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Addressing social, emotional, and organizational goals for a child with an autism spectrum disorder (ASD) using the Cognitive Orientation to daily Occupational Performance (CO-OP) approach:

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ADDRESSING SOCIAL, EMOTIONAL, AND ORGANIZATIONAL GOALS FOR A CHILD WITH AN AUTISM SPECTRUM DISORDER (ASD) USING THE COGNITIVE ORIENTATION TO DAILY OCCUPATIONAL PERFORMANCE (CO-OP) APPROACH

by

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Master of Occupational Therapy, University of North Dakota, 2014

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An Independent Study
Submitted to the Occupational Therapy Department
of the
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for the degree of
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This Independent Study, submitted by Gina Czmowski and Shea Willert in partial fulfillment of the requirement for the Degree of Master of Occupational Therapy from the University of North Dakota, has been read by the Faculty Advisor under whom the work has been done and is hereby approved.

Signature of Faculty Advisor

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Title: Addressing social, emotional, and organizational goals for a child with an autism spectrum disorder (ASD) using the Cognitive Orientation to daily Occupational Performance (CO-OP) approach

Department: Occupational Therapy

Degree: Master of Occupational Therapy

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ABSTRACT

Background: Children with autism spectrum disorders (ASDs) have social, emotional, and organizational deficits. These are frequently addressed through behavioral-based skills training which often does not result in generalization of skills.

Methods: This single case study sought to understand if the Cognitive Orientation for daily Occupational Performance (CO-OP) approach, an approach developed to assist children in problem solving their own motor planning difficulties, is an effective approach for addressing social, emotional, and organizational goals with a child with an ASD.

Results: Pre and post-intervention assessment ratings on the Canadian Occupational Performance Measure and the Performance Quality Rating Scale completed by the participant’s parents and the authors indicate an improvement on all three goals. Analysis of video recordings of the intervention sessions indicated the global strategies of Goal-Plan-Do-Check were effective, with the participant spending most time in “plan.” A majority of the domain specific strategies did not apply to this case study. The participant utilized “verbal guidance by therapist” most often and spent a majority of dimension of time on task “talking about the task.”

Conclusion: The CO-OP approach was demonstrated to be effective in addressing social, emotional, and organizational skills with a child with an ASD. The global strategies were demonstrated to be effective, but further research to identify more applicable domain specific strategies for social, emotional, and organizational goals is recommended.
CHAPTER I
INTRODUCTION

Currently, occupational therapists use a variety of methods to address the social, emotional, and organizational skill deficits associated with children with autism spectrum disorders (ASD). Common social skills interventions include the use of Social Stories, social autopsies, comic strip conversations, mindreading, video detective, and power cards (Gagnon, 2001; Gray & White, 2002; Hilton, 2011; Hutchins & Prelock, 2006; McAfee, 2002; Williams, Gray, & Tonge, 2012). In regards to emotional regulation skills, the most common interventions include the use of emotion charades, scales, and thermometers (Buron & Curtis, 2003; Kuypers, 2011; McAfee, 2002; Williams & Shellenberger, 1996). In the area of organizational skills, occupational therapists commonly use strategies such as visual supports, practice, and positive reinforcement (Ganz, 2007; LaVesser & Hilton, 2011). Though these intervention methods are efficacious, the main drawback is that they have not been effective in promoting generalization and transfer of the skill set (Watling, Miller-Kuhaneck, & Audet, 2011).

Metacognitive strategies have recently been used to address the lack of generalization and transfer of skills in children with ASDs (Rodger & Vishram, 2010; Sangster, Beninger, Polatajko, & Mandich, 2005). The use of a metacognitive strategy requires the child to monitor their own performance, problem solve, and adjust their performance as needed (Deitchman, Reeve, Reeve, & Progar, 2010). In the occupational therapy literature, three main metacognitive strategies have been discussed. These include
the metacognitive model for children with atypical brain development (Josman &
Rosenblum, 2011), the Cognitive Functional (Cog-Fun) intervention approach (Hahn­
Markowitz, Manor, & Maier, 2011), and the Cognitive Orientation to daily Occupational
Performance (CO-OP) approach (Missiuna, Mandich, Polatajko, & Malloy-Miller, 2001).

The CO-OP approach was initially developed to address motor difficulties in
children. It was found that traditional intervention approaches were not effective in
promoting generalization and transfer for children with Developmental Coordination
Disorder; therefore another method of intervention was necessary (Missiuna et aI., 2001). The CO-OP approach is metacognitive in nature and includes the use of a global strategy (Goal-Plan-Do-Check) to facilitate the discovery and use of domain specific strategies (Polatajko et aI., 2001b). In this approach, the therapist acts as a guide to facilitate self­
discovery of strategies that promote generalization and transfer of performance to a
variety of occupations (Polatajko et aI., 2001b).

Though most previous research focuses on the use of CO-OP with children who
have motor issues related to Developmental Coordination Disorder (Banks, Rodger, &
Polatajko, 2008; Bernie & Rodger, 2004; Martini & Polatajko, 1995; Miller, Polatajko,
Missiuna, Mandich, & Macnab, 2001; Polatajko et aI., 2001b; Sangster et aI., 2005;
Taylor, Fayed, & Mandich, 2007; Ward & Roger, 2004; Wilcox & Polatajko, 1993),
recently the approach has been used with children with ASD. Children with ASD have
deficits in the areas of social skills, emotional regulation, motor clumsiness, and
generalizing to transfer skills (Rodger & Brandenburg, 2009; Rodger, Pham, & Mitchell,
2009). Initially, the studies with children with ASD also focused on motor-based goals,
however the use of the CO-OP approach was expanded to include goals related to social

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and organizational skills (Rodger, Ireland, & Vun, 2008; Rodger & Vishram, 2010).
Rodger et al. (2008) found that the CO-OP approach was effective in helping children
with Asperger’s Syndrome meet their social and organizational goals. In addition, the
global strategy of “understanding the context” was added, as well as the domain specific
strategies of “transitional supports,” “affective supports,” and “motivational supports.”
Rodger and Vishram (2010) suggested that more studies be conducted in order to further
assess the effectiveness of using the CO-OP approach to address social, emotional, and
organizational goals for children with an ASD.

Purpose of Study

The purpose of this case study research was to further explore the effectiveness of
using the CO-OP approach with a child with an ASD in the areas of social skills,
emotional regulation, and organizational skills.

Research Questions

Throughout this study, the authors sought to answer the following questions: Does the
CO-OP approach work for addressing social, emotional, and organizational skills for
a child with an ASD? Does the child generalize the goals among varying contexts? Does
the child generalize the global and domain specific strategies within the sessions and
outside of the sessions? What domain specific strategies were used in the sessions? Were
the domain specific strategies used in the session similar to those in previous literature?
What type of guidance is used by the child in the sessions? What dimension of time on
task is utilized most often by the child? The authors anticipate that the use of the global
strategy will be effective when addressing social skills, emotional regulation, and
organizational issues in children with ASDs. However, the authors anticipated that some
of the established domain specific strategies would be used, but may need further adjustment to help children with ASDs meet their social, emotional, and organizational goals. It was anticipated that the child will meet their goals, transfer their skills to various contexts, and also develop their own individualized strategies for successful occupational performance in these areas.

Population

A single case experimental design was used for this study (Rassafiani & Sahaf, 2010). The authors recruited one participant from the greater Grand Forks community. A flyer was provided to local providers of occupational therapy, education, social work, and psychology. A local autism support group was also contacted. The inclusion criteria included (a) the child being between the ages of 8 and 12, (b) a diagnosis of high-functioning autism, (c) an IQ of 85 or higher, and (d) the parent and child being willing to participate in one evaluation session, ten intervention sessions, and one post-evaluation to be completed over approximately five to six weeks. One participant was recruited for this study. The participant met the inclusion criteria listed above.

Theory

The CO-OP approach protocol was used to guide the research process for this study. The occupational therapy model that guides this approach is the Canadian Model of Occupational Performance and Engagement (Missiuna et al., 2001). In this model, the interaction between the child, their environment, and occupational performance is considered. A change in any one of these components will cause a change in the other components (Missiuna et al., 2001).

During intervention using the CO-OP approach, the therapist’s role was to
facilitate the optimal match between person, environment, and occupation. This was
considered in both the assessment and intervention phases. In the assessment phase, the
authors interviewed the child and his mother using the Canadian Occupational
Performance Measure (COPM), which is based off of the Canadian Model of
Occupational Performance and Engagement (Polatajko & Mandich, 2004). During the
administration of the COPM, the child and his mother had the opportunity to discuss the
occupations that were of most concern and the environment in which the occupations
take place. The child also completed the Pediatric Activity Card Sort, which allowed the
child to indicate occupations that he participates in and occupations that he would like to
participate in. The authors, child, and his mother prioritized three goals to address in the
intervention sessions. Throughout the intervention process, the authors concurrently
assessed the child’s performance in the three goal areas and adjusted the sessions to
facilitate the optimal match among person, environment, and occupation.

Definitions

The following definitions are important to understanding aspects related to the use
of the CO-OP approach. These definitions are provided to ensure readers a consistent
understanding of this research study.

Autism Spectrum Disorders (ASD): refers to individuals whom meet the following
diagnostic criteria:

- Persistent deficits in social communication and social interaction across multiple
  contexts; restrictive, repetitive patterns of behaviors, interests, or activities;
- Symptoms must be present in the early developmental period; symptoms cause
  clinically significant impairment in social, occupational, or other important areas
of current functioning; and these disturbances are not better explained by intellectual disability or global developmental delay (American Psychiatric Association [APA], 2013, pp. 50-51).

Cognitive Orientation to daily Occupational Performance (CO-OP): refers to An approach that is highly individualized in which children are guided in the use of a global problem-solving strategy and the identification of domain specific strategies that will enable new and effective ways of achieving their individually chosen functional goals (Polatajko, Mandich, Miller, & Macnab, 2001a, p. 85).

Domain specific strategies (DSS): refers to “strategies that are specific to a particular task or part of a task and are task, child, and situation specific” (Polatajko & Mandich, 2004, p. 74).


Generalization: refers to “the degree that a specific skill, learned in a specific context, can be performed in another context” (Polatajko & Mandich, 2004, p. 32).

Global cognitive strategy: refers to “a higher order strategy that is used to control and coordinate other strategies” (Polatajko & Mandich, 2004, p. 68).

Performance breakdown: an objective of Dynamic Performance Analysis and refers to “the specific imbalances that prevent successful performance” (Polatajko et al., 2001b, p. 115).

Transfer: refers to “the degree to which learning one skill influences the learning of another skill” (Polatajko & Mandich, 2004, p. 33).
Summary

Chapter I was composed of an introduction to this independent study, an introduction to the literature used to support the study, an overview of the research questions, information on the population involved in the study, use of theory to guide the study, and definitions of terms. The purpose of this study was to further examine the effectiveness of using the CO-OP approach to address social, emotional and organizational skills for children with ASDs. Chapter II includes a complete and detailed literature review related to ASDs common intervention methods used with children with ASDS, and the development and use of the CO-OP approach. Chapter III includes a description of the research methods that were used in this study. More specifically, Chapter III includes information on the research design, participant selection procedures, information on the participant, measures used in the study, data collection, and the data analysis process. Chapter IV includes a summary of the results. More specifically, this chapter includes pre and post-assessment data from the COPM and the Performance Quality Rating Scale, an overview of the parents’ responses on the Weekly Progress Sheet, and a summary of the Daily Activity Log, Pediatric Activity Card Sort, and the Dynamic Performance Analysis results. This chapter also includes the data results of the global strategies, domain specific strategies, types of guidance, and dimensions of time on task used in the current study and the relationship of the findings with previous research. Chapter V consists of a summary of the authors’ findings, conclusions and recommendations, and limitations.
CHAPTER II
LITERATURE REVIEW

According to the DSM 5 (American Psychiatric Association [APA], 2013), individuals with an autism spectrum disorder have deficits in social communication and social interaction that span varying contexts. They also develop repetitive behaviors, interests, and activities that interfere with daily functioning. The child must present these types of symptoms in the early developmental period and the disturbances cannot be explained by an intellectual disability. Children with autism spectrum disorders develop clinically significant impairments in social, occupational, or other pertinent areas of functioning. These impairments can lead to challenges with learning and generalizing skills (APA, 2013). Individuals who were given a DSM-IV (APA, 2000) diagnosis of autistic disorder, Asperger’s disorder, or pervasive developmental disorder not otherwise specified (PDD-NOS) should now be given the diagnosis of autism spectrum disorder (APA, 2013). In the DSM-IV (APA, 2000), the diagnostic category of Asperger’s disorder was used to describe children who had a normal or above average IQ, typically developed language skills, and developed restrictive, repetitive behaviors, but also demonstrated poor social and communication skills. For the purpose of this literature review, it is noted that studies referenced may refer to individuals with high functioning autism spectrum disorder or Asperger’s disorder and these studies and demographic data are based on the DSM-IV (APA, 2000) criteria unless otherwise noted.
Introduction to Autism Spectrum Disorders

In the past 10 to 15 years, the prevalence of autism spectrum disorders has increased significantly due to varying factors including improved diagnostic testing, expansion of the diagnostic criteria, and more attention from medical professionals and the public in general (Glennon, 2010). Based upon the DSM-IV criteria (APA, 2000), the prevalence of autism spectrum disorders is 1 in every 88 children (Centers for Disease Control, 2012). The severity of autism spectrum disorders vary, however all children with autism spectrum disorders exhibit some amount of impairment in communication, socialization, and the development of restrictive, repetitive acts (Wetherby & Prizant, 2000). The DSM 5 established a new diagnostic category, termed Social (Pragmatic) Communication Disorder. In this disorder, children have difficulty with the social use of non-verbal and verbal communication; however they do not exhibit restrictive and repetitive behaviors (APA, 2013). It is important to consider that children diagnosed with an autism spectrum disorder and children diagnosed with Social Communication Disorder demonstrate problems with the use of nonverbal communication (APA, 2000; Audet & Schub, 2007). These include difficulty with aspects such as body posture, gestures, eye gaze, facial expressions, and vocal intonation (Audet & Schub, 2007).

