

SELF REGULATION IN CHILDREN WITH AUTISM

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ABSTRACT

An investigation on the impact of early attachment on middle childhood in children diagnosed with autism and how it relates to self regulation is necessary to better understand how counselors and psychologists can support the child and caregivers in family-centered practice. Subjects were recruited through an advertisement placed in Autism Calgary Association's newsletter. An investigation of children diagnosed with autism's ability to regulate emotional and physiological states and attachment behavior was made through caregiver response instruments. The Strength and Difficulties Questionnaire and the SAP-REPORT FORM: Language Partner Stage from the SCERTS model of intervention was used for this investigation. Results indicate that there was no relationship between a child having a diagnosis of Autistic disorder, Asperger's disorder, or Pervasive Developmental Disorder-not otherwise specified and the strategies that are used to regulate emotional and physiological states when faced with anger or anxiety. Additionally, prosocial behavior is not an indicator of whether the child will seek help from a caregiver for regulation or make use of repetitive behaviors to support regulation. Further investigation is necessary to examine whether attachment-based interventions may be used as a means to aid a child diagnosed with autism in using different strategies to co-regulate or self-soothe in times of stress.

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CHAPTER I: INTRODUCTION

An increasing amount of research and data is available to us about Autism Spectrum Disorders (ASD): what it looks like in early childhood (Gomez & Baird, 2005; Goin & Myers, 2004; Prizant, Wetherby, Rubin, & Laurent, 2006; Watson, Baranek, & DiLavore, 2003), differing opinions about etiology (Barrows, 2004; Fisher, 2006; Maillo, 2001; Rogers, 2004; Rhode, 2004) and intervention practices (Barrows, 2004; Belmonte, Cook, Anderson, Rubenstein, Greenough, Beckel-Mitchener et al., 2004; Dunn, Saiter, & Rinner, 2002; Dawson & Watling, 2000; Harrington, 2000; Nuzzolo-Gomez, Leonard, Oritz, Rivera, & Greer, 2002; Prizant et al., 2006; Rhode, 2004). Very little research has been conducted investigating the middle childhood years and the child's ability to regulate emotional and physiological states. An investigation on the impact of early attachment on middle childhood in children diagnosed with autism and how it relates to self-regulation is necessary to better understand how counselors and psychologists can support the child and caregivers in a family-centered practice.

The connection between the primary attachment relationship and self-regulation is an important aspect of intervention for children diagnosed with autism and their families. In August of 2004 a new legislation was introduced in Alberta to better support children with severe disabilities and their families. The family-focused and child-centered approach supports the notion that primary caregivers play an integral role in the overall functioning of their child. There have been a number of interventions used over the years, which have been considered best practices in the treatment of the child diagnosed with ASD (Mandel, Walrath, Manteuffel, Sgro, Pinto-Martin, 2005; Marcus, Rubin & Rubin,

2000; Marshall & Miranda, 2000; Mulick & Butter, 2002; Ozonoff & Cathcart, 1998; Sheinkopf & Siegel, 1998). Many of these treatments give varying levels of support to the caregivers and families, particularly in the areas of overall family functioning and engagement. Alberta's new legislation (August, 2004) for increased funding and services for children and families contending with disabilities, service providers have been forced to assess their current interaction practices and adjust to a more family-centered approach.

The introduction of family-focused practice includes the caregivers as an integral part of the intervention, thus a need for the investigation of attachment profiles in connection with self-regulation and co-regulation is necessary. Often behavioral outbursts and atypical, repetitive movements are observed when there is anxiety or unpredictability in the environment. Some view these 'behaviors' as functional, aiding in self-regulation or as the child seeking co-regulation. Others view these behaviors as dysfunctional and socially unacceptable behaviors. When a child uses repetitive behaviors to self-regulate or to seek mutual regulation from a parent or primary caregiver and the parent or caregiver is not receptive to this bid for attention, there can be a disruption in the attachment relationship leading to insecurely attached behaviors, as discussed above.

Research Purpose and Objectives

The purpose of this paper is to explore the relationships between the behaviors that are associated with children diagnosed with ASD and how these behaviors are related to self-regulation. A qualitative method of data collection and data analysis will be used to investigate the behaviors more in depth and bring meaning to what functions

the behaviors might serve. Qualitative research methods allow the researcher to gain more detailed information and draw meaning from the information provided by the respondents and what the behaviors being investigated mean to the caregiver by representing the caregivers worldview. For this investigation, qualitative research methods allow the researcher to attempt to make sense of the behaviors being investigated in order to further support the caregivers and children diagnosed with ASD. Qualitative research allows the investigator to search for answers to the questions she or he put forward, and to formulate additional questions that will further research in this area.

Limitations and Delimitations

There were several limitations and delimitations identified in this study, which should be taken into consideration for any follow-up studies that may be initiated in the future. These limitations include participant recruitment, number of participants, assessment of attachment relationship, and clinical observations and interview. This author has recognized that many of these limitations are due to the nature of the requirements for this final project in the Campus Alberta-Counselling Initiative, but would high-light these limitations with viable options for further research in this area. It is the opinion of this author that further research in this area is necessary to adhere to the growing needs of this population of children and to offer interventions which are family centered and adhere to the individual functional needs of the child to interact and connect with their family and community.

Study Overview

Chapter II will explore the definition of self-regulation and provide the reader with the current definitions of Autistic Disorder, Asperger's Disorder and Pervasive Development Disorder-Not Otherwise Specified (PDD-NOS). There is a discussion of common deficits, which this author believes contributes to self-regulation and emotional regulation in children with the above diagnoses. The author will define and explore early attachment behaviors of an infant to a primary caregiver and how it is related to self-regulation. Included will be an attempt to link factors that are indicated as common deficits, such as eye contact and social reciprocity, in autism to attachment and bonding. Chapter III will provide the reader with the study's research design and procedures. This will also include a description of participants, assessment tools, limitation and delimitations. Chapter IV will provide the reader with the results and a description of the research data. Chapter V will discuss the study's findings and the implications for treatment and intervention practices. Lastly, Chapter VI will provide concluding remarks and a discussion of the areas in need for further research.

CHAPTER II: LITERATURE REVIEW

There are many factors that impact an individual's ability to regulate his or her emotional and physiological state. Some people wiggle their foot when comfortable or slightly agitated; others twiddle his or her thumbs or clench fists. Individuals with a diagnosis of ASD respond to the environment differently and he or she attempts to regulate emotional and physiological states in a way that works for them. Research early attachment processes and the impact of attachment on the development of self-regulating abilities indicate that early caregiver responsiveness and developmental readiness impacts the ability to regulate emotional and physiological states. Current research and information regarding self-regulation, current diagnostic criteria for ASD and associated areas of difficulty, and caregiver-child attachment will be presented as a mean for investigating self-regulation in children diagnosed with autism.

Self-Regulation

Self-regulation is, “ a factor in social-emotional development,(and) refers to one's ability to regulate emotional state and to organize a behavioral response to experience” (Gomez & Baird, 2005, p. 108). Prizant et al. (2006) describe self-regulation as the ability to regulate emotional states and physiological arousal, which includes the regulation of mood, self-calming, preparation for social interactions, coping with challenges, and delayed gratification. The ability to regulate one's emotional state is considered to be a core process that underlies attention and social engagement (Anzalone, 2007; Bieberich & Morgan, 2004; Dunn, Saiter, & Rinner, 2002; Prizant et al.; 2006, Schaaf & Miller, 2005). Emotional regulatory strategies are considered according to

developmental level and cognitive capability. Self-regulation strategies will aid the child to maintain an optimal level of arousal, which will enhance learning and functional abilities (Anzalone, 2007; Dunn, Saiter, & Rinner, 2002; Prizant et al., 2006; Schaaf & Miller, 2005)

Gomez and Baird (2005) contend that there are four levels in an infant's development of self-regulation, which emerge in the first two years of life. The first level (zero to three months) in a typically developing infant, the infant must be able to maintain a state of equilibrium given internal and external stimulation. The second level (two to seven months) is characterized by the formation of attachments. The infant has formed some capacity to self-regulate and becomes more attuned to interpersonal relationships. In the third level (three to ten months) the infant shows more interactive and social engagement and is less dependent on internal states. The fourth and final level (nine to twenty-four months) the infant develops a capacity for learning. In this typical development the later stages relate to a greater capacity to delay gratification, communicate, and response inhibition (Gomez & Baird, 2005). These authors contend that with infants' growing ability to understand, comes improved methods of self-regulation. The belief is that with the coordination of the developing neural and motor systems, sensory experiences, and caregiver support help develop self-regulation.

Biological Factors

There are a number of biological (Schupp, Junghofer, Weike, & Hamm, 2003) and environmental (Dunn, Saiter, & Rinner, 2002; Tomanik, Harris, & Hawkins, 2004) factors that contribute to the regulation of affect and physiological responses. In this

section, there will be a brief exploration of the parts of the central nervous system and the autonomic nervous system that are related to self-regulation. This section is an overview of the areas affected, and the intention is to highlight the basic neural components that effect individuals diagnosed with ASD and attachment related disorders.

