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Making Connections and Learning Together: A School-Based Program to Promote Social Participation of Students with an Autism Spectrum Disorder

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Doctoral Project

MAKING CONNECTIONS AND LEARNING TOGETHER:
A SCHOOL-BASED PROGRAM TO PROMOTE SOCIAL PARTICIPATION OF
STUDENTS WITH AN AUTISM SPECTRUM DISORDER

by

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DEDICATION

I dedicate my doctoral project to my family, friends, colleagues and students. I am grateful to my husband Marc, daughter, Irene and son, Jason as well as his partner, Beth, my mother-in-law, Honey and dear friend Diane, for believing in me and being my personal cheering section throughout my graduate studies and doctoral work. Irene, I thank you for previewing my doctoral presentation. You grounded me in confidence and enthusiasm at just the right moment.

My dear friend, Meg, has inspired me to embark on this journey by her example, reflections and deeds. I am so glad you have been willing to share the journey. My new friend and peer mentor, Heidi Woolley, has been there throughout the doctoral program keeping me moving forward in challenging times through her enduring support and wonderful energy.

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MAKING CONNECTIONS AND LEARNING TOGETHER:  
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STUDENTS WITH AN AUTISM SPECTRUM DISORDER  

(Order No. 3357660)  

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ABSTRACT  

Autism is defined by IDEA as a developmental disability that significantly impacts verbal and non-verbal communication and social interaction, is generally evident before that age of 3 and adversely affects educational performance. The increased prevalence of autism presents unique challenges in educational settings for pre-school and school-age children and youth. Even though impairment in social interaction skills is a defining feature of autism, there is a significant gap in programs that effectively address this pervasive challenge. The Making Connections and Learning Together (MCaLT) program is a class-wide peer mediated intervention program to close the social gap between students with an autism spectrum disorder and their peers. The program will be implemented in the public school setting in the general education classes and will focus on students with autism and their peers in the kindergarten through third grade. The program will be implemented by an occupational therapist.
collaborating with a general educator and paraprofessional. The program involves class-wide training in social emotional skills instruction using visual-based media. The instruction will consist of 22-26 short lessons focus on targeted social emotional competencies preceding peer partner or collaborative learning activities. The expected outcomes of the program are improvement of peer acceptance and social participation as well as social skills of children with autism. The MCaLT program emphasizes the collaborative efforts of the occupational therapist and teacher to support improve social emotional competence of students with autism and their peers.
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Introduction

The Individuals with Disabilities Act of 2004 (U.S. Department of Education, section 300.8c1i) defines autism as a developmental disability that significantly impacts a child's communication and social interaction, is generally evident before the age of 3 and adversely affects the child's educational performance. Autism under IDEA does not differentiate the spectrum of disorders, manifested with varying degrees of impairment (National Institutes of Mental Health, 2008) frequently referred to as autism spectrum disorders (ASDs) in the educational, medical and psychological literature. This spectrum of disorders include Autistic Disorder, Asperger’s Syndrome and Pervasive Developmental Disorder, Not Otherwise Specified (PDD-NOS) as defined in the Diagnostic and Statistical Manual of Mental Disorders, 4th edition (American Psychiatry Association, 1994). ASDs impact individuals of all ages, races, socioeconomic and educational levels. Currently the Center for Disease Control estimates that 1 in 150 of those born will be affected (CDC, 2007).

Prevalence and Challenge for Public Schools

The prevalence of this spectrum of disorders creates unique challenges because many students with an ASD are being educated in general education classrooms instead of self-contained special education settings. These challenges include a shortage of special education teachers and the lack of specialized training for general and special education teachers and paraprofessionals to meet the unique learning, communication and behavioral
needs of students with an ASD (Dybvik, 2004; Jordan, 2008; Scheuermann, Webber, Boutot & Goodwin, 2003). The emphasis on highly standardized curricula and teaching methodologies to meet the accountability expectations of No Child Left Behind (U.S. Department of Education, 2004) presents a barrier to the flexibility needed to accommodate the unique learning and processing styles of students with an ASD and to adapt the general education curriculum to meet individual education needs (Dybvik, 2004; White, Scahill, Klin, Koenig & Volkmar, 2007). Scheuermann et al. (2003) succinctly stated that “unlike most teaching situations, educating students with an ASD requires a village of knowledgeable people” (p. 202), with the time and resources to plan and provide well coordinated, collaborative services (Dybvik 2004; Jordan, 2008; Scheuermann et al., 2004). Occupational therapy interventions over the past 20 years, as noted by Bazyk, Michaud, Goodman, Papp, Hawkins and Welch (in press) have shifted to integrating services into naturalistic school settings to meet the expectations of IDEA (Individuals with Disabilities Act, 2004). There is evidence that the “village of knowledgeable people” should include peers of students with an ASD (Ochs, Kremer-Sadlik, Solomon & Sirotka (2001). Ochs et al. (2001) found peers engaged in more positive inclusion practices toward students with an ASD when the diagnosis was disclosed and information about ASDs was shared with typically developing peers. The proposed program that will be described in this paper is needed because of the increasing numbers of students with an ASD being served in school settings (White et al., 2007) where impairments in social
skills may be a factor that differentiates students who remain in inclusion settings and those who are moved to more restrictive special education settings (White et al., 2007).

**Nature of the Gap and the Problem Defined**

The IDEA definitions of disability and Ohio's Operating Standards (U.S. Department of Education, n.d; Ohio Department of Education, 2008) do not differentiate specific syndromes on the autism spectrum. There is an on-going debate in the literature about similarities and differences in diagnostic categories of ASDs and whether there are discrete syndromes as opposed to severity-graded impairments and symptoms on a single spectrum (Solomon et al., 2004; Macintosh & Dissanayake, 2006a, 2006b; Glennon & Miller-Kuhaneck, 2004). There is evidence, however, that children with Asperger’s Syndrome or High-functioning Autism (AS/HFA) do differ significantly from typically developing peers on a variety of social emotional competencies such as recognizing emotional facial expressions (Downs & Smith, 2004), co-operation, assertion and self-control (Macintosh & Dissanayake, 2006a, 2006b).

While there are numerous studies suggesting that children with AS/HFA can improve their social emotional skills (Bauminger, 2002; 2007, Rao, Beidel & Murray, 2008; Solomon, Goodlin-Jones & Anders, 2004; White, Keonig & Scahill, 2007; Hwang & Hughes, 2000; Kalyva & Avramidis, 2005; Kamps et al., 1992, 1994, 1997, 2002; Laushey & Heflin, 2000; Morrison et al., 2001; Roeyers, 1996; Thiemann et al. 2004), there appears to be a significant gap in addressing social
emotional skills in students with an ASD specifically within the school setting (Ohio Autism Society of Greater Cleveland, n.d.; White et al., 2007). Interventions for students with an ASD in inclusion settings tend to focus exclusively on academic skills (Scattone, 2007) even though challenges in social competence impact all areas of academic, emotional and social development (Gutstein & Whitney, 2002; Rao, Beidel & Murray, 2008). Unfortunately, when social interaction skills are not specifically addressed, the social gap between children with an ASD and their peers tends to increase over time (Scattone, 2007) impacting social participation in the school setting. The proposed program is designed to address this gap in the educational setting for young students with an ASD who are included in general education classes.

The problem that this program focuses on is impairment in social competence as it impacts peer acceptance and social participation of students with AS/HFA in kindergarten through third grade in the general education setting. The MCaLT program is designed to address the question: Can a class-wide peer mediation intervention program utilizing visual-based training modules and an integrated service model increase peer acceptance, social skills and social participation for students with AS/HFA in the general education classroom?

**Target Population**

This proposed program will initially focus on 1-2 students with Asperger's syndrome or high-functioning autism (AS/ HFA) who are included in general education classes for a least part of each day. High functioning autism is defined
as meeting the diagnostic criteria of autism without having a cognitive impairment (Klin & Volkmar, 2008). Asperger's syndrome is characterized by significant qualitative impairment in social interaction and the presence of repetitive or stereotypic behaviors, interests or activities with no significant delays in language, cognitive development, self-help skills and other adaptive behaviors except for social behaviors (CDC, 2007; Klin & Volkmar, 2008). Klin and Volkmar (2008) suggest that individuals with HFA may be withdrawn, socially unaware and disinterested in potential social partners, while those with AS may be socially aware and very interested in relating to others, but lack the skills to do so. In children with AS/HFA impairment in social competence is a core feature even though language and cognitive skills tend to be within the typical range (Gutstein & Whitney, 2002).

Children who participate in the program will be those who meet the criteria for a student with a disability under the definition of autism as established by IDEA (U.S. Department of Education, section 300.8c1i, n.d.) and the Operating Standards of Ohio's Schools for Serving Children with Disabilities (Ohio Department of Education, section 3301.51.B10di, 2008). They will be identified as having Asperger's Disorder or high functioning autism through a multifactor evaluation (MFE) by school personnel trained and experienced in the assessment of students with ASDs. Students will be identified as 'high-functioning' by obtaining a full scale IQ score of 70 or above with a diagnosis of an ASD using a standardized diagnostic assessment such as the Childhood
Autism Rating Scale or the Gilliam Autism Rating Scale (M. Wolf, personal communication, February 7, 2009) or if available the ADOS (MacIntosh & Dissanayake, 2007a; Solomon et al., 2004; White, Scahill, Klin, Koenig & Volmar, 2007). A diagnosis that meets the DSM-IV criteria of AS, PDD-NOS or HFA may be confirmed by a licensed psychologist or neurologist.