In addition to communication deficits, children with autism spectrum disorders have deficits in socialization that can interfere with their ability to develop significant peer, family, and community relationships (Barnhill, Cook, Tebbenkamp, & Myles, 2002). Children with autism spectrum disorders have difficulty both interpreting and comprehending non-verbal communication, leading to an inability to repair breakdowns in communication (Audet, 2010). The communication behaviors of children with autism
spectrum disorders are often difficult to interpret, which can lead to difficulty with socialization. They often exhibit unconventional behaviors, use communicative behaviors inconsistently, use unconventional behaviors for many different purposes, and have difficulty combining verbal and nonverbal language to enhance meaning (Audet & Schub, 2007; Stone, Ousley, Yoder, Hogan, & Hepburn, 1997; Wetherby & Prizant, 2000). Children with autism spectrum disorders also have difficulty sustaining communication interactions, which can subsequently affect socialization. They can have difficulty in all areas of social interaction including initiation of a conversation, asking for clarification or elaboration, providing information, and terminating the interaction (Audet, 2010). Each of these deficits can lead to an overall difficulty with the socialization process.

In addition to deficits in socialization, children with autism spectrum disorders have difficulty with emotional regulation. Children with autism spectrum disorders commonly have difficulty expressing their emotions and understanding the emotions of others (APA 2013; Loveland, 2005). In some instances, children with autism spectrum disorders are highly expressive; however they exhibit inappropriate emotions for the situation (Loveland, 2005). Additionally, some children show no fear in situations that are dangerous but have strong reactions to sounds and objects, such as a toilet flushing (Loveland, 2005). It is also common for these children to have difficulty labeling the emotions of others accurately and they may misunderstand how emotions affect themselves (Loveland, 2005). All of these factors contribute to deficits in emotional regulation.

The socialization and emotional regulation deficits found in children with autism
spectrum disorders are relatively consistent. Children with autism spectrum disorders have IQs that span a wide spectrum, from profound mental retardation to high levels of functioning (Klin, Saulnier, Tsatsanis, & Volkmar, 2005). Though IQ level can vary, most children with autism spectrum disorders have a gestalt learning style. This type of learning style can lead to difficulties with organization. Gestalt learners have rigid thinking patterns and have difficulty with abstracting and generalizing information to different contexts (Bolte, Holtmann, Poustka, Scheurich, & Schmidt, 2007; Prizant, 1983; Schuler, 1995). This style of learning relates to how events are conceptualized, the meaning attached to events, and perceiving which details are most important. Gestalt learners perceive their environment in chunks or wholes and the initial representation of an event is stored internally and used to represent all subsequent events (Schuler, 1995). Attwood (1999) described that children with autism spectrum disorders have difficulty with organizational skills needed for daily life. Sumiyoshi, Kawakubo, Suga, Sumiyoshi, and Kasai (2011) compared the organizational abilities of children with autism spectrum disorders to the abilities of their typically developing siblings and found that the children with autism spectrum disorders had significant difficulty with organizing information needed for daily life.

Occupational Therapy for Children with Autism Spectrum Disorders

The deficits associated with autism spectrum disorders can have a substantial impact on occupational performance, which is the main domain of occupational therapy (American Occupational Therapy Association [AOTA], 2008). In order to address these skill deficits, occupational therapists can implement various strategies in a collaborative, client-centered way (Case-Smith & Arbesman, 2008). Occupational therapists use a
variety of approaches to intervene with children with autism spectrum disorders. These approaches include visual supports, social learning theory approaches, behavioral approaches, and metacognitive approaches (Audet, 2010; Watling, 2010). Occupational therapists have the capabilities to address the social, emotional, and organizational skills deficits found in children with autism spectrum disorders.

**Social Skills Interventions**

There are various interventions that occupational therapists use to address social skills in children with autism spectrum disorders. The goal of these interventions is to help the child participate appropriately in both social and group situations. In most cases, the child and therapist work one-on-one to help develop appropriate social skills and eventually, the child can progress to working with one other child or working in a social skills group (Hilton, 2011).

Gray and White (2002) developed Social Stories, which help teach social skills to children with autism spectrum disorders. In each story, one social skill or issue is addressed and this helps children with autism spectrum disorders take the situation literally to understand the concepts that are introduced. Social Stories are written in first person and can include visual aids. Ozdemir (2008) found that Social Stories were effective in decreasing disruptive and inappropriate behavior in children with autism spectrum disorders. Additionally, in a randomized control trial, Quirmbach, Lincoln, Feinberg-Gizzo, Ingersoll, and Andrews (2009) found that Social Stories helped children with autism spectrum disorders generalize and transfer social skills. Additionally, Crozier and Tincani (2007) found that the use of Social Stories increased positive social behavior in children with autism spectrum disorders. Overall, there has been positive evidence
demonstrating the efficacy of the use of Social Stories in improving social skills for children with autism spectrum disorders (Hilton, 2011).

Social autopsies, comic strip conversations, mindreading, and video detective are ways to address the deficits in theory of mind that children with autism spectrum disorders demonstrate. Children with autism spectrum disorders have difficulty understanding and interpreting the thoughts and feelings of others, known as theory of mind (Hutchins, Prelock, & Bonazinga, 2012; Baron-Cohen, 1995). Social autopsies were first developed for children with learning disabilities, but can be used with children with autism spectrum disorders. Social autopsies help the child examine the situation after it has occurred (Hilton, 2011). The therapist and child discuss the situation, focusing on the motivations of others, and consider various alternative responses. This helps the child consider the situation, the motivations of others, and both positive and negative ways of responding in the situation (Hilton, 2011).

Comic strip conversations are similar in nature, but instead use comic strip drawings to depict social interactions. The drawing is constructed after the situation occurs and is introduced to the child so that he or she can better understand the perspectives of others (Hilton, 2011). According to Hutchins and Prelock (2006), comic strip conversations and social stories can be used in conjunction in order to reduce inappropriate behaviors in children with autism spectrum disorders. Comic strip conversations have also been found to decrease loneliness and improve social satisfaction in children with autism spectrum disorders (Pierson & Glaeser, 2007).

Mindreading is another strategy used to improve theory of mind deficits in children with autism spectrum disorders (Williams, Gray, & Tonge, 2012; Baron-Cohen,
In this strategy, the child is first introduced to pictures and drawings of faces depicting various emotions in order to help the child identify what another person could be feeling. In subsequent sessions, the therapist and child work on understanding the expectations of different emotional responses and understanding varying perspectives (Williams et al., 2012; Howlin, Baron-Cohen, & Hadwin, 1999). There is preliminary evidence showing the effectiveness of mindreading. Bell and Kirby (2002) conducted a study with three children with autism spectrum disorders and found encouraging results. Williams, Gray, and Tonge (2012) also found that children with autism spectrum disorders were able to identify emotions more effectively after intervention using mindreading.

Video detective is considered a step above the other approaches because it includes watching video clips to help children with autism spectrum disorders improve their ability to interpret non-verbal communication (McAfee, 2002). In this strategy, the therapist first teaches the child about body language, verbal communication, and non-verbal communication. The child then watches a video with the volume off and the child is asked what emotions and nonverbal behaviors the actors are depicting. The child then watches the movie with the volume on and they are given the opportunity to examine their first answer. This strategy can also be used in a group setting, where the children discuss their answers and collaboratively work on coming up with an answer (McAfee, 2002). Although this approach is commonly used, there is little empirical evidence to support its use (Hilton, 2011).

Gagnon (2001) developed the power card in order to help children develop appropriate social skills. In this strategy, a child’s favorite character or super hero is used
to help them learn appropriate social behaviors. The therapist identifies a social scenario that the child needs to improve and uses a cut-out picture of the child’s favorite character, with the scenario written on the back, to help them process the steps of the correct action. The therapist and the child then practice acting out the scene (Gagnon, 2001). This strategy provides both a visual cue and a special interest, which are both effective ways to teach children with autism spectrum disorders (Volkmar, 2004). Myles, Keeling, and Van Horn (2001) found that the use of a power card decreased disruptive and noncompliant behaviors in children with an autism spectrum disorders. In addition, Keeling, Myles, Gagnon, and Simpson (2003) found that power cards improved good sportsmanship in a child with an autism spectrum disorder.

**Emotion Regulation Interventions**

In addition to interventions aimed at improving social skills, occupational therapists also use interventions to improve emotional regulation skills in children with autism spectrum disorders. The challenges that children with autism spectrum disorders face can be further affected by emotional dysregulation (Case-Smith & Arbesman, 2008). When addressing emotional skills, the occupational therapist needs to consider the child’s sensory processing abilities, as this can greatly affect emotion regulation. In addition, strategies used to promote social skills can also be effective at improving emotional regulation skills (Hilton, 2011).

The first step in developing emotional regulation skills is to help the child identify emotions of others (Hilton, 2011). This is highly related to social skills. A strategy that emphasizes this is emotion charades. McAfee (2002) developed this strategy to help children identify emotions in others. This is a role-playing strategy and involves having
someone express an emotion and then asking others to label that emotion. This strategy can be used one-on-one with the therapist or in a group setting (McAfee, 2002). There is little to no empirical evidence demonstrating the effectiveness of this strategy (Hilton, 2011).

The most common interventions used by occupational therapists to address emotional regulation skills are scales and thermometers. These strategies can help children identify, quantify, and describe their emotions at different levels. The Alert Program (Williams & Shellenberger, 1996) was developed to help children identify, recognize, and quantify different levels of behavior that they are experiencing. Some examples of behavior include voice volume, aggression level, stress level, or level of alertness. This approach can also help the child monitor their responsivity to sensory stimuli (Hilton, 2011; Williams & Shellenberger, 1996). The goal is to help the child recognize their feeling and behavior so that they can better self-regulate and change their behavior (Hilton, 2011).

The Incredible 5-Point Scale (Buron & Curtis, 2003) was developed to help children understand the social consequences of their behavior, regulate these responses, and calm themselves when they over respond to a situation. This approach is similar to the Alert Program because it helps the child quantify their behavior and communicate their behaviors in a measurable way (Buron & Curtis, 2003). Both of these strategies should be introduced at a quiet time and after an event in which the child had difficulty regulating his or her emotions. The therapist and child can also role play the event with reenactment of the words used, tone of voice used, and the level of anger in order to help the child understand the system (Hilton, 2011). The Zones of Regulation is a program
similar to the Incredible 5-Point Scale, but instead uses color “zones” to help children identify, quantify, and regulate their emotions (Kuypers, 2011). Empirical evidence is needed to support this approach.