Perry (2006) contends that the brain is organized in a hierarchical fashion where, starting from the most basic functions and up, the brainstem regulates body temperature, heart rate, and blood pressure; the diencephalons regulates sleep, appetite, and arousal; the limbic system regulates motor regulation, emotional reactivity, sexual behavior, and attachment; and finally, the neocortex regulates affiliation, concrete thought, and abstract thought. That is, the areas of the brain that are normally related to state regulation is the brainstem, which has the most active growth between zero and nine months old, and emotional regulation is the limbic system, which appears to have the most active growth between one and four years old. Perry also views these areas as developing at different ages and stages where, when an individual is confronted with a stressful or threatening situation they tend to respond with a less mature style by accessing a 'lower level of brain response'. In this framework, Perry argues that if an individual is exposed to chronic levels of stress, the internal model will 'reset' the baseline states of arousal, where even with no external threats or stress the individual is in a constant physiological state of alarm. The state of alarm can also be considered a state of physical dysregulation in response to stress. This means that for a child who has experienced a traumatic event such as being beat daily by a caregiver, the child's brain will actually reset the response system so the child is constantly on a level of 'alertness (or alarm) that will keep him or

her safe. The same can be said for a child who is diagnosed on the autistic spectrum that has a hypersensitivity to sound. In order to protect the child, the brain will set the sensitivity level so that child will remain at a constant state of alarm, or dysregulated, to keep safe.

Autistic Spectrum Disorder

Autism Spectrum Disorders (ASD) or Pervasive Developmental Disorders (PDD) can be broadly defined as neurodevelopmental, pervasive disorders that are characterized by impairments in social interactions, a broad spectrum of communication difficulties and behaviors that are identified as ritualistic and/or restrictive in its presentation (Berger, 2006; Coonrod & Stone, 2004; Fisher, 2005; Gillham, Carter, Volkmar, & Sparrow, 2000; Stone, Lemanek, Fishel, Fernandez, & Altemeire, 1990; Wing & Potter, 2002). According to the Diagnostic and Statistical Manual, 4th Edition, Revised Text (DSM-IV-TR), ASD is defined categorically into five separate disorders, based on age of onset, impairment of language and communication, regressive patterns of development, and sex of afflicted individual (American Psychiatric Association, 2000). Notably, the characteristics necessary for a diagnosis on the autistic spectrum are interpreted relative to a child's developmental level and may not be applicable to children who are one or two years of age chronologically, but the caregivers have noted differences in their child's development (Beyer & Gammeltoft, 1998; Gomez & Baird, 2005). This 'missed' opportunity for early identification could impact mechanisms and processes that may initiate typical development (Berger, 2006), such as early caregiver attachment. Some studies suggest, via retrospective parent report, that some social behaviors and stereotypic

behaviors evidenced in a three or four year old was not seen in the same child at two years of age (Berger).

ASD is usually first diagnosed in infancy, childhood, or adolescence (American Psychiatric Association, 2000). A formal diagnosis is not often made until a child is at least three years old, however, retrospective studies have documented identifying markers of delay in children as young as one and two years of age (Berger, 2006; Goin & Myers, 2004; Gomez & Baird, 2005). ASD is categorized as a neurological disorder, which is pervasive across the lifespan (Billstedt, Gillberg, C., & Gillberg, C., 2005; Fisher, 2006) and has no known psychological or environmental factors that contribute to it (Fisher, 2006; Myles & Simpson, 1998). Current research supports the notion of a genetic link to ASD and the behaviors associated with this diagnosis (Molloy, Dietrich, & Bhattacharya, 2003; Smith-Myles & Simpson, 1998).

Diagnostic Criteria and Common Characteristics

The following information includes the current diagnostic criteria required to make a diagnosis of Autistic Disorder, Asperger's Disorder, and PDD-NOS according to the most current version of the *Diagnostic and Statistical Manual*, the *DSM-IV-TR* (American Psychiatric Association, 2000).

Autistic disorder. In 1943, Kanner identified a group of children who displayed common characteristics which included relationship difficulties, speech delays, impaired language development, a need for environmental sameness, preoccupations with objects and, repetitive and other self-stimulating behavior (Nuzzolo-Gomez et al., 2002; Smith-Myles & Southwick, 1999; Taylor, Hoch, & Weissman, 2005). Originally, Kanner (1943)

had categorized these children as displaying symptoms of childhood schizophrenia and then later associated these children with parents who were distant and cold (i.e. “Refrigerator Parent”) (as cited in Fisher, 2006), but later revised his initial assessment to form a new category labeled “Infantile Autism”. Autistic disorder is often referred to as Infantile Autism, childhood autism, or Kanner’s autism (American Psychiatric Association, 2000). Individuals associated with this diagnosis present with significant and marked impairment in the development of social interactions, communication and a significantly restricted repertoire of activities and interests which may include repetitive and stereotyped patterns of behavior. Notably, these stereotypic patterns of behavior include, inflexibility, a preoccupation with parts of objects, and/or repetitive motor mannerisms. (American Psychiatric Association). An individual who meets the criteria for Autistic disorder has delays with the onset prior to the age of three years.

Features that have been associated with Autistic disorder but are not required for a diagnosis of Autistic disorder include a diagnosis of mild to profound Mental Retardation with atypical development of cognitive skills with verbal skills typically weaker than non-verbal skills (American Psychiatric Association, 2000). Additionally, there is a range of behavioral symptoms, which include hyperactivity, short attention span, aggressiveness, impulsivity, self-injurious behaviors, and temper tantrums (American Psychiatric Association). Individuals diagnosed with Autistic disorder usually display atypical responses to sensory information, abnormal affective responses, and a lack of or intense fear, which may not match the situation (American Psychiatric Association; Watson, Baranek, & DiLavore, 2003).

In summary, the onset of Autistic disorder is prior to three years old, it is pervasive across a lifetime, and may display regressive or improved behaviors through the adolescent years. Autistic disorder is identified in males five times more than females and epidemiological studies indicate an increase in report of this diagnosis (American Psychiatric Association, 2000; Fisher, 2006). The question of whether there is an increase in prevalence due to better diagnostic testing and increased awareness or in actual increase in incident of the disorder is still left unanswered (American Psychiatric Association, 2000; Fisher, 2006; Wing & Potter, 2002).

Asperger's disorder. Kanner's (1943) original description of children with autism, as mentioned above, has been used as a general blueprint for Asperger's disorder as described by Hans Asperger whose original writings on Autistic disorder and Asperger's Syndrome in 1944 were largely ignored in the United States (Smith-Myles & Simpson, 1998). There are several features involved in the diagnosis of Asperger's disorder, which are described in the DSM-IV-TR. A diagnosis of Asperger's disorder requires a, "severe and sustained impairment in social interaction...and the development of restricted, repetitive patterns of behavior, interests and activities...The disturbances must cause clinically significant impairment in social, occupational, and other areas of functioning..." (American Psychiatric Association, 2000, p.80). Compared to Autistic disorder, there are no clinically significant delays in language acquisition; however, delays in social communication are often noted in Asperger's disorder. Additionally, there are no clinically significant delays in cognitive functioning prior to the age of three years. The child usually displays age-appropriate acquisition of learning skills and

adaptive skills, except social interaction (American Psychiatric Association). Additional features that may be associated with Asperger's disorder, include motor difficulties and clumsiness, difficulty with visual-motor and visual-spatial skills, overactivity, inattention, and a number of different mental disorders, such as Depressive Disorder and Anxiety Disorder (American Psychiatric Association; Smith-Myles & Simpson, 1998; Smith-Myles & Southwick, 1999). Asperger's disorder affects five times more males than females and is believed to be present at birth and pervasive throughout the lifespan (American Psychiatric Association, 2000). The prognosis for an individual who is diagnosed with Asperger's disorder appears significantly better than that of an individual diagnosed with Autistic disorder. Studies indicate that many individuals with Asperger's disorder are capable of being gainfully employed and are able to be self-sufficient (American Psychiatric Association; Smith-Myer & Simpson, 1998). Smith-Myer and Simpson (1998) also recognize the difficulty in predicting long-term prognosis of an individual diagnoses with Asperger's disorder due to the many factors associated with this disorder, such as the severity of symptoms and social impairment, the amount of support the individual requires to adapt to the demands of the community that they are living in.

Pervasive developmental disorder-not otherwise specified. This category is used to diagnose an individual with a severe and pervasive delay in verbal or nonverbal communication skills and that these deficits have significant impact on reciprocal social interactions and/or the presence of stereotyped/repetitive behavior, activities, and

interests, but the criteria is not met for a specific Pervasive Developmental Disorder (Psychiatric Association, 2000).

Biological Basis of Autistic Spectrum Disorder

Fisher (2005) contends that ASD involves multiple neural systems. These neural systems include the limbic system, and in particular the amygdala, which plays a significant role in emotional arousal and assigns significance to the environment, and parts of the temporal and frontal cortices (Baron-Cohen & Belmonte, 2005; Fisher; McPartland, Dawson, Webb, Panagiotides, & Carver, 2004; Schore, 2003b). The temporal lobe is associated to facial recognition, discrimination of faces, and the understanding of facial expressions. The frontal lobes is connected to deficits in reciprocal connections with the limbic system, which is an area necessary for an individual to be able to think about thoughts, feelings and intentions (Fisher, 2005; Schore, 2003b). Schore (2003a; 2003b) asserts that recent brain imaging technology in functional MRIs indicate that damage in the orbitalfrontal regions of the brain is related to an array of disorders, including ASD. Many of these brain regions are thought to develop early and the areas of the brain that are related to the development of attachment in infants are affected by early environmental stimuli and regulation models given in sensitive caregiving (Schore, 2003b).