**Rationale**

The hypothesized relationships between factors contributing to the identified problem are illustrated in Figure 1.

![Figure 1. Factors contributing to limited social participation.](image-url)
Factors that contribute to the problem

Evidence suggests that children with AS/HFA demonstrate impairments in specific social competencies, which include impairments in social referencing (Gutstein & Whitney, 2002; Bacon, Fein, Morris, Waterhouse & Allen, 1998), decreased social emotional reciprocity (Gutstein & Whitney, 2002; Knott, Dunlop & Mackay, 2006) and difficulty with emotional understanding (Bauminger, 2007; Downs & Smith, 2004; Gutstein & Whitney, 2002). The literature suggests that the use of verbal and non-verbal communication (Macintosh & Dissanayake, 2006a and 2006b) and overall quality and nature of social interactions (Bauminger, Shulman & Agam, 2003) in children with AS/HFA appear to be similar to typically developing peers. However, the frequency and duration of their engagement in reciprocal social interactions appear to be significantly less than in typically developing peers (Bauminger et al., 2003; Macintosh & Dissanayake, 2006b). Students with AS/HFA are rated by their teachers as significantly lower on cooperation and assertion when compared to their typically developing peers (Bauminger, 2002; Macintosh & Dissanayake, 2006a). Downs and Smith (2004) reported children with autism did not differ significantly from typically developing peers in the number of cooperative responses made in a simulated game situation. The inconsistency of results of the two studies may be attributed to the variation in outcome measures used in these studies. If the evidence were to be applied to the school setting, teachers’ ratings and direct observation of social interactions in naturalistic school activities might better reflect functional skills in
this context when compared to responses to simulated games. The literature also indicates that students with AS/HFA show impairments in self-management, another aspect of social skills that impact peer relationships (Knott et al., 2006; Macintosh & Dissanayake, 2006a). Self-management can be defined as a social emotional competency necessary for successful participation in the school setting (Elias, Zins, Weisberg, Frey, Greenberg, Haynes, Kessler, Schwab-Stone & Shriver, 1997). It includes aspects of self-regulation such as self-control, self-monitoring and emotion-focused coping (Elias et al., 1997). Children with AS/HFA show impairments in self-control and temper control as determined by self-ratings as well as ratings by teachers and parents (Knott et al., 2006) when compared with typically developing peers (Macintosh & Dissanayake, 2006a).

To help determine the particular social skills that might impact the participation of students with AS/HFA in the school setting, I conducted a focus group of K-3rd grade educators at one K-8th grade school in the Cleveland Metropolitan School District. Findings from this group process support the perception that self-control is one of the social emotional competencies that is most difficult for students with an ASD. In addition, in my personal experience as an occupational therapist working for the past 25 years, I have found that self-management skills of students with an ASD are significantly impaired, impacting their ability to participate in the school setting. Examples of behaviors that general educators have sought occupational therapy support for include
excessive and disruptive talking out in class, behavioral 'melt-downs' or disruptive out-of-seat behaviors.

Another factor that may affect social participation and inclusion in school settings for students with an ASD could be limited peer support and relationships. Ochs et al. (2001) found that children with AS/HFA may experience social neglect, rejection, and scorn and respond with signs of distress in inclusive public education settings. Bauminger et al. (2003) found that children with AS/HFA report higher degrees of loneliness when compared to typically developing peers.

The nature of the relationship between impairment in social competence and peer attitudes and social acceptance is not clear, however. Research findings present conflicting evidence on peer attitudes, acceptance and social preferences towards students with an ASD. Boutot and Bryant (2005) found no significant differences in social acceptance and inclusion in social networks for students with an ASD compared to typically developing peers. In contrast, other studies have reported that typically developing peers report significantly more negative attitudes and behavioral intent towards student with an ASD (Swaim & Morgan, 2001; Campbell, Ferguson, Herzinger, Jackson & Marino, 2003). For example, Chamberlain, Kasari and Rotheram-Fuller (2007) reported that students with an ASD experienced less peer acceptance and identification with social groups when compared to typical peers. Ochs, Kremer-Sadlik, Solomon and Sirota (2001) found that providing information about autism to peers was associated with more peer acceptance and support of students with an ASD.
Boutot and Bryant (2005) found no difference on measures of social acceptance and inclusion in social networks when compared with their typically developing peers or students with other disabilities. Although the results of these two studies (Boutot & Bryant, 2005; Chamberlain et al., 2006) appear contradictory, the differences may be explained by their different measures and their analyses. Boutot and Bryant (2005) limited peer nominations to only one social group for each student and rank ordered outcomes to determine high and low levels of social preference and inclusion by median scores. In contrast, Chamberlain et al. (2007) compared randomly selected typically developing peers matched for gender with the student with AS/HFA. They also collected and analyzed more detailed information regarding levels of inclusion in social networks and peer acceptance and allowed nominations to more than one social group (Chamberlain et al, 2007). The methods used by Chamberlain et al. (2007) appear more robust due to direct comparison with typically developing peers and nomination procedures that may better capture social networks within a naturalistic classroom setting. The quality of evidence for these four studies is good in part due to the use of large sample sizes, the use of outcome measures that included standardized questionnaires, rating scales and nomination procedures (Boutot & Bryant, 2005; Campbell et al., 2003; Chamberlain et al., 2007; Swaim & Morgan, 2001) as well as randomized selection of typical peers for comparison with students with an ASD (Chamberlain et al., 2007). This evidence could be applied to the target population and setting for the proposed...
program with some confidence.

**Theoretical Framework to Guide the Intervention**

"Social competence refers to skills and strategies that allow individuals to productively collaborate with groups, teams and work partners and manage public social settings" (Gutstein & Whitney, 2002, p. 161). Social competencies include social behaviors, self-regulation, as well as social problem-solving (Williamson & Dorman, 2002). Self-regulation involves modulation of arousal levels, attention and self-control (CASEL, 2000; Williamson & Dorman, 2002). A sound theoretical framework to guide this proposed intervention should emphasize the dynamic interaction of the social environment and instruction in developing social emotional skills as well as activities that support practice and application of these skills. Social emotional learning theory (SEL) may provide a framework to understand the social challenges of students with AS/HFA and what interventions might be effective to address them (Payton, Wardlaw, Graczyk, Bloodworth, Tompsett & Weisberg, 2000).

**Social emotional learning (SEL) framework background**

The SEL framework was developed by the Collaborative for Academic, Social and Emotional Learning (CASEL, 2009a), an international non-profit organization based at the University of Illinois at Chicago. CASEL was founded in 1994 by Daniel Goleman, author of *Emotional Intelligence* (1995) and *Social Intelligence* (2006) and Eileen Rockefeller Growald to gather evidence that social and emotional learning contributes to student’s academic performance, mental
health as well as reduces risk behaviors in children and youth. CASEL's mission is to advance the science and evidence-based practice of social and emotional learning through the development of guidelines, tools, informational resources and educational policies and supports (CASEL, 2009a). Recent educational policy (U.S. Department of Education, 2004) and public opinion (CASEL, 2003) focuses on educational reform to create schools that are safe and supportive using evidenced-based programs that enhance student's academic, social, emotional and ethical development (CASEL, 2009a). The key competencies for the SEL framework are based on research "demonstrating connections between social adjustment and children's health outcomes" (Payton et al., 2000, p. 3) as well as relevant social emotional learning and behavior change theories (Payton et al., 2000). The CASEL framework combines elements of a number of social and emotional learning and behavior change theories because no one model captured all the elements that address the development of social competence in the school setting from pre-school to high school (Payton, 2000) as determined by an interdisciplinary team assembled by CASEL. Thus primary elements of a number of social and emotional learning and behavior change theories are combined in the SEL framework to identify competencies that build upon each other to promote social competence (Payton et al., 2000). The key SEL competencies (Payton et al., 2000) include awareness of self and others, positive attitudes and values, responsible decision making (including social problem-solving) and social interaction skills. SEL programs provide systematic
instruction that is engaging and developmentally appropriate to teach all students to be caring, responsible and contributing members of their peer group and school community (Payton et al., 2000) and to promote healthy development and academic success as well as prevent substance abuse and reduce risk behaviors (CASEL, 2003). SEL instruction is most effective in a caring, supportive and engaging classroom. When SEL activities become a part of life in the school these competencies are more likely to be maintained over time and generalized across school contexts (Elias et al., 1997).

Factors impacting social participation and SEL competencies

Table 1 illustrates factors identified in the literature (italics) that impact social participation for students with AS/HFA and their possible relationship to the key SEL competencies (Bacon et al., 1998; Bauminger, 2002; 2003; 2007; Downs & Smith, 2004; Gutstein & Whitney, 2002; Knott et al., 2006; Macintosh & Dissanayake, 2006a; 2006b; Payton et al., 2000). Other factors related to positive attitudes and values are important social emotional competencies because they set a positive and caring social environment and promote acceptance and inclusion.
Table 1

SEL competencies as they relate to factors impacting social participation.