Organizational Skill Interventions

While the strategies for improving social and emotional skills in children with autism spectrum disorders are rather specific, the strategies used for addressing organizational skills are more general. Children with autism spectrum disorders have deficits with executive functioning or their ability to reason, organize, and solve problems (Hilton, 2011). These deficits can lead to problems with organization that are needed in order to complete basic self-care skills. Again, occupational therapists can use various general strategies in order to address the organizational skill deficits found in children with autism spectrum disorders (Case-Smith & Arbesman, 2008). These strategies include visual supports, practice, and positive reinforcement.

Self-care skills such as dressing, feeding, bathing, and hygiene are essential for children to learn, however children with autism spectrum disorders often have difficulty organizing these activities due to deficits in executive functioning (Case-Smith & Arbesman, 2008). Occupational therapists have used a variety of strategies to address these deficits (Case-Smith & Arbesman, 2008; Hilton, 2011). Initially, it is important to establish a baseline for the behavior or skill that is being addressed. This way, the occupational therapist can assess which skills the child further needs to develop. Secondly, it is important that the occupational therapist consider the context and environment in which the child completes his or her daily activities. This is important because the context or environment could impede the child’s capabilities and therefore
would need to be modified. After these areas have been assessed, the therapist can apply direct strategies (Hilton, 2011).

A main strategy that can be used to help children with autism spectrum disorders organize their daily activities is the use of visual supports. Children with autism spectrum disorders often respond well to visual schedules or visual supports during the learning process (Ganz, 2007). Actual pictures of the child completing the steps of the activity can be used or commercial pictures are also available. This can help the child learn routines and have expectations for what is coming next (LaVesser & Hilton, 2011).

Another strategy that is commonly used is practice. Whatever the skill may be, the therapist and child can practice the skill with the therapist providing the appropriate feedback (LaVesser & Hilton, 2011). Behavioral strategies such as backward and forward chaining can be used during practice as well. Backward chaining involves having the therapist complete all of the steps until the final step is reached and then the child completes the final step. This approach is thought to be internally motivating because it focuses on successful completion of the task. Forward chaining involves teaching the child the first step and then progressing through the remaining steps with prompting and feedback as needed (LaVesser & Hilton, 2011).

Positive reinforcement is often used to help children organize their activities. Children with autism spectrum disorders often do not respond to rewards such as praise, so alternative rewards must be identified (LaVesser & Hilton, 2011). It is important to find out what is motivating to the child and then use that as a reward for successfully completing routines or activities. Rewards can include a favorite toy, food items, items related to the child’s special interests, or items that provide the desired sensory input.
These items can be paired with social rewards so that the child can learn to appreciate social rewards (LaVesser & Hilton, 2011). Positive reinforcement can also be used with visual supports to further improve the child’s motivation to successfully complete the task (Ganz, 2007).

Metacognitive Strategies

Though current approaches to occupational therapy intervention for children with autism spectrum disorders have been found to be mostly efficacious, it has also been suggested that intervention approaches using metacognitive strategies may be beneficial, particularly for those with higher level thinking skills (Watling, Miller-Kuhaneck, & Audet, 2011). Children with autism spectrum disorders have difficulty generalizing skills, and it has been suggested that metacognitive strategies may be more effective in regards to generalization in children with autism spectrum disorders (Rodger & Vishram, 2010).

In the field of psychology, the cognitive behavioral strategy of self-monitoring has been used with children and young adults with autism spectrum disorders (Deitchman, Reeve, Reeve, & Progar, 2010; Ganz & Sigafoos, 2005; Parker & Kamps, 2011). When children with autism are able to self-manage their behaviors, it is believed that they are able to generalize this skill to varying contexts. This is because self-monitoring requires the child to assess their own performance and adjust their performance as needed (Deitchman et al., 2010). Numerous studies examined the success of using self-monitoring with children with mild disabilities, but few examined the effectiveness with children with autism spectrum disorders (Ganz & Sigafoos, 2005). In 2005, Ganz and Sigafoos found that young adult males with an autism spectrum disorder were able to learn a self-monitoring technique in order to complete their work.
tasks. Due to the findings that children with autism spectrum disorders are able to generalize skills with the use of self-monitoring, several other studies were conducted utilizing this approach. Deitchman et al. (2010) found that children with autism spectrum disorders were able to improve their social interactions with peers after using video feedback to assess their own behavior. Further, Parker and Kamps (2011) found that the use of task analysis and self-monitoring improved the social peer interactions of two young adults with autism.

A metacognitive strategy helps an individual develop a plan for an activity. After a plan has been implemented, it is important to help guide the child through self-reflection to assess successful and unsuccessful strategies (Sangster, Beninger, Polatajko, & Mandich, 2005). This can then help the child plan what they will do differently the next time (Sangster et al., 2005; Watling, Miller-Kuhaneck, & Audet, 2011).

Currently, there are three main metacognitive approaches described in occupational therapy literature. Josman and Rosenblum (2011) proposed the use of a metacognitive model for children with atypical brain development. Atypical brain development describes children who have developmental disorders due to abnormal brain development. Disorders characterized as involving atypical brain development include specific language impairment, learning disorders, attention deficit hyperactivity disorder, and Developmental Coordination Disorder (Kaplan, Crawford, Cantell, Kooistra, & Dewey, 2006). Children with these disorders have deficits in executive functioning, leading to difficulty with planning, organizing, and judging (Ylvisaker & Feeney, 2002).

The proposed metacognitive model would address the deficits in executive functioning that these children experience. The model is based off of the Dynamic
Interaction Model (Toglia, 1992) in which different treatment approaches are used based upon the client’s needs. In the Dynamic Interaction Model, it is suggested that therapy take place in a variety of contexts and domains due to the impact of cognition on various occupational roles and occupational performance (Toglia, 1992). The role of occupational therapy in the metacognitive model is to evaluate the child’s performance, raise awareness so that the child is aware of their own deficits, set intervention goals with the child, provide intervention, perform ongoing re-evaluations, adjust the course of intervention if needed, and produce comprehensive reports (Josman & Rosenblum, 2011). The entire process would be collaborative and involves the participation of the child and their parents or caregivers. Proposed intervention guidelines include the child being an active participant during goal-setting and intervention, selecting meaningful interventions, teaching the child specific skills for generalization, promoting the child’s self-awareness and self-monitoring, and adapting the interventions to family routines (Josman & Rosenblum, 2011). Application of the model has not been studied in regards to autism spectrum disorders and therefore empirical evidence is needed before its effectiveness and use can be assessed.

The metacognitive model proposed by Josman and Rosenblum (2011) focused on improving executive functioning in children with atypical brain development. In addition, the Cognitive Functional (Cog-Fun) intervention also targets executive functioning, specifically with children with attention deficit hyperactivity disorder (Hahn-Markowitz, Manor, & Maier, 2011). This approach is also based upon the Dynamic Interactional Model, with a focus on transferring strategies to various contexts and emphasizing self-monitoring and self-evaluation (Toglia, 1992). Hahn-Markowitz et al. (2011) studied the
effects of using the Cog-Fun intervention for children with attention deficit hyperactivity disorder. In particular, they wanted to assess if the Cog-Fun intervention could help the children achieve occupational goals, improve executive function in their everyday lives, and improve their self-efficacy (Hahn-Markowitz et al., 2011).

The Cog-Fun approach utilizes the executive strategy of Stop, Plan, Review while the children are working on achieving occupational goals. In one study, children engaged in ten, one hour weekly sessions while their parents worked on helping them transfer skills to the home environment (Hahn-Markowitz, 2011). Task-specific strategies were also used to help the children reach their goals. The results of the study indicated that the children showed significant improvement in executive functioning, parent rating of performance increased, and the child’s rating of their own performance increased. These gains were also maintained at follow-up. Additional research is needed to further examine the effectiveness of the Cog-Fun intervention approach (Hahn-Markowitz, 2011).

The third metacognitive approach studied in the occupational therapy literature is the Cognitive Orientation to daily Occupational Performance (CO-OP) approach. This approach has been in development since the early 1990s, when researchers recognized the need for a new treatment approach for children with Developmental Coordination Disorder, or DCD (Missiuna, Mandich, Polatajko, & Malloy-Miller, 2001). It was hypothesized that children with DCD had difficulty with generalizing learning and motor skills due to problems with skill acquisition. Traditional motor theory approaches were hierarchical, reductionistic, and there was a lack of positive evidence indicating that these approaches were working to help children with DCD improve their skills (Missiuna et al.,
2001). The need for a new approach was clear and the development of the CO-OP approach began.

*The Cognitive Orientation to daily Occupational Performance (CO-OP) Approach*

There are several theorists that provided the foundational premises upon which the CO-OP approach is based. Vygotsky (1896-1934) was a psychologist who noted that younger children tended to speak their thoughts aloud before acting, however older children simply seemed to think and then act (Missiuna, Malloy-Miller, & Mandich, 1998; Missiuna et al., 2001). It was concluded that the thoughts of the younger and older children were similar, but Vygotsky hypothesized that younger children first need a significant other to provide feedback before this process is internalized. This was termed the "zone of proximal development" and eventually the child would automatically solve problems independently because the process would be internalized (Missiuna et al., 1998).

Luria (1959) supported Vygotsky’s belief that children initially speak aloud to solve problems and eventually internalize this so that it becomes an automatic process. He further developed a problem-solving process with five stages. The first stage is discovering the problem, which is done by the child. Next, the child investigates the problem and then selects alternative solutions. Finally, the child makes an attempt to solve the problem and the final step is that the child evaluates the results of the problem-solving attempt (Missiuna et al., 1998; Missiuna et al., 2001).

Meichenbaum (1977) further developed the ideas of Vygotsky and Luria by proposing that children can learn to talk themselves though problems by first identifying a goal, coming up with a plan, enacting the plan, and then evaluating the success.
Meichenbaum believed that this process first needed to be demonstrated by a significant adult, then stated aloud by the child, and finally the child would internalize this process (Missiuna et al., 2001). Meichenbaum further emphasized the importance of embedding problem-solving into everyday routines, individualizing the plan to each child, and supporting generalization of the problem-solving process across contexts (Missiuna et al., 1998). Meichenbaum’s theory was further developed into an approach initially titled “Verbal Self-Guidance.” In this approach, the phrase goal, plan, do, check was developed to help guide the child through the problem-solving process (Missiuna et al., 1998).

Feurstein (1974) and later, Haywood (1987) proposed the idea of meditational learning. They discussed that cognitive development was a direct result of two processes. First, the child needed to be directly exposed to tasks within their environment and second, a mediated learning experience must occur (Missiuna et al., 1998). A mediated learning experience involves an adult who interprets the experiences for the child until it was appropriate for the child’s level of learning (Missiuna et al., 2001). The mediator would use techniques such as questioning, bridging, comparison, describing, modeling, challenging, and providing feedback (Missiuna et al., 1998; Missiuna et al., 2001).

Poulsen, Rodger, and Ziviani (2006) and Dunn and Thrall (2012) discussed the importance of self-determination in children. Self-determination involves three components. These include autonomy, competence, and relatedness. Autonomy relates to something being internally motivating to a child, rather than based upon external factors. Competence involves a child’s belief that they can personally influence factors within their lives. Children who experience competence are more likely to persist in a task. The concept of relatedness involves a child’s need for support and affection from others.
When children have a high sense of relatedness, they are more likely to engage in a wide variety of activities in varying environments. (Poulsen et al., 2006; Dunn & Thrall, 2012).

In the CO-OP approach, the basic premises of each of the aforementioned theories are maintained. Vygotsky’s belief that children talk themselves through problem-solving is a focal point of this intervention approach (Missiuna et al., 1998). Meichenbaum’s strategy of goal, plan, do, check is used directly during the interventions. The meditational techniques described by Feuerstein and Haywood are used to help facilitate the child’s learning and generalize the skills to daily life (Missiuna et al., 2001). Finally, the concepts of self-determination theory are embedded within each step of the CO-OP approach through child-chosen goals, self-evaluation of performance, and the inclusion of parents, therapists, teachers, and other significant others in the intervention process (Dunn & Thrall, 2012; Poulsen et al., 2006).