Behavioral Characteristics Related to Self-Regulation

There are a number of observable behaviors present in a child diagnosed with ASD. The observable behaviors such as hand flapping and rocking are related to the regulation of physiological and emotional states. Prizant et al. (2006) supports three

different levels of emotional regulatory strategies: behavioral strategies, language strategies, and metacognitive strategies. Behavioral strategies include simple motor actions an infant or child engages in to regulate arousal level, remain alert, and self-soothe. Language strategies develop as a child is able to use words or other symbols to regulate their emotional or physiological states. The use of language strategies, which is symbolic, can be evidenced by the child's ability to change attention levels, activity levels, emotions, and his or her engagement in various situations. A child may also start using strategies such as self-talk to further promote regulation such as saying "I'm okay" after they fall down. Finally, the use of metacognitive strategies as a method of self regulation is observed when a child recalls and talk about strategies that previously worked for them in different situations, noting how those strategies could be used in the future (Prizant et al.). A clear understanding of the function of the repetitive behaviors will enable parents and professionals to educate the public and support children in maintaining an optimal level of arousal while exploring their environment with a secure base. The challenge faced by caregivers is supporting the child in appropriate and functional behaviors to aid in regulation while also recognizing their present level of ability. For example, one would not expect a child with severe cognitive delays to functionally utilize metacognitive strategies to regulate emotional or physiological states. Joseph, McGrath, and Tager-Flushberg (2005) examined executive dysfunction and its relation to language ability in verbal school-aged children with ASD. Executive function can be described as, "mental operations which enable an individual to disengage from the immediate context in order to guide behavior by reference to mental models or future goals" (p. 362). Regulation of

emotion and physical input involves the use of working memory, inhibition, and planning. Most of which, in isolation or combination are areas of difficulties in a child diagnosed with ASD. These authors contend that the executive dysfunction found in children diagnosed with ASD is strongly mediated by language deficits. In fact, the finding indicates that children diagnosed with ASD fail to use language for the purpose of self-regulation and not executive dysfunction itself.

Sensory processing. Sensory processing refers to an individual's ability to receive information through his or her various sensory organs, organize, and interpret the information in addition to having an appropriate response to the inputted information. This task seems simple enough, although when one considers that we receive a great deal of information to various sensory systems, at which point we ignore extraneous information and make sense of the 'important' information, this is no simple task. Perry (2006) contends that the integration of multiple sensory inputs are associated with an area of the brain called the diencephalon, which is a part of the midbrain and has its most active neurological growth between six months and two years of age. Watson, Baranek, and DiLavore (2003) found that in narratives from adults diagnosed with ASD and in retrospective interviews with caregivers there were reports of disturbances which are reflective of sensory processing difficulties during the first three years of life. These reported sensations or sensory experiences include: hypersensitivity to sound, social touch, textures in various foods, over-focused attention or a preoccupation with certain visual stimuli, and/or a high pain tolerance (Gomez & Baird, 2005; Watson, Baranek, & DiLavore, 2003). Similar to a diagnosis on the Autistic Spectrum, these sensations or

sensory experiences can range from mild to severe and may contribute to a child's ability to self-regulate, as well as interfere with their ability to participate in activities of daily living (Watson, Baranek, & DiLavore). The challenge for caregivers and professionals is to provide a child with optimal sensory experiences by challenging the child with maximal sensory stimuli without exceeding the child's tolerance (Schaaf & Analone, 2001). This means providing the child with support in the regulation of physiological and emotional states while engaging the child in a variety of sensory laden activities. Schaaf and Analone propose a theory of sensory integration in a framework that structures the intrinsic and extrinsic factors that impact sensory processing. The intrinsic factors consist of arousal, attention, affect, and action, which are interrelated and influence by each other. Extrinsic factors include the demands and opportunities between a child's social and physical environments. The 'goodness of fit' between the social and physical environments also plays an important role in determining the child's response to sensory information and maintaining a regulated state (Schaaf & Analone). When examining early infant behavior, an attuned caregiver will mediate environment stimuli and support the child in regulating physiological and emotional states. An attuned caregiver responds to an infant's behavioral output, which is evidenced by increased sucking as an attempt to maintain self-regulation or a cry in an attempt to bid for support from a caregiver to aid in the regulation of physiological or emotional states. If an infant or child has difficulty communicating basic needs, in relating socially to a caregiver, and with sensory processing, this may further impact early neurological development. Specifically, these

difficulties may impact areas related to the regulation of physiological and affective states.

While difficulties with sensory processing have been identified as a deficit in many individuals diagnosed on the autistic spectrum, they are not considered one of the core deficits contributing to a diagnosis on the spectrum (Anzalone, 2007; Dawson & Watling, 2000; Dunn, Saiter, & Rinner, 2002; Gomez & Baird, 2005; Prizant et al., 2006; Schaaf & Miller, 2005; Watson, Baranek, & DiLavore, 2003). Furthermore, difficulties with sensory processing have been correlated with higher levels of stereotypic, rigid, and repetitive behaviors, and appear to be more common during infancy and childhood than in adulthood (Dawson & Watling, 2000). Caregivers' sensory processing profile has an impact on children's ability to self-regulate and also contributes to the use of maladaptive behaviors to aid in self-regulation. Moreover, stereotypic, rigid, and repetitive behaviors may contribute to caregivers' responsiveness and support, which in turn may also contribute to a child's ability to self-regulate.

An inability to regulate sensory information can cause a great deal of stress and anxiety, and can impact a child's ability to self-regulate. A study conducted by Goodwin et al. (2006), measured the cardiovascular arousal in five individuals during seven tasks that included various levels of familiarity, challenge, and sensory experiences. The subjects' ages range from 8 to 18 years old, and are diagnosed with Autistic disorder or PDD-NOS. The subjects were compared to same-aged, typically developing individuals. The findings indicated that there were lower fluctuations in heart rate between baseline and activity level in the subjects diagnosed with ASD, however, the overall heart rate of

the individuals diagnosed with ASD was significantly higher throughout the experimental condition as compared to the same-aged typically developing group. This indicates the individuals diagnosed on the Autistic Spectrum experience a consistently heightened level of physiological and psychological arousal. Moreover, this state of constant dysregulation is apparent in environments that are perceived as unpredictable and unsafe. In an attempt to control for the environment, Goodwin et al. allowed a primary caregiver to be with the subject diagnosed with ASD during all but one experimental condition. As well, there was a comfortable chair in a room with low levels of extrasensory stimulation to further control for the experimental condition. With the additional efforts made to control for the environment, the individuals diagnosed with ASD had a higher heart rate than the same-aged control group.

Many inquiries have been raised regarding one's ability to process and organize sensory information into usable forms and the impact of one's processing ability on regulation. Some of these questions include: Are individuals on the Autism Spectrum able to better regulate their behaviors and emotions when they are older due to reaching a certain emotional age or have more experience with sensory input? Would being "taught" or exposed to various intervention types (behavioral, attachment-based therapy and/or sensory integration therapy) help to respond to various stimuli more appropriately? Or do individuals on the Autistic Spectrum outgrow or habituate their sensitivities and adapt to the external world around them?

Schaaf and Miller (2005) suggest that an approach that combines occupational therapy and a sensory integration therapy, developed by A. Jean Ayres, an Occupational

Therapist, in the early 1970's. Ayre's theory of sensory integration incorporates the potential relationships between the neural processes of receiving, modulating and integrating sensory input and the resulting output, which she believed to be adaptive behavior (Anzalone, 2007; Dunn, Saiter, & Rinner, 2002; Schaaf & Miller, 2005). The sensory integration approach focuses on adaptive behavior and functional skills by helping improve an individual's ability to process and integrate sensory information. In turn, this leads to an improvement in an individual's independence when engaging in activities of daily living, play, and school tasks (Anzalone; Dunn, Saiter, & Rinner; Schaaf & Miller).

Dunn, Saiter, and Rinner (2002) discuss in detail this model of intervention as it applies to children diagnosed with Asperger's disorder. After completing a sensory assessment using various sensory profiles measuring sensory processing in daily life, they applied the outcomes to an intervention plan. The intervention plan included a combination of cognitive and behavioral strategies, such as social stories, priming, visual supports, and a home base, with embedded sensations to meet sensory thresholds. This gave the children an opportunity to gain optimal arousal states in the individual to improve regulation and learning (Dunn, Saiter & Rinner, 2002).

Repetitive behaviors. It is important to gain perspective on the function of repetitive or stereotyped behaviors to guide caregivers in choosing the most appropriate intervention options for their child and families. Furthermore, based on the fact that repetitive or stereotyped behaviors are among the earliest descriptive accounts of ASD, there is currently little understood regarding the causes, function, maintenance, and

treatment of these behaviors (South, Ozonoff, & McMahon, 2005). There appears to be a general agreement among professionals that repetitive or stereotyped behaviors can be organized into four subgroups: (a) stereotypic motor mannerisms, (b) preoccupations with nonfunctional objects or parts of objects, (c) patterns of interest that are unusual in narrowness and/or intensity of their pursuit, and (d) extreme rigidity and insistence on sameness (South, Ozonoff, & McMahon). Yet, there are many different opinions about whether specific behaviors are associated with differential autism diagnoses, or whether they are associated with IQ level or organic pathology (South, Ozonoff, & McMahon).

Some researchers have indicated that repetitive behaviors may partly be a function of self-regulation and may aid the child in coping (Watson, Baranek, & DiLavore, 2003; Prizant, et al. 2006). There are many different interventions that target repetitive or stereotyped behaviors. Thomas and Smith (2004) examined an intervention that uses tabletop play activities to engage a child with ASD. This intervention incorporates the use of books and/or toys to help with engaging the child instead of the child remaining passive or enabling repetitive or stereotyped behaviors. These authors contend that increased exposure to typically developing play and interpersonal interactions will help support the child with ASD to increase his or her play exploration. While other researchers believe there are limited functions to repetitive or stereotyped behaviors and these interventions focus on the elimination of these behaviors (Nuzzolo-Gomez et al., 2002)

The recognition and acceptance of different approaches to self-regulation is essential to navigate in society. The use of repetitive or stereotyped behaviors to self-

regulate warrants further investigation. More answers regarding the function of stereotyped or repetitive behaviors would have a great impact on intervention techniques and tool to be used with children diagnosed with ASD.

