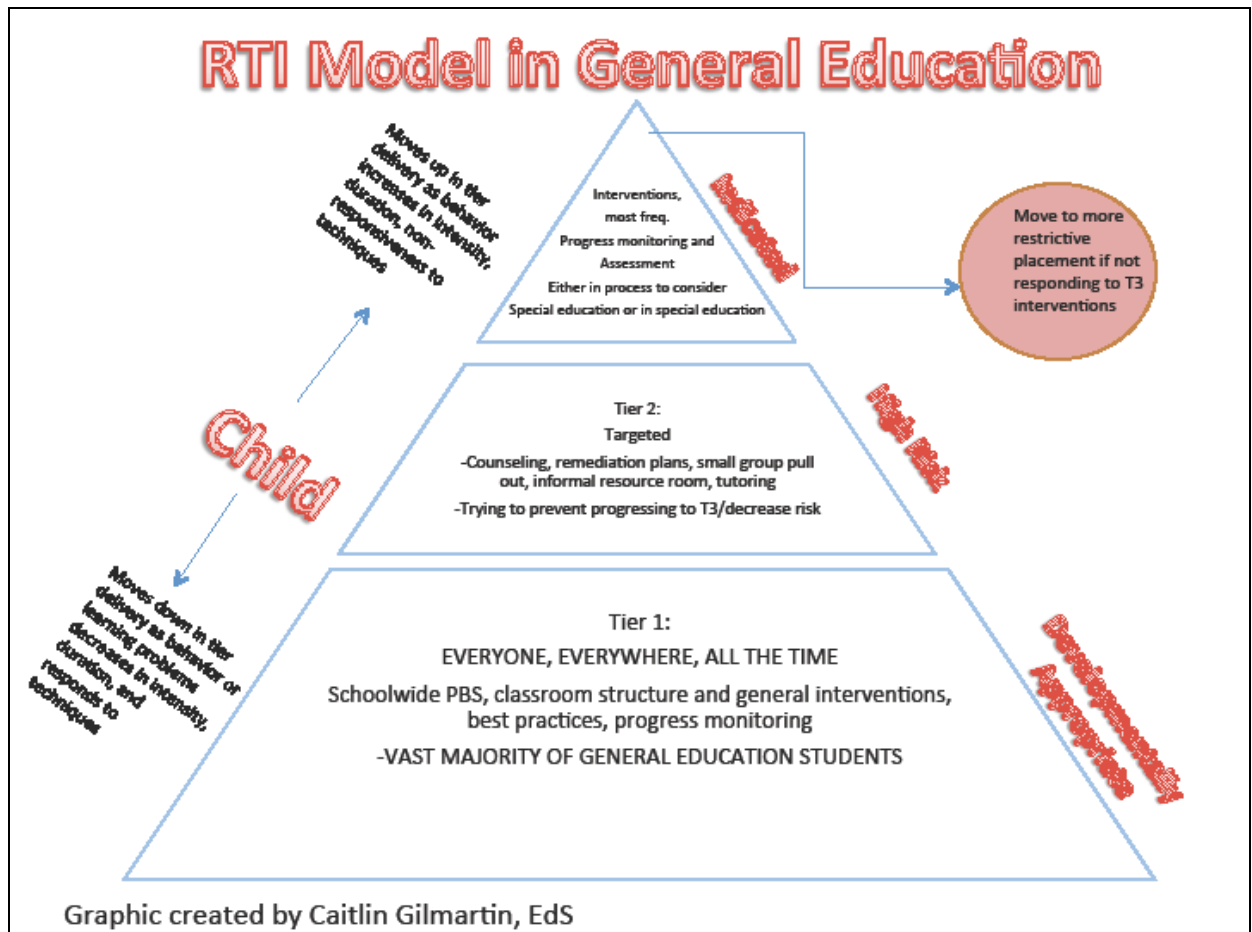


Figure 2. RTI in general education.

Application for Students with Autism

Applications for RTI have been increasing beyond applications for academic disorders, into areas of behavioral intervention, classification of other disorders, and provision of preschool services (Lindstrom, 2013). Social skill interventions for Autism have been suggested as fitting into the three-tiered model of service provision as a possible aid for schools in intervention selection (Sansosti, 2010); in addition to intervention, the use of RTI has also been indicated as a possible route for classification. Hammond, Campbell, and Ruble (2013) commented that educational providers may either fully adopt RTI for the use of identification and service provision of students with Autism, adopt a hybrid

model that incorporates specific elements into a three-tiered delivery model, or determine that students with Autism may not fit within the RTI model. Hammond, et al. (2013) suggests that an alignment already exists between evidenced-based practices in Autism and core components of RTI. In addition, some of the principles of positive behavioral supports and RTI have also been identified as being aligned with one another; positive behavioral support has demonstrated success with students with Autism, so this may point to promise in the use of RTI practices (Crosland & Dunlap, 2012).

Although there is some caution that the use of an RTI model should not delay service provision to those suspected of having Autism, there is potential for the use of this framework in service delivery (Hammond, et al., 2013). Identification using an RTI model may need interpretation with caution, because many states have not expanded their definitions of identification to include RTI approaches for this area and legal mandates take precedence (Lindstrom, 2013).

Future Implications

Interest in the use of an RTI structure for Autism intervention is growing. In 2011, a literature search revealed only one article detailing this type of service delivery specific to Autism interventions. A similar review in 2014 revealed two additional articles specific to Autism and RTI, with additional literature making mention of the possibility of using this framework. However, to date, no manual exists to assist educational entities in designing and implementing such a program, the aim of the current project.

Key Points:

1. Response to Intervention is used to provide services to struggling learners, as well as an alternate route to identification of students with disabilities.
2. RTI is an overall framework and set of principles, rather than a prescribed intervention.
3. RTI is being adapted for use with different populations and interest in its use with Autism is growing.

Team Questions:

1. How do the principles of RTI fit in with educational mandates and legal mandates?
How do they fit in with concepts or areas that my educational team struggles with?
2. What has your exposure to RTI been thus far? It is in use in your setting? Are you using any elements or any principles?

Section 3: Introduction to the Model

The ARTSI model is best thought of as a tiered intervention program, existing in conjunction with the tiered intervention systems already existing within educational entities. When a school or district is not utilizing a formal, tiered intervention system for their student population, the existing levels of intervention may still be thought of in terms of the model.

Tier 3 of the GENERAL EDUCATION RTI model (discussed in section 2) is expanded into its own three tiered pyramid to create the ARTSI pyramid. Figure 1 demonstrates a how Tier 3 becomes its own three-tiered program. This assumes the concept that a student may require special education and individualized intervention; however, this will not remain at the **same level of intensity** across the duration of their education.

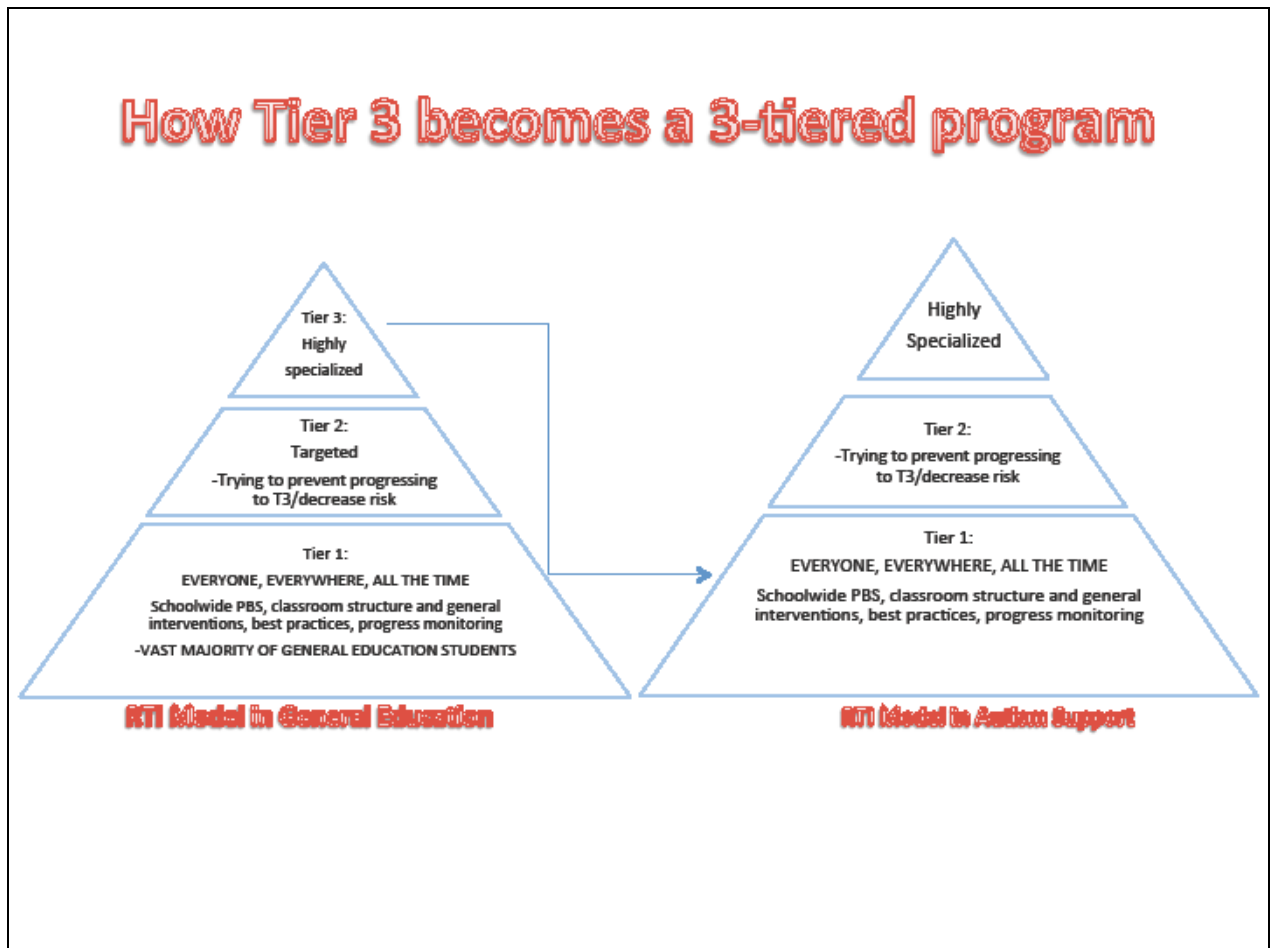


Figure 3. The relationship between RTI and ARTSI

Assumptions and Principles

Several general assumptions and guiding principles are important to understanding the overall model:

1. **Use of the ARTSI Model assumes that the student has already been identified as a student with an educational classification of Autism.** The tiers of the ARTSI program is for already identified students. Tier 1 (Universal Supports) of the ARTSI model is still special education support services to students. The

ARTSI model is intended to provide support at varying intensity levels, but all are special education services.