The CO-OP approach is based upon the interaction between the person, the environment, and the occupation (Polatajko et al., 2001b). The overall focus of the CO-OP approach is the use of strategies during skill acquisition in order to develop occupational competency. A global problem-solving strategy (goal, plan, do, check) is used to help facilitate the child’s discovery of domain specific strategies, which enables successful performance of the task (Polatajko et al., 2001b). The three objectives of the CO-OP approach are skill acquisition, cognitive strategy development, and generalization/transfer (Polatajko et al., 2001b). In order for this approach to be successful, there are certain parameters that the participants must meet. The child must have sufficient cognitive and language ability in order to respond to assessment tools. The child must be able to identify three occupational goals and be able to respond to the
therapist. Finally, the child must have the actual potential to perform the tasks and must be motivated to learn the three identified goals (Polatajko et al., 2001b). This approach also involves parental and/or caregiver participation. The parent and/or caregiver must be committed to helping the child generalize the skills learned to other contexts. It is also important that the parent and/or caregiver understand their role in the approach (Polatajko et al., 2001b).

There are six key features of the CO-OP approach. The first is session structure. The intervention sessions are typically delivered over twelve, one-to-one sessions. These sessions typically last one hour and two sessions are provided weekly. There is a developed protocol which details what should occur during each session. The parents and/or caregivers are encouraged to attend as many sessions as possible (Polatajko et al., 2001b). The second feature is that the goals are chosen by the child. This helps promote motivation, transfer, and is consistent with the trend in healthcare that children should be active participants in their own care (Polatajko et al., 2001b). The third feature is dynamic performance analysis. This process occurs continually and involves evaluating the breakdowns in performance, considering possible solutions, and then trying out the solutions (Polatajko et al., 2001b). The next feature is the use of cognitive strategies. The global strategy (goal, plan, do, check) is used to help the child improve their metacognition by training him to self-monitor and evaluate his performance. Domain specific strategies are more specific and focus on improving performance. Eight domain specific strategies have been developed and include “body position,” “attention to doing,” task specification/Modification,” “supplementing task knowledge,” “feeling the movement,” verbal motor mnemonic,” and “verbal rote script.” (Polatajko & Mandich,
The sixth feature is the inclusion of enabling principles within the intervention sessions. Some of these include making the process fun, promoting good strategy use, working toward independence, and guided discovery. The final feature is parent/caregiver involvement which is imperative to help the child transfer the skills learned during intervention to other daily life contexts (Polatajko et al., 2001b).

Wilcox and Polatajko (1993) explored a cognitive approach, initially called Verbal Self-Guidance, to assess the effects of its use on occupational performance for children with Developmental Coordination Disorder. In this study, 10 children participated in the interventions. The Canadian Occupational Performance Measure (COPM) was used to assess goals at baseline and upon completion of the study. Additional measures used included the Vineland Adaptive Behavior Scales (VABS) to assess adaptive behavior, the Developmental Test of Visual Motor Integration (VMI) which assesses visual motor skills, the Test of Motor Impairment (TOMI) to assess gross and fine motor skills, the Child Behavior Checklist, and the Eyberg Child Behavior Inventor, which looked at the areas of generalization and transfer (Polatajko et al., 2001a). Each of the sessions was videotaped for data analysis (Wilcox & Polatajko, 1993). The results of this study indicated that children with DCD could learn the global problem-solving strategy in order to acquire skills and these skills were maintained at follow-up (Polatajko, Mandich, Miller, & Macnab, 2001a).

Due to the positive results from the first study, Martini and Polatajko (1995) conducted a systematic replication study to further assess the effectiveness of using the Verbal Self-Guidance approach with four children with DCD. The measures used in this study were the COPM for goal-setting and the Performance Quality Rating Scale
(PQRS), a five-point observation rating scale to measure performance during the videotape analysis (Martini & Polatajko, 1995). The results of the study indicated that the children were able to use the global problem-solving strategy to meet their goals, improved their performance, and indicated improved satisfaction with their performance (Martini & Polatajko, 1995; Polatajko et al., 2001a). After the success of this study, the development of the approach, now titled Cognitive Orientation to daily Occupational Performance (CO-OP) was pursued (Polatajko et al., 2001a).

Due to the successful results of the first two studies, Miller, Polatajko, Missiuna, Mandich, and Macnab (2001) conducted a randomized control trial using the CO-OP approach with 20 children with DCD. The main objective of the study was to measure improvement in performance on three goals selected by each child. The children were randomly assigned to either the CO-OP treatment group or the current treatment approach (CTA) group. The current treatment approach used interventions from various frames of reference, including neuromuscular, sensory, and biomechanical (Miller et al., 2001). Again, the COPM was used for goal-setting and the PQRS for video analysis. Other measures used included the VABS to measure adaptive behavior, the Evaluation Tool of Children’s Handwriting (ETCH) to assess handwriting skills, the Bruininks-Oseretsky Test of Motor Proficiency (BOTMP) to assess gross and fine motor skills, the VMI which measures visual-motor skills, and the Self-Perception Profile for Children (SPPC) to understand the child’s perception of their performance (Polatajko et al., 2001a). The results indicated statistically significant improvements in the CO-OP group when considering goals and overall performance as compared to the CTA group (Miller et al., 2001; Polatajko et al., 2001a).
After the positive results of the randomized control trial, several studies were further conducted assessing the effectiveness of using the CO-OP approach with children with DCD. Ward and Rodger (2004) and Taylor, Fayed, and Mandich (2007) assessed the effectiveness of using the CO-OP approach with young children with DCD due to the lack of evidence with children under the age of seven. Ward and Rodger (2004) had two children participate in their study and the measures used included the VMI, the COPM, the PQRS, and the VABS. The two children engaged in 10 sessions of CO-OP intervention in order to work on their chosen goals. Taylor et al. (2007) had four participants in their study and both the COPM and the PQRS were used as measures. In addition, the Pediatric Activity Card Sort (PACS) was used to help the children identify goals (Taylor et al., 2007). The results of both studies indicated that the children improved their task performance, used the global problem-solving strategy, and used all of the domain specific strategies at least once (Taylor et al., 2007; Ward & Rodger, 2004).

In addition to assessing overall motor performance in children with DCD, Banks, Rodger, and Polatajko (2008) assessed the effectiveness of using the CO-OP approach to help children with DCD improve their handwriting skills. Four participants engaged in five weeks of CO-OP intervention, with two sessions per week. The PQRS was used as a measure when assessing the videotaped performance of the children (Banks et al., 2008). It was found that the children in this study were able to use the global problem-solving strategy to improve their handwriting. The most common domain specific strategy used was task specification/modification. Each child utilized all domain specific strategies at least once during treatment (Banks et al., 2008).
Several studies also examined cognitive strategy use by children with DCD during CO-OP intervention. Bernie and Rodger (2004) found that children with DCD who were working on a goal of handwriting used similar, but not identical domain specific strategies, indicating that the use of domain specific strategies could be highly individualized to each child. Additionally, Sangster et al. (2005) found that children with DCD have the ability to generate domain specific strategies spontaneously and that strategy use increased over the course of intervention. It was also found that children in the CO-OP intervention generated significantly more strategies than children receiving the current treatment approach. Finally, Rodger and Liu (2008) examined the use of the global problem-solving strategy and the domain specific strategies in children with DCD. It was found that “do” was the most frequently used global strategy, indicating that the children focused the most on practicing the tasks. Additionally, it was found that no specific domain specific strategy use was observed for the majority of the time intervals. This highlights the effectiveness of the fundamental verbal component of CO-OP as compared to traditional approaches which focus on practice (Rodger & Liu, 2008).

One study has focused on the use of the CO-OP approach with children with acquired brain injury (ABI). Missiuna et al. (2010) examined the effectiveness of using the CO-OP approach to help six children with ABI meet their desired goals. The COPM, PQRS, and VABS were used as measures. In addition, the Perceived Efficacy and Goal Setting System (PEGS) was used with children aged 5 through 9 because they were too young to understand the COPM. The children engaged in 10 weekly sessions of CO-OP intervention. It was found that all children showed improvement in performance immediately after intervention and four months post-intervention. The children’s own
self-perception of their performance and their parents’ perception of their children’s performance also improved after intervention (Missiuna et al., 2010). Missiuna et al. (2010) suggested that more research be conducted using the CO-OP with the ABI population in order to further assess its effectiveness.

Recently, the CO-OP approach has been used with children with Asperger’s syndrome. Children with Asperger’s syndrome have some similarities in common when compared to children with DCD, including motor clumsiness, poor fine motor skills, and poor coordination (Rodger & Brandenburg, 2009; Rodger, Pham, & Mitchell, 2009). Rodger and Brandenburg (2009) assessed the effectiveness of using the CO-OP approach with two children with Asperger’s syndrome when addressing motor-based goals. The COPM and the VABS were utilized both pre-test and post-test and the PQRS was used for videotape analysis. The results showed an improvement in self-perception of performance for both the children and their parents. Data analysis of the videotapes indicated that one child met both of their goals and the other child met one of their goals (Rodger & Brandenburg, 2009). Rodger and Brandenburg (2009) suggested that subsequent research be conducted in this area to further examine the factors that contribute to successful goal acquisition in children with Asperger’s syndrome.

Rodger et al. (2009) conducted secondary analysis of the aforementioned study completed by Rodger and Brandenburg (2009) in order to describe strategy use by the children in the study. It was found that the children were able to learn the global strategy and apply it to their goals. The global strategy of “goal” was used most during earlier sessions, while “plan,” “do,” and “check” were used more frequently in later sessions. The pattern of domain specific strategy use was individualized to each child and their
goals; however "task specification/modification" was the most commonly used strategy (Rodger et al., 2009).

Phelan, Steinke, and Mandich (2009) further examined the use of the CO-OP approach with children with Asperger's syndrome and high-functioning autism. The COPM and PQRS were used as measures in this study and two children participated in the CO-OP interventions. Following video analysis, it was found that both children met their desired goals and both parent and child satisfaction of performance improved (Phelan et al., 2009). Rodger, Springfield, and Polatajko (2007) examined skill transfer and generalization in children with Asperger's syndrome following intervention with the CO-OP approach. In this study, two siblings engaged in the CO-OP interventions. Their mother kept a diary throughout the entire intervention process and this was coded for data analysis. Results indicated that both children were able to generalize and transfer the skills and the strategies they learned to other contexts, including home and school. Several unexpected results emerged, including the positive impact of intervention on anxiety, sensory sensitivity, and the need for routine (Rodger et al., 2007).

After the successful results of the studies addressing motor-based goals for children with Asperger's syndrome utilizing the CO-OP approach, two studies examined the effectiveness of using CO-OP to address social and organizational goals in children with Asperger's syndrome. Rodger, Ireland, and Vun (2008) utilized the CO-OP approach when intervening with two children with Asperger's syndrome. The COPM was used to set goals related to social and organizational skills. The Social Skills Rating Scale was completed by the two children, their parents, and their teachers in order to assess changes in social skills both pre and post-intervention. The PQRS was used for video
The children engaged in 10 individual weekly sessions of CO-OP intervention (Rodger et al., 2008). The results indicated that the children met their social and organizational goals, noted improvements in performance satisfaction, and were able to generalize and transfer the skills and strategies they learned. This indicates the potential effectiveness of using the CO-OP approach for mastering social and organizational skills in children with Asperger’s syndrome (Rodger et al., 2008). In addition to the positive results, Rodger et al. (2008) described a new global strategy, “understanding the context,” where the therapist uses dynamic performance analysis to understand the social context and further facilitate the child. Rodger et al. (2008) also identified new domain specific strategies. These included “transitional supports,” “affective supports,” and “motivational supports.”

Rodger and Vishram (2010) conducted secondary analysis of the study conducted by Rodger et al. (2008) to determine the types of global and domain specific strategies the children used during intervention, the type of guidance utilized, and the dimensions of time on task. Rodger and Vishram (2010) found that both children used all of the global strategies at some point during the intervention process. A considerable amount of time was spent by both children using the global strategies “plan” and “understanding the context.” In terms of domain specific strategies, both children used “task specification” the most and they used it to address each of their goals. Similarly, “supplementing task knowledge” was used by both children in each of their goals. Though “task specification” and “supplementing task knowledge” were used most frequently, for the majority of time intervals the participants used no specific strategy. Instead, the pattern of strategy use was a complex interaction between the child, the goal, and the therapist using the
principle of guided discovery. This finding is consistent with prior studies that indicated children use a variety of domain specific strategies, even for similar goals (Bernie & Rodger, 2004; Ward & Rodger, 2004).