Play. Play in children diagnosed with ASD is typically repetitive, restrictive and does not include social interactions. This type of play is related to the core deficits in children diagnosed with ASD. The idea of play is not easily defined; however, play has typical patterns and ranges (Thomas & Smith, 2004). It serves a number of functions in the development of social and self-awareness, in both typical and atypically developing individuals. Play allows a child to make meaning of events and serves as a mode to develop strategies for dealing with situations. For a child diagnosed with ASD, the development of play is impaired or delayed, and usually with the appearance of repetitive movement, is isolated, sensory based, concrete and lacking in imagination (Thomas & Smith). His or her play is often characterized by fewer social initiations, more solitary activities, and less proximity to peers (Jones & Car, 2004; Thomas & Smith; Watson, Baranek, & DiLavore, 2005). Autistic children's play can be categorized into two separate, but overlapping realms: object play and social play. Object play includes atypical play patterns and can be labeled stereotypic or repetitive behavior, such as lining up toys. This type of play appears to be important to the child where the child appears to have a pattern or place in mind that the toy belongs and is determined to organize the toys in such a manner. However, the child is not making functional use of the toys in the manner that same aged peers are able to use the toys. In fact, if someone interrupts the child's play, moves a toy out of order, or introduces them self or an alternate object into

the child's play, the child may become greatly dysregulated and can exhibit externalized or internalized behaviors such as lashing out or withdrawing into self. Retrospective research on early object play in children with ASD found that prior to diagnosis these children were observed to mouth objects more than typically developing children. Prior to 12 months of age and the emergence of functional play, the authors indicated that it was difficult to delineate a typical child's play from that of a child later diagnosed with ASD. In fact, it was not until around 18 months when the child with autism demonstrated deficits in early pretend play skills (Watson, Baranek & DiLavore, 2005) that deficits could be clearly identified. For typically developing infants, object play provides them with the opportunity to explore the external environment and make sense of objects and situations, as well as paving the path for the development of more complex play acts (Watson, Baranek, & DiLavore).

Exploratory play typically emerges around four months of age and Relational play emerging around 10-18 months. Functional play emerges around 12-18 months and symbolic or fantasy play emerges between 18 to 30 months (Watson, Baranek, & DiLavore). By two to three years old children with ASD show significant delays in both functional and symbolic play. This brings into question the function of play: Is object play a method of self-regulation or a means to focus on the concrete and the predictable as a way to maintain a regulated state? Is what one considers repetitive, unproductive, and stereotypic actually functional play in the world of a child diagnosed with ASD? How can a parent or practitioner interact, in a playful and attentive manner, with a child

engaged in repetitive play behaviors without dysregulating or harming a child in their efforts?

Play is fundamental to the positive development of a child's identity, social relationships and sense of safety and control; it is a way to connect the 'physical dimension', the things we can see, touch and smell (a way that many Autistic children live and learn) and to the 'social dimension', the unspoken language of interaction and supposition (Beyer & Gammeltoft, 1998). In social play, a child diagnosed with ASD usually struggles to communicate socially and play interactively with adults or peers. These difficulties limit an Autistic child's experience with relational play opportunities that would help increase his or her exposure of various play techniques (Thomas & Smith, 2004). This is due to the fact that our society expects a certain amount of innate social and communicative competence from a child, which is not the case for a child who is diagnosed with ASD. A child diagnosed on the autistic spectrum often has difficulty with complex human interactions, such as perspective taking, showing empathy, and predicting another's actions based on previous knowledge and experience (Watson, Baranek, & DiVavore, 2005). It appears that each experience, even if it appears to be the same or similar to a non-autistic individual, is a new and separate event that has little relevance to similar experiences. This condition is referred to as theory of mind and plays a significant role in an Autistic child's ability to play interactively and make use of cognitive and meta-cognitive abilities when interacting with others.

Theory of mind. Theory of mind is one's ability to understand the mental states and emotions of others in various social situations. Many researchers believe that this

concept is what sets individuals with ASD apart from individuals with other diagnoses (Baron-Cohen, 1999; Smith-Myles & Southwick, 1999). Following is a list of difficulties associated with the deficits an individual possesses in relation to theory of mind: the ability to explain their own behaviors, understand emotion, predict the behavior or emotional state of others, understand the perspective of others, make inferences regarding the intentions of others, a lack of understanding that their behavior has an impact on the way that others think and/or feel, a problem with joint attention, and difficulties in differentiating fiction from fact (Smith-Myles & Southwick, 1999). While many of these characteristics do not become apparent until a child is three or four years old, early markers in social relatedness may be present within the first year of life (Berger, 2006). All of these areas have an impact on the child's ability to maintain an inner state of equilibrium or regulation. For example, when an individual is unable to identify his or her own affective state (i.e., confusion), he or she may react by flapping his or her hands or lashing out. In this state of dysregulation the individual is unable to utilize cognitive or meta-cognitive strategies to regulate his or her reaction to the situation, as a result of his or her lack of problem-solving abilities. The confusion may also have been a reaction to what someone said or did which was not fully understood and likely based on the lack of perspective taking ability. The behaviors typically associated with regulation are coping response because the individual feels out of control and this is his or her way of gaining back the control. It is likely that he or she lack an understanding of the situation, their body response, and how his or her behavior affects other people. It appears to be a vicious cycle of an individual diagnosed with ASD's reaction to a world that holds very

little meaning and predictability based on his or her theory of mind. Not only are the exceptions to the social rules that govern our society daunting, but the need to share perspective, to understand what others are thinking and/or feeling and to realize that it may be different from what you are thinking and feeling. All of these limitations leave one unanswered question, what impact does this have on an individual's ability to maintain a regulated physiological and/or affective state?

Attachment

Attachment theory can be defined as the psychosocial development of a child based on his or her interactions with a primary caregiver, with the purpose of keeping an infant safe and supporting his or her survival (Broderick & Blewitt, 2006; Fonagy & Target, 2002; Humber & Moss, 2005; Mikulincer, Shaver, & Pereg, 2003; Schore, 2001; van Ijzendoorn, 2002; Wood, Emmerson, & Cowan, 2004). Ainsworth (1989) describes attachment from an ethological and evolutionary viewpoint. She sees it as a behavioral system, similar to reproductive or feeding behaviors, manifested in humans that keep the infant in close proximity to one primary or a few secondary caregivers. Through these behaviors, an infant's chance of survival is increased by the caregiver's protection that the infant elicits. Schore (2001) indicates that, "the infant's emerging social, psychological, and biological capacities cannot be understood apart from its relationship with the mother." (p. 13). Ainsworth (1989) describes the infant's behavioral repertoire as being genetically guided, species-specific, group of behaviors that promotes proximity to a caregiver. These include behaviors that are observable, such as crying, and are initially emitted to attract any caregiver but soon directed towards to a specific caregiver.

A very young infant will exhibit behaviors such as crying, sucking, rooting, and smiling to increase his or her proximity to a caregiver, despite the insufficient ability to discriminate to a specific caregiver (Ainsworth & Bell, 1970). The ability to discriminate between caregivers and display of preference seems to appear during the first year of life. In brief, the normal course of attachment, an infant from zero to three months-old shows little ability to discriminate between caregivers, however, the infant will recognize the mother's smell in the first few hours of life. Social responsiveness does not become evident around three to six months old when the infant makes use of a social smile (Hanson & Spratt, 2000). At this point the infant will show differential responsiveness to caregivers versus strangers, however, does not express preference for a specific caregiver until between the ages of eight months and three years old (Hanson & Spratt). Other authors contend that the attachment system is activated for a primary caregiver earlier and more reliably than three years old (Ainsworth, 1989; Hall & Geher, 2003; Main, Kaplan, & Cassidy, 1985; Zeanah, Keyes, & Settles, 2003). The emergence of directed grasping and reaching, increased locomotion, and more effective proximity keeping behaviors, which are goal directed, help to build and organize a predictable environment (Ainsworth, 1989). When external environments become more organized and predictable, infants are able to create working models of attachment figures, themselves and their physical environments. Bowlby (e.g. 1982) also defined similar working models of attachment figures and believed that the working models build the foundations represented in relationship building, which may be evidenced in the onset of basic levels of cognitive perspective taking (Ainsworth, 1989).

Main et al. (1985) define the internal working model of attachment, “as a set of conscious and/or unconscious rules for the organization of information relevant to attachment and for obtaining or limiting access to information, that is, information regarding attachment-related experiences, feeling and ideations.” (p. 67). These internal working models of attachment are not only representative of early behaviors and feelings, in addition to attention, memory, and cognition as they are directly or indirectly related to attachment (Main et al.). Ainsworth and Bell (1970) argue that the intensity of attachment behavior is subject to change, either heightened or diminished, due to situational conditions. Although but once formed, this intensity does not vanish in times of inactivity. Many authors have linked this behavioral system to observable behaviors and neurophysiological processes (Ainsworth, 1989; Perry, 2006; Shore, 2001; 2002) and internal working models (Main et al., 1985).

Patterns of Attachment

As described by Ainsworth, there are four patterns of attachment: securely attached, anxious ambivalent-insecurely attached, avoidant-insecurely attached, and disorganized-disoriented-insecurely attached (as cited in Broderick & Blewitt, 2006; Zeanah et al., 2003; Hanson & Spratt, 2000; Main et al., 1985). A child with a secure attachment shows anxiety or distress when separated from his or her primary caregiver (usually the mother), but is easily soothed when the primary caregiver returns. After being soothed, the child is then able to continue on with his or her play and exploration knowing that the primary caregiver is available when he or she is needed (Broderick & Blewitt, 2006; Humber & Moss, 2005; Mikulincer et al., 2003; Schore, 2001; Wood et

al., 2004). At separation from a caregiver, the insecure avoidant child shows little or no response to the attachment figure's departure and will actively avoid a caregiver when he or she returns. The insecure resistant child appears preoccupied with their primary caregiver and show great distress upon separation. A child with an insecure resistant profile cannot be easily comforted and will seek contact with the primary caregiver at the same time as resisting the contact by pulling away but still remaining physically connected (Rutger et al, 2004). Finally, a child who shows contradictory behaviors, such as seeking attention and being soothed by a primary caregiver when stressed and then running away when reached for are characterized as disorganized-disoriented-insecurely attached (Broderick & Blewitt, 2006). This child can also display repetitive motor behaviors or freezing in situations of stress and anxiety and/or when reunited with a caregiver (Fonagy & Target, 2002). In particular, these children display sequential or simultaneous contradictory attachment behaviors (Rutgers et al., 2004), in addition to strategies that are not coherently organized, confusing, incomplete or lack the ability to gain comfort and protection (Zeanah et al., 2003).