2. Every school system may have different levels of intervention at Tier 1, 2, and 3, but it should be assumed that **not every student always needs the most intensive level of support, even if he or she is in a very intensive setting** (and the reverse applies. Not everyone makes progress with the least intensive level of support, even in very low-intensity settings).
3. Any supports that are in place or successful are not necessarily **forever**. The belief that students may develop and grow, as well as a belief in effecting positive change, guides the overall principles. Students are able to go between Tiers and go back to a lower, less restrictive Tier. The ARTSI model also ensures that if more intensive services are necessary, they are made available to the student.
4. The general goal of treatment and education is to prepare students for independence, participation in the least restrictive environment, and positive experiences.
5. The ARTSI model is designed to create a rapid response to student needs, with an emphasis on making data-based decisions. The intention is not for students to wait for response until there is a significant problem, but to monitor progress frequently and respond to student need. The ARTSI model is designed as a dynamic process that assists school entities in meeting student needs where the students are.

The ARTSI model encompasses its own three-tiered pyramid (Figure 3.) Tier 1 of the ARTSI model includes interventions that are considered **best practice for students with**

Autism and can include widely and universally used, easily accessible interventions including positive reinforcement, appropriate engineering of school/classroom environment, and appropriate progress monitoring for students. This includes interventions and general principles that are best described as “everyone, everywhere, all the time,” (with *everyone* referring to all educators and caregivers administering best practice interventions to students receiving intervention for Autism support.) Behaviors and symptom involvement within ARTSI's Tier 1 may be disturbing to the child's education in a less restrictive environment and are defined as “behaviors that may be annoying but could cause a person to be teased or limit interactions with others” (PA Department of Public Health, n.d.). When social, emotional and academic needs are identified as falling within tier 1, they may also thought of as disturbing the student's ability to perform in a less restrictive environment.

Tier 2 of the ARTSI model includes interventions and supports that are **selected** for the setting where the child is. This may include: more frequent progress monitoring, individualized behavioral protocols or techniques, and targeted social skills intervention. Behaviors and symptoms targeted within this tier typically include behaviors that are considered disruptive to the student's learning and participation in the environment and are defined as “behaviors interfering with inclusion, acceptance, and overall quality of life” (PA Department of Public Health, n.d.). Tier two prerequisites for social-emotional needs and academic needs also can be described by the term disruptive: needs in this area require substantial supports to continue to make progress.

Tier 3 of the ARTSI model includes interventions that are considered **indicated or targeted**. They are specialized for the setting, and also include the use of a 1:1 support. Other aspects of Tier 3 include the most frequent progress monitoring and reporting. This tier of support typically deals with behaviors and symptoms that are destructive to the student's health and wellbeing, participation in the environment, and overall learning. They are defined as "behaviors that are affecting the safety of self and others or serious property destruction" (PA Department of Public Health, n.d.). Tier three academic and social-emotional needs are best described as requiring very substantial support to continue progress and may be drastically different from age and or grade norms.

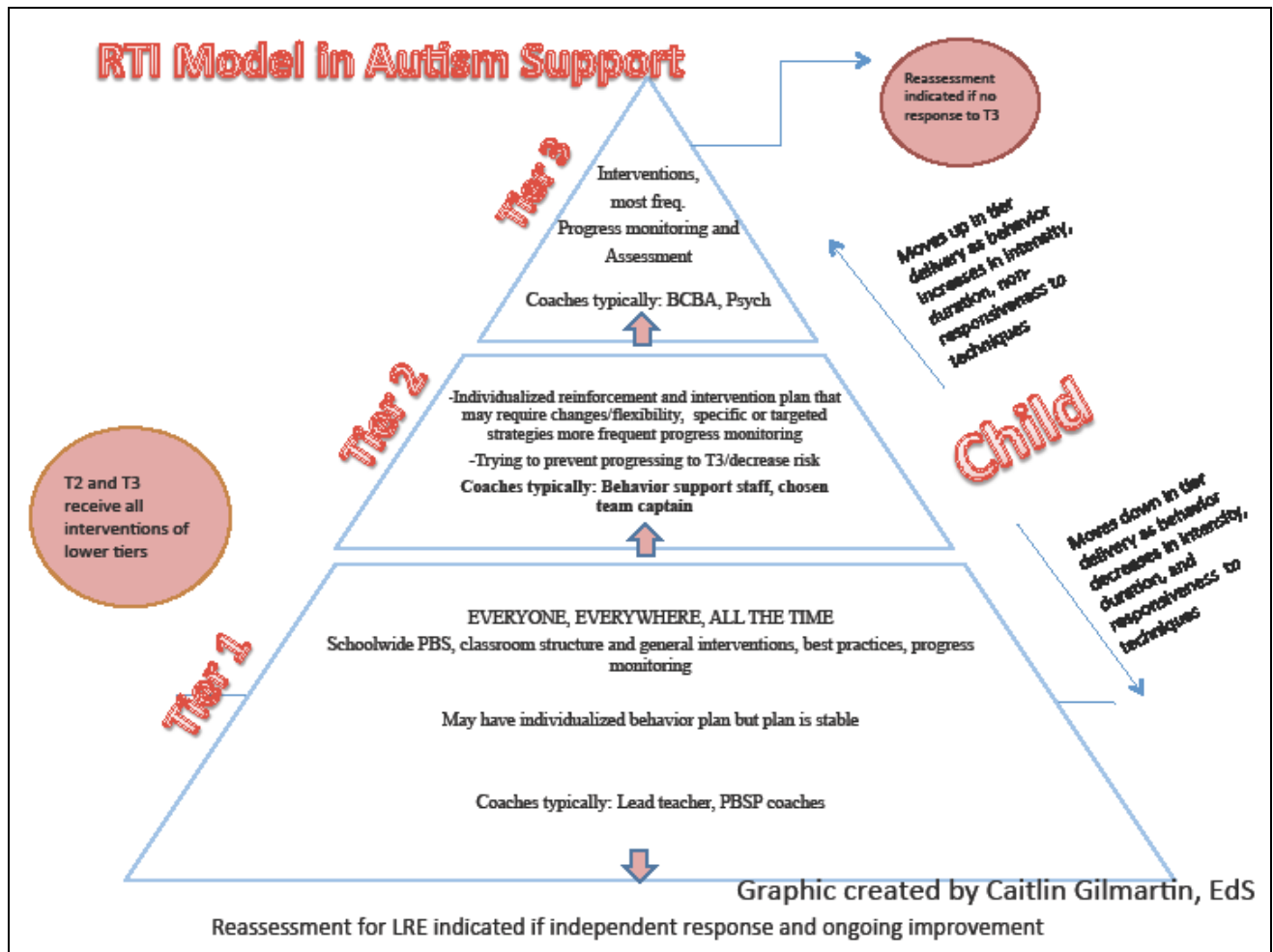


Figure 4. The ARTSI pyramid.

Implications for Service Delivery

The model as demonstrated in the graphic above has several key implications for service delivery. The first is that students who are receiving more intensive interventions receive all the applicable interventions of lower tiers as well. Because a student requires more intensive services does not mean we cease to provide opportunities at the building-wide level, or decrease our use of generally-prescribed interventions.

The second important aspect is that it is the **child** who moves up or down in tiers for service delivery, as their symptoms or needs increase or decrease in intensity, severity, duration, or frequency. The supports are designated within the school building at the onset, with the ARTSI team identifying those supports that are most necessary to apply to student needs at any given time.

A third aspect is the indication of reassessment at two places: when a student has been stable within “Tier 1” interventions and may be reassessed to ensure that he or she is being educated in the Least Restrictive Environment; or when “Tier 3” interventions and supports have not proven successful and additional data are needed to ensure that programming is most appropriate to the student’s overall profile. These built-in assessment times ensure that students receive evaluation services when necessary in order to ensure that they make progress; however, the need for reassessment does not delay increasing or decreasing service delivery (moving up or down in tiers).

These are the guiding, general, overall principles. In the next section, we discuss the specific set-up and day-to-day running of this type of programming.

Section Key Points:

1. The ARTSI model assumes that a student has been identified as being in need of special education services. Services will not be at the same level for each individual student and individuals will not require services at the same intensity across targeted areas throughout the duration their educational careers.