For the majority of the time that the children were practicing and executing their tasks, no formal guidance was observed. This is consistent with previous studies (Rodger and Vishram, 2010). In addition, only one child was observed to be using verbal self-guidance. Finally, the majority of the time was spent talking about the task, this result was anticipated due to the social and organizational nature of the goals. Rodger and Vishram (2010) suggested that more studies be conducted in order to assess how CO-OP is used by children with autism spectrum disorders to achieve their social and organizational goals.

While there are currently efficacious methods for intervention focused on social, emotional, and organizational skills, the issue continues to be that children with autism spectrum disorders have difficulty with generalizing skills to other contexts. Cognitive approaches are an alternative intervention that may increase generalization of the skill set. The current study will further investigate the effectiveness of using the CO-OP approach with children with autism spectrum disorders. Intervention in the current study will focus on social, emotional, and organizational skills. A case study approach will be utilized and the CO-OP protocol outlined by Polatajko et al. (2001b) will guide the intervention process.
CHAPTER III

METHODOLOGY

Single case experimental design

A single case experimental design (SCED) was used to explore the effectiveness of the CO-OP approach in addressing social, emotional, and organizational goals. A SCED is a research design that focuses on the individual and his/her specific progression and outcomes, rather than analyzing group differences (Rassafiani & Sahaf, 2010). Within the SCED, the withdrawal design, or ABA design, was selected. This type of SCED has a period with the participant receiving no CO-OP intervention, followed by a period receiving intervention, and then ending with the participant again receiving no CO-OP intervention (Rassafiani & Sahaf, 2010). A SCED-ABA was an appropriate design choice, as this study focused on collecting qualitative and quantitative data from a single participant who had not previously been receiving intervention using the CO-OP approach and would continue receiving traditional or no intervention following the conclusion of the study. In addition, a SCED was selected because of the limited research that has been previously conducted using the CO-OP approach to address social, emotional, and organizational goals. Due to the exploratory nature of the study, the data generated from the in-depth analysis of an individual participant can be used to support more rigorous research on the effectiveness of the CO-OP approach in the future.
Participant selection

A single participant was recruited from the greater Grand Forks, North Dakota community. The recruitment process consisted of the authors contacting autism support groups, pediatric occupational therapists, and counselors in the community. Flyers presenting the inclusion criteria and purpose of the study were provided, via email or mail, to the local autism support groups and pediatric therapists to be used for distribution to interested families. Of the families that reported interest in participating in the study, the final participant was selected based on the following inclusion criteria: (a) diagnosis of Asperger's syndrome, High Functioning Autism, or Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS) per parent report, (b) between the ages of 8 and 12 years, (c) IQ of 85 or higher per parent report, and (d) wishing to address social, emotional, or organizational skill deficits. Exclusion for participation in the study included children who did not possess the communication or cognitive skills meeting the predetermined inclusion criteria.

Participant

The study participant was recruited using convenience sampling from a local occupational therapy clinic in the greater Grand Forks, North Dakota community. The participant recruited was an eight-year-old male who had a diagnosis of PDD-NOS, as reported by the participant's parents. The participant was receiving additional therapy services including occupational therapy and speech therapy at the time of the study. The additional occupational and speech therapies were addressing goals different from those social, emotional, and organizational goals identified for this study, and neither therapy was utilizing the CO-OP protocol.
Measures

Based on the protocol established by Polatajko and Mandich (2004), the Daily Activity Log (Polatajko & Mandich, 2004), Pediatric Activity Card Sort (PACS) (Mandich, Polatajko, Miller, & Baum, 2004), the Performance Quality Rating Scale (PQRS) (Miller, Polatajko, Missiuna, Mandich, & Macnab, 2001), the Canadian Occupational Performance Measure (COPM) (Law, Baptiste, Carswell, McColl, Polatajko, & Pollock, 2005), and the Dynamic Performance Analysis Record (DPAR) (Polatajko, Mandich, Martini, 2000) were selected to assist in the process of data collection to assess for the effectiveness of the CO-OP intervention. The Social Skills Checklist (University of Washington, 2004) and the Weekly Progress Sheet, developed by the authors, were also used to gather data.

The Daily Activity Log

The Daily Activity Log (Polatajko & Mandich, 2004) is an informal method for the therapist to collect data regarding the participant’s typical daily routine, excluding the weekends. The parent and child complete the daily log together, listing what occurs throughout a typical day and when that particular activity occurs. Completion of the Daily Activity Log (Polatajko & Mandich, 2004) assists the child and family in identifying the child’s strengths and areas for improvement. The activities the child and family identify as areas for improvement can be used to establish therapy goals. The parent and child completed the Daily Activity Log (Polatajko & Mandich, 2004) prior to attending Session 1, where it was discussed in detail.

The Pediatric Activity Card Sort

The PACS (Mandich et al., 2004), is an assessment comprised of 75 colored cards
presenting a variety of occupations that are broken into four domains: (a) personal care, (b) chores, (c) hobbies, and (d) sports. The assessment assists the therapist in understanding a child’s engagement in occupations. Using the cards depicting occupations, the child states whether or not he/she participates in the activity and how often. The information gathered from the responses is used in conjunction with the COPM and Daily Activity Log to assist the child in determining goal areas for therapy during Session 1.

The Performance Quality Rating Scale

The PQRS (Miller et al., 2001) is used for data analysis. Used as a pretest/posttest measure, this assessment measures performance and magnitude of change based on observation (Polatajko & Mandich, 2004). Part A of the assessment, completed by the therapist, rates the child’s occupational performance on a 10-point scale, and Part B is an 11-point scale used to record the magnitude of change in the child’s performance of his/her set goals. Part A was completed pre and post intervention by the participant’s parents and the authors. The PQRS was administered to the parents during Session 3 and 12. Part B was also completed by the parents during Session 12. The authors completed the PQRS during review of the video recordings of Session 3 and Session 12. Part B was completed following Session 12. This measure tests reliable for children with Developmental Coordination Disorder, as it showed a high degree of consistency among three experienced clinicians (Polatajko & Mandich, 2004).

The Canadian Occupational Performance Measure

The COPM is a client-centered, self-report assessment used to identify a client’s perception of his/her occupational performance, in addition to his/her level of satisfaction
with that performance (Law et al., 2005). This is done using two-10 point scales in which the client rates his/her occupational performance and satisfaction separately. The COPM has demonstrated to be a valid and reliable outcome measure (Carswell, McColl, Baptiste, Law, Polatajko, & Pollock, 2004). The assessment measure was used in the study to assist the child in distinguishing goals to be addressed during intervention sessions. The COPM (Law et al., 2005) was used as a pre and post intervention assessment, and was completed during Session 1 and Session 12 through collaboration of the participant and his parents (Taylor, Fayed, & Mandich, 2007).

Weekly Progress Sheet

The Weekly Progress Sheet is a form developed by the authors specifically for this study. The parents complete the progress sheet to report their child’s progress towards his/her goals, and if transferring of skills learned during therapy was observed. The Weekly Progress Sheet was completed by the participant’s parents once weekly throughout the 12 sessions, and once two weeks following completion of all sessions. The participant’s parents were asked to include details and specific examples related to the child’s individual skills when completing the form (see Appendix A).

Dynamic Performance Analysis Record

The DPAR (Polatajko et al., 2000) is an observation-based tool used by therapists to outline a client’s performance. The DPAR consists of seven items which are scored by the therapist using a 10-point rating scale. The seven items on the DPAR are categorized under four sections: (a) performer prerequisites, (b) performance requisites, (c) identification of performance breakdown, and (d) specification of intervention strategies. Section I is completed using the information gained by the therapist discussion with the
client. Section II relies on observation of the client and the therapist’s knowledge of typical performance. Section III identifies the breakpoints inhibiting occupational performance. Section IV provides therapists the opportunity to identify strategies for intervention. The DPAR was completed during Session 1. The information gathered from the DPAR was used to assist the authors in the completion of the PQRS.

*The Social Skills Checklist*

The Social Skills Checklist (University of Washington, 2004) is a self-report tool completed by a parent, teacher, or family member, rating a child’s current social skills. The psychometric properties of the tool are unknown. The Social Skills Checklist was completed by a parent of the participant. The checklist is broken down into four sections: (a) Social Play and Emotional Development, (b) Emotional Regulation, (c) Group Skills, and (d) Communication Skills. Within each of the four categories, social situations are described and rated as “almost always,” “often,” “sometimes,” or “almost never” occurring. The Social Skills Checklist was administered during Session 1 to assist the child, family, and therapist in distinguishing areas of improvement that could be used to establish goals.

*Video Recordings*

Sessions 2-12 were video recorded using a video recording system built into the treatment room. The video recordings were used for data collection purposes. Session 2 was recorded, documenting the teaching process of the global strategies, but was not analyzed. Sessions 3-11 were analyzed for the use of global and domain specific strategies, in addition to the type of guidance and dimension of time on task. Session 12 was recorded for the use of completing the PQRS, but was not analyzed for global and
domain specific strategies. The recordings provided the authors with a record of the child’s behavior to be viewed and analyzed for global and domain specific strategies at a later date.

Procedures for Data Collection

The Daily Activity Log (Polatajko & Mandich, 2004), PACS (Mandich et al., 2004), the COPM (Law et al., 2005), and The Social Skills Checklist (University of Washington, 2004) were administered during Session 1. The COPM (Law et al., 2005) was re-administered during Session 12. The PQRS (Miller et al., 2001) was initially completed during and following Session 3, and was re-administered during and following Session 12. The parents completed the PQRS during Sessions 3 and 12 with the authors available to guide the process. The authors completed the PQRS following Sessions 3 and 12. All three goal areas were rated each time the PQRS was completed. The Weekly Progress Sheet was completed once weekly throughout the intervention sessions and once two weeks post-intervention. Following every intervention session, the Global and Domain Specific Strategies Log (see Appendix B) was used to record the participant’s use of global and domain specific strategies observed in the video recordings of each session.

Intervention Protocol

The CO-OP approach is based around four objectives: (a) skill acquisition, (b) cognitive strategy use, (c) generalization of learning, and (d) transfer of learning (Polatajko & Mandich, 2004). In order for a child to meet the objectives, Polatajko and Mandich (2004) created the global strategies of Goal-Plan-Do-Check (GPDC). GPDC is taught during Session 2 and remains at the core of the intervention sessions as a means
for the child to achieve his/her personally identified goals. Following establishment of GPDC, the child is guided to identify domain specific strategies. Domain specific strategies are strategies individualized to the person and the task at hand. Though global strategies are overarching and domain specific strategies are brief and defined, the child uses the two simultaneously to approach his/her goals. With the establishment of global and domain specific strategies, it is anticipated the child will begin to generalize the concepts of CO-OP and transfer the strategies to areas outside the established goals.

Progress of the child’s goals is measured using a combination of quantitative and qualitative data from various assessments to include the COPM, the PQRS, the PACS, and the Daily Activity Log. A session-by-session summary of the intervention protocol as set forth by Polatajko and Mandich (2004), including when each assessment is administered, is as follows:

Session 1

An interview with the participant and the participant’s parent(s) is conducted to gather basic occupational profile. The COPM, PACS, The Daily Activity Log, the DPAR, and the Social Skills Checklist are administered to use as baseline data and to assist in the goal-setting process. The PQRS is completed following the session, using observations of participant’s performance from Session 1.

Session 2

The therapist or researcher introduces the concepts of the global strategies of Goal-Plan-Do-Check (GPDC). The parent(s) are taught the concepts of GPDC for use at home.
Sessions 3-11

The therapist or researcher facilitates the use of GPDC to address client-chosen goals. He/she also facilitates discovery of domain specific strategies and promotes the use of the strategies in skill acquisition. The therapist or researcher continues educating the parent(s) on concepts of the CO-OP approach to promote generalization and transfer of CO-OP concepts at home.

Session 12

Re-administration of the COPM and the PQRS are completed. The therapist or researcher reviews progress of the participant’s goals with the participant and his/her parents. Review the concepts of the CO-OP approach will take place with the participant and the participant’s parent(s) for continued generalization and transfer of skills.

According to the protocol established by Polatajko and Mandich (2004), the child is to participate in two 50-minute intervention sessions per week, for a total of 10 intervention sessions in five weeks. The intervention sessions, Sessions 2-11, emphasized teaching and implementing the Goal-Plan-Do-Check strategy to approach the goals the child selected. Prior to the start of intervention, Session 1 was held to gather baseline data from the participant, and to set goals to be used during future sessions. Session 12 was the final session. During this session, the COPM and PQRS were re-administered. Two weeks following Session 12, the participant’s parents completed the Weekly Progress Sheet. This information was used to determine if generalization and transferring of skills occurred.