Disorders of Attachment

Disrupted attachment patterns in children can interrupt relationship building later in life (Lieberman, 2004; Zeanah et al., 2003) and will not always lead to an attachment disorder. Often, a disorganized child is diagnosed with Reactive Attachment Disorder (RAD).

Reactive Attachment Disorder

Researchers postulate RAD is an understudied and overused diagnostic category in the DSM-IV-TR (Boris & Zeanah, 1999) and believe that attachment disorders may need further investigation and definition to facilitate clinical work (Boris & Zeanah, 1999). Historically, RAD first made its appearance in the Diagnostic and Statistical Manual, Third Edition (DSM-III) where the criteria for a diagnosis included a failure to thrive. This symptom needed to be evident prior to the age of eight months (Boris & Zeanah). Later, in the Diagnostic and Statistical Manual, Third Edition-Revised (DSM-III-R), the diagnostic criteria for RAD was refocused on two deviant patterns of social relatedness. The first is a contradictory or ambivalent social response. And the second is an emotionally distressed or unresponsive. These patterns have continued to be represented in the Diagnostic and Statistical Manual, Fourth Edition (DSM-IV) and the Diagnostic and Statistical Manual, Fourth Edition, Text Revised (DSM-IV-TR). It is important to note that the DSM-IV-TR criterion for a diagnosis of RAD has met with some criticism due to its focus on social relatedness rather than on attachment. In fact, the inclusion of pathogenic care is the only attachment related diagnostic criterion (Boris & Zeanah, 1999; Boris, Zeanah, Bernet et al., 2005; Hanson & Spratt, 2000; Zeanah & Smyke, 2005; Zeanah et al., 2003).

Historically, there has been an awareness of the necessity of differentiating between a diagnosis of RAD and a diagnosis of Autistic Spectrum Disorders (ASD) (known in earlier versions of the Diagnostic and Statistical Manual as Pervasive Developmental Disorder, or PDD). Both RAD and ASD share a number of

characteristics, which include abnormalities in social and emotional reciprocity, emotional regulation, and some stereotypic or restrictive patterns of behavior. In fact, in the DSM-IV, notations in both the RAD and ASD (PDD) categories explicitly requires a differential diagnosis to be made, because these two diagnosis cannot co-exist (Boris et al., 2005; Smith-Myer & Simpson, 1998). Boris et al. (2005) recognize the difficulty clinicians face when differentially diagnosing a child that has been reared in a severely deprived institutional setting as the characteristics of RAD and ASD are so closely interrelated. This can be evidence in the Romanian state orphanages where many of the children who were reared by the state exhibit autistic-like symptoms such as limited social reciprocity, repetitive or stereotyped behaviors, and disordered theory of mind (Schore, 2002).

Diagnosis. The current DSM-IV-TR criteria for diagnosing RAD includes, an early onset of abnormal social relatedness across different contexts that are distinguishable from pervasive developmental disorders, and are the result of “pathogenic care” (Boris et al., 2005). Additionally, the symptoms are not be accounted for by a developmental delay alone. The diagnosis of RAD includes two subtypes: inhibited or emotionally withdrawn type, and disinhibited or indiscriminate type.

A child who is diagnosed with RAD generally have symptoms beginning before the age of 5 years, will approach unfamiliar adults and seek or accept comfort from unfamiliar adults (Boris et al., 2005).

RAD-inhibited subtype is characterized by “emotionally constricted and socially withdrawn behavior during interactions with others” (Boris et al., 2005, p. 1211). In times

of stress the child does not consistently seek support from others and is fearful in seeking comfort despite observable distress. The child may also react with fear to comfort and resist being held (Boris et al.). This pattern of resistance to care is often observed in children who have experienced maltreatment or those reared in institutions. This subtype of RAD is often associated with hyperarousal symptoms, where the child struggles to regulate affective and physiological states, Posttraumatic Stress disorder, or an Anxiety disorder (Boris et al., 2005). As well, the child displays sudden outbursts of crying, persistent irritability, anger/aggression in response to comforting attempts, and an absence of expected positive affect (Boris et al.).

RAD-disinhibited subtype is specifically characterized by a child who protests when separated from an unfamiliar adult or wander away from their caregiver without looking back at the caregiver. The child is often described as attention seeking, shallow, and superficial interpersonally (Boris et al., 2005). This RAD subtype is usually associated with young children adopted out of institutions (Boris et al., 2005)

The two RAD subtypes are thought to be mutually exclusive diagnoses, however, research exploring the characteristics of children who were reared in severely deprived institutions appear to exhibit both inhibition and indiscriminate sociability (Boris et al., 2005).

Behavioral Characteristics

Children diagnosed with RAD exhibit numerous maladaptive behaviors, including the destruction of property, hoarding or gorging food, refusal to make eye contact, stealing, and lying (Chapman, 2002; Hall & Geher, 2003). Additionally, other

behaviors that can be harmful or even lethal include: cruelty to animals, people, fire setting (Hall & Geher) and an unhealthy interest in blood, death, or fire (Chapman, 2002). Behaviors associated with social responsiveness are also observed in children diagnosed with RAD. These behaviors include: indiscriminate affection to strangers, refusal to give or receive affection from family members, inappropriate sexual behavior with self and other children, and promiscuity (Hall & Geher, 2003). Other behavioral characteristics include poor impulse control, developmental delays, lack of or an underdeveloped ability to engage in cause and effect thinking, and abnormal speech patterns such as constant chattering and/or nonsense questioning (Chapman, 2002; Hall & Geher, 2003). These children are often described as lacking a conscience, which includes an inability to feel any remorse or regret for their actions (Chapman, 2002; Coleman, 2003; Hall & Geher, 2003). These individuals may also display antisocial behaviors that are not attributed to their current living situation (Hall & Geher). Elimination problems, such as fecal retention or pica, are also observed in individuals diagnosed with RAD.

There are a number of recent findings that explore the physiological impact of the attachment process. From late in a pregnancy through to the first two years of life there is a period of accelerated growth in the brain, which is believed to interact with biological factors and environmental influences (Perry, 2006; Schore, 2001; 2002). This growth requires a sufficient amount of nutrients, in addition to regulated interpersonal experiences (Schore, 2001). This means that in order for an infant to grow and develop there is a need for both proper nutrition and exposure to an environment that is safe and nurturing. Schore (2001) also suggests that during this period of rapid brain growth, the

brain is increasingly more susceptible to adverse environmental factors, such as dysregulating interpersonal affective experiences (e.g. an unresponsive caregiver) and nutritional deficits. The biological basis for aberrant social behavior can result in neuronal pruning that is maladaptive and will interfere in the development of neurobiological pathways needed to foster adaptive affect regulation (Coleman, 2003; Perry, 2006; Schore, 2001).

The neurobiology of a securely attached infant and mother show a closely attuned, unconscious communication, which produces signals that mediate the regulation of emotion (Schore, 2002). The caregiver regulates the infant's postnatal development of the autonomic nervous system by regulating external sensory stimulation and acting as an organizer of stimulation to support the infant's negotiation of internal and external states (Schore, 2002). Schore (2001, 2002) postulates that this fundamental exchange influences the limbic system, which processes social-emotional stimuli, and the autonomic nervous system (ANS), which generates somatic responses for emotion. The ANS and the limbic system respond to emotional feelings while guiding behavior. These connections are not limited to the limbic system and the ANS, but bridge the central nervous system (CNS) to higher regulatory systems of the right hemisphere of the brain (Schore, 2002). The areas of the brain that are involved in the attachment process include the limbic system and the amygdale and these are the areas of the brain that are affected by caregiver response. Schore (2002) indicates that, "the early forming right hemisphere stores an internal working model of attachment relationship that determine the individual characteristic strategies of affect regulation for coping and survival" (p. 14). Chapman (2002)

acknowledges Schore's 1994 research, which suggests that the neural networks of traumatized children are "hardwired" to instigate the ANS to respond to common events with the fight, flight, or freeze responses commonly seen in extremely stressful situations. As well, children diagnosed with ASD often demonstrate these responses to various sensory modalities.