<table>
<thead>
<tr>
<th>SEL competency</th>
<th>Low Levels of Social Engagement</th>
<th>Poor Peer Acceptance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness of Self and Others</td>
<td>Recognizing, managing feelings, behavior <em>(self control)</em></td>
<td>Perspective Taking</td>
</tr>
<tr>
<td></td>
<td>Awareness of others’ emotions through facial expressions, body language <em>(emotional understanding)</em></td>
<td>Self control</td>
</tr>
<tr>
<td></td>
<td>Reading social cues and adjusting response, actions <em>(social referencing)</em></td>
<td>Awareness of feelings, social cues of others <em>(emotional understanding, social referencing)</em></td>
</tr>
<tr>
<td>Social Interaction Skills</td>
<td>Expressive communication <em>(social emotional reciprocity, reciprocal social interaction)</em></td>
<td>Expressive communication <em>(social emotional reciprocity, reciprocal social interaction)</em></td>
</tr>
<tr>
<td>Cooperation</td>
<td>Cooperation</td>
<td>Cooperation</td>
</tr>
<tr>
<td>Assertion</td>
<td>Assertion</td>
<td>Assertion</td>
</tr>
</tbody>
</table>
Attempts to address challenges in social participation

Because impairment in social interactions is a core feature of ASDs there is a large body of research on intervention approaches to address this pervasive challenge. Some studies included here focus specifically on students with AS/HFA while other studies do not differentiate disorders on the autism spectrum. Child-specific and peer-mediated interventions are the two best researched approaches (McConnell, 2002) in terms of the number of studies and the prevalence of quasi-experimental designs utilizing multiple baselines across subjects. Child-specific interventions are characterized as instructional or reinforcement approaches that increase social behavior skills, their frequency or quality. These interventions appear to be effective in improving social initiations (McConnell, 2002; Scattone, 2007) frequency and duration of social interactions, cooperation, use social greetings, eye contact and joint attention (Bauminger, 2002, 2007a; Rao et al., 2008; Solomon et al., 2004; White et al., 2007; Hwang & Hughes, 2000) and social emotional understanding (Bauminger, 2002, 2007a, 2007b; Solomon et al., 2004).

An important consideration in developing an effective intervention program for social emotional interaction skills for children with an ASD is whether the skills are likely to be generalized to settings and contexts different from the intervention setting. Bauminger (2002, 2007a, 2007b) reported that learned social skills were generalized to non-treatment settings in 2 of 3 of her child-specific intervention studies. These changes were measured by pre and post intervention ratings on
the Social Skills Rating Scale- Teacher version (Gresham & Elliott, 1990). Both studies used special educators as interventionists and raters. Bauminger controlled for potential rater bias (2002) by adding non-interventionist raters (2007a). McConnell’s literature review (2002) indicated only 4 of 8 studies reported generalization in at least one new setting (McConnell, 2002). Another literature review (Hwang & Hughes, 2000) reported some generalization of learned social communication skills in 7 of 8 studies and a third review (Rao et al., 2007) reported limited generalization of social interaction skills in 1 of 3 studies. There was no overlap in studies included in the three literature reviews. One of the Bauminger (2002) primary studies reviewed for this paper also appeared in one of the literature reviews. White et al. (2007), in their literature review of group-based social skills training, found that even though social skills can be improved through group-based interventions, generalization of social skills to natural settings continues to be a challenge. White and her colleagues (2007) recommended involving typical peers, multiple trainers and opportunities to practice learned social skills to promote generalization. These recommendations (White et al. 2007) provide support for elements of the MCaLT intervention program.

Generalization and maintenance of learned social emotional interaction skills are problematic for students with an ASD (White et al., 2007). Only one study included data on the maintenance of social interaction skills over time utilizing child-specific interventions. Bauminger (2007a) reported maintenance of
cooperation, self-control and assertiveness over 34 months. Hwang and Hughes (2000) in their literature review indicated that 6 of 6 studies reporting data on maintenance of social communication skills indicated positive results. This study (Hwang & Hughes, 2000) focused exclusively on reinforcement strategies and arrangement of the environment while the other literature reviews and primary studies focused on instructional approaches (Bauminger, 2002, 2007a; Rao et al., 2008; Solomon et al., 2004; White, et al., 2007).

Peer-mediated interventions represent the largest number of intervention studies in the research literature (McConnell, 2002). These studies include one random controlled trial (Roeyers, 1996) and numerous quasi-experimental designs using primarily multiple-baseline designs (McConnell, 2002; Harper, Symon, & Frea, 2007; Kamps, Barbetta et al., 1994; Kamps, Leonard et al., 1992; Kamps, Potucek et al., 1997; Kamps, Royer et al., 2002; Laushey & Heflin, 2000; Morrison et al., 2001; Petursdottir, McComas, & McMaster, 2007; Thiemann & Goldstein, 2007). Peer-mediation interventions involve social skills training and instruction to children without disabilities to change the social interactions and skills of children with an ASD. There is evidence that this type of intervention may be effective in increasing the quality and quantity of social interactions in children with an ASD (Kalyva & Avramidis, 2005; Kamps, Leonard et al. et al., 1992; Kamps, Barbetta et al., 1994; Kamps, Potucek et al., 1997; Kamps, Royer et al., 2002; Laushey & Heflin, 2000; Morrison et al., 2001; Roeyers, 1996; Thiemann & Goldstein, 2004).
Peer-mediated social skills interventions appear promising in supporting generalization and maintenance of social emotional interaction skills in students with an ASD. Six of these studies reported data on generalization of skills to new contexts, peers or activities with all reporting positive outcomes (Kamps, Potucek et al., 1997; Kamps, Royer et al., 2002; Laushey et al., 2000; Morrison et al., 2001; Roeyers, 1996; Thiemann & Goldstein, 2004) The conclusion that social interaction skills are maintained in non-intervention contexts is also supported in literature reviews (DiSalvo & Oswald, 2002; McConnell, 2002; Rogers, 2000; Scattone; 2007). Only 3 of the 10 primary studies I reviewed reported data on maintenance of learned social emotional interaction skills and all 3 studies reported maintenance of learned skills over time (Kalyva & Avramidis, 2005; Kamps, Royer et al., 2002; Laushey & Heflin, 2000). It appears that the presence of trained peers may provide naturalistic reinforcement and support for a wide variety of learned social and emotional skills even after the intervention is completed. Additionally, improvement in peer acceptance and attitudes has been noted (DiSalvo & Oswald, 2002).

Large sample sizes of typically developing peers in these studies supports a high degree of confidence in the evidence reviewed on improvement in peer engagement, acceptance and attitudes (Kamps, Royer et al., 2002; Laushey & Heflin, 2000; Roeyers, 1996). Limitations of the studies that focused on changes in social interactions skills and behaviors of students with an ASD include small sample sizes and larger age ranges than the target population of my proposed
project. These threats to internal validity underscore the need for good outcome measures of social interaction skills of students with an ASD for the proposed program.

In conclusion, there is evidence that students with an ASD, including those with AS/HFA, can learn a variety of social and emotional interaction skills through direct instruction or reinforcement of targeted social behaviors (Bauminger, 2002, 2007; McConnell, 2002; Rao et al., 2008; Scattone, 2007; Solomon et al., 2004; White et al., 2007; Hwang & Hughes, 2000). There is a paucity of evidence that learned skills may be generalized to new situations, activities or with peers (Bauminger, 2007; Hwang & Hughes, 2000) and maintained over time unless additional supports are used (McConnell, 2002; Scattone, 2007). A more naturalistic and effective approach to improve and promote the generalization and maintenance of social emotional interaction skills may be to use a peer-mediation training intervention that includes all students within a classroom setting who all receive direct instruction and reinforcement of targeted social interaction skills (Kamps, Leonard et al., 1992; Kamps, Barbetta et al., 1994; Kamps, Royer et al., 2002; Laushey & Hefflin, 2000). Typical peers and the supportive, accepting culture that may develop through peer mediated interventions utilizing the SEL framework may be the 'additional' supports students with an ASD need to use the social emotional competencies that they have been taught (Kamps, Royer et al., 2002; White et al., 2007). Simply possessing the knowledge of what to do in social situations or demonstrating
social emotional interaction skills in exclusive therapy groups does not address the needs of students with an ASD in a meaningful way (Gutstein & Whitney, 2002). These ideas form the foundation of the proposed program to improve social competence and to close the social gap for students with AS/HFA in the elementary school setting.