The authors deviated from the established assessment administration protocol. Although the PQRS is to be completed prior to the DPAR, due to the nature of the goals,
the authors did not feel equipped to complete the PQRS without first understanding the breakdown points. The DPAR was completed through combined efforts for the authors and the participant’s parents. The parent’s provided information with guidance from the authors about breakdown points not observable in a clinical setting. Social, emotional, and organizational goals are highly context-specific; therefore it was necessary to understand breakdown points in true context before scoring performance. The authors completed the PQRS by asking the client to demonstrate how he completes the tasks. The role play was evaluated at the beginning and end of intervention. Due to the contextually-specific nature of the goals, an addition of parent ratings for the PQRS was added to the protocol. The authors rated PQRS based on observation and role play of the task during intervention sessions. The parents completed their ratings based on observations occurring at home and in the community, times the authors were not present.

Intervention

Approval for research was obtained from the University of North Dakota’s Institutional Review Board. The parent of the participant signed a consent of participation prior to the start of intervention. In addition, written assent was obtained from the child prior to receiving intervention.

The family participated in a total of 12 sessions. During the initial session, the COPM, PACS, Social Skills Checklist, and the Daily Activity Log were administered. The child, parent, and author used the information gathered from the assessments to established client-centered goals to be addressed throughout the remaining intervention sessions.

Following the initial assessment, intervention sessions began. Sessions 2-11 took
place over the course of seven weeks. The recordings from Sessions 3-11, which were reviewed for data collection, ranged from 32 to 52 minutes. Each session averaged a length of 43 minutes. Session 2 and 12 were recorded, but not used for data collection. Session 2 was not used for data collection because of the session’s emphasis on teaching the participant the global strategies. The recording of Session 12 was used for completion of the PQRS. Approximately 6-8 minutes of recording during Session 11 was unable to be analyzed due to video availability. Therefore, this missing data was not included when calculating the average length of sessions.

The protocol by Polatajko and Mandich (2004) suggests 10 intervention sessions. Previous studies have completed two sessions per week over five weeks. Due to scheduling conflicts, intervention sessions Sessions 2-11 were completed over a period of seven weeks. Specifically, weeks 3, 4, 6, and 7 had one intervention session per week and weeks 1, 2, and 5 had two sessions per week. All 12 sessions, including (a) an initial session, (b) 10 intervention sessions, and (c) the final wrap-up session, were completed in nine weeks. Divergence from the original protocol was necessary based on the family’s availability.

Data Analysis Procedure

The Daily Activity Log

The Daily Activity Log (Polatajko & Mandich, 2004), was used to assist the child in goal setting. The Daily Log was summarized in narrative form, emphasizing those activities that were important to the participant, or those activities he engaged in most frequently.
The Pediatric Activity Card Sort

The PACS (Mandich et al., 2004), was used to assist the child in goal setting. The PACS was summarized in narrative form, emphasizing those activities that were important to the participant, or those activities he engaged in most frequently, based on the cards selected.

The Canadian Occupational Performance Measure

The COPM (Law et al., 2005), resulted in quantitative date. The pre and post-intervention COPM ratings for satisfaction and performance were recorded in figure format.

The Performance Quality Rating Scale

The PQRS (Miller et al., 2001) provided quantitative ratings of pre and post-intervention performance. Part A provides actual performance at the initiation and conclusion of CO-OP intervention. Part B of the PQRS provides the magnitude of change in performance from the beginning to the end of intervention. The results of Part A are reported in figure format and Part B was reported in table format.

The Social Skills Checklist

The Social Skills Checklist was summarized in narrative form. The summary includes information about the social areas of priority to the participant’s mother, and how often the skills were occurring prior to CO-OP intervention.

Weekly Progress Sheet

The Weekly Progress Sheets were summarized in narrative form, highlighting themes identified throughout the weeks. Emphasis on changes observed and reported by the parents was also included in the narrative.
Video Recordings

Session 1 was not video recorded, as it was a session focused on completing assessment measures to determine goal focus. Sessions 2-12 were video recorded. Session 2 focused on teaching the global strategy of Goal-Plan-Do-Check, and therefore was recorded, but not analyzed. Sessions 3 and 12 were analyzed to complete the PQRS. Sessions 3-11 were video recorded for data analysis. Following each intervention session, analysis of the session was completed by watching the video recording. Review of the video recordings took place prior to the next intervention session. To ensure confidentiality of the participant, the review of the video recordings was completed in a private room located within the University of North Dakota Occupational Therapy Department with only the authors present. The video recordings were located on a password secured internet site that required a hardwired internet connection to gain access to the recordings; these additional security measures were in place for participant confidentiality.

Data analysis of the video recordings was completed using systematic behavioral observation by two raters, as described by Rodger, Pham, and Mitchell (2009). Two 5-minute sections of video recording from each of the intervention sessions were randomly selected for review (Rodger et al., 2009; Ward & Rodger, 2004). The child was intermittently allowed three minutes reward time. If a randomly selected segment included footage of reward time, it was determined that three minutes of time would be deducted and added onto the end of the selected video segment. During the review of the video recordings, the child’s use and frequency of global and domain specific strategies was recorded using the Global and Domain Specific Strategies Log. The type of guidance
the participant used and the dimension of time on task were also recorded on the Global and Domain Specific Strategies Log during review of the video recordings. Following the completion of Session 11, the Global and Domain Specific Strategies Logs from Sessions 3-11 were compiled and the data summarized. The data from the Global and Domain Specific Strategies Log is presented in table format.

Inter-rater reliability was considered during the data analysis process. First, both authors studied the definitions of global strategies, domain specific strategies, types of guidance, and dimension of time on task set forth by Rodger and Vishram (2010) and Polatajko and Mandich (2004). Two authors then completed individual analysis of the video recordings, identifying (a) global strategies, (b) domain specific strategies, (c) type of guidance, and (d) dimension of time on task. Discrepancies in ratings were discussed until a consensus could be reached.

Reliability and Validity

According to Merriam (1998), reliability in qualitative research is concerned with whether the results are consistent with the data that was collected. This is determined through triangulation, audit trails, and the researcher’s position. Triangulation, using different methods of data collection, was utilized through the use of (a) video recordings, (b) parent reports, (c) the participant’s perspective through interview, and (d) observation, to gather data. Audit trails, involving an in-depth explanation of how the data was collected and analyzed was described earlier in this chapter. The researcher’s position, including, (a) the background in theory guiding this study, (b) rationale for selecting a participant, and (c) the description of the participant in detail, was also considered in concern with the overall reliability of the study (Merriam, 1998). The reliability of the
intervention method and its implementation according to the established protocol was considered through the regular debriefing that took place between the two occupational therapy students and the registered occupational therapist acting as research supervisor following each session. The debriefing process was focused on determining strengths, areas for improvement and degree to which trueness to method was upheld.

Merriam (1998) also describes validity in two forms, internal and external. Considerations for internal validity included the use of video recordings to verify if components of the intervention were being carried out true to the established method. Video recordings were reviewed prior to the next session because the recordings acted as feedback, allowing for changes to be made to the intervention implementation prior to the next session.

External validity is concerned with generalizability. Through case study research, the authors generalized methods and results from existing literature to guide the research process. Another aspect of generalizability is case-to-case transfer. The consumer takes the results of the research and analyzes it as to how it can be applied to their own research or practice. Conduction of this research makes available an opportunity for other practitioners and researchers to use the processes and results established through this study to help guide future research on a similar topic.

Corbin and Strauss (2008) present similar ideas to foster quality research. These concepts include: (a) methodological consistency, (b) clarity of purpose, (c) self-awareness, and (d) adequate training in qualitative research. Corbin and Strauss (2008) explain “methodological consistency” as the degree to which a researcher follows a set protocol or method. The authors considered methodological consistency through frequent
referral to the protocol established by Polatajko and Mandich (2004).

According to Corbin and Strauss (2008), a researcher must make the purpose of research clear prior to conducting research. It must be understood whether the researchers hope to build theory or provide description at the beginning of the research process. Researchers also need to possess self-awareness throughout the research process. A researcher influences the research through collection and interpretation of data, and therefore, needs to be aware of how the research and process is being affected (Corbin & Strauss, 2008). The authors debriefed following each session to address awareness of how their thoughts and actions were affecting intervention and outcomes. Training in qualitative research varied among the authors. The two occupational therapy students have completed a qualitative research course through the occupational therapy program. The registered occupational therapist acting as research supervisor has experience completing qualitative research, and has received formal education about the qualitative research process.
CHAPTER IV

RESULTS

Introduction

This case study examined the effectiveness of using the protocol established by Polatajko and Mandich (2004), the Cognitive Orientation to daily Occupational Performance (CO-OP) approach, to address goals related to social, emotional, and organizational skills for a child with an autism spectrum disorder. The participant will be referred to as Ben from this point forward. In this chapter, the authors will illustrate the application of the CO-OP approach to Ben’s case. Specifically, results from the assessment and intervention processes are included. In addition, as the results are reported, a discussion of the findings as they relate to previous studies will be presented.

Background

Ben was an eight-year-old child who completed the CO-OP intervention sessions. He was in the second grade during participation in the study. He had a diagnosis of Pervasive Developmental Disorder-Not Otherwise Specified, as reported by Ben’s parents. He was receiving additional therapy services, including occupational therapy and speech therapy at the time of the study. The additional occupational and speech therapies were addressing goals different from those social, emotional, and organizational goals identified for this study, and neither therapy was utilizing the CO-OP protocol.
Assessment

In order to understand Ben’s engagement in occupation, the following assessments were used. Based on the protocol established by Polatajko and Mandich (2004), the Daily Activity Log (Polatajko & Mandich, 2004), Pediatric Activity Card Sort (PACS) (Mandich, Polatajko, Miller, & Baum, 2004), the Performance Quality Rating Scale (PQRS) (Miller, Polatajko, Missiuna, Mandich, & Macnab, 2001), the Canadian Occupational Performance Measure (COPM) (Law, Baptiste, Carswell, McColl, Polatajko, & Pollock, 2005), and the process of Dynamic Performance Analysis (DPA) (Polatajko, Mandich, Martini, 2000) were selected to assist in the process of data collection to assess the effectiveness of the CO-OP intervention. The Social Skills Checklist (University of Washington, 2004) was used in the initial assessment. The Weekly Progress Sheet, developed by the authors, was also used to gather data about progress.

The Daily Activity Log

The Daily Activity Log (Polatajko & Mandich, 2004) was used to gather data for goal-setting. This tool aided in the goal-setting process by providing the authors with information about the activities that Ben engaged in during a typical day. This day could not be a weekend day. Ben’s mother completed and returned the daily activity log. The log indicated that Ben woke up at 7:00 a.m. each day, ate breakfast, and went to school at 8:00 a.m. He attended school from 8:00 a.m. to 3:30 p.m. At 4:00 p.m. on Wednesdays, Ben attended speech therapy and occupational therapy at an outpatient clinic. On Mondays and Thursdays at 4:00 p.m. he attended Tae-Kwan-Do. At 6:00 p.m., he would eat dinner with his family and then he and his family would have homework and free
time until Ben went to bed at 8:00 p.m.

The Pediatric Activity Card Sort

Completion of the PACS (Mandich et al., 2004) indicated high daily involvement in personal care activities, including (a) bathing, (b) brushing teeth, (c) dressing, and (d) eating. Ben indicated less participation in the area of school/productivity. He reported engaging in (a) making the bed, (b) cleaning his room, and (c) setting the table. These activities were completed on a weekly basis. Ben noted involvement in a variety of hobbies/social activities, including (a) going to a place of worship, (b) playing at recess, and (c) doing arts and crafts, most of which he participated in on a weekly basis. Ben reported selective involvement in sports including (a) golf, (b) martial arts, and (c) baseball. Frequency of engagement in these three sports varied.

The Social Skills Checklist

The Social Skills Checklist (University of Washington, 2004) was used to gather assessment data about Ben’s current social skills. Ben’s mother filled out the checklist during Session 1. The checklist describes various social behaviors and Ben’s mother was asked to select from the options “almost always,” “often,” “sometimes,” and “almost never” for each situation. Ben’s mother was also asked to mark those areas that she considered to be a priority for goal-setting. After analyzing the mother’s responses, it was found that she prioritized self regulating when becoming tense or upset, self regulating when energy level is high, accepting consequences of his behaviors without becoming upset or angry, using appropriate attention-seeking behaviors, and continuing to try when something is difficult as focus areas for intervention. Each of these areas was marked as “almost never” by Ben’s mother. These areas were considered when setting goals with
Ben and his mother.