Autism and Attachment

There is a need to investigate the relationship between attachment relationships in children diagnosed with ASD and its connection to co- and self-regulation due to the children's maladaptive response to stress and anxiety. There is a growing amount of research looking at children diagnosed with ASD and their ability to form secure attachment relationships, however, this research is limited. In a study involving children diagnosed with Asperger's disorder conducted by Sigman, Dijamco, Gratier, and Rozga (2004) they found that there was no difference in attachment profiles in this group when compared to age-matched peers with no diagnosis. Limitations to the study include: data is limited to video taped samples of special occasions and retrospective parent report (Sigman et al.). There are no research studies currently available investigating the relationship between attachment and self-regulation in children diagnosed with ASD. Schore (2001) indicates that self-regulation and secure attachment relationships are connected. He supports the notion that it is through co-regulation and the "dyadic dance" between the primary caregiver and his or her infant helps the brain pathways develop to support the infant with self-regulation in later infancy and early childhood in typically developing children. A meta-analysis of current research on ASD and attachment

indicated that a child diagnosed with ASD can achieve the same types of attachment relationships with the primary caregiver (Rutger et al., 2004). It is believed that attachment security is linked to maternal sensitivity despite later diagnoses (Ainsworth, 1970; Schore, 2003b; Sigman et al., 2004)

Beyer and Gammeltoft (1998) illustrated the findings to a study performed by David Ricks in 1976. Ricks' study gathered data from three groups of six children who had no verbal language: six diagnosed with ASD, six diagnosed with a general learning disability and six without a disability. The children were presented with four incidents and their responses were recorded. The mothers of the children diagnosed with ASD were able to identify their own child on the audiotape and interpret their child's reactions better than the other mother's in all four situations. More specifically, the other mothers were only able to interpret their child's reactions. This study acknowledged that the Autistic children expressed affect in a manner that was not random. The mothers of the children diagnosed with ASD recognized the need for people to know their children better in order to interpret the child's feelings correctly. This study illustrates the importance of an attentive and attuned caregiver in the creation of a safe base.

Sigman et al. (2004) indicate that attachment security is likely not part of the core deficits found in children diagnosed with ASD and recognized that these children may be using different skills to secure these attachment relationships compared to typically developing children. In typical attachment, it is believed that a child uses unspecified levels of cognitive ability and social skills to form a secure attachment relationship, where as these skills are often lacking in a child with a diagnosed with ASD (Sigman et

al, 2004). Sigman et al.'s review of literature indicated that the behaviors of older children diagnosed with ASD (from four to 10 years old) were used to investigate attachment security by using the Strange Situation Test. This Strange Situation test was designed for children in early childhood (12 to 18 month-old). While this may be an equivalent mental age for children diagnosed with ASD, is it not equivalent to the child's social and emotional level. Research has also shown that it is not only the capability of the child to form secure attachment relationship with a parent but the parent sensitivity that aids in the formation of a secure attachment relationship (Jernberg & Booth, 2004; Munns, 2000; Sigman et al, 2004).

Summary and Implications

The question is not whether a child diagnosed with ASD is capable of forming secure attachment relationships (Rutgers et al. 2004), but how effectively these relationships support the regulatory process. Attachment patterns and caregivers availability are connected to the child's early development of co-regulation and self-regulation. Shore (2001) contends that the regulation of affect is a, "central organizing principle of human development and motivation" (p. 10) and thus, is a building block for the regulation of behavioral responses to the body and the environment. Often a children diagnosed with ASD have varying responses to caregivers during infancy due to their hyper- or hypo-responses to sensory information (Prizant et al., 2006). For example, a child who is hyper responsive to touch may react to a soft touch with a painful response, on the other hand, a child who is hypo responsive may crash into a door, leaving a gash, but may not respond or feel the pain. In these extreme cases, the child may not respond

appropriately to the sensory experience. This hypo-responsiveness can lead to confusion for the caregiver and may further isolate the child (Prizant et al., 2006). An Autistic child's ability to process sensory information, coupled with the impacted neural functioning (Fisher, 2005, Schore, 2004, 2001) may lead to a behavioral response that appears in victims of trauma or neglect such as the fight, flight, freeze response (Schore, 2004).

Hypotheses

The purpose of this research study is to investigate behaviors identified in children diagnosed with ASD that can be associated with self-regulation. It is hoped that the results of this study will make a significant contribution to the current literature in the field. The following hypotheses have been generated based on previous literature.

Hypothesis 1

Individuals who exhibit kind and helpful behaviors will have fewer repetitive or stereotypic behaviors.

Hypothesis 2

Individuals who exhibit kind and helpful behaviors will more likely seek support from a caregiver in an attempt to regulate physiological or affective states.

Hypothesis 3

Individuals who are diagnosed with Asperger's Disorder or PDD-NOS will have more adaptive ways to cope with stressful events and anxiety.

CHAPTER III: METHODOLOGY

This author has had the opportunity to work with children diagnosed with ASD and their families in the home and community settings. The work requires naturalistic observation, interpretation of behavior, as to its function and /or meaning, and troubleshoot strategies with caregivers to support and better understand their children. The more intense the observations in numerous settings allow the author to attempt to gain the perspective of the children and better understand their world view. Qualitative research methods allow this author an avenue to do an in-depth exploration of some of the behaviors that impact the lives of the children diagnosed with ASD and their caregivers. As cited in Merten (2006), Denzin and Lincoln describe qualitative research as “multilevel in focus, involving an interpretive, naturalistic approach to its subject matter...attempting to make sense of, or interpret, phenomena in terms of meaning people bring to them” (p.160). From an Interpretive/Constructivist View there is the assumption that there are multiple realities that are dependent on time and context (Merten), the investigation into the function of many behaviors that are evident in children diagnosed with ASD are context and time dependent.

The information provided by a case by case investigation and interpretation of data allows for the individual to remain unique and one on to him or herself instead of being categorized and ‘fit’ into a larger group. It is the individual’s behaviors being investigated, not the specific diagnosis or category the child “fits” into. Credibility (internal validity) of qualitative research is a “correspondence between the respondents actually perceive social constructs and the way the researcher portrays their viewpoints”

(Merten, p.181). Dependability (reliability) from a constructivist paradigm, would expect data to change over time, but should be tracked publicly over time. In the investigation of behaviors associated with a child diagnosed with ASD, truthful representation of the data and acknowledgement that this information was provided by the caregiver on a single occasion and reflects that child at the specific time the questionnaire was filled out strengthens the dependability of the information provided in the study. Qualitative research methods insist on the investigation and further questioning of the data while being mindful of the impact of retelling or interpreting the data will have on the group that is being investigated and our greater profession and society (Brinkmann & Kvale, 2005).

Overview

An advertisement (see Appendix A) was put into Autism Calgary Association's newsletter, *The Autism Echo*, where caregivers were invited to participate in a study investigating children diagnosed with ASD's ability to regulate physiological and emotional states.

Participants

Participant Selection

Participants in this study were recruited from a homogeneous sample. This sample included the primary caregiver of children between the ages of 4.0 and 10.11 years of age who have been diagnosed with ASD. Specifically, the children had a diagnosis of Autistic disorder, Asperger's disorder, or Pervasive Developmental Disorder- Not Otherwise Specified (PDD-NOS). The participants of this study were recruited on a

volunteer base and the data from the assessment tools will be stored according to the Canadian Code of Ethics for Psychologists (Sinclair & Pettifor, 2001). The data will be disposed of confidentially by shredding all the data after it has been used for the purposes of this study. A scripted letter (see Appendix B) was read to the participants over the telephone to ensure information governing informed consent, voluntary participation, and any questions had been answered. This ensured the participants were aware of the purpose of the study, their right to withdraw at any point in the study, how they can access the results of the study upon completion. Furthermore, a checklist was used to track all inquiries, verbal consent, and returned packages. A code was assigned to each package as a means of tracking the returned packages and to ensure confidentiality. The code on the package and tracking sheet matched and no names appeared on any information sheets.

Participant Information

A total of 14 packages were mailed out to potential respondents (caregivers) and ten packages were returned. All ten returned surveys were included in the study. The subjects included nine males and one female. Table 1 is a summary of the demographic information of subjects who met the inclusion criteria of the study and the professionals involved in the current programming.

Table 1: *Summary of Participants Grouped by Diagnosis*

	N=	Age Range	Demographic Information	Speech Pathology	Psychological Support	Occupational Therapy	Counselling
Autistic Disorder	7	6-10	5-rural 2-urban	4	1	5	1
Asperger's Disorder	1	10	1-rural 0-urban	0	1	0	0
PDD-NOS	2	7-10	2-rural 0-urban	0	1	0	1

Summary of Participants

Age of children. The subjects ranged in age from 6 to 10 years old. There was one 6 year old, one 7 year old, two 8 year olds, two 9 year olds, and 4 ten-year olds. The female participant was a part of the ten year-old group.

Diagnosis of children. Either a psychologist, a developmental pediatrician, or a multidisciplinary team had diagnosed the subjects. The diagnoses are as follows; one subject was diagnosed with Asperger's Syndrome, two subjects were diagnosed with PDD-NOS, and seven subjects were diagnosed with Autistic Disorder.

Demographic location. The sample of subjects came from various sized centers. Two of the subjects in the study lived in a city with more than 100,000 people, two subjects lived in rural areas, five lived in a town with a population between 10,000 and

50,000, and one lived in a center with a population between 5,000 to 10,000. All subjects resided in Alberta, Canada at the time of the study.

Professional involvement. Professional involvement in the individual programs offers a great deal of insight given the funding structure in Alberta, Canada. If an individual between zero and 18 years old is receiving funding from the Alberta government and has a multidisciplinary team involved in their home-based program, it implies that there is a severe and functional need for this type of support. This criteria was set form an Alberta Legislation through Family Support for Children with Disabilities to assist with the cost of professional programs run in the family's home. In this study, five of the subjects were receiving services from a multidisciplinary team, which included a Speech and Language Pathologist (SLP), an Occupational Therapist (OT), a Psychologist, a Behavior Consultant, and a behavioral or developmental aid to assist the parents and professionals with the child's individual service plans. The four subjects were involved in home-based programming and were receiving support from an aid and a Behavior Consultant. Finally, two subjects were involved with a counselor (play therapy). Refer to Appendix E for the demographic information and professional involvement for individual subjects.