Description of the Proposed Program

**Making Connections and Learning Together (MCaLT program)**

In keeping with SEL theory and current evidence, the Making Connections and Learning Together (MCaLT) Program involves implementation of a class-wide peer mediation program that will focus on students with AS/HFA and their typically developing peers. It will emphasize the key SEL competencies using visual supports in the natural class setting. The MCaLT Program will focus on improving social participation and acceptance of students with AS/HFA through direct instruction and practice of social emotional competencies that includes typically developing peers and students with AS/HFA. The key elements of this innovation are class-wide peer training utilizing visual-based instruction and the collaborative efforts of the teaching staff and occupational therapist to support practice and use of target SEL competencies in the general education setting over seven months. The 7 month intervention timeline provides for one month for students and teachers to get to know each other as well as to accommodate holidays and school breaks with a typical school calendar year. A review of the
literature suggests that changes in social skills as measured by the SSRS-T may be more effective if interventions are provided for 7 months (Bauminger, 2002; 2007a; 2007b). The MCaLT program will consist of 22-26 lessons divided into 4 modules that reflect the key SEL competencies. The use of visual supports and instruction is expected to increase the effectiveness of the peer mediation training as well as support practice and implementation of learned skills in the natural environment (See Appendix A: McALT Logic Model).

**Meeting the Challenge of Integrated Services**

There are several significant challenges to implementing this innovation in a general education classroom. The first challenge is identifying and implementing a plan that will support the collaborative effort and 'open the door' to address the needs of a few students in a naturalistic, inclusive environment. The behavior consultant model may provide a useful model to understand and to develop effective approaches to meet this challenge. The behavior consultant model supports a collaborative, data driven, problem-solving approach (Sheridan, Kratochwill & Bergan, 1996). A literature review (Zins, 2007) and two primary studies (Atkins, Graczyk, Frazier & Abdul-Adil, 2003; Noell, Witt, Slider, Connell, Gatti, Williams, Koenig, Resetar & Duhon, 2005) provide key findings on elements that appear to support successful implementation of mental health interventions by K – 5th grade general educators using consultation. These studies (Atkins et al., 2003; Noell et al., 2005; Zins, 2007) focused on classroom implementation of programs to promote mental health. It can be argued that the
overall focus of the proposed intervention and mental health interventions is very similar. They both promote social emotional competencies in students within the public school setting. Even though the overall nature of these interventions may differ slightly in scope, the training, expertise and frame of reference of occupational therapists do differ from those of psychologists and social workers and should be considered when applying this evidence. Occupational therapy can be distinguished from education and mental health services in its use of meaningful everyday activities to enhance social participation in the school setting (Jackson & Arbesman, 2005 as cited by Bazyk, et al., in press).

External validity of the research findings is supported by a good match to the demographic characteristics of the target population in two primary studies to my educational setting (Atkins, et al., 2003; Noell et al., 2005; Zins, 2007). Both studies took place in low income urban public school districts where the majority of students were African-American. These demographic characteristics match closely to those of the population of the target school district for the proposed program.

There is a paucity of research linking student outcomes to consultation practices (Zins, 2007); however, several studies have investigated factors that promote implementation. This is a crucial concern for this aspect of the proposed program. Critical elements that will be included in my intervention program are review of student performance (Noell et al., 2005) and the inclusion of key opinion leaders (KOL) among the teaching staff. A focus group that includes
general and special education teachers including key opinion leaders in the school building will be convened to identify social emotional skills that are necessary for participation in cooperative learning classroom activities at the K–3rd grade level. The findings of the focus group will provide the perspectives of teachers in the school setting (Atkins et al., 2003) to supplement key social interaction skills identified in the literature (Gutstein & Whitney, 2002; Bacon, et al., 1998; Knott, et al., 2006; Bauminger, 2007).

The focus group experience is expected to be an important step to initiate a collaborative effort that is valued by the educational team (Oldenberg & Parcel, 2002) and supports adoption of the program. Social emotional challenges identified by the focus group of both typical peers and students with an ASD as well as key social emotional skills identified in the literature will be addressed by the instructional modules and lessons. Ideally this focus group will be convened by the end of the school year or during the summer preceding implementation of the program.

Classroom implementation will be further supported by on-going review of student performance (Noell et al., 2005) during bi-weekly consultation with the classroom teacher. The utility of the visual supports used (charts, Power Point slides, posters) will be discussed with the teacher during the bi-weekly consultation between the occupational therapist and teacher. Cooperative group or peer partner activities could include center-time, peer tutoring, study buddy or small group projects. A checklist (see Appendix B) will be used by the
occupational therapist to monitor the recall and demonstration of the targeted skill each week for the students with AS/HFA and 2 randomly selected peers. Modifications will be made to these instructional supports based on teacher feedback. Data and observations of the social engagement of targeted students will be reviewed and discussed during this time.

Information about SEL theory and programs will be made available to focus group members to further support potential school-wide adoption of this approach to promote infusion of SEL competencies across classrooms and in all school contexts. Establishing on-going relationships and a format for information sharing with the school key opinion leaders and faculty will be explored. This may be implemented at a later date as the program is refined and expanded. The intranet system of the school district that includes e-mail, informational folders and conference sites, could be used for communication and dissemination within the school building and expanded across the school district.

**Key Elements and Format of the Proposed Program**

The MCaLT program will consist of whole class instruction in a targeted SEL lesson provided once a week for 7 months. The program will use visual media and modeling as well as hands-on activities to support learning and opportunities for practice. This instruction will precede naturalistic cooperative group or peer partner learning activities (CG/PP) in which students can then demonstrate newly learned skills. Modules will be developed primarily around lessons related to awareness of self and others and social interactions skills. The
modules and lessons will be developed through the use of recognized SEL curricula (Elias et al., 1997) and the use of the Alert Program™ (Williams & Shellenberger, 1996).

The first module focuses on positive attitudes and values for Making Connections and Learning Together. It will begin with a literacy-based lesson to help students recognize and value a variety of differences. This initial lesson will use a children’s book that explore differences and shared interests. A second lesson will use a children’s book that explores the importance of individual differences, acceptance and friendship while introducing a character that has an ASD. This inclusion of contents of the lessons exploring autism and information about autism will discussed with parents of students with an ASD. Parents will be provided information about the impact of disclosure of children’s diagnosis and the impact of additional information about autism to support an informed decision about disclosure. Books such as Friends Learn about Tobin (Murrell, 2007) or Looking after Louis (Ely, 2004) explore these topics and are appropriate for kindergarten through third grade students. This first module will also identify and value qualities associated with being a friend. The module will conclude with a lesson that provides a simple explanation of ASDs. Books such as Since We are Friends (Shally, 2007) or The Autism Acceptance Book: Being a Friend to Someone with Autism (Sabin, 2006) will provide a positive literacy-based to promote understanding and social support of a peer with an ASD.
The second module will address awareness of self and others with a focus on awareness of one’s feeling states as well as strategies to regulate these feelings and arousal levels to match the demands of learning and social contexts. The Alert Program™ (Williams & Shellenberger, 1996) is a commonly used program by occupational therapists to specifically address self-regulation and modulation of arousal levels (Barnes, Schoenfeld, Graza, Johnson & Tobias, 2005; Maas, Mason & Candler, 2008; Salls & Bucey, 2003) in school settings. The Alert Program™ (Williams & Shellenberger, 1996) was selected for inclusion in the MCaLT program because it provides a unique intervention approach to address one aspect of social competence associated with self-regulation and modulation of arousal levels (Williamson & Dorman, 2002; Williams & Schellenberger, 1994). No peer-reviewed studies were found to support evidence that the Alert Program™ (Williams & Shellenberger, 1996) is effective in improving self-management skills.

The Alert Program™ (Williams & Shellenberger, 1996) uses the metaphor of a car engine to provide simple concepts for developing self-awareness of feeling states and understanding of alertness levels that support or inhibit participation and performance in everyday life (William, Shellenberger, 1996). The metaphor of using a car engine, and some of the charts, pictures and activities will be used to develop lessons related to awareness of self and others and management of feelings. Self-regulation skills will be developed by increasing awareness of alertness levels, learning a variety of activities and
strategies to change alertness associated with different feeling states and identifying and practicing the strategies that work best for each student. See Appendix C for a sample description of modules and lessons for the proposed MCaLT program.

**Modules and Lessons** (examples of topics for lessons)

**Module I: Attitudes and Values for MCaLT**
- **Lesson 1** - Literacy-based lesson - *Different Like Me*
  - Recognizing and valuing a wide range of differences
- **Lesson 2** - Literacy based lesson - *Do-si-do with Autism, Looking after Louis or Friend Friends Learn about Tobin*
  - Recognizing and valuing differences in characters with and without autism
- **Lesson 2** - Being a buddy - honest
  - Identify, value qualities of a buddy
- **Lesson 3** - Being a buddy - fair
  - Identify, value qualities of a buddy
- **Lesson 4** - Being a buddy - caring
  - Identify, value qualities of a buddy
- **Lesson 5** - Understanding autism
  - Simple definition of ASD and literacy-based lesson on being a buddy to someone with an ASD. Since *We Are Friends* (Shally 2007) or *The Autism Acceptance Book: Being a Friend to Someone With Autism* (Sabin, 2006).