2. Universal interventions are utilized within Tier 1; students who have been identified with needs in Tier 2 and 3 continue to receive Tier 1 interventions as well.

3. Behaviors, symptoms, and involvement, are best thought of as most involved to least involved or restrictive, one terminology suggested has been “disturbing, disruptive, and destructive.”

Team Questions:

1. What typically triggers a reassessment of a student under your current model?
2. How do you currently determine how to increase or decrease student service intensity? How is this communicated with different stakeholders?

Section 4: Setting up and Running an ARTSI Model

Section three provided a general, overall understanding of the program as a whole, including how the program fits into a greater, overall educational culture and system. Our discussion now moves to the ARTSI program itself- most specifically, designing a program and the day-to-day implementation of such a program. The overall foundation of the ARTSI program lies in (1) team meetings (2) use of coaching and supports (3) home school collaboration, each of which is to be discussed in more detail here. Collaborative problem solving between members of the school team, as well as data-based decision making and progress monitoring, are crucial to ensuring that decisions are not made in isolation.

Throughout this section, three different processes are discussed. The first is the building-level ARTSI process which assists in understanding how to **initially** roll-out the program at the building level. The second is the student level ARTSI process which provides an overview of how an individual student moves through the ARTSI process as teams address their needs. We also discuss the home-school component of the program.

Rolling out the Program

Several steps need to occur before utilizing the process with the students. Figure 1 outlines the process flowchart for programmatic design at a building level. For the purposes of our discussion, student needs addressed as part of the ARTSI program are divided into Cognitive/Academic Problems, Behavior Problems, and Social/Emotional

Problems, although teams may determine it fits their needs to apply the program at only one or two divisions.

It is important that the administrative team, or designated individuals, determine those supports and interventions that currently exist within the school building as well as those interventions that will be added as part of the program; included in this are the natural supports already occurring. The intention of the ARTSI program is not necessarily to change interventions within the school building: schools may choose to keep their current interventions in place. The purpose is to give a framework for monitoring intervention success and determining student need, as well as aid in progress monitoring and reporting. As interventions are tiered and supports are determined, the team should work to identify appropriate **coaches** at each level, or the person(s) most appropriate to assist in leading team discussion and consulting on appropriate interventions at different levels of intensity. Coaching is also an opportunity for school-based supports to provide consultation to the entire team, allowing teams to assist one another in the absence of coaching or administrative staff.

After identification of coaches, programs may wish to group teachers and staff into teams, in order to provide naturally occurring supports and assistance. Figure 2 outlines the overall relationships of team members within the ARTSI program. Because team meetings and collaboration are hallmarks of the program, it is often of a service to the staff that additional opportunities for collaboration are available. The RTI teams would meet prior to the roll-out of the program, in order to discuss specific individual student

needs and determine what tier(s) of intervention are being received by their students. Appropriate data collection methods are outlined, team meeting dates/times are set, and the forms and policies available to staff should also be outlined prior to implementation. An overall checklist for pre-rollout planning can be found in section six.

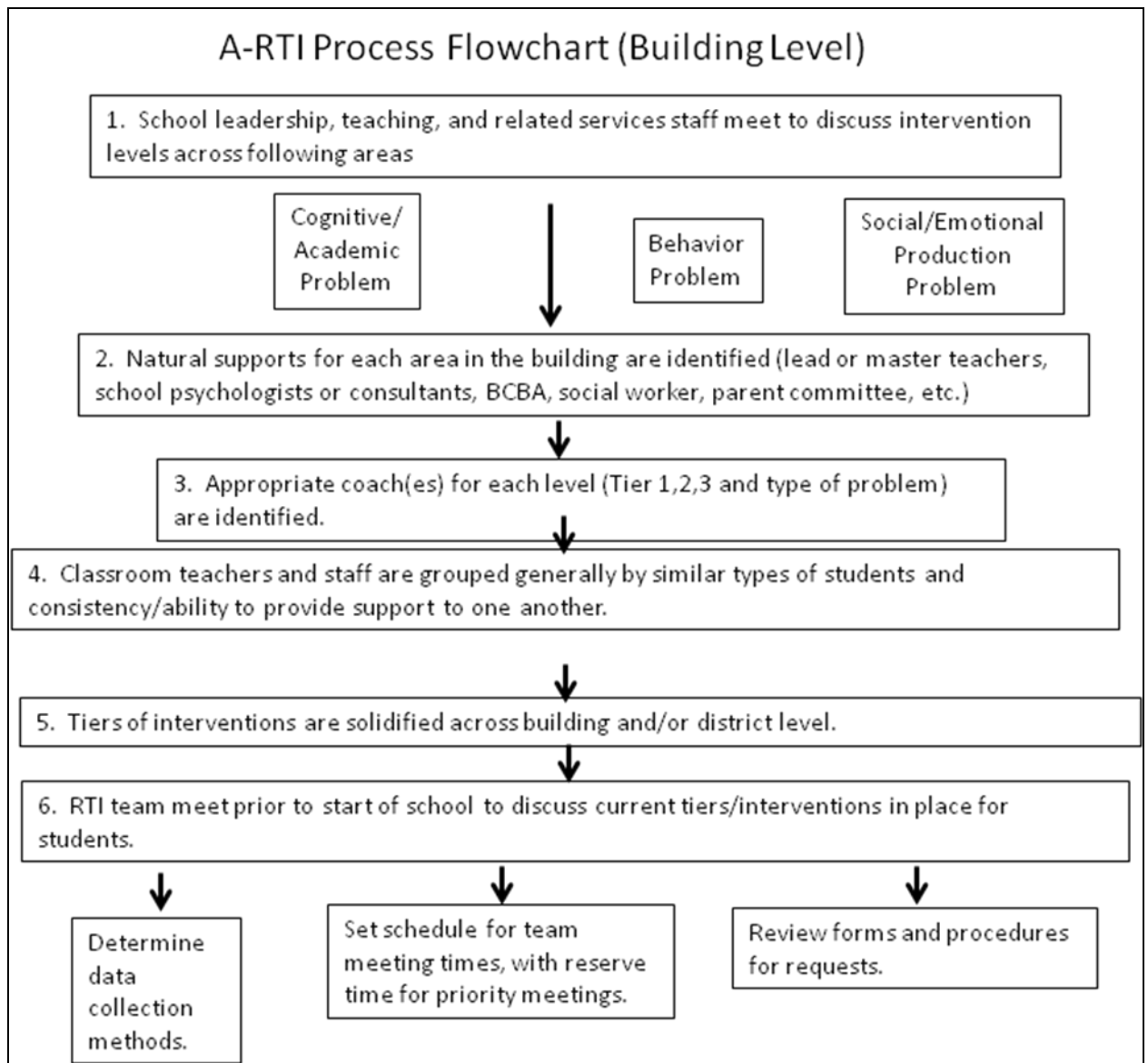


Figure 5. The building level ARTSI process. Adapted from George McCloskey, PhD.

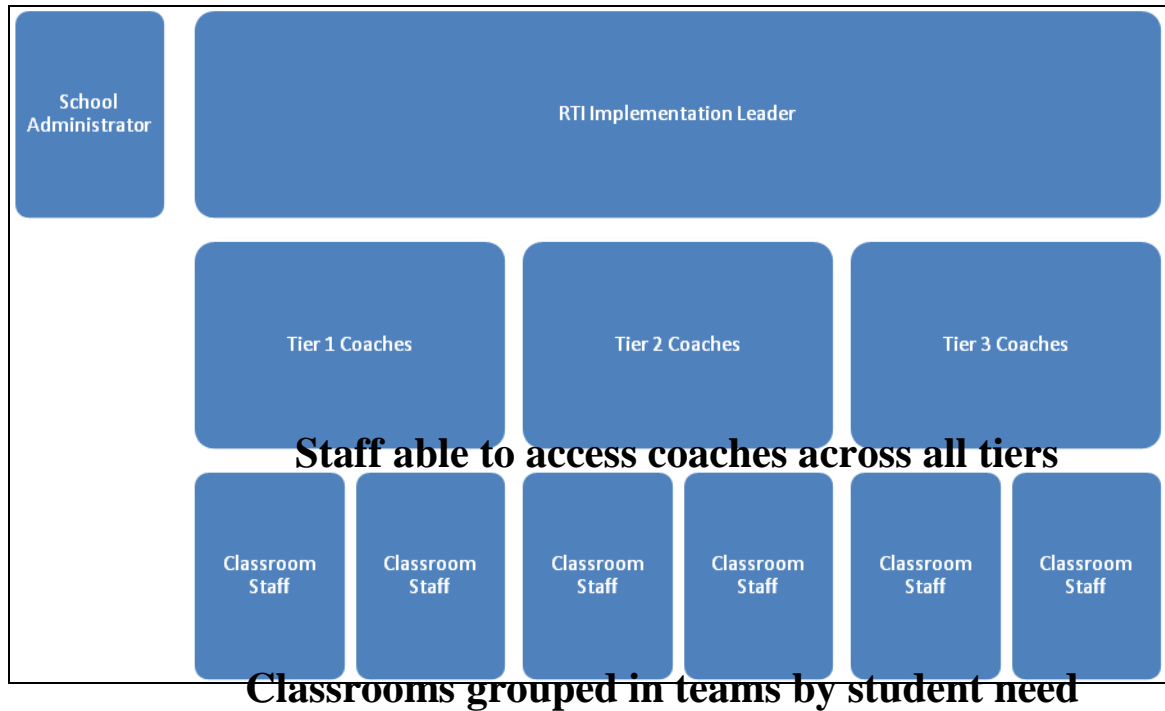


Figure 6. Relationships between team members.