Measures

There were three instruments used in this study. The first instrument was a Demographic Information Questionnaire that required the caregiver to provide information regarding professional involvement, age and diagnosis of the subject, and where the subject resides (see Appendix C). The second instrument used was a standardized caregiver Likert scale, Goodman's Strengths and Difficulties Questionnaire

(SDQ). This tool was used to gain information regarding the subject's individual strengths and difficulties (see Appendix D). Finally, the third instrument was an open response question form called the *SAP-REPORT FORM: Language Partner Stage* from Prizant et al.'s (2006) assessment manual for the *Social Communication Emotional Regulation Transactional Support* (SCERTS) model was used to gain more specific and detailed information on a subject's use of language, regulation strategies and caregiver support.

Demographic Information

An introductory page that requested demographic information was included. The information that was collected includes, the age of the child when he or she was diagnosed with ASD, the size of the city where the family was living at the time of the study, and the frequency and type of intervention the child has received thus far.

Strengths and Difficulties Questionnaire

The Strengths and Difficulties Questionnaire (SDQ) is a standardized instrument that measures an individual's strengths and difficulties. The SDQ is a brief behavioral screening questionnaire that measures emotional symptoms, conduct problems, hyperactivity-inattention, and peer problems. Additionally, the SDQ a prosocial score, which defines strengths in individuals three to 16 years old. The SDQ has been norm referenced in several countries, including Great Britain, Finland, Germany, Sweden, and the United States (USA). For the purpose of this study, the normative data is from the USA . The SDQ was included in the 2001 National Health Interview Survey (NHIS) supplement where informants were randomly selected out of the 10,367 identified

respondents 9878 individuals participated. The SDQ is held to be compatible with other behavioral questionnaires (Goodman, 1997). The SDQ is a copyrighted document and is free to download and photocopy provided it is left unmodified and used for non-commercial purposes (<http://sdqinfo.com/bb2.html>).

SAP-REPORT FORM: Language Partner Stage

The survey is SAP-REPORT FORM: Language Partner Stage from the *SCERTS Model of Intervention* (Prizant et al., 2006). The SCERTS model offers three levels of assessment forms which are meant to be chosen based on the level of functioning and chronological age of the child being assessed. The *Language Partner Stage* form was chosen based on the wide variety of questions which included questions from the two previous levels. The survey is a copyrighted document which grants the owner of the document permission to photocopy for use in clinical and educational settings. The survey explores different environmental and/or emotional triggers for a specific behavior, the frequency of a particular behavior, and whether or not the child seeks out a caregiver or another person for mutual regulation. The results from this survey will provide information on how children maintain an optimal level of arousal in order to participate in various activities and how we may also support a child with regulation strategies. The purpose of this instrument was to gather information pertaining to the child's self-regulation and mutual regulation strategies and to gather insight on attachment patterns that support self-regulation.

Procedures

Data Collection

An advertisement (see Appendix A) was dispersed to the membership at Autism Calgary Association through their monthly newsletter in March of 2007. A brief synopsis of the research project was included in the Autism Echo, a newsletter sent out by Autism Calgary Association. The advertisement included a letter to the primary caregiver requesting the voluntary and confidential participation in this study with a brief description of what the purpose of the study is (see Appendix B). The caregiver was asked to leave a first name and phone number to be reached. The author phoned the potential participant back within two business days and read the script outlined in Appendix B to obtain verbal informed consent, confidentiality and the voluntary nature of this project. The author then asked for an address and mailed out the package to the participant. The packages included a stamped and addressed return envelope, the letter of introduction, demographic information form, the Strengths and Difficulties Questionnaire, SDQ, (Goodman, 2001), and the survey, *SAP- REPORT FORM: Language Partner Stage*, taken from Prizant et al. (2006) Social Communication Emotional Regulation and Transactional Support (SCERTS) model, *SAP REPORT FORM: Language Partner Stage*. The return address on the packages will be sent to a purchased mailbox. The advertisement was open until April 30, 2007 to allow for the participants to receive the package, fill it out and return the package.

Data Analysis

This study used two instruments to provide information about the subject. One instrument, the SDQ, is a norm-referenced, standardized tool, and the other is a open-response instrument, *SAP-REPORT FORM: Language Partner Stage*, to allow the respondent to give detail and perspective in reference to the subject, environment, and the question being asked. Binkman and Kvale (2005) discuss the micro- and macroethics in qualitative research where the importance is to consider how the knowledge produced from the research and report will circulate in a wider culture and affect humans and society. The analysis of qualitative sources of information must represent and respect the individuals involved while provide information that is useful in the field. This study is a descriptive analysis of a non representational sample. The researcher makes use of descriptions of behaviors and does not make generalizations, this allows for the researcher to question and revisit questions as a foundation for future research.

Strengths and Difficulties Questionnaire

The SDQ was filled out for each of the subjects in the study. The SDQ is a 25-item checklist that requires the parent or caregiver to check ‘not true’, ‘somewhat true’, or ‘certainly true’ for each statement. These statements are then analyzed and scored against a norm-referenced group, using norms from the United States. The questionnaires are scored through the *Youth in Mind* (1997) website utilizing <http://scoresdq.com> component. The scores were calculated and a report was generated and then printed. The scores measures the child’s overall stress, emotional distress, behavioral difficulties, hyperactivity and attention difficulties, peer relational skills, and the overall impact of the

difficulties on the child's life. The scores are grouped into four bands that include: 'close to average' where 80% of children score, 'slightly raised' at 10%, 'high' at 5%, or 'very high' at 5%. The exception is with 'kind and helpful behavior', which includes 'close to average' at 80%, 'slightly low' at 10%, 'low' at 5%, and 'very low' at 5%. The scores on the SDQ were used as a baseline to provide information on all subjects from a single, objective perspective. The SDQ has been identified as a tool to discriminate well between children with and without psychopathological symptoms (Muris & Maas, 2004). The individual components were used as a source of triangulation to verify the more qualitative data in the SAP-REPORT FORM: Language Partner Stage.

SAP-REPORT FORM: Language Partner Stage

The SAP-REPORT FORM: Language Partner Stage is a qualitative instrument that allowed for the respondents to provide as much or as little detail to their response as they deemed necessary. Also the language that was used by the respondents was not laden with technical jargon, but simple descriptions and direct examples of various situations. The qualitative nature of this information allowed the researcher to gain the perspective of the respondent and utilize the information while keeping her own biases in check. The project supervisor was available to verify interpretation of the qualitative data and ensure the world perspective of the respondents were fairly represented in the body of this project.

The direct analysis of the data consisted of organizing the information provided by the respondents into the specific areas of research from the various domains within the survey. The researcher was careful to retain the authenticity of the language and world

views of the respondents. Due to the nature of this project the information provided within the document could not be clarified, expanded upon, or confirmed by naturalistic observation.

Limitations and Delimitations

Limitations

There were several limitations identified in this study, which should be taken into consideration for any follow-up studies that may be initiated in the future. These limitations include, participant recruitment, number of participants, assessment of attachment relationship, and clinical observations and interviews. Many of these limitations are due to Campus Alberta-Counselling Initiative's requirements for this final project, but provide viable options for further research. Further research should adhere to the growing needs of children diagnosed with ASD, to offer family-centered interventions, adhere to the functional needs of each child, and to connect with the respective families and communities that these children live in.

The first limitation to be considered is the measures that were used in this study. The SDQ is a caregiver-response Likert scale which is subjective and based on perception of child capabilities. The responses may vary from day to day depending on events of the day and whether the caregiver accepts the child diagnosed with ASD's level of functioning. The *SAP REPORT FORM: Language Partner Stage* requires the parent or caregiver to have increased awareness of observable behaviors that are characteristic for children diagnosed with ASD. This would mean that the parent or caregiver was able to separate characteristics that are 'autistic' in nature or personality based habits. Further

limitations with the case design include the inability to verify the information provided by the care giver in multiple environments or with multiple sources, limited direct contact with the caregiver to gain more specific information about the provided data, and no direct observation, which would contribute to the credibility and reliability of the qualitative data (Mertens, 1998). In future research of this nature, this issue may be circumvented with additional checklists on attachment security could be added to the package to gain further insight on the parent-child dyadic relationship and to videotape the child and caregiver clinically or in a natural environment. The observation and monitoring of the interaction and individual behavior while utilizing a set of standardized interactive tools such as the Marschak Interaction Method (MIM) (Munns, 2000) would be beneficial to strengthen the validity of the study. This type of assessment tool is intended to measure parent child interactions by observing the parent's ability to structure a play situation, engage their child in an interaction, challenges his or her child at the child's level of functioning, nurture the child, and comfort the child after a brief separation (Sigman et al., 2004). This type of clinical observation would provide more information on the caregiver-child attachment relationship, on the child's behavioral characteristics he or she uses to regulate his or her emotions, and on how much the child uses caregiver input in co-regulation. Parent report with no clinical observation or ability to clarify information, due to the limitations of this study, left this examiner with several questions regarding parent attunement, reported independence in self-regulation, and child-caregiver interactions. These questions include whether or not behaviors currently exist for the child to meet the current criteria for being diagnoses with ASD? What level

of acceptance the parent or caregiver is currently at and how that is affecting responses?
And, Does the parent understand the diagnosis of ASD or is there and increased require
for further psycho-education?

Delimitations

The selection of participants in this study was not a random sample, thus is not representative of caregiver's of children diagnosed with ASD. The advertisement for the participants was accessing only one group of caregivers and those caregivers were members of Autism Calgary Association, which may represent a certain classification of caregiver who is seeking help or information from this organization.

CHAPTER IV: RESULTS

This section will include the information gathered from the Strength and Difficulty Questionnaire and the SAP REPORT FORM-Language Partner Stage. The responses were in checklist form and in short answer form. The SDQ is a norm referenced questionnaire that looks at an individuals' strengths and difficulties, and the SCERTS questionnaire gives the caregiver the opportunity to expand on information regarding communication, emotional regulation, and the support the child requires from a caregiver.