**Module II: Getting Ready for MCaLT**
- **Self-regulation**
  - **Lesson 1** - How our engines run - High, low, just right.
    - Introduction to concepts, vocabulary related to arousal levels
  - **Lesson 2** - How our engines run - High, low, just right... where are you?
    - Identification and labeling
  - **Lesson 3** - How our engines run - changing engine speeds - breathing
    - Identification, labeling, recognizing change with a strategy
  - **Lesson 4** - How our engines run - changing engine speeds - moving
    - Identification, labeling, recognizing change with a strategy
  - **Lesson 5** - How our engines run - changing engine speeds - something for my hands
    - Identification, labeling, recognizing change with a strategy
  - **Lesson 6** - How our engines run - changing engine speeds through eyes and ears
    - Identification, labeling, recognizing change with a strategy
Recognizing and understanding feelings
Lesson 7 – Feeling connections
  Identification, labeling feelings and their link to behavior
Lesson 8 – Detective work for MCaLT – what does that face mean?
  Identification, labeling others’ feelings
Lesson 9 – How would you feel?
  Identify the perspective of others

Module III: Solving problems for MCaLT
Lesson 1 – How do we solve a problem?
  Learn steps to solve social problems, use of comic strip conversation techniques
Lesson 2 – Solve this problem
  Identify and apply steps to solve a presented problem

Module IV: Making Connections and Learning Together
What it takes to be a buddy
Lesson 1 – Listening with ears, eyes
  Active listening, social emotional reciprocity
Lesson 2 – Talk to our buddies, what do they think, feel, like?
  Initiating and maintaining conversation, reciprocal social interaction
Lesson 3 – Cooperation
  Turn-taking, sharing
Lesson 4 – Assertion – saying no and still being buddies

* Additional lessons will be developed. Lessons may be added, expanded or repeated based on input from focus group or bi-weekly problem-solving consultation.

The occupational therapist will take an active role in preparing and implementing the instructional modules and will work collaboratively with the classroom teacher in monitoring and reinforcing the use of these targeted skills during cooperative learning activities. The therapist will provide support in monitoring student progress and collecting outcome data. Training modules will be provided weekly through a direct service model. Collaborative consultation with the classroom teacher will be provided on a weekly basis. Visual supports
such as charts, posters and bulleted PowerPoint slides or hand-outs will be developed for the teacher to use to review key points of each lesson on a daily basis before students engage in paired or cooperative learning activities. This daily review and reinforcement will be important in supporting learning and generalization of the targeted social competencies.

Visual supports are expected to increase the effectiveness of instruction in and practice of targeted social competency skills. The evidence suggests that visual supports (Bryan & Gast, 2000; Morrison et al., 2001; Odom, Brown, Frey, Karasu, Smith-Canter & Strain, 2003; Rogers, 2000; Thiemann & Goldstein, 2004) including video-modeling (Ayres & Langone, 2005; McCoy & Hermansen, 2007) may be an effective medium for children with an ASD to improve targeted social skills. The quality of this evidence is variable due to small sample sizes, poor control for multiple visual support interventions and inclusion of students who were older than my target population. This type of support is expected to be well received by students as well as educators and will be easily integrated into the classroom setting. The training modules will utilize a PowerPoint presentation to highlight key concepts as well as model targeted social behavior through video. Other visual supports will include student-made charts to support identification of feeling states as well as activities for self-regulation and a classroom behavior chart to provide feedback to students on their use of targeted strategies and social skills during collaborative learning groups. A single PowerPoint slide with key concepts and embedded video-modeling will be used to
highlight learned concepts and support practice in daily CG/PP learning activities and classroom experiences. Students will also be trained in the use of comic strip conversation techniques to provide a visual-based technique for social emotional problem-solving. This involves drawing out simple stick figures in which social emotional interactions of a problem situation are visually represented (Glauser, Pierson & Fritschmann, 2003). This provides a visual-based strategy to identify the actions of social partners, to reflect on feelings of self and others and to generate solutions based on a problem-solving process (Pierson & Glauser, 2007; Rogers & Myles, 2001). There is preliminary evidence that this intervention may be effective in assisting students with an ASD to understand and resolve difficulties that arise in peer interactions (Glauser, et al., 2003; Pierson & Glauser, 2007; Rogers & Myles, 2001). This limited evidence based on 3 case studies (Glauser et al., 2003; Rogers & Myles, 2001) and a quasi-experimental, before and after design (Pierson & Glauser, 2007) indicates the need for good data collection to document the effectiveness of this strategy to promote social emotional problem-solving skills.

Evaluation

Expected outcomes and measures

The expected overall outcomes of this proposed program are increased peer acceptance of students with an ASD by typically developing peers and improvement in social skills and increased social participation by students with AS/HFA in the general education classroom setting. The MCaLT program will
use a single subject AB research design to evaluate these outcomes. Data on peer acceptance and social skills will be collected using pre and post intervention measures. Peer acceptance will be assessed using the peer nomination procedures as described by Chamberlain et al., (2007). Each student in the class will be asked to sort pictures of their peers into two piles of students that they ‘like to or do not like to hang out with’ (Chamberlain et al., 2007). Students will be encouraged to include themselves and students of the opposite sex. Data on social skills in the classroom will be measured through the use of the Social Skills Rating System – Teacher Report (Gresham & Elliott, 1990). Data on these outcome measures will be collected during the first week of the baseline phase and when the intervention phase ends at the end of the school year.

Social participation will be measured through repeated observational measures taken before and during the intervention phase. Social engagement is defined as the presence of social emotional behaviors that involve reciprocity. Behavioral definitions are derived from procedures used by Macintosh and Dissanayake (2006b) and modified to reflect activities that may occur in CG/PP learning activities (see Appendix D). These behaviors include: engagement in conversation; turn-taking; sharing ideas and materials; social greetings and exchanges; and emotional expressions, such as responsive smiling, nodding, and laughing. Non-engagement is defined as behaviors that are solitary and devoid of interaction with a peer. Behaviors that indicate non-engagement include being unoccupied, an observer, or engaged in solitary or parallel
activities that lack interaction with a peer. Targeted behaviors will be measured using a checklist to tally the frequency of engaged vs. non-engaged behaviors. The student with an ASD will be observed during CG/PP learning activities. Every 20 seconds for 10 minutes, the student's behavior will be coded as either socially engaged or not engaged. A percentage of time engaged during each 10 minute observation will be calculated for each observation made during baseline and intervention phases. Data will be collected for 5 cooperative learning group sessions during the baseline phase and during 5 cooperative learning group sessions during the intervention. Data will be collected every 3 to 4 weeks over the 7 month period.

The baseline data measurement will be initiated after 4 full weeks of school in the fall. This will give students and teachers an opportunity to adjust to the new school year, new routines and to get to know each other. During the fifth week of school, students will be asked to provide information using peer nomination procedures as whole group activities in their general education classroom. This will include typical peers as well as the target student with an ASD who is included in the general education classroom. The teacher will also be asked to complete the SSRS – Teacher Form during this week. Baseline data on social participation will be collected during 5 CG/PP learning activities in the general education classroom during the first two weeks of the program. Baseline and post-intervention data will be collected by a trained occupational therapy student who is blind to the research design and intervention to minimize bias.
On-going use on the teacher's daily use of charts, posters and Power Point slide for review of responses will be monitored through informal discussions with the classroom teacher during the bi-weekly consultation. A simple checklist (see Appendix B) will be used by the occupational therapist to monitor the ability of the student with AS/HFA and randomly selected typically developing peers to identify and demonstrate the targeted social competency weekly during the cooperative group or peer partner learning activity after each lesson. These data along with data on social participation will be reviewed with the classroom teacher and paraprofessional on a biweekly basis to support the collaborative team effort and provide a basis for on-going problem-solving and adjustments. An exit interview with the teaching staff (see Appendix E) will provide qualitative data on the perceived value and effectiveness of various elements of the proposed program as well as impressions of the impact on students without an ASD. An informal interview with the students with AS/HFA will be conducted at the end of the intervention (see Appendix F). This exit interview will provide perceived value and impact of the program from the perspective of students with AS/HFA. Figure 2 describes the tasks and timelines of the proposed program.
Focus group convened in spring or summer preceding school year

Baseline Data collected week 5-6 of the new school year
Measures:
- SSRS- Teacher Version
- Peer Nominations
- Observations of Social Participation during 5 CG/PP learning activities by O.T. student
- Blind to intervention design

Intervention Phase
Weeks 7 – 35
- Weekly class-wide instruction/practice during CG/PP learning activities.
- Bi-weekly consultation with teacher
- Teacher will provide daily brief review of target behaviors and SEL expectations prior to CG/PP learning activities

On-going data collection of social participation every 5-6 weeks.