Ongoing Use and Day-to-Day Running of the Program

After initial roll-out and decision making has occurred across the program, the day-to-day running of the program is encompassed in elements of team meeting and collaboration, ongoing assessment, policy and procedure and family involvement. Figure 2 outlines the ARTSI process at the student level.

At the beginning of the year, teachers should review student interventions and determine the tier of intervention that each student in their classroom is currently receiving. The student summary sheet, found in section six, can assist in organizing this information and

providing a record of the time when the student is referred. The flowchart assumes that the tier of intervention has already been defined for each student prior to roll-out. The actual ARTSI process of team meetings begins when a teacher determines that a student is not making appropriate progress with interventions currently in place, and requests support via a team meeting to determine the next steps for a student who is exhibiting needs, i.e., not responding to his or her current tier of support. The exception to this process may be a new student to the building mid-semester, in which case the team may wish to convene to review any available data on the student and assist in implementing interventions and assigning tiers initially.

Initial Team Meetings

The first step is requesting an ARTSI Initial Team Meeting. The teacher is tasked with defining the problem that he or she would like to address and provide initial progress monitoring data to the applicable coach and team for the student's current tier. This progress monitoring data is **crucial** to ensuring that data-based decisions are being made. The initial team meeting is a place in which strategies and procedures are discussed in an attempt to keep the student in his or her current level of intervention, utilizing new strategies. It is crucial that the team also determine at this point, a time to reconvene in order to review new progress monitoring data. These modifications are made and additional progress monitoring data are collected. In addition, the coach can assist in a fidelity check of the data. Forms in section six include: 1.) The team meeting summary form; this provides a place to record information from the initial meeting, and 2.) ARTSI Team Meeting Procedures overview form, which also includes recommended time

frames to keep meetings within a reasonable amount of time.

Progress Monitoring Team Meetings

All meetings after the *Initial Team Meeting* are titled, Progress Monitoring Review Meetings. The following steps are dependent upon student response. A Progress Monitoring Review Meeting is always scheduled following the initial ARTSI team meeting (recommended for two weeks). When adequate progress is determined at that meeting, the team continues to implement the modifications and then reconvenes at a designated date to discuss whether or not the student may be able to move to a less restrictive tier when appropriate (recommended one to two months).

When inadequate progress has been made, the team should seek to implement additional strategies and suggestions at the current tier, with a plan in place or progress monitoring ready, and move to more intensive services if the progress monitoring outcome is not favorable. When this occurs within Tier 3, the request may include a referral for a comprehensive assessment to determine appropriateness of student goals, services, and placement.

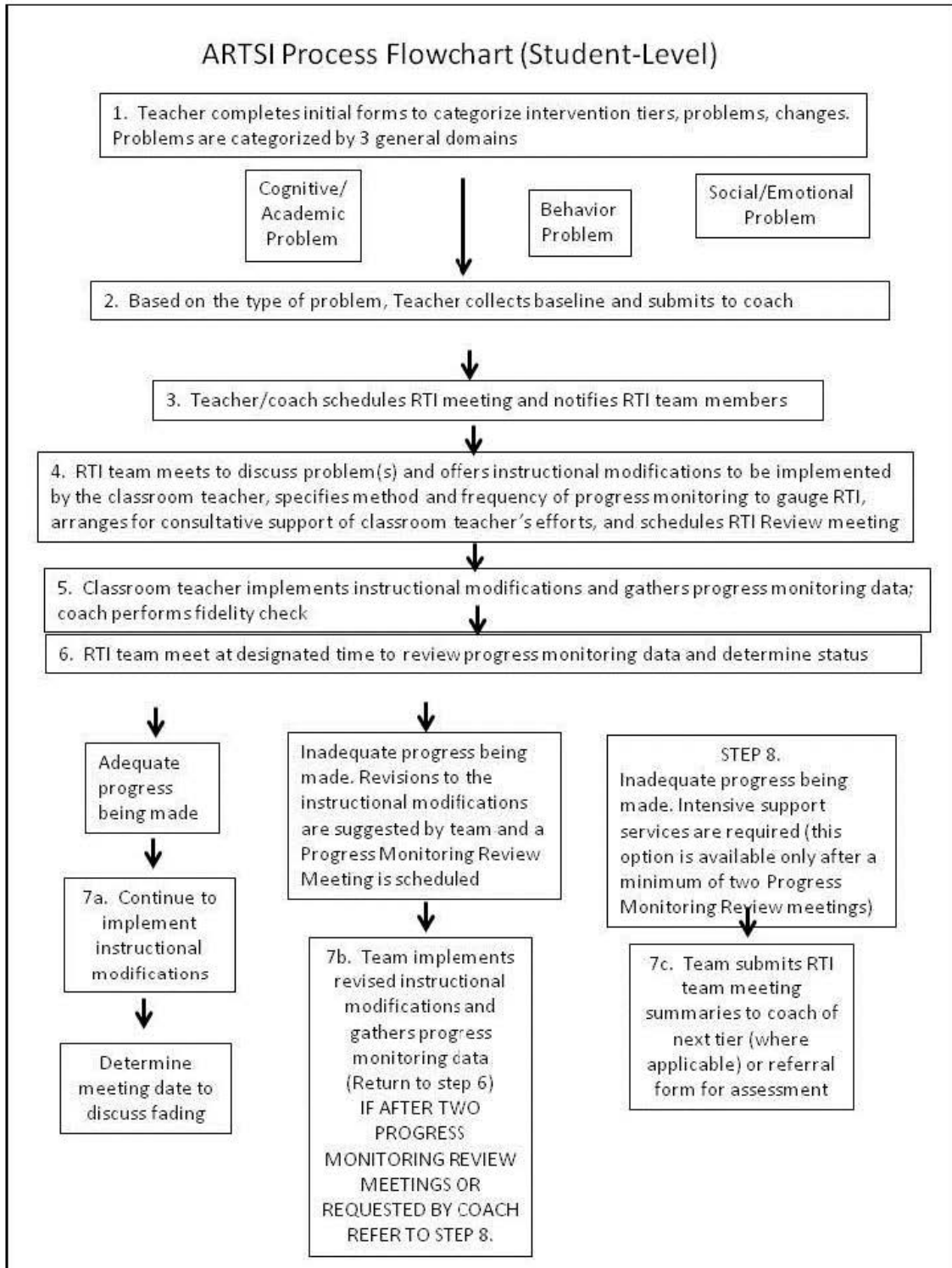


Figure 7. The student level ARTSI process. Adapted from George McCloskey, PhD.

Home and School Collaboration

It is widely acknowledged that both the school system and the home environment play a crucial role in the development of the learner (Esler, Godber, & Christenson, 2002; Elizade-Utnik, 2002); this may be even more valid for children with the need profile of a learner with Autism, where consistency is a cornerstone of effective intervention delivery. The home-school collaboration is an integral piece of the ARTSI framework. Different levels of home-school collaboration are suggested to be embedded directly within the ARTSI framework, as a means to facilitate parents and educators utilizing resources effectively and building partnerships to assist in student learning. It is important, considering the rest of the program, to look at the availability of resources within the school and tier home-school collaborations in a way that is appropriate, from most intensive to least intensive involvement, utilizing the following suggestions as guidelines.

In order to frame team interactions and introduce the ARTSI format, it is suggested that staff training as well as a parent introduction meeting is offered at the start of each new academic year; this is necessary in order to remind team members of principles guiding interactions as a general tier 1 support. School and family team members will work collaboratively each year to define parameters for team interaction, guided by the principles for effective partnerships.

Suggestions for a model of home school collaboration are as follows:

Tier 1: A home-school committee includes parent trainings, a schedule of parent-

centered meetings with the school leadership team to address ongoing systemic concerns, and twice-semester designated home contacts for students who are defined as Tier 1.

Students who are in Tier 1 in non-district programs may have criteria for a move to less restrictive environments ("discharge" criteria for going back to district) that are well defined and discussed on regular intervals between the sending district, parents, and school team.

Tier 2: It is suggested that home-school involvement at this level include monthly home contacts from coaching staff, weekly contact with school teams (phone conference, behavior checklists), and parent attendance at all school/home meetings. Parents with children in this group also have access to all Tier 1 home-school supports, including trainings and home-school committee meetings.

Tier 3: It is suggested that daily data are reported to home and school; that weekly school-based problem solving and check-in meetings are provided, and that home supports in the form of coach consult are extended to parent (such as a psychologist or behavior analyst). This may include home-school visitation where allowed, as well as evaluation within the home environment to determine how student profiles of strengths and needs across settings may provide valuable information for tier movement and intervention design.

Outcome Measures

Each educational entity typically has outcome data that are reported program-wide; it is

generally accepted that this type of data can be adapted to reporting outcomes of ARTSI programs. For example, if an educational entity were using the Assessment of Functional Living Skills (AFLS) as a progress monitoring tool for his or her overall program, outcome data may include the number of levels or new skills learned across a school year, along with the tier of support that the student received.

It is important that the overall ARTSI program is monitored as well. The purpose of ARTSI is to move students to less restrictive interventions and tier levels when possible. Progress monitoring of the ARTSI program should include, at a minimum, data on the number of team meetings held, number of times per year that students are referred for problem-solving meetings, and tier movement. Schools may also consider gathering information on stakeholder satisfaction (parent and teacher surveys) and reporting on home-school relationships (number of parental contacts or home visits). A sample program reporting sheet is included in section six.