Goal Setting

Following completion of the previously described assessment tools, the COPM (Law et al., 2005) was completed with Ben and his mother in order to narrow the intervention focus and select intervention goals. The following goals were identified: (a) I will get to the car with everything I need for school, (b) when I am sitting on the couch with mom, I will remain an arm’s length away, and (c) when it’s time for Mass on Sunday, I will use my coping skills.

Response to Intervention Sessions

The intervention sessions were all completed in the evening after Ben had a full day of school and at times, other activities. Ben was often off-task during the intervention sessions and required re-direction from the authors. In some instances, Ben noted that he was fatigued. Therefore, the authors adapted sessions based upon his behavior and energy level. In addition, Ipad games were used as rewards for participation throughout the intervention sessions. In order to encourage on-task behavior, the authors used a visual schedule for each intervention session so that Ben could be aware of the planned sequence of events. Overall, to encourage on-task behavior, the authors made an effort to include activities in the sessions that encouraged movement, active participation, and the inclusion of Ben’s special interests.

Results for Intervention Goals

The Canadian Occupational Performance Measure

The COPM (Law et al., 2005) was used to aid in the goal-setting process. Ben’s mother completed the COPM during Session 1 and three goals were identified. The
COPM is a 10-point rating scale that includes ratings for performance and satisfaction. A score of 1 indicates not at all satisfied/very poor performance and 10 indicates very satisfied/high performance. Figure 1a and Figure 1b present the pre-test and post-test ratings by the mother in the areas of performance and satisfaction.

Figure 1a

*Canadian Occupational Performance Measure parent pretest and posttest performance ratings*
All COPM parent ratings indicated improvements in the areas of performance and satisfaction when comparing pretest and posttest ratings of all three goals. A mean improvement of 4.3 points was noted in the area of performance across goals. This indicates improvement in the performance of all three goals. Satisfaction ratings increased a mean of 7.3 points, indicating an increase in the parent's satisfaction of the performance in the three goal areas when intervening with the CO-OP approach. Rodger et al. (2008) found similar results when analyzing COPM data for two participants with Asperger's Syndrome. For both participants, the parent mean ratings for both performance and satisfaction increased.

*The Performance Quality Rating Scale*

The PQRS (Miller et al., 2001) was used to rate Ben's performance before and after the intervention process both by the parents and authors. Parent ratings were completed based upon performance in natural context. Author's ratings were completed
based upon role play in the clinic setting. Part A includes a 10-point rating scale of performance and Part B is an 11-point magnitude of change scale. Scores on Part A can range from 1-10, indicating quality of performance, with 1 being “very poor” and 10 being “very good.” Scores on Part B can range from -5, indicating that the change was five times worse, to +5, indicating that the change was five times better. Figure 2 presents the parent’s and author’s pre-test and post-test ratings for Part A. Table 1 presents the magnitude of change identified through completion of Part B.

Figure 2

Performance Quality Rating Scale parent and author pretest and posttest ratings
| Table 1 |

**Magnitude of change for Performance Quality Rating Scale**

<table>
<thead>
<tr>
<th></th>
<th>Morning routine</th>
<th>Boundaries on couch</th>
<th>Preparing for Sunday Mass</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents</td>
<td>+5</td>
<td>+2</td>
<td>+4</td>
</tr>
<tr>
<td>Authors</td>
<td>+3</td>
<td>+1</td>
<td>+4</td>
</tr>
</tbody>
</table>

All parent ratings of the PQRS increased when comparing pretest to posttest. This indicates an improvement in the child’s performance in all goal areas based on the parent’s perception. The authors also noted improvements in all goal areas based on their observations of the child’s performance at pretest and posttest. Although both the parent and authors’ PQRS scores indicated improvement in the current study, the parent’s ratings had a higher magnitude of change when compared to the scores of the authors. The authors hypothesize that this is because performance in natural context is different than role-playing for a child with PDD-NOS. When comparing these results to other studies, Rodger, Ireland, and Vun (2008) found that for one participant with Asperger’s Syndrome, the scores on the PQRS improved for one goal, but remained the same for a second goal when comparing pre and posttests.

**Weekly Progress Sheet**

Ben’s parents noticed him making notable progress towards his goals throughout the course of CO-OP intervention. After the introduction of Goal-Plan-Do-Check for each goal, Ben naturally progressed in each goal area, evidenced by a gradual decrease of cueing. The parents also observed generalization and transferring of CO-OP concepts. Examples include using the term “boundaries,” reminding others of personal space, or using terms from the Zones of Regulation to identify his own emotions and the emotions
of others in areas other than those associated with the exact goal being addressed. Parents were also encouraged to transfer to other areas. Ben’s mother indicated practicing Goal-Plan-Do-Check for other tasks such as laundry and creating a plan for the day at breakfast. School personnel and extended family members also indicated that Ben used similar concepts on his own. At the two week follow-up, Ben’s mother indicated continued improvement in performance of all goal areas. Ben continues to utilize terms from the Zones of Regulation, his teachers have noted an improvement in his behavior at mass, and that he utilizes Goal-Plan-Do-Check when folding his laundry.

Dynamic Performance Analysis Record

The process of DPA (Polatajko et al., 2000) was used by the authors to iteratively assess the breakdown points in Ben’s performance. To aid the parent’s understanding of this process, a handout was created and provided to the parents (Figure 3). This figure includes the breakdown points identified within each goal area and which steps of the goal address those breakdown points.

Figure 3

Summary of Dynamic Performance Analysis Record

Goal: I will get to the car with everything I need for school

<table>
<thead>
<tr>
<th>Breakdown Points</th>
<th>Plans</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiating the activity</td>
<td>• Cue from Mom, “It’s time to get to the car with everything you need for school”</td>
</tr>
<tr>
<td>Organizing Items</td>
<td>• Plan with step-by-step directions:</td>
</tr>
<tr>
<td></td>
<td>1. Get shoes on</td>
</tr>
<tr>
<td></td>
<td>2. Get my backpack</td>
</tr>
<tr>
<td></td>
<td>3. Ask Mom if I need my coat</td>
</tr>
<tr>
<td></td>
<td>4. If mom says yes, put on coat</td>
</tr>
<tr>
<td></td>
<td>5. Get to the car</td>
</tr>
<tr>
<td>Checking</td>
<td></td>
</tr>
</tbody>
</table>
**Goal: When sitting on the couch with mom, I will remain an arm’s length away**

<table>
<thead>
<tr>
<th>Breakdown Points</th>
<th>Plans</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recognizing Personal Space</td>
<td>• Education on boundaries: Remaining an arm’s length away, Moving in your space</td>
</tr>
<tr>
<td></td>
<td>• Moving to another couch if Mom says “No”</td>
</tr>
<tr>
<td>Staying In One Place</td>
<td>• Using “arm’s length away” when on the couch</td>
</tr>
<tr>
<td></td>
<td>• Grabbing the pillow to help keep his hands busy and his body still</td>
</tr>
</tbody>
</table>
Goal: When it’s time to go to Mass on Sunday, I will use my coping skills

<table>
<thead>
<tr>
<th>Breakdown Points</th>
<th>Plans</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficulty Responding to Change in Routine</td>
<td>• Time warning from Mom/Dad</td>
</tr>
<tr>
<td>Identifying and Using Coping Skills</td>
<td>• Deciding what color he is in (Zones of Regulation)</td>
</tr>
<tr>
<td></td>
<td>• Coping Skills in Plan: Playing Legos for 5 minutes, getting a drink of water, and sitting on the couch and counting for 37 seconds</td>
</tr>
<tr>
<td>Not highly motivated to get ready for mass</td>
<td>• Use of Legos (something he enjoys) as a coping skill</td>
</tr>
</tbody>
</table>

Figure 3 is a handout that was provided to Ben’s parents. This handout includes a summary of the identified breakdown points. The corresponding column contains a description of the specified portion of the Plan where the breakdown point was addressed. The breakdown points were identified by the therapists throughout the intervention process by using the process of DPA. When each goal was being addressed, the authors interviewed the parents and child to further understand where the breakdowns were occurring. The authors also used role-playing and observation to further assess the breakdown points.

Results of Intervention Strategies

Analysis of the intervention strategies was completed as set forth in Chapter 3. The reader is referred to the analysis procedures for details.

Global and Domain Specific Strategies

To determine the frequency of global and domain specific strategies used by the authors and the child, video analysis occurred. Table 2 presents the percentage of use for...
each global and domain specific strategy.

Table 2  
*Global and domain specific strategies use*

<table>
<thead>
<tr>
<th>Global Strategy</th>
<th>Number of Occurrences</th>
<th>Percentage of Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal</td>
<td>31/358</td>
<td>8.66</td>
</tr>
<tr>
<td>Plan</td>
<td>79/358</td>
<td>22.07</td>
</tr>
<tr>
<td>Do</td>
<td>54/358</td>
<td>15.08</td>
</tr>
<tr>
<td>Check</td>
<td>35/358</td>
<td>9.78</td>
</tr>
<tr>
<td>Understanding Context</td>
<td>71/358</td>
<td>19.83</td>
</tr>
<tr>
<td>None</td>
<td>88/358</td>
<td>24.58</td>
</tr>
</tbody>
</table>

**Domain specific strategy**

| None                                      | 128/358 | 35.75 |
| Body Position                             | ---     | ---   |
| Attention to doing/attending             | 68/358  | 18.99 |
| Task specification                        | 38/358  | 10.61 |
| Task modification                          | 5/358   | 1.40  |
| Feel the movement                          | ---     | ---   |
| Verbal mnemonic                           | ---     | ---   |
| Verbal rote script                        | 19/358  | 5.31  |
| Supplementing task knowledge              | 5/358   | 1.40  |
| Transitional supports                     | 46/358  | 12.85 |
| Affective supports                        | 23/358  | 6.42  |
| Motivational supports                     | 26/358  | 7.26  |

The authors identified “none” as being the global strategy utilized most often (24.58%), followed by “plan” (22.07%), and “understanding the context” (19.83%). All of the global strategies were used at some point in the analyzed segments. Rodger and Vishram (2010) found that two participants with Asperger’s Syndrome used all global strategies during their recorded video segments, which is consistent with findings in this study. The most common global strategies used by the participants in the previous study were “plan,” which one participant used 26% of the time and “understanding the context,” which the second participant used 42% of the time. In addition, the second participant used the global strategy “none” for 19.8% of coded segments (Rodger & Vishram, 2010). Both this study and the Rodger and Vishram (2010) study, the global strategies of “none,” “plan,” and “understanding the context” were most commonly used by the
participants.

When analyzing domain specific strategy use, “none” was the most commonly used strategy (35.75%). Though Rodger and Vishram (2010) found that “task specification” was the most commonly used domain specific strategy, for most of the intervals no specific domain specific strategy was observed. Interestingly, Rodger and Vishram (2010) found that the pattern of domain specific strategy use involved a unique interaction between the child, the goal, and the therapist using guided discovery. This phenomenon also occurred in the current study, however the frequent use of “attention to doing” and “transitional supports” was unique to this participant when compared to results of previous studies.

In addition, the authors found that “attention to doing” was the second most commonly used strategy (18.99%), followed by “transitional supports” (12.85%). The strategies “body position,” “feel the movement,” and “verbal mnemonic” were identified as not being used in the coded segments. The authors hypothesize that this is due to the social, emotional, and organizational nature of the goals.

In the previous study conducted by Rodger and Vishram (2010), it was found that the domain specific strategy “task specification” was used most often. The first participant utilized this strategy 52.4% of the time; while participant two utilized this strategy 33.3% of the time. In addition, “affective supports” (15.4%) and “supplementing task knowledge” (24.2%) were the second most commonly used strategies for both participants, respectively (Rodger & Vishram, 2010).
Type of Guidance

The type of guidance utilized throughout the intervention process was analyzed by the authors through video recordings. Table 3 presents the percentage of use for each type of guidance.