Post intervention data collected
Weeks 36- 38
Measures:
- SSRS- Teacher Version
- Peer Nominations
- Exit interview of teacher, student(s) with AS/HFA

Figure 2. MCaLT Program timeline and tasks

**Data Analysis**

Peer acceptance will be measured through pre and post-intervention data collection using nomination procedures. Peer acceptance will be analyzed by summing the number of buddy nominations for each student indicated as a buddy score. Changes in buddy scores will be compared for the typically developing students was well as the student(s) with an ASD. A t distribution for the class can be developed by calculating the mean for the typically developing students in the class as well as the standard deviations using the pre and post
intervention scores. The change score of the student(s) with an ASD can then be compared to the distribution of buddy scores for the class. The Social Skills Rating Scale: Teacher’s version (Gresham & Elliott, 1990) will be used to measure changes in social skills in the school setting. Changes in pre and post standardized scores will be analyzed to determine if significant changes occurred. Social engagement in collaborative group activities will be assessed through multiple probes using direct observations taken during the baseline and intervention phase. The percentage of social engagement for each observation will be graphed and visually inspected to determine if there is an observable intervention effect. The C statistic is an appropriate analysis to apply to data that is serially dependent and can then be converted to a Z statistic to determine if there is a significant difference in pre and post intervention data (Niemeyer, 2008). If there is an apparent trend, changes from baseline to intervention phase may be analyzed through the use of a celeration line analysis for comparison of trends using the C and Z statistics. If there does not appear to be an apparent trend in the baseline data, then a change in level from baseline to intervention phase will be determined using either a two standard deviation band or a binomial test. Analysis of the data will identify whether this approach impacts peer acceptance and inclusion in social networks, social skills and social participation in CG/PP learning activities. The data will provide valuable information to revise and refine the training modules as well as integrate the perspectives and knowledge gained through the collaborative process.
Conclusion

The MCaLT program emphasizes the collaborative efforts of an educational team to create a classroom community of students who are socially and emotionally competent. This innovation will provide the instruction and support to close the social gap between students with an ASD and their peers by creating learning and practice opportunities in the natural school environment. Typically developing peers will provide the motivation and support for students with an ASD to use newly learned social emotional skills in an accepting and positive environment. It is hoped that typically developing peers will develop the social emotional competencies to value differences and build relationships with students with an ASD, even after the intervention program is completed.
Appendix A
MCaLT Logic Model

Resources
- Staff, OT, general & special educators
- Informed support of parents, administrators
- Funding resources
- Collaborating academic or community agency partners

Activities
- Literature review
- Focus group - key opinion leaders, teachers, union chairperson, building principal.
- Review of data from focus groups and literature review to develop program, instructional modules
- Plan and develop program
- Presentation of program to program manager, parents to obtain permission to participate
- Development of short teaching modules
- Development of charts, posters, etc.
- Collect pre test data, i.e. Social Skills Rating Scale, observation of social participation, peer nominations
- Class-wide instruction (includes teachers) in SEL competencies, strategies provided by OT
- Integrated OT services to support application of
- Newly introduced skills to collaborative group and peer partner (CG/PP) learning activities
- On-going consultation, collaboration with teachers to refine, monitor program, progress

Outputs
- 22-26 weekly Class-wide peer mediation
- Training modules for 7 months
- Instruction modules lasting 15 minutes
- Utilizing Power Point slides, animations, embedded video modeling of target SEL competencies
- One Power Point slide with embedded video highlighting targeted behavior for the week
- Visual templates such as comic strips, charts for daily review of target behaviors
- By teacher

Customers
Students with HF/ASD who are included in general ed., their peers, general & special

37
Short term outcomes
- Student with AS/HFA will identify social emotional skills that are important to participate in CG/PP learning activities
- Students with AS/HFA will demonstrate targeted social emotional competency during guided CG/PP learning activities (following SC lesson)
- Teachers will use PowerPoint slide, charts, posters before daily CG/PP learning activities
- Therapist and teachers will identify and monitor students' initial responses through informal observation

Intermediate outcomes
- Students with AS/HFA will demonstrate use of targeted social competency during CG/PP learning activities
- Therapist and teacher will collect and review on-going data on students with AS/HFA and collaboratively identify what is working and what needs to be revised
- Implement revisions and continue to collect data & review. Celebrate success!

Long term outcomes
Students with AS/HFA will show increased social participation as measured by behavior observation data
Students with AS/HFA will show improvement in social skills as measured by the SSRS-T
Typical peers will show increased acceptance, inclusion of students with AS/HFA as demonstrated by peer nomination procedures
Teachers will provide qualitative data on perceptions of program and its effectiveness.
Students with AS/HFA will provide qualitative data on experiences and attitudes toward program.
## Appendix B

**MCaLT Program: Target skill use in natural CG/PP activities**

**Student:** ____________________________

<table>
<thead>
<tr>
<th>Date</th>
<th>Skill</th>
<th>Identifies, explains target skill</th>
<th>Uses skill in CG/PP learning activity</th>
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### Engine levels

- Use of breathing
- Use of movement strategy
- Use of hand fidget strategy
- Use of visual/auditory strategy

### Feelings and behaviors

- Facial expressions
- Perspective-taking

### Valuing differences

- Being a buddy
Problem-solving I

Problem-solving II

Active listening

Reciprocal social interaction

Cooperation

Assertion
Appendix C

Description of Sample Instruction Lessons

Module II Lesson 1

Focus - Self-regulation

Lesson 1 – How our engines run – High, low, just right.

Goal: Introduce common vocabulary to develop awareness of arousal levels of self and others.

Objectives:

1. Students will learn the engine words (arousal/alertness levels) and concepts by viewing a short animation of a vignette in which Cruisey informs his friends, Revvie and Draggy of a beach party. Each character represents an arousal level (Williams & Shellenberg, 1996).

2. Students will demonstrate understanding of arousal levels by naming the arousal level that correspond to each arousal level.

3. Students will discuss what happened to the characters related to engine levels.

4. Students will label own alertness level during collaborative group or peer partner group learning activities.

Materials

Laptop with projector with Flash animation loaded on laptop

Power point slide with pictures of characters

Large Poster board divided into 3 sections
Permanent Markers

Picture of each character on Poster Board (in each section corresponding to high, just right and low.

Description of lesson and learning activities

Therapist will begin by saying “If your body is like a car engine, sometimes it runs too low.” Therapist demonstrates what low might look like by moving slowly, head down and slumped body.

Therapist continues saying “sometimes it runs on high” Therapist demonstrates what high might look like, by moving fast and jerky, with erect posture and head up, quickly scanning room.

“and sometimes it runs just right”. Therapist demonstrates what just right might look like, by moving at moderate speed, with a relaxed, balanced posture, easy, engaged manner.

Let’s look at this video about 3 friends and what happens if their engine levels are running at different speeds.

View animation....

Therapist will present Power Point slide and ask student’s to vote on what the engine levels are for each character and type in words

Therapist will ask what happened to each character and why?

Therapist will ask class to brainstorm words that describe each engine level

She will write words in corresponding sections on poster board
Students will be asked to think about their own engine levels and they will be asked to label their engine level at least once during follow-up the cooperative group or peer partner learning activity.

The poster and corresponding labels that the students identified will be used by the teacher during the week to review lesson and reinforce concepts. Teachers will reinforce learning by labeling their own engine levels and asking students to identify their engine levels throughout the week. Teacher may occasionally make reflective statements, such as 'J, your engine looks like it might be running on low right now', is that how it feels?

**Description of Module II Lesson 2**

**Focus - Self-regulation**

Lesson 1 – How our engines run – High, low, just right...where are you?

**Goal:** Students will identify engine speeds (arousal/alertness levels).

**Objectives:**

Students will learn the engine words (arousal/alertness levels) and concepts by matching a picture to the corresponding alertness level to the High – Low Chart (Williams & Shellenberg, 1996).

Students will demonstrate understanding of arousal levels by brainstorming words that correspond to each arousal level.
Students will label own alertness level during collaborative group or peer partner group learning activities.

**Materials**

24 x 36 inch poster board

Graphic with high – just right – low continuum

Represented in top to bottom orientation

Placed on left side of poster

Double stick tape

Pictures representing different arousal/alertness levels from “How Does Your Engine Run?: A leader’s guide to the Alert Program for Self-Regulation” (Williams & Shellenberger, 1996) as well as pictures from magazines.

**Description of lesson and learning activities**

Therapist will begin by saying “Do you remember what we learned last week about engine levels? Who can tell us how my engine is running now? Therapist demonstrates what low might look like by moving slowly, head down and slumped body.

Therapist continues saying “Who can tell us how my engine is running now?” Therapist demonstrates what high might look like, by moving fast and jerky, with erect posture and head up, quickly scanning room.

“and who can tell us how my engine level is running now?” Therapist demonstrates what just right might look like, by moving at moderate speed, with a relaxed, balanced posture, easy, engaged manner.
Therapist will hand out 1-2 pictures to each student. Each picture will represent an engine level. Students will take turns showing their picture and identifying what engine level they think it represents. Feedback will be elicited from group and therapist will facilitate awareness by pointing out body and facial cues to help identify arousal/alertness levels.

Students will place double stick tape on their picture(s) and place it at the appropriate engine level on the poster.

Students will be asked to continue to think about their own engine levels and they will be asked to label their engine level at least once during follow-up the cooperative group or peer partner learning activity. Therapist will monitor and check to make sure student with ASD can identify his engine level.

The poster and corresponding labels that the students identified will be used by the teacher during the week to review lesson and reinforce concepts. Teachers will reinforce learning by continuing to label their own engine levels and asking students to identify their engine levels throughout the week. Teacher may occasionally make reflective statements, such as 'L, your engine looks like it might be running on low right now', is that how it feels?
Appendix D

Social Engagement Observation Checklist

Socially engaged is defined as the presence of social emotional behaviors that involve reciprocity. They include: engagement in conversation, turn-taking, sharing ideas and/or materials, social greetings and exchanges, and emotional expressions, such as responsive smiling, nodding, laughing, etc.