Section Key Points:

1. Initial roll-out of the ARTSI program involves identification of supports available within the school system, i.e., personnel: teachers, master or lead teachers, behavior support staff, administrators, psychologists, social workers, etc. AND materials: curricula, visual supports, intervention expertise, etc.
2. Home and school collaboration is a cornerstone of effective relationships; adding this component into your program increases transparency and promotes effective partnerships.
3. The team should choose and utilize the same assessment measures in order to provide opportunities for comparison of progress over time.

Team Questions:

1. How are parents involved in progress monitoring at the current time?
2. What barriers and difficulties do you see to implementation of this program?
3. Can you determine in your building who would be appropriate coaches for tier 1, 2, and 3 across all areas: academic, behavioral, and social-emotional?

Section 5: Case Studies

The following case studies are offered as composite examples of the author's work in school and community settings, purely for illustrative purposes of an **ideal** use of the model. These cases do not represent a single student or school entity. Two cases are offered: a student within a general-education/resource room setting, and a student within a center-based/alternative setting.

Case 1 Background: Sunnyside School District begins implementation of an ARTSI program for all students currently receiving services with an educational classification of Autism. Based upon the district resources and interventions, the district designs its program as follows:

Tier 1- Coach: Grade Level Special Education Teacher (All Areas)

Behavioral: Program Wide Positive Behavior Support Plan

Academic: Research-based curriculums

Social-emotional: Lunch-bunch social time and peer modeling

Tier 2: Coach: Lead Teacher (Academic, Social-Emotional) and Behavior Support

Personnel (Behavioral)

Behavioral: Individualized Behavior Intervention Plan and Reinforcement System

Academic: 1:2 instruction during resource periods

Social-emotional: Small group pull out for direct instruction

Tier 3: Coach: Board Certified Behavior Analyst (Behavior) and School Psychologist
(Academic and Social Emotional)

Behavioral: Individualized Behavior Intervention Plan and Use of 1:1 Aide (part time or all day)

Academic: 1:1 instruction

Social emotional: Individual counseling for direct instruction

Alex, an 11 year old male, is being educated within a district based, grade 5 setting, as a student qualifying for special education for Autism. He is primarily within general education settings with resource room support for three of eight periods per day. At the initial roll out at the start of the school year, his teacher determines that he receives Tier 1 intervention across cognitive/academic interventions (general use of best-practice and evidence based teaching strategies) and Tier 2 interventions across social-emotional functioning because he receives small group social skills, as well as Tier 2 interventions for behavior (an individualized reinforcement system and behavior plan.)

Throughout the first several months of the school year, Alex makes adequate progress by receiving the interventions currently in place. In mid-February, Alex's teacher refers him for an ARTSI team meeting when he begins to display significant task-refusal within the classroom; there are episodes of crying/yelling/and object aggression when faced with schedule changes. His special education teacher requests a Tier 2 ARTSI Team Meeting for behavior. The team reviews data on Alex's behavior and implements new strategies and suggestions within the context of his current tier.

Outcome A: Alex **responds** to these interventions favorably, using the criteria set by the ARTSI Team, decreasing his task refusal and behavioral response to schedule changes, and remains in Tier 2 interventions.

Outcome B: Alex continues to demonstrate a similar level of behavior in the identified situations. Following the first progress monitoring meeting, the Tier 2 coach (lead teacher) determines that Alex's behaviors are intensifying and requests Tier 3 support. The district behavioral consultant is called to contribute an observation and suggests strategies which are implemented, including the use of an individual classroom aide for the end of the day when the behaviors have intensified. Alex works on specific replacement behaviors and he demonstrates favorable responses with the Tier 3 supports in place. The team meets to discuss fading to Tier 2.

How did ARTSI help Alex (in both outcomes)?

In Outcome A, the naturally existing resources within the school building were used successfully. Alex was not subjected to a greater intensity of services than were needed and was able to continue to work towards his IEP goals. All possibilities were considered and his entire team was able to participate in the process.

In Outcome B, Alex did not have to "wait-to-fail" or wait for the results of a lengthy assessment process to start receiving interventions. Interventions were attempted and progress monitoring took place immediately. The team was able to review the data and

demonstrate the need for the increased level of service; they also set a benchmark, determining the time when they would reconsider decreasing the intensity.

Case 2: Sunnyside Approved Private school is a center-based program for Kindergarten age students to 21 year old students who are sent out from home school districts due to greater needs than can be served within their home schools. The classroom structure at Sunnyside features a special education teacher and two teaching assistants. Based upon building resources, the administrative and leadership teams defined the following tiering system and supports.

Tier 1- Coach: School Lead Teacher

Behavioral: Program Wide Positive Behavior Support Plan and Individual

Behavior Plan designed and monitored by special education teacher, with primary behavior needs identified in the Tier 1 range

Academic: Research-based curriculums delivered within mixed-modality classrooms.

Social-emotional: School wide social-emotional curriculum (research based, module program that was purchased) and classroom-level social skill instruction

Tier 2: Coach: Behavior Specialist

Behavioral: Individualized Behavior Intervention Plan and Reinforcement

System that is designed/monitored by Special Education Teacher and Behavior Specialist with needs defined primarily in the Tier 2 range

Academic: Enrollment in method-specific classroom OR increase ratio 50% or more in 1:1 instruction within eclectic model classroom

Social-emotional: Small group pull-out based on student needs (i.e. groups for relaxation skills, groups for feelings identification, play group, conversation group.)

Tier 3: Coach: BCBA and School Psychologist

Behavioral: Individualized Behavior Intervention Plan with behavioral need meeting criteria for Tier 3, Use of 1:1 Aide (part time or all day), highest rate of reinforcement

Academic: Enrollment in method-specific classroom with higher ratio of 1:1 teaching

Social emotional: Individual pull out and consult with needed personnel for social emotional needs to be taught in individual, small group, or classroom based level. Indicated and highly individualized.

Sally, a 6 year old female, is being educated at Sunnyside APS in the grade 1 classroom that uses an eclectic approach (Tier 1). She participates in a small-group playgroup for indicated social skills instruction (Tier 2) and has an individualized behavior plan for mild off-task behavior that is designed and monitored by her special education teacher (Tier 1).

In December, Sally's teacher refers her to RTI due to lack of progress in social skills. A goal for Sally in the current play group is to increase her turn-taking ability with peers,

because her response to peers has been identified as a limitation to her participation in a more general education setting. The team reviews data on Sally's progress within the playgroup and new strategies and suggestions are implemented within the context of her current tier.

Outcome A: Sally **responds** to these interventions favorably, using the criteria set by the ARTSI Team, and remains within the Tier 2 level of support. The team monitors data and considers fading her to Tier 1 support.

Outcome B: Sally continues to lack progress. At the progress monitoring meeting, additional interventions are suggested and implemented. At the second progress monitoring meeting, no progress is noted and Sally is referred for Intensive Support Team (Tier 3) services in the area of social-emotional skills. After assessing Sally's needs, she is referred for several sessions of intensive teaching, with the school psychologist using individualized visual aids and reinforcement to build turn-taking skills. As Sally responds to the individual intervention, additional peers are added. The data are reviewed and it is determined that Sally is making progress; however, it is not sufficient to decrease her support to Tier 2.

How did ARTSI help Sally (in both outcomes)?

In Outcome A, the naturally existing resources within the school building were used successfully. Sally's teacher was able to access immediate supports and receive

assistance to ensure that Sally was making meaningful progress towards her goals. Sally was not subjected to excessively intensive levels of service that would further prohibit her participating in the least restrictive environment.

In Outcome B, Sally did not have to “wait-to-fail” or wait for the results of a lengthy assessment process to start receiving new interventions. Her classroom teacher had additional supports available to design new interventions. Interventions were attempted and progress monitoring took place immediately. The team was able to review the data and demonstrate the need for the increased level of service, as well as set a benchmark for a time when they would reconsider decreasing the intensity.

Section 6: Forms

1. Summary Forms and Checklists

- **Pre-Implementation Checklist**
- **Program Intervention Tiers Summary Form**
- **Student Summary Form**
- **ARTSI Program Level Outcome Summary**

2. Meeting Forms (Adapted from George McCloskey, PhD)

- **ARTSI Initial Team Meeting Summary Form**
 - This form is to be used when a student is initially referred to ARTSI
- **ARTSI Initial Team Meeting Procedures**
 - Suggested times and talking points for keeping team meetings to the 20 minute allotment
- **ARTSI Team Progress Monitoring Review Summary Form**
 - This form is to be used for subsequent follow-up meetings
- **ARTSI Progress Monitoring Review Meeting Procedures**
 - Suggested times and talking points for progress monitoring meetings
- **ARTSI Tier 3 Team Meeting Data Form**
 - A separate form for meetings that require tier 3 support.
- **ARTSI Tier 3 Team Meeting Procedures**
 - Suggested times and talking points for tier 3 meetings.