Table 3
Type of Guidance

<table>
<thead>
<tr>
<th>Type of Guidance</th>
<th>Number of Occurrences</th>
<th>Frequency percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbal self-guidance</td>
<td>35/358</td>
<td>9.98</td>
</tr>
<tr>
<td>Verbal guidance (by therapist)</td>
<td>216/358</td>
<td>60.34</td>
</tr>
<tr>
<td>No guidance</td>
<td>107/358</td>
<td>28.89</td>
</tr>
</tbody>
</table>

The authors identified "verbal guidance by therapist" as being the type of guidance used most often (60.34%). "No guidance" was the second most often used guidance (28.89%). Ben used "self-guidance" least often (9.98%). This means that throughout sessions, the authors were the main source of guidance while carrying out the concepts of Goal-Plan-Do-Check. These results differ slightly from the results of the study conducted by Rodger and Vishram (2010) where it was found that "no guidance" was used for the majority of time with both participants. In addition, only one participant was found to be engaging in verbal self-guidance (Rodger & Vishram, 2010).

Dimension of Time on Task

The frequency of dimension of time on task was assessed from the video recordings during the data analysis process. This included assessing whether Ben was talking about the task or goal area, practicing the task or goal area, or dual-tasking. Table 4 presents the percentage of use of each dimension of time on task.
Table 4

*Dimension of time on task*

<table>
<thead>
<tr>
<th>Dimension of time on task</th>
<th>Number of Occurrences</th>
<th>Frequency percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Talking about the task</td>
<td>292/358</td>
<td>81.56</td>
</tr>
<tr>
<td>Practicing the task</td>
<td>12/358</td>
<td>3.35</td>
</tr>
<tr>
<td>Dual tasking</td>
<td>54/358</td>
<td>15.08</td>
</tr>
</tbody>
</table>

The dimension of time on task occurring most often was “talking about the task” (81.56%), followed by “dual tasking” (15.08%), and “practicing the task” (3.35%).

Overall, the participant spent a significant portion of the time during intervention sessions not physically practicing the goal areas, but rather talking about the goals. Similarly, Rodger and Vishram (2010) found that both participants spent the majority of the time “talking about the task,” however this was expected due to the social and organizational nature of the goals. In addition, the dimensions of “dual tasking” and “practicing” were rarely viewed for both participants (Rodger & Vishram, 2010).
CHAPTER V

SUMMARY

The purpose of this case study research was to further explore the effectiveness of using the Cognitive Orientation to daily Occupational Performance (CO-OP) approach with a child with an autism spectrum disorder (ASD) to address goals in the areas of social, emotional, and organizational skills. The authors sought to answer the following research questions: Does the CO-OP approach work for addressing social, emotional, and organizational skills for a child with an autism spectrum disorder? Does the child generalize the goals among varying contexts? Does the child generalize the global and domain specific strategies within the sessions and outside of the sessions? What domain specific strategies were used in the sessions? Were the domain specific strategies used similar to those in previous literature? What type of guidance is used by the child in the sessions? What dimension of time on task is utilized most often by the child? The findings related to these questions are summarized below.

The authors found that the CO-OP approach is effective for addressing social, emotional, and organizational skills for a child with an ASD when considering pretest and posttest parent and author assessment ratings. Ben’s parents and the authors both indicated improvements in Ben’s performance in all three goal areas on the Canadian Occupational Performance Measure (COPM). Satisfaction ratings on the COPM also
increased for Ben’s parents and the authors. Both the parents and the authors also indicated improvements in the Performance Quality Rating Scale (PQRS). These findings indicate that the use of the CO-OP approach was successful in addressing Ben’s goals related to social, emotional, and organizational skills.

It was found that Ben was able to generalize the goals among varying contexts. As noted on the Weekly Progress Sheet, Ben’s parents indicated that he used concepts from the intervention sessions in other contexts. Examples include using the term “boundaries,” reminding others of personal space, or using terms from the Zones of Regulation to identify his own emotions and the emotions of others in areas other than those associated with the exact goal being addressed. In addition, school personnel and extended family members indicated that Ben used similar concepts on his own. At the two week follow-up, Ben’s mother further indicated that performance in all goal areas continued to improve. Ben’s mother also indicated that he continues to utilize terms from the Zones of Regulation, teachers have noted an improvement in his behavior at Mass, and that he was utilizing the global strategies Goal-Plan-Do-Check when folding laundry.

In contrast, generalization of global and domain specific strategies within the sessions was not as apparent. For the majority of analyzed segments, Ben relied on therapist guidance instead of using self-guidance to reach his goals. In addition, most of the time was spent utilizing no specific global strategy or utilizing the strategy of “plan,” which involved mostly therapist guidance and facilitation. The authors hypothesized that this was likely because that for these types of goals, role-playing was required instead of direct performance. Ben required guidance from the therapist in order to role-play specific situations related to his goals.
The authors analyzed Ben’s use of domain specific strategies and found that he used the strategies of “none,” “attention to doing,” and “transitional supports” most often. Additionally, the strategies of “body position,” “feel the movement,” and “verbal mnemonic” were not used at all in the coded video segments. The authors hypothesized that this was likely because the goals addressed were not motor-based; therefore these strategies would not be applicable.

When considering type of guidance utilized most frequently, it was found that Ben relied on guidance by the therapist for the majority of intervals (60.34%). He utilized verbal self-guidance least often (9.98%). The authors hypothesized that Ben required heavy guidance by the therapist due to the nature of the goals. The goals were not as concrete as motor goals and required therapist teaching and guidance. In addition, Ben spent the majority of the time talking about the goals (81.56%). Again, the authors hypothesized that this is because the chosen goals required direction and guidance from the therapist and role-play was used often instead of actual performance because the clinic was not the true context.

Reflection on Protocol

After considering the results of the current study, the authors compiled reflections about the use of the CO-OP approach with Ben to address goals related to social, emotional, and organizational skills. The authors found that the use of the global strategies, Goal-Plan-Do-Check were effective for addressing these goals, especially the goal related to organization. This is likely because the organizational goal had a set sequence of events, which is similar to motor-based goals. Overall, Ben was able to internalize these strategies and apply them to each goal.
The authors also found that the global strategies of “plan” and “understanding the context” were used often, due to the nature of the goals. In order to understand the breakdown points and effectively engage in “plan,” the authors needed to have an understanding of how the goals occurred in the natural context. In addition, the “plan” phase for each goal took a significant amount of time because Ben and his parents worked together to develop plans that would fit best with their established routines. The authors and Ben also had to engage in role-play often during this phase to understand how the plans would work. Overall, the use of these global strategies was effective and a large majority of the time was spent in “plan” and “understanding the context” due to the nature of the goals.

Another finding was that most of the established domain specific strategies did not apply to this case study. Again, the authors hypothesized that this was due to the nature of the goals. Most of the established strategies apply more to motor-based goals. The authors found that the strategy use during the coded segments involved a unique interaction between the authors, the child, and understanding of the context in which the goals occurred. These interactions applied more to the use of a global strategy rather than one of the specified domain specific strategies.

Ben’s parents completed the Weekly Progress Sheet each week following the sessions. The form includes questions about Ben’s transfer and generalization of the goals to other contexts and the parents were provided blank lines to record their thoughts. The parents’ responses were somewhat brief and they did not expand on their answers. The parents indicated that they would have preferred a more concise form.
Conclusions and Recommendations

The authors have a few recommendations for future studies examining the effectiveness of using the CO-OP approach to address social, emotional, and organizational goals for a child with an ASD. First, the authors recommend the continued use of the global strategies when addressing these types of goals. The global strategies were effective at promoting generalization and transfer and Ben was able to internalize the use of these strategies. Next, the authors recommend that the established domain specific strategies be altered when addressing goals specific to these areas. The later established strategies as set forth by Rodger and Vishram (2010) of “transitional supports,” “affective supports,” and “motivational supports” should continue to be included for these goals because of the needs of children with ASD. For example, due to the nature of the goals, many sessions involved discussion and role-play; therefore Ben required motivational supports in order to remain engaged. The authors also utilized a visual schedule of each session to help Ben transition throughout each session. These strategies were effective when working with a child with an ASD, however further strategies may need to be developed to more accurately reflect the unique strategy use that occurs with these types of goals.

The authors also concluded that goals related to social, emotional, and organizational skills are highly context-specific and therefore not as observable in a clinic setting. When addressing these types of goals, it is important to ensure that the parents are dedicated to the process because most of the carry-over occurs at home. In the clinic, the authors had to facilitate role-play, which was sometimes difficult for Ben. Instead, the authors had to rely on parent carry-over of the goals and rely on their ability to accurately
report back on the progress of the goals each week.

In terms of assessment tools, the authors also make a few recommendations. Ben completed the Pediatric Activity Card Sort (Mandich, Polatajko, Miller, & Baum, 2004) during Session 1. The authors found that this information was not as useful for goal-setting because Ben was not an accurate reporter in terms of what activities he engaged in and the frequency of engagement. This will likely be true for other children with an ASD; therefore the use of this tool for these types of goals should be considered. Additionally, the PQRS had to be completed by the authors based on video recordings of the child engaging in role-play and not of performance in the real context. Therefore, it was difficult to assess whether or not true performance was being assessed. The parents’ ratings of the PQRS may be more useful in these situations due to the context-specific nature of the goals.

Finally, the authors recommend that a new Weekly Progress Sheet be developed. The authors suggest that the parents and therapist engage in a discussion about progress, generalization, and transfer at the beginning of each session and the therapist should take notes on these discussions. In addition, a form containing questions with a Likert scale could be provided for the parents to complete parents in conjunction with the discussion occurring at the start of each session.

Limitations

There were a few limitations of the current study. First, though the authors studied the protocol before beginning the intervention sessions and referenced the manual throughout the process, the authors were not experienced with using the protocol. Second, this study was a case example of one child and cannot be generalized to an entire
population. Next, performance was not always observable due to the social, emotional, and organizational nature of the goals and that could have impacted the results. Due to this, the authors had to rely heavily on parent report when assessing progress related to goals. Finally, the authors deviated from the protocol of two sessions per week due to family scheduling. Also, the scoring of the PQRS was completed by the authors based off of the video recordings of performance and was not completed until after Session 3 so that the authors had sufficient video material to base their ratings on. Additionally, the parents completed the PQRS due to the context-specific nature of the goals. This could have affected the reliability of the parents’ PQRS results because the parents may have been more likely to want to present Ben’s progress in an overly positive light, either for their own or the authors’ benefit.
APPENDICES
Appendix A
Author developed Weekly Progress Sheet

Weekly Progress Sheet
Please fill this form out one time per week. This form is designed to help the researchers track your child’s progress throughout the intervention process and for 4 weeks following completion of the interventions. You are asked to answer the following questions to the best of your ability.

_____ Week of Intervention

Have you noticed your child making any progress towards his/her goals over the past week at home? (Circle One)

Yes      No

Please explain further:
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________

Have you noticed your child transferring skills learned during the sessions to the home environment?

(Circle One)

Yes      No

Please explain further:
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
Have any other family members, teachers, or other significant people in your child’s life indicated that your child is transferring skills or progressing towards goals? (Circle One)

Yes

No

Please explain further:

__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________

Please include any other comments below:

__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
Appendix B
Author developed Global and Domain Specific Strategies Log

Global and Domain Specific Strategies Log

Session: ________________________________________________________________

Goals addressed: _______________________________________________________

Times viewed: __________________________________________________________

Global Strategies

<table>
<thead>
<tr>
<th>Goal</th>
<th>Plan</th>
<th>Do</th>
<th>Check</th>
<th>Understanding Context</th>
<th>None</th>
</tr>
</thead>
</table>

Domain-specific Strategies

<table>
<thead>
<tr>
<th>None</th>
<th>Body Position</th>
<th>Attention to doing/attending</th>
<th>Task specification</th>
<th>Task modification</th>
<th>Feel the movement</th>
<th>Verbal mnemonic</th>
</tr>
</thead>
</table>

76
<table>
<thead>
<tr>
<th>Type of Guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbal self-guidance</td>
</tr>
<tr>
<td>Verbal guidance (by therapist)</td>
</tr>
<tr>
<td>No guidance</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimension of time on task</th>
</tr>
</thead>
<tbody>
<tr>
<td>Talking about the task</td>
</tr>
<tr>
<td>Practicing the task</td>
</tr>
<tr>
<td>Dual tasking</td>
</tr>
</tbody>
</table>
References


Occupational Therapy, 76 (1), 23-28.


ability to organize information in individuals with autism spectrum disorders and their siblings. *Neuroscience Research, 69*, 252-257. doi: 10.1016/j.neures.2010.11.007