Non-engagement is defined as behaviors that are solitary and devoid of interaction with a peer. They include: being unoccupied, an observer, or engaged in solitary or parallel activities that lack interaction with a peer.

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Percentage of time engaged: __________________________
Appendix E
MCaLT Teacher’s Exit Interview

Semi-structured interview questions

Begin with introductory script......*We have been working together over the past 7 months to help the student with an ASD and their peers in your class to develop better social emotional interaction skills. The intent of this program is to increase acceptance and understanding of the student with an ASD and to increase positive and productive social interactions in your classroom. I would like to talk about your experiences and perspective on the MCaLT program.*

*Script* This information will be used as part of the evaluation process to revise and improve the program. Let’s begin by talking about your overall impressions of the program.

1. In what ways was this program beneficial for your students?
2. In what ways did this program meet or fail to meet your expectations?
3. Was the program more beneficial for particular students?
   a. If so, what do you think are the common characteristics of these students that might have made it more beneficial to them? (i.e. verbal ability, learning style, gender, etc.)
4. How did your students respond to the program?
5. How relevant were the modules to the social emotional needs of your students?
6. Was the time spent introducing the skills (short lessons) adequate?

Now let's talk about your experiences in implementing this program.

7. How easy was it for you to use the materials to review the target skills?

8. How easy was it for you to integrate some of the concepts and target skills into your class group activities?

9. How did the consultation sessions support or hinder implementing the program?

Finally, let's talk about your perceptions of the MCaLT program

10. If another teacher asked about the program, what would you say to them?

11. What suggestions do you have to improve the program?
Appendix F

MCaLT Student Interview Questions

Pre and post intervention semi-structured interview questions

(Pre intervention interview): I would like to talk to you about school and what it is like in your classroom

(Post intervention interview): The school year is coming to an end. I would like to talk to you again about school and what it is like in your classroom now.

1. Can you tell me about the kids in your classroom? Who is in your classroom?
   Can you tell me how many are boys and how many are girls?

2. Are there some kids in your classroom that are your friends?
   a) If yes:
      1) Tell me how you became friends with_______?
      2) Tell me about a time when you and your friends did something fun together.
      3) What makes ___________ a friend?
   b) If no:
      a. Can you tell me why they aren't your friends?
      b. Do you want them to be your friends?
      c. What do you think gets in the way of friendships for you?

3. What are three things that make someone a friend?

4. How can you tell if someone is your friend?
5. Why do people have friends?

6. Are there kids in your classroom who like to work with you during center time (K) or when you work in groups or with a buddy? *

   a. If yes:
      1.) What kinds of things do you do in class with ____________?
      2.) What makes __________ want to be your buddy during center time
          or in group time?

   b.) If no:
      1.) Can you tell me why they don’t want to be your buddy during
          center time or in group time?
      2.) Do you want to be a buddy or work in a group with other kids?
      3.) What do you think gets in the way of being asked by other kids
          to be a buddy in center time or in a group?

7. What do you like to do in school?

   *terminology will be modified to represent terms used for cooperative
   learning activities or peer partner learning activities
Appendix G

Making Connections and Learning Together (MCaLT) Program Funding Plan

The Making Connections and Learning Together (MCaLT) program is a class-wide peer mediated intervention program to close the social gap between students with an autism spectrum disorder and their peers. The program will be implemented in the public school setting in the general education classes and will focus on students with autism and their peers in the kindergarten through third grade. The program will be implemented by an occupational therapist collaborating with a general educator and paraprofessional. The program involves class-wide training in social emotional skills instruction using visual-based media. The instruction will consist of 22-26 short lessons focused on targeted social emotional competencies preceding peer partner or collaborative learning activities. The expected outcomes of the program are the improvement of peer acceptance and social participation as well as the social skills of children with autism. The MCaLT program emphasizes the collaborative efforts of the occupational therapist and teacher to support improve social emotional competence of students with autism and their peers. The following will describe the funding plan for Year 1 and Year 2 of the project.
<table>
<thead>
<tr>
<th>Resources</th>
<th>Materials/ Services</th>
<th>Estimated budget costs</th>
<th>Justification/ comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>
| Susan Bazyk, PhD.  
Cleveland State University | Review of SEL module lesson plans | *In-kind services:*  
I will offer to guest lecture at CSU or provide other services. | Dr. Bazyk was a Circle of Advisor for my doctoral project and an expert in social emotional learning interventions. |
| Irene     | Develop story line for animations, ideas for graphics  
Assist with focus groups if available |                        | Irene has a B.A. in English, creative writing. |
| Friends and colleagues, Meg  
Manny, Diane Saturnino, Beverly Ash, | Review lesson plans, strategies to address needs of students in school setting. Assist with focus groups if available. |                        | Meg is an OT and special educator in early childhood; Diane is school-based OT with many years experience; Beverly is a Special Educator with extensive experience and expertise in teaching young students with autism |
| Marc and Jason Kirschenbaum, husband and son, computer scientists | Provide technical assistance, consultation |                        | Marc and Jason can help me find the right resources for developing the animations. |
| CMSD Human Ware Action Committee | Potential training in adopted Universal Tier 1 recognized SEL program  
Either PATHS or Second Step program. | I will volunteer to train colleagues in the Department of Related Services | *My program should dove-tail with the Universal tier 1 intervention of CMSD and this will promote sustainability because it will use a common language and curriculum as its foundation. |
<table>
<thead>
<tr>
<th>Needed resources</th>
<th>Year 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reusable project materials:</td>
<td>Year 1</td>
</tr>
<tr>
<td>SEL program either PATHS or</td>
<td>$800 - $1000</td>
</tr>
<tr>
<td>Second Step curriculum</td>
<td>* see comment above. Curriculum needed to develop modules and lessons. It will be used and modified to meet unique needs of students with autism and their peers.</td>
</tr>
<tr>
<td>Flash animation creation by</td>
<td>$1500 - 2000 * Multiply by 2 if program focuses on 2 classes</td>
</tr>
<tr>
<td>free-lance artist</td>
<td>I have made these by hand in the past and teachers have found them very effective in quickly reinforcing target classroom social behaviors/rules. Laminated poster will be reusable and should last several years.</td>
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<tr>
<td>Stop light behavior chart-</td>
<td>$120 - 150 *</td>
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<tr>
<td>laminated poster and</td>
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<tr>
<td>individualized student icons to</td>
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<tr>
<td>reinforce targeted skills</td>
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<td>throughout the day</td>
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<tr>
<td>Evaluation: SSIS (Social Skills</td>
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<tr>
<td>Rating System) : Manual</td>
<td>$101</td>
</tr>
<tr>
<td>ASSIST software package</td>
<td>$250</td>
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<tr>
<td>Teacher rating forms</td>
<td>$52</td>
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<tr>
<td>Consumable materials:</td>
<td>$100 - 150 *</td>
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<tr>
<td>for student created visual</td>
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<tr>
<td>supports</td>
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<tr>
<td>Poster boards, glue, scissors,</td>
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<td>markers, Velcro, lamination film,</td>
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<tr>
<td>etc.</td>
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<td>for class of 24</td>
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<tr>
<td>Project Equipment: (reusable):</td>
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<tr>
<td>for implementation of visual-based training modules in the classroom setting:</td>
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<tr>
<td>Notebook computer</td>
<td>$1000-1500</td>
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<tr>
<td>LCD portable projector</td>
<td>$500-1000</td>
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<tr>
<td>Flash Drive to save lessons and</td>
<td>$20-30</td>
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<tr>
<td>modules, place review slides on</td>
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</table>

These supplies are necessary for creating engaging lessons. Students will related much better to visual supports they have helped to develop.

SSIS is updated version of SSRS. Use of software will be very helpful in tracking progress and determining differences in ratings of different teachers to control for bias.

Since the interventions are visual-based instruction, it is very important that I have equipment that is up to date and reliable. I currently use a District laptop however it is unreliable. My lessons are short and precede class learning activities. It is essential the visual media work well and
classroom computer for student/teacher reference.
Carrying case for notebook computer $100
Video-camera # $300 – 400
Tripod for camera $50 – 100

Personnel:
Hourly wages for OT student(s) $15 – 30 •
Training – 1-2 hours @ $15 per hour
Review and coding of observation sessions $15 – 30 •
video-taped or in vivo 1-2 hours
Assist with focus group if volunteer not available 2 hours

Other expenses:
Refreshments for focus groups $25-30 •
Gift certificates to educational materials store for teachers participating in program $200 •

Needed resources
- Year 2
Reactive equipment:
Video-camera # $300 – 400
Tripod for camera $50 – 100

Consumable materials: replenish supplies for student created visual supports for class of 24

reliably.

# Video-taping and randomly ordering observation segments for coding would further enhance reliability of outcome data. This could be added the second year if the first year funding can not support this purchase.