Pre-Implementation Checklist

Task	Person(s) Responsible	Date Accomplished
Review manual		
Determine comprehensive list of current interventions and resources at building level		
Determine tier of each intervention from least to most restrictive		
Identify appropriate coaches for each area and each tier		
Determine school-wide progress monitoring tools and approve classroom-specific tools		
Group teachers and staff into teams based on common need		
Identify current tiers of interventions for existing students/hold pre-school team meetings if necessary		
Plan and hold initial staff trainings and disseminate information to parents		
Hold initial progress review meeting at building level to determine any changes that need to be made		
Gather feedback from stakeholder groups		

Program Intervention Tiers Summary

Form

Academic	Behavioral	Social Emotional
<p>Tier 1 Interventions</p> <hr/> <hr/> <hr/> <hr/>	<p>Tier 1 Interventions</p> <hr/> <hr/> <hr/> <hr/>	<p>Tier 1 Interventions</p> <hr/> <hr/> <hr/> <hr/>
<p>Tier 2 Interventions</p> <hr/> <hr/> <hr/> <hr/>	<p>Tier 2 Interventions</p> <hr/> <hr/> <hr/> <hr/>	<p>Tier 2 Interventions</p> <hr/> <hr/> <hr/> <hr/>
<p>Tier 3 Interventions</p> <hr/> <hr/> <hr/> <hr/>	<p>Tier 3 Interventions</p> <hr/> <hr/> <hr/> <hr/>	<p>Tier 3 Interventions</p> <hr/> <hr/> <hr/> <hr/>

Student Summary Form

Academic Current Tier: ____	Behavioral Current Tier: ____	Social-Emotional Current Tier: ____
Interventions currently used: _____ _____ _____	Interventions currently used: _____ _____ _____	Interventions currently used: _____ _____ _____
Referred Y N A-RTI Team Meeting Date: _____	Referred Y N A-RTI Team Meeting Date: _____	Referred Y N A-RTI Team Meeting Date: _____
Interventions Attempted: _____ _____	Interventions Attempted: _____ _____	Interventions Attempted: _____ _____
Progress Review Meeting 1 Date _____ Interventions Attempted: _____ _____	Progress Review Meeting 1 Date _____ Interventions Attempted: _____ _____	Progress Review Meeting 1 Date _____ Interventions Attempted: _____ _____
Progress Review Meeting 2 Date: _____ Interventions Attempted: _____ _____	Progress Review Meeting 2 Date: _____ Interventions Attempted: _____ _____	Progress Review Meeting 2 Date: _____ Interventions Attempted: _____ _____
Next steps recommended: _____ _____	Next steps recommended: _____ _____	Next steps recommended: _____ _____

ARTSI Program Wide Progress Monitoring

Tier Movement

OUTCOME MEASURE	NUMBER- FALL (If applicable)	NUMBER-SPRING
Overall number of students in program		
Students in tier 1- Academic		
Students in tier 1- Behavioral		
Students in tier 1- Social-Emotional		
Students in tier 2- Academic		
Students in tier 2- Behavioral		
Students in tier 2- Social Emotional		
Students in tier 3- Academic		
Students in tier 3- Behavioral		
Students in tier 3- Social-Emotional		

OUTCOME MEASURE	Amount
Number of ARTSI Referrals	
Number of Follow-Up Progress Monitoring Meetings	
Number of Tier Movements Up (More Intensive)	
Number of Tier Movements Down (Less Intensive)	

ARTSI Team Initial Meeting Summary

Student:

Teacher:

Grade:

Meeting Date:

RTI Team Members Present:

Type of problem(s) discussed (maximum of 3):

Baseline Data for each problem:

Recommended Instructional Modifications:

Progress Monitoring Method and Frequency of Data Collection:

Progress Monitoring Review to be held on:

ARTSI Initial Meeting Procedures

1	Introduction to Problem RTI Team Leader summarizes problems identified by the teacher on the Diagnostic Checklist and prioritizes order of discussion if more than one problem is identified.	RTI Team Leader	1 minute
2	Statement from Teacher Referring Classroom teacher offers clarifying comments about nature of problems	Referring Teacher	4 minutes
3	Group Discussion RTI Team discusses baseline data provided by the teacher and further clarifies the nature of the problem(s)	RTI Team	3 minutes
4	Brainstorming RTI Team discusses problem(s) and offers possible instructional modifications that would address the problem(s)	RTI Team	9 minutes
5	Selecting Strategies Referring Classroom teacher selects instructional modification(s) to be implemented by the Classroom teacher to address problem(s)	Referring Teacher	2 minutes
6	Establishing Support Plan & Follow-up RTI Team discusses how Classroom Teacher will be supported in efforts to implement instructional modifications and specifies method(s) and frequency of progress monitoring that will occur until the RTI Progress Monitoring Review meeting	RTI Team Leader & Team	5 minutes
7	Plan follow-up & Close meeting RTI Team Leader sets a date for the RTI Progress Monitoring Review Meeting	RTI Team Leader	1 minute

ARTSI Team Progress Monitoring Review Meeting Summary

Student:

Teacher:

Grade:

Meeting Date:

RTI Team Members Present:

Progress Monitoring Data collected:

RTI team appraisal of progress:

____ Adequate progress being made, continue to implement, or phase out, instructional modifications.

____ Inadequate progress being made, implement new instructional modifications specified below.

____ Inadequate progress being made, instructional support services are required (this option is available only after a minimum of two Progress Monitoring Review meetings).

Recommended Instructional Modifications

Progress Monitoring Method and Frequency of Data Collection:

Progress Monitoring Review to be held on:

ARTSI Progress Monitoring Review Meeting Procedures

1	Introduction to Problem RTI Team Leader summarizes problems identified by the teacher on the Diagnostic Checklist and prioritizes order of discussion if more than one problem is identified.	RTI Team Leader	1 minute
2	Statement from Teacher Referring Classroom teacher offers clarifying comments about nature of problems and instructional modifications that were implemented since the Initial RTI meeting.	Referring Teacher	4 minutes
3	Group Discussion RTI Team discusses progress monitoring data provided by the teacher, what did or did not work in terms of instructional modifications, and whether progress was or was not made. If the team determines that adequate progress has been made, go to 4a. If adequate progress has not been made, go to 4b.	RTI Team Leader	5 minutes
Steps when Adequate Progress has been made:			
4a	Group Discussion If adequate progress has been made, meeting concludes with a discussion of whether or not to continue, revise, or phase out instructional modifications.	RTI Team	4 Minutes
5a	Close Meeting	RTI Team Leader	1 minute
Steps for when Inadequate Progress has been made:			
4b	Brainstorming RTI Team offers possible changes to, or new, instructional modifications that would address the problem(s)	RTI Team	8 minutes
5b	Selecting Strategies Referring Classroom teacher selects instructional modification(s) to be implemented by the Classroom teacher to address problem(s)	Referring Teacher	2 minutes
6	Establishing Support Plan & Follow-up RTI Team discusses how Classroom Teacher will be supported in efforts to implement instructional modifications and specifies method(s) and frequency of progress monitoring that will occur until the next RTI Progress Monitoring Review meeting	RTI Team Leader & Team	2 minutes
7	Determining Eligibility for IST or Next Tier If two or more RTI Progress Monitoring Review meetings have been held for this student, the RTI team determines whether or not the student is eligible for tier movement	RTI Team	2 minutes
7	Plan follow-up & Close meeting RTI Team Leader sets a date for the next RTI Progress Monitoring Review Meeting	RTI Team Leader	1 minute

ARTSI Tier 3 Team Meeting Data Form

Student:

Teacher:

Grade:

Meeting Date:

IST Team Members Present:

Type of problem(s) discussed (maximum of 3):

Review of RTI meeting summaries, baseline and progress monitoring data for each problem:

Recommended Next Step:

___ Conduct FBA or Screening

___ Conduct Comprehensive Psychoeducational Assessment

___ Implement classroom instructional modifications as specified below

___ Continue to implement instructional modifications specified in previous RTI meetings

Recommended Instructional Modifications:

Progress Monitoring Method and Frequency of Data Collection:

Progress Monitoring or Comprehensive Assessment Review to be held on:

ARTSI Tier 3 Progress Review Meeting Data Sheet

Student:

Teacher:

Grade:

Meeting Date:

RTI Team Members Present:

Progress Monitoring Data collected:

Psychoeducational Assessment Findings Summary (also see attached reports):

Team appraisal of progress:

- Adequate progress being made, continue to implement instructional modifications
- Inadequate progress being made, implement new instructional modifications specified below
- Inadequate progress being made, assessment should be considered

Recommended Instructional Modifications

Progress Monitoring Method and Frequency of Data Collection:

Progress Monitoring Review to be held on:

ARTSI Tier 3 Meeting Procedures

1	Introduction to Problem Teacher or Coach summarizes problems identified by the teacher on the referral, prioritizes order of discussion if more than one problem is identified, reviews RTI meeting summaries and reviews progress monitoring data collected.	IST Team Leader	3 minutes
2	Statement from Teacher Referring Classroom teacher offers clarifying comments about nature of problems and instructional modifications that have been tried.	Referring Teacher(s)	3 minutes
3	Group Discussion Team discusses progress monitoring data provided by the teacher and further clarifies the nature of the problem(s) and determines if data support a referral for a comprehensive psychoeducational evaluation.	IST Team	5 minutes
4	Brainstorming IST Team discusses problem(s) and offers possible instructional modifications that would address the problem(s) in the classroom.	IST Team	8 minutes
5	Selecting Strategies Teacher selects instructional modification(s) to be implemented in the classroom.	Referring Teacher(s)	2 minutes
6	Establishing Support Plan & Follow-up Team discusses how Classroom will be supported in efforts to implement instructional modifications and specifies method(s) and frequency of progress monitoring that will occur until the next Progress Monitoring Review meeting	IST Team Leader & Team	2 minutes
7	Plan follow-up & Close meeting Team Leader sets a date for the Progress Monitoring/Comprehensive Assessment	RTI Team Leader	1 minute

Section 7: Intervention Review

In order to utilize the ARTSI framework successfully, the school setting must identify the interventions and supports available, determine interventions appropriate to each tier, and have a continuum of supports available at each tier. Identifying and utilizing research based interventions is an aim of Autism providers in educational settings. Discussion of interventions is lengthy because there is wide variability in the type of research performed on different interventions, and hundreds of interventions, strategies, and suggestions exist for students with Autism.