This element of training for evaluation of social engagement is essential to reduce bias in outcome date and increase reliability. • Multiply by 2 if program focuses on 2 classes

Teachers will be participating voluntarily. Gift certificate is a way to show appreciation. I will explore using paid voluntary professional hours through the school district teacher's contract for the focus group and consultation that takes place after school hours.

# see comment above.
Appendix H

MCal T Program Dissemination Plan

The Making Connections and Learning Together (MCalT) program is a class-wide peer mediated intervention program to close the social gap between students with an autism spectrum disorder and their peers. The program will be implemented in the public school setting in the general education classes and will focus on students with autism and their peers in the kindergarten through third grade. The program will be implemented by an occupational therapist collaborating with a general educator and paraprofessional. The program involves class-wide training in social emotional skills instruction using visual-based media. The instruction will consist of 22-26 short lessons focused on targeted social emotional competencies preceding peer partner or collaborative learning activities. The expected outcomes of the program are the improvement of peer acceptance and social participation as well as the social skills of children with autism. The MCalT program emphasizes the collaborative efforts of the occupational therapist and teacher to support improve social emotional competence of students with autism and their peers. The following will describe the dissemination plan for the project.
Long term goal 1:

Adoption of SEL based program school-wide in one school in CMSD (Universal intervention, Tier 1) with implementation of the MCaLT program in at least 2 general education classes, K - 3rd grade in which students with autism are included at least part of the day.

Short term goal 1a: Increased understanding by occupational therapists and educators of the role of SEL learning in improving school climate and the overall learning environment and how modifications used in the MCaLT program will meet the unique learning styles/needs of students with autism and other challenges.

Target Audience: Occupational therapists and educators.

<table>
<thead>
<tr>
<th>Key messages</th>
<th>Sources/Messengers</th>
<th>Dissemination Activities</th>
<th>Budget</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase awareness and understanding of the challenges in meeting the unique needs of students with autism in terms of educational policy and evidence-based interventions that appear effective in meeting the social participation needs of this population.</td>
<td>AOTA</td>
<td>AOTA continuing education article published in OT Practice. I will write this with reviews from colleagues. This will be a first step to increase awareness of the gap and challenges.</td>
<td>No expense, only the time of the author. This activity would be implemented through electronic media.</td>
<td>Acceptance/publication of article will reinforce the importance of the increasing awareness among OT community. Number of participants completing the CEU process.</td>
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<tr>
<td>Modification of SEL based programs using the MCaLT program can be an effective way to meet the social emotional needs of students with autism using an integrative OT service model.</td>
<td>OOTA</td>
<td>Power Point presentation or poster presentation at the OOTA conference to share findings of pilot study</td>
<td>Travel/lodging $150 Poster $80 - 100</td>
<td>Number of participants in the presentation.</td>
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</table>
| **Ohio Department of Education** | **Power Point presentation or poster presentation at the Annual Ohio School-based OT PT Institute**<sup>+</sup> | **Travel/lodging** $150 | **Number of participants in the presentation.**

**Implementation of brief class-wide SEL based lessons using the MCaLT model and an integrative OT service model before cooperative group or peer partner learning activities can effectively meet the social interaction challenges of students with autism in the classroom, creating a positive and productive learning environment for all. Integrative O.T. services provide valuable and effective support to educators to meet the challenges of special needs students.**

**Catalyst - Ohio, a non-profit newsmagazine that focuses on school reform in Ohio's urban school districts.** | **Brief article or interview in Catalyst Ohio, This will be my third step and will provide an avenue for reaching educator who are open and interested in reform and innovations that work. I will initiate this through a phone contact and meeting.** | **Meeting expenses may include providing lunch or dinner $50 - $75** | **Acceptance and publication of the article/interview.**

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**Long term goal 2:**

Change in practices in Ohio schools to meet social interaction needs of students with autism in the school setting.
Short term goal 2a:
Increased understanding of other stakeholders and policy makers on the role of SEL learning to improve school climate and the learning environment overall and how modifications used in the MCaLT program will meet the unique learning styles/needs of students with autism and their peers.

Target Audience: Parent groups such as the Autism Society of Greater Cleveland or Ohio, administrators and policy-makers in the Ohio Department of Education.
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<tr>
<th>Key messages</th>
<th>Sources/ Messengers</th>
<th>Dissemination Activities</th>
<th>Budget</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier 1 SEL programs that focus on improving social emotional competence for all students are effective in creating school environments that facilitate positive inclusion practices for students with special needs such as autism. A class-wide intervention program such as MCaLT that incorporates key elements of SEL and meets the unique learning styles of students with special needs such as autism are: &lt;br&gt; 有效 in increasing and maintaining social interaction skills across settings and contexts &lt;br&gt; sustainable &lt;br&gt; cost effective.</td>
<td>Ohio Center for Autism and Low Incidence (OCALI) -Columbus &lt;br&gt; State Support Team region 3-local &lt;br&gt; Autism Society of Ohio</td>
<td>Power Point Presentation &lt;br&gt; I will provide this in person. The presentation will be provided first to my SST and Greater Cleveland Autism Society locally and then to OCALI and members of the Autism Society of Ohio at the state level. &lt;br&gt; Brief article presented on websites of OCALI and ASO, GCAS</td>
<td>Travel/ lodging $250 – 350 &lt;br&gt; Printing for handouts, articles $100- $150 &lt;br&gt; Expenses for meetings i.e. refreshments, lunch $100 - 150</td>
<td>Attendance at presentation and meetings &lt;br&gt; OCALI agrees to post article, PPT presentation on website &lt;br&gt; ODE/ OAT include MCaLT model as one of the recommended protocols to meet the gap in services related to social skills training in Ohio TS-7 of Ohio Autism Taskforce recommendations</td>
</tr>
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</table>
References


United States Department of Education. (n.d.) Individuals with Disabilities Education Act, Sections 300.8c1i, 300.116and 612a5. Retrieved April 28, 2008 from: http://idea.ed.gov/explore/search/p/%2Croot%2Cregs%2C300%2CA%2C300%252E8%2C


Curriculum Vitae

PERSONAL

Kirschenbaum Robin Ann Morgan
Name: Last First Middle Maiden

ADDRESS
Number and Street: 16100 Chadbourne Rd.
City: Shaker Heights
State: Ohio
Zip Code: 44120
Telephone number: 216-991-5480
Cell: 216-337-1712
E-mail: travelingks@aim.com

FORMAL EDUCATION

Graduate Degree: Doctor of Occupational Therapy
Date of Degree: 5/17/09
Name of University: Boston University College of Health and Rehabilitation Sciences: Sargent College
Location: Boston MA

Graduate Degree: Master of Science, Occupational Therapy
Date of Degree: 1/25/07
Name of University: Boston University College of Health and Rehabilitation Sciences: Sargent College
Location: Boston MA

Baccalaureate Degree: Bachelor of Science, Occupational Therapy
Date of Degree: 12/7/79
Name of University: The Ohio State University
Location: Columbus, Ohio

Post-Baccalaureate Program – Cincinnati Public Schools- January – March 1980
Advanced clinical study of school-based occupational therapy for students with sensory integration disorders under the direction of Virginia Scardina, OTR/L

CREDENTIALS

Occupational Therapist Registered
Initial certification 2/1/1980
National Board form Certification In Occupational Therapy, Inc.
Positions Held

August, 1989 - ongoing

**Occupational Therapist**

Cleveland Municipal School District
Cleveland, Ohio

- Evaluate student's strengths, challenges related to school performance
- Determine educationally relevant needs, develop goals and objectives as part of team process
- Develop individual intervention plans including modification of materials and accommodations within classroom settings
- Develop and provide professional development training, consultation for general and special educators, occupational therapists, other related service professionals
- Maintain appropriate documentation of services provided and assessments of student interventions

October 1983 to August 1989

**Occupational Therapist**

Private Practice
Shaker Heights, Ohio

- Evaluated strengths, challenges of children with developmental delays, ages 3-12 in the areas of school performance and daily life skills in community and home.
- Developed individualized educational/habilitation plans as well as treatment plans
- Consulted with other occupational therapists, teachers, habilitation specialists, parents, administrators and other related service professionals
- Supervised certified occupational therapy assistants
- Provided in-services and training to staff and parents in schools and habilitations centers.
September 1980 to August 1982  **Occupational Therapist**  
Franklin County Board of Mental Retardation  
Columbus, Ohio  
- Evaluated, planned and implemented treatment for multiply, orthopedically handicapped or delayed children, ages 2-6.  
- Collaborated with interdisciplinary teams in determining programming and placement needs of children and developing Individual Education Plan

PROFESSIONAL SOCIETY AND ORGANIZATION MEMBERSHIPS

American Occupational Therapy Association  
Ohio Occupational Therapy Association  
Autism Society of America

GRANT AWARDS

“Fit to Go”. MBNA Corporation Foundation Grant. 9/1/04. Amount $3,554.


PRESENTATIONS


Kirschenbaum, R. M. (2006, September). Evidence-based Practice for School-based Therapists: Tools to Integrate EBP into daily practice”. Professional Development presentation to OT/PT Department, Cleveland Municipal Schools, Cleveland, OH.