The following review does **not** provide a completely comprehensive picture of all available Autism interventions; to do so would be a virtual impossibility. Discussion of interventions here falls into two categories: 1. Places to go to find out the most relevant and recent scientific information; and 2. An overview of interventions that are designed for utilization within educational settings falls under evidenced based or emerging practices and common use interventions, as identified by prior studies of the prevalence of different teaching strategies.

Where to Find Interventions

National Standards Project on Autism Spectrum Disorders. The National Standards Project on Autism Spectrum Disorders (ASD) completed by the National Autism Center (NAC, 2009), underwent an analysis of the body of literature regarding ASD intervention and set forth specific criteria in order to identify treatments as falling within categories of

either established, emerging, unestablished, or ineffective/harmful (NAC, 2009).

Established treatments included antecedent packages, behavioral packages, comprehensive behavioral treatments for young children, joint attention interventions, modeling, naturalistic teaching strategies, peer training packages, pivotal response treatment, schedules, self-management, and story based intervention packages (NAC, 2009). Emerging treatments were identified in over 20 areas, and although a multitude of unestablished treatments were also identified, there were no current practices that were determined to be actively ineffective or harmful (NAC, 2009). Information on the National Standards Project can be found at:

<http://www.nationalautismcenter.org/about/national.php>

National Professional Development Center Report. The National Professional Development Center (NPDC) on ASD performed a similar analysis spanning 22 years of literature (NPDC, 2010). Evidence based practices overlapped some of those identified by NAC and other large scale analyses. The highest level of positive evidence was found in the following areas: prompting, antecedent based interventions, time delay, reinforcement, task analysis, discrete trial training, functional behavior analysis, functional communication training, response interruption/redirection, differential reinforcement, social narratives, video modeling, natural interventions, peer mediated intervention, pivotal response training, visual supports, structured work systems, self-management, parent implemented interventions, social skills training groups, speech generating devices, computer aided instruction, picture exchange communication, and extinction (NPDC, 2010).

The NPDC project and report can be found at: <http://autismpdc.fpg.unc.edu/>

Missouri Autism Initiative. The Missouri Autism Initiative combined the results of these two aforementioned large-scale projects, along with the ASD Services Final Report on Environmental Scan performed by Centers for Medicare and Medicaid Services, Therapies for Children with ASD performed by Vanderbilt Evidenced-based Practice Center, Management of Symptoms in Children with ASD report: A comprehensive review of pharmacological and complementary-alternative treatments performed by Stanford Autism Research Team, and an analysis by Odom, et al., in Journal of Autism and Developmental Disorders (Missouri Autism Guidelines Initiative, 2012). The intention of this project was to provide data from each of these analyses to determine recommendations regarding interventions. Results of the Missouri Autism Guidelines Initiative divided Autism interventions into comprehensive intervention sets, or full programs designed for use in addressing a variety of needs; Focused Interventions, or strategies that can be used in isolation or in conjunction with other strategies; and Pharmacological Interventions (Missouri Autism Guidelines Initiative, 2012). The Missouri Autism Guidelines Initiative can be found online at:

<http://www.autismguidelines.dmh.mo.gov/>

This website includes resources for professionals and for parents, as well as short videos.

Overview of Researched Interventions in Educational Settings

Although a vast array of interventions have been identified as showing effectiveness or promise, there is a continual question from the educational setting regarding their actual

application or usage within school settings. A survey of educational providers across public schools in the state of Georgia found that less than 10% of the interventions being utilized were considered effective or empirically based (Hess, Morrier, Heflin, & Ivey, 2008); however, this comparison was based upon previous literature reviews and not on larger surveys of the literature such as those carried out by NPDC or NAC.

This study also identified the fact that significantly large scale studies concerning the use of interventions have not been carried out frequently at this time, therefore making it difficult to determine those changes that are needed within educational settings (Hess et al., 2008). Across all literature reviewed, interventions are generally grouped as behavioral and social interventions, with additional interventions regarding communication, cognitive skills, and other areas also occurring and overlapping across categories. Both large-scale treatment review projects, as well as the small body of research regarding interventions applied in educational settings, were utilized in selecting interventions for review, broadly grouped into behavioral interventions and social interventions. These two areas were chosen for the current review due to their alignment with treating core features of Autism.

Behavioral Interventions

The core and primary diagnostic criteria for Autism includes behavioral concerns in repetitive and stereotyped behavior; this may also include difficulties in transitions between activities, change and routine, and other areas and are addressed specifically in the IDEA criteria (IDEA, 2004). In the most general sense, behavioral interventions are

defined as those working towards reducing behaviors that are problematic or not functional for a learner (NAC, 2009). When applied more specifically, behaviorally-oriented approaches teach specific skills for student use.

The majority of behavioral techniques fall under a skill-building umbrella, which has been reported as the intervention type most commonly in use in educational settings (Hess et al., 2008). Behavioral and skill based techniques are reported across the continuum of services from general educational classrooms to special education classrooms and represent a wide variation in intensity of service and evidence based in practice. Although many commonalities exist across behavioral approaches, there are identified philosophical differences and variations in the use of these types of programs. Behavioral programs, including applied behavioral analysis techniques and work-based programs such as the Training and Education of Autistic and related Communication Handicapped Children (TEACCH) have found some level of social validity in the techniques that overlap both types of behavioral interventions. It was also found that a combination of best-practices and techniques that are applicable across settings are a preferred method of intervention across stakeholders (Callahan, Shulka-Mehta, Magee, & Wie, 2010).

Applied behavioral analysis. Applied behavioral analysis (ABA) interventions focus on examining the precursor factors influencing behaviors (defined as distal factors and antecedents), as well as what occurs immediately following the behavior (consequences), in order to design a variety of changes needed to shape or change behavior (Simpson,

2001). ABA is not a specific intervention itself, but rather a designed methodology of interventions using different techniques in order to elicit the desired behaviors from students (Foxx, 2008). Many elements of ABA programs have been identified as evidenced-based and established practices (NAC, 2009; NPDC, 2011).

Evidence based practices within an applied behavioral analysis program include discrete trial training, prompting, differential reinforcement, and time delays. These are often used in conjunction with one another. Discrete trial training (DTT), utilizes a manipulation of what occurs immediately before or after a behavior (antecedents and consequences), within the context of a short, structured trial to attempt to reinforce learner behavior to learn a discrete skill (Bogin, 2008). Prompting is the use of additional support given to aid in student response, and may include a verbal (spoken directive), visual (picture or cue), gestural (pointing), or physical (providing guidance using a hand-over-hand approach) prompt in order to indicate to the student the behavior to perform (Neitzel & Wolery, 2009). Time delay is used in conjunction with prompting, and involves gradually increasing the amount of time between a directive and a prompt to give a learner additional time to perform a behavior before assistance is given, in order to increase student proficiency and decrease the use of prompts over time (Neitzel, 2009). Differential reinforcement is a procedure in which a student is given a reinforcement in order to increase the frequency of a desired behavior (Brogin & Sullivan, 2009). These foundational ABA principles, combined with other principles, are often utilized in behavioral intervention packages as well as in specifically designed ABA based programs such as Verbal Behavior.

Verbal Behavior. The verbal behavior approach is a type of applied behavior analytic intervention that emphasizes the development of language in increasing skills and reducing problem behavior in children with Autism (Sundberg, 2008). This is based upon work by B.F. Skinner on the active parts of language, defined as mand (requesting), tact (labeling), echoic (repeating sound), imitation (repeating gesture), intraverbal (responding to conversation or question), textual (understanding written language), transcriptive (responding to speech using a written language response), and copying a text (producing a written verbal response that is a direct correspondence to another written verbal response.)

This approach attempts to break down these parts of communication and use principles of applied behavioral analysis to reinforce desired behaviors and extinguish non-desired behaviors (Sundberg, 2008). Although few studies have taken place on the verbal behavior approach and researchers have called for more specificity in determining the efficacy of this particular intervention package (Carr, 2005), elements such as discrete trial training and natural environment teaching utilized within the verbal behavior approach have been identified as having empirical support.

Current Issues within ABA/Behavioral Intervention. In a major analysis regarding the place of ABA in Autism intervention, Foxx (2008), cited the support of the Surgeon General in ABA as a treatment for Autism, the 40-year knowledge base, and the benefit gained from students. Because the effectiveness of ABA has been established, research has focused on those elements that make ABA interventions the most effective, including

how to incorporate the elements of ABA into intervention packages (Weiss, 2001). Issues identified with the application of ABA on a larger scale include determining suitable intervention packages, appropriate outcome goals, how or if to incorporate this into larger programs, and the number of trained staff needed (Simpson, 2001). It is possible that despite the rich research basis of ABA interventions, some of these factors can prohibit the widespread use of ABA interventions in educational settings (and ARTSI may assist in providing the answer to some of these questions!)

TEACCH. The Treatment and Education of Autistic and Related Communication Handicapped Children (TEACCH) model is described as an intervention package that provides structure in the form of a work system for children using visual supports, structured teaching, and detailed schedules to capitalize on the strengths of children with Autism in order to allow them to participate in educational opportunities (Meisbov, 1997). TEACCH has gained a large research base in its ability to allow students to gain functional skills and a high amount of outcome data, when compared with other approaches (Meisbov, 1997); it has also been found effective when compared with non-specific approaches, in inclusion settings, and with students considered on the lower-functioning end of the spectrum (Panerai, Ferrante, & Zingale, 2002; Panerai et al., 2009).

Elements of the TEACCH program, such as the schedules and structured work systems, have met criteria for inclusion as established or evidenced based practices (NAC, 2009; NPDC, 2011). Visual schedules and structured teaching were indicated as being in use

by approximately 15% of respondents to a survey regarding the use of interventions in Georgia Public schools (Hess et al., 2011).

Social Skill Interventions

Social skills interventions are indicated as interventions that are primarily aimed at addressing social deficits in Autism, including diagnostic criteria such as the deficits in nonverbal social behaviors (eye gaze, gestures), development of peer relationships, sharing joy and interest, and emotional reciprocity (APA, 2000). Although many of these skills are addressed from a behavioral standpoint in behavioral intervention packages, additional interventions are considered primarily as social skills interventions.

Synthesized research of social skills interventions found that video modeling and social skills groups met criteria as evidenced based practices (Reichow & Volkmar, 2010).

Social skills groups were also found to be effective in other analyses (NPDC, 2010).

Cognitive behavior therapy. Cognitive therapy is a focused, structured psychotherapy which has empirical support for treating a wide variety of psychological disturbances (Beck, 1995). The cognitive model posits the idea that the relationship between a client's thoughts and beliefs will ultimately affect his or her mood and actions. Cognitive therapy becomes cognitive behavior therapy when the cognitive model is combined with behavioral treatments such as relaxation training, behavioral replacement, and cognitive restructuring.

Early research linking CBT and Autism posited the concept that this type of intervention

was impossible to carry out with persons who have pervasive developmental disorders because the understanding and self-insight necessary to complete this type of treatment was seen as non-existent in these children (Anderson & Morris, 2006). Although some research indicates that CBT may not be effective for clients with Autism who are considered lower functioning or with more severe symptoms (Tsai, 2006), numerous research based reviews and single case studies identified interventions that have shown success; these include computer-based CBT, stress reduction training, and visually supported CBT interventions (Attwood, 2003; Greig & MacKay, 2005; Anderson and Morris, 2006).

Estimates for the rate of co-morbidity of Autism and other disorders ranges from 17-74% throughout literature (Tsai, 2006). When considering these possible co-morbid diagnoses, CBT has also been identified as being successful in anxiety reduction when behavioral training was emphasized along with parent and school involvement (Wood, et al., 2009). Although most frequently emphasized in treating co-morbid mood or anxiety disorders in Autism, an exploratory study also demonstrated the potential efficacy in reducing core symptoms of Autism in the form of social skill building. Conclusions from this study were limited overall, based on the use of parental report in determining symptom reduction (Wood, J., Drahotka... & Spiker, M., 2009). In terms of inclusion as a treatment within the context of a larger intervention package, current research supports the use of CBT for reduction of secondary symptoms and some skill building techniques. Cognitive behavioral therapy has a significant cross over with other social skill building techniques.

Social stories. Social Stories are a trademarked intervention term developed by Carol Gray (Gray & Garland, 1994). They represent a technique utilizing the specific explication of a social situation; the original program suggests that a variety of sentences be included in each story in order to describe the situation, give perspective of the people in the situation, and provide a directive about those behaviors that someone should perform (Gray & Garand, 1994). For example, a Social Story about a birthday party might include a description of the activities, that the person whose party it is might feel excited or happy, and the specific rules that the reader should follow while at the birthday party (such as wait your turn, sing "Happy Birthday".)

Research on Social Stories has varied, with some of the body of work pointing to decreasing problematic behaviors; less specific research on Social Stories has been generated regarding actual skill building capacity in social situations (Hanley-Hochdorfer, Bray, Kehle, & Elinoff, 2010). Quirnbach, et al. (2008) found Social Stories effective for increasing game play skills in children with Autism; however, fewer efficacies were found for non-pictorial based stories for children with lower verbal comprehension skills, indicating that this strategy may not have a wide application across different levels and subtypes of Autism.

Social narratives and story-based intervention packages are included in lists of evidence based and effective practices (NAC, 2009; NPDC, 2011). In conflict with previous findings, a meta-analysis of 64 more recent studies utilizing social stories found overall limited effectiveness (Kokina & Kern, 2010). Across the review of the research and in

comparison with previously performed meta-analyses, findings indicated that social stories may be more effective for simple rather than complex behaviors. Limited generalizability was also found, because the majority of the studies took place in self-contained settings versus inclusion settings, which would also point to a limited sample in the variability of types of students who participated in these studies.

Power cards. Power cards are identified as a social skill method which emphasizes the specific interest of an individual in order to teach social skills; this method follows a prescribed procedure that utilizes determining student interest, the function of his or her behavior, and ways to help a student solve a particular social problem (Gagnon, 2001). This strategy was specifically developed to capitalize on the specific interests and stereotyped behaviors inherent in Autism. Regarding application within school settings, case study formats have served as the primary research body for this type of intervention, due in particular to the highly specific nature of individual student interests (Campbell & Tincani, 2011).

A case study strategy utilizing three specific students with Autism in a public school classroom demonstrated the fact that Power Cards were seen as an accessible intervention by classroom teachers, demonstrating effectiveness in the maintenance phase following treatment for direction following (Campbell & Tincani, 2011). Similar results were also found for three students utilizing a Power Card strategy to decrease latency times for transitions in a public school classroom (Angell, Nicholson, Watts, & Blum, 2011). Cartooning is a similar intervention that involves drawing comic strips of social situations

to fill out ideas of what the characters say and do and what behaviors to exhibit in an given situation. In one study of utilization in Georgia Public schools, Power Cards were reported, along with cartooning, at a utilization rate of 3.95% across educational classrooms (Hess et al., 2008).

Appendix B: Voluntary Comments from Review Period

The program manual was made available to interested stakeholders from March 5, 2014 until April 1, 2014, to provide a public comment period for parties who may have an interest or expertise in this type of program. Participation was strictly voluntary and by request of the participant. Respondents included participants from Pennsylvania, New Jersey, and Wisconsin, who identified as the following roles: occupational therapist, principal/supervisor of special education and former special education teacher, superintendent/teacher/principal and mentor of new superintendents, and a parent.

Occupational Therapist (Pennsylvania)

Very clear model and discussion/descriptions of how ARTSI can be implemented. I liked the explanations of the tiers. It was also nice how you outlined key points for sections as you discussed the model and team questions. I loved the idea of coaches! I really like the model and especially the way in which teams interact and make decisions. Not sure how much time this could take or how much time may be given to staff per day or week. Excellent explanations and examples throughout the paper.

Principal/Supervisor of Special Education & Former Special Education Teacher (Pennsylvania)

The idea of meeting student needs “where they are” was very good. Remember in your description of RTI that RTI programs cannot be used to delay the identification of the need for special education so that is something to keep in mind. The idea that not every student needs the most intensive level of support, even in very intensive settings, is important as is the idea that supports that are in place are not forever. You may want to consider including the use of PCA’s in the tier three interventions. The idea of

reassessment if tier three interventions for that setting are not working is good. You may need to think about where you will get building-level data to monitor the success of the program. Behavioral incident reports may provide a good starting point for possible determination of when a referral for ARTSI would be needed.

Parent (Wisconsin)

[In my district] Parents are encouraged to allow inclusion for elementary grades. If a student is not up to participating in educational components, the child will join in social times of the day. I did not find this particularly beneficial to my autistic child, as the shuffling around confused a sense of place to belong, and as far as acceptance by peers-being the kid who comes in for attendance, lunch and recess doesn't help one "fit in". My personal definition of "least restrictive" does not match the legal one. I find that inclusion can actually restrict learning, and is more of a superficial adherence to code than anything beneficial for those involved. I would say that reassessment and changes in student service intensity are more spontaneous, if more casual. If someone is having a rough day, expectations may change. If the child is consistently meeting a goal, it is practiced less frequently. If a means of instruction is causing frustration, another way is attempted. Sometimes a parent is called for immediate input. Other times notes are exchanged between staff and parents. For example, when practicing spelling words, the child was given a list. When it was time to test, the student disregarded verbal prompts, and typed the list. In future, words were given randomly during practice.

This whole approach is likely better suited to borderline-assessed students. Even when I was a teacher in the early 90s and had many EEN kids in my Art class, communication and inservices RE: inclusion strategies in HS was reasonable extra effort

, in my opinion. I do not see the point of specifying ASDs within the EEN population in terms of using RTI. I absolutely bristled at the idea that the tiers and levels of need are characterized by behavior.

Parents are as involved as they want to be. In my case, I like communication notebooks and emails over phone or personal visits, but those are available when needed. This program sounds like a huge confusing bundle of work for a lot of people who don't really need to be involved. It may not be universally common, but direct communication with classroom teachers, support staff, Special Ed teachers, parents, and possibly administrators gets all this done as needed without all the meetings and assignments.

Former Special Education teacher, Supervisor of Special Education, Administrator of Special Services, Assistant Superintendent, High School Principal and Superintendent. Current Administrative Consultant and Superintendent Mentor.

This piece had good flow and a good sequence. I liked the part about achievement/ecological concerns especially as we tackle student achievement in terms of content standards. The Disturbing, Disruptive and Destructive, Pyramid: in my former many roles in this business this would have been a great graphic illustration of a starting point to many student based and teacher based problems. The roll out made sense and was clearly explained. The flow charts [were also] good. The home school collaboration is so important for continuity. This is a research project in itself! I would like to discuss my thoughts on this subject with you. This is HUGE! [This] maybe [needs] more detail. The case studies had good variety in case examples. [You] May want to touch on general education/special education teacher relationships and training. My overall reaction is WOW! I can see this as being a great resource for anyone looking to start or revise a

program. [I'd like to] share any part or all of this material with the administrative residents in my program.