Hypothesis 1

Ho: Individuals who exhibit kind and helpful behaviors will have fewer repetitive or stereotypic behaviors.

There were two instruments used to examine this hypothesis. The first was the SDQ which was used to examine kind and helpful, or prosocial behaviors, and the second was the *SAP-REPORT FORM: Language Partner Stage* to examine repetitive or stereotypic behavior.

The SDQ is a caregiver response, 25-item Likert scale that measures an individual's overall stress, emotional distress, behavioral difficulties, attention, and relational skills. In addition to these areas of difficulties, the SDQ also measures "kind and helpful" behaviors that examines how often the individual would give assistance to an adult or a peer, or recognize a person in need. The respondent is required to check "not true", "somewhat true", or "certainly true" for each statement. The responses are then measured against a norm-referenced group to gain the final scores. The scores for "kind

and helpful behaviors” are grouped into four bands that include, “close to average” where 80% of children are found, “slightly low” at 10%, “low” at 5%, or “very low” also at 5%. Indicating that individuals who score in the “very low” range have a low skill levels and/or ability to take another person’s perspective, show empathy, help when being asked to do so by an adult, or recognize when a person needs help.

The *SAP-REPORT FORM: Language Partner Stage* is a short-answer functional assessment tool used in the SCERTS model (Prizant et al., 2006). This instrument examines an individual’s abilities in social communication, emotional regulation, and in caregiver or environmental supports that is necessary for the individual diagnosed with ASD to maximize potentials. The caregiver is allowed to provide as much detail as he or she deem necessary to describe his or her child’s behavior.

The first hypothesis states that a child who is diagnosed with ASD will display lower levels of repetitive behaviors with higher scores in “kind and helpful” behaviors. This hypothesis was not supported by the information presented in the current study. Table 2 represents a summary of kid and helpful behaviors and repetitive behaviors by diagnosis. All caregiver respondents gave full responses on the SDQ, however not all respondents responded to all questions in detail on the *SAP: REPORT FORM: Language Partner Stage*, this too is represented on Table 2.

Table 2: *Kind and Helpful Behaviors and Repetitive Behaviors by Diagnosis*

Diagnosis	N=	Kind and Helpful Behavior Rating	Repetitive Behavior
Autistic Disorder	7	2-close to average 5-very low	1/1 3/3
Asperger's Disorder	1	1-very low	n/a
Pervasive Developmental Disorder-NOS	2	2-very low	1/1

On the “kind and helpful”, or prosocial behavior scale, two subjects scored in the “close to average” range, compared to the other subjects who scored in the “very low” range. Notably, the two subjects who scored in the “close to average” range indicated that they have been in programming for seven years and have a diagnosis of Autistic disorder. As seen in Table 2, four of the seven children were noted to have repetitive behavior and there was no mention of repetitive behaviors being present in the other three subjects who were diagnosed with Autistic disorder. The one subject diagnosed with Asperger’s disorder had no mention of repetitive behaviors by the caregivers but was rated as having “very low” prosocial abilities. Finally, one caregiver made reference to repetitive behaviors in a subject diagnosed with PDD-NOS.

Hypothesis 2

Ho: Individuals who exhibit kind and helpful behaviors will more likely seek support from a caregiver in an attempt to regulate physiological or affective states.

The SDQ and the *SAP-REPORT FORM: Language Partner Stage* were used to identify whether the individuals diagnosed with ASD made use of a caregiver when he or she was attempting to regulate his or her emotional or physiological states. The SDQ was

used to assess the child's prosocial skills and all caregivers completed the SDQ to gain scores. The SDQ was used in a study by Muris and Maas (2004) in the investigation of the relationship between attachment security and the levels of strengths and difficulties a child displays in their every-day life. The findings indicate that, "insecure attachment status was associated with higher levels of difficulty but lower levels of strengths." (p. 325). The study used subjects from clinical samples and non-clinical samples. The *SAP-REPORT FORM: Language Partner Stage* was used to investigate the child's ability to seek the support of a caregiver when needing help to self-regulate. This instrument also allows for the investigation of caregiver awareness. In particular, the *SAP-REPORT FORM: Language Partner Stage* aided in the investigation of the caregiver's ability to identify bids for support and the individual wants or needs of the child. A limitation to the *SAP-REPORT FORM: Language Partner Stage* being completed by the caregiver is the amount and type of information the caregiver shares in the document. Table 3 represents a summary of ratings in Kind and Helpful Behaviors and Support Seeking Behaviors identified by the caregiver.

Table 3: *Kind and Helpful Behaviors and Support Seeking by Diagnosis*

Diagnosis	N=	Kind and Helpful Behavior Rating	Support Seeking
Autistic Disorder (n=7)	7	2-close to average 5-very low	1/1 3/5
Asperger's Disorder (n=1)	1	1-very low	1/1
Pervasive Developmental Disorder-NOS	2	2-very low	1/2

An area of the *SAP- REPORT FORM: Language Partner Stage* that indicates of caregiver sensitivity to the child's internal responses, or caregivers' confidence in child rearing, asks the caregiver to rate their ability to read his or her child's signals in eight areas using a 0-2 scale; 0 being rarely, 1 some of the time and 2 most of the time. The eight areas include: the child's focus of attention, how the child is feeling, when the child needs a break, whether the child is frustrated, what the child is trying to communicate, the child's preferred pace to work or play in, whether the child is interested, and whether the child is overwhelmed. This section was used to identify whether a caregiver was aware of when and how the subject was making bids for support or accessing the caregiver for support.

Findings indicate that 6/9 caregivers that responded indicated that their children seek their support when needing to be regulated. There does not appear to be any relationship between the child's diagnosis, and/or the child's prosocial scores in seeking caregiver support. Thus, this hypothesis is not supported by the current study.

Hypothesis 3

Ho: Individuals who are diagnosed with Asperger's Disorder or PDD-NOS will have more adaptive ways to cope with stressful events and anxiety.

The *SAP- REPORT FORM: Language Partner Stage* consisted of several questions in the areas of social communication, emotional regulation and transactional support. This allowed the researcher to examine the caregiver responses about subject's ability to regulate affect and physiological states in response to stressful events specifically information regarding fight, flight, or freeze responses, repetitive behaviors,

and/or sensory seeking behaviors. Table 4 represents the number of respondents who identified the self-regulation strategies including fight, flight, freeze, repetitive behaviors and/or sensory seeking behavior in the *SAP- REPORT FORM: Language Partner Stage* divided by diagnosis.

Table 4: *Regulation Strategies by Diagnosis*

Diagnosis	N=	Fight	Flight	Freeze	Repetitive Behavior	Sensory Seeking
Autistic Disorder	7	2/3	4/4	3/4	4/4	7/7
Asperger's Disorder	1	1/1	1/1	0/1	n/a	n/a
Pervasive Developmental Disorder-NOS	2	1/2	1/2	1/1	1/1	1/2

Again, not all areas of concern were commented on by all caregivers so the information provided in the chart exhibits the data that was presented in the individual test instruments. In summary, it appears that four out of 10 children respond to stress or threatening situations with a “fight” response, six with “flight”, three with “freeze”, and five with ‘repetitive’ or ‘stim’ behaviors. Eight of the caregivers made reference to the sensory system or sensory input. There were similar responses to stress and anxiety in the subjects diagnosed with Autistic disorder as Asperger’s disorder and PDD-NOS, thus the hypothesis is not supported by this study.

In a case by case investigation the responses varies from subject to subject but the classification of the response spanned across individuals. In the case of subject 01, when faced with anger or frustration the subject may cry, yell, or run to his room and punch a

pillow. He may seek comfort from a caregiver when he has had time to calm down.

Subject 02 will turn into a cat when she is faced with anger or frustration. Her mother indicated that she will meow and hiss in response to any adult intervention. Moreover, she will line up her stuffed cats when she withdraws (in her cat state) and cover her stuffed cats with a blanket. Subject 02 prefers not to be touched and she will “stiffen up”.

Furthermore, she will “zone out” when feeling overwhelmed. Subject 03 will seek out comfort when sad by requesting a hug. When Subject 03 is angry he will crawl on the floor, push his head into the ground, hide, or lie down and refuse to move. The mother of subject 03 indicated that if there is an attempt to intervene, his behavior would escalate so the parents and caregivers have agreed to walk away and leave him be. For Subject 04, he does not like to be cuddled. He will push away and start to throw things. When upset or distressed, he throws things, hits himself, jumps, squishes into things, and the caregiver indicates that nothing seems to help. The caregiver reported if he or she tries to intervene that the child will get angrier and hurt himself. In challenging situations, 04 reportedly “shuts down”, put his head on his desk, or runs away. Subject 06 likes hugs or “squishes” and elicits deep pressure touch by using proximity. When he is angry or upset, Subject 06 will hit or verbally tell his mother that she is “stupid”. Subject 06’s caregiver reported that when he is extremely upset or distressed that he usually requires a hug or a squeeze. Subject 06’s caregiver reported that sometimes she cannot tell if he is listening or not, but will cue him to breath deeply when he is feeling mad or frustrated. Subject 07’s caregiver reported that her son will rock or bend at the hips in situations that are challenging and when he is trying to focus and he will wander off when he is feeling angry or frustrated,

but will also use hip beds and rocking as well. Subject 08 displays emotions much the same as one would expect from a typically developing 10 year old. He will stomp his feet with anger and frustration, he becomes shaky when he is feeling afraid, and will cry and become overwhelmed by sadness. Subject 08 responded positively to comfort and also will seek out hugs when he requires comfort. Subject 09's caregiver reported that he displays behaviors that include looking at his fingers, hitting his hand against his leg, jumping on one leg, or wandering off in response to frustration, or when he is trying to focus. Subject 09 will grab one of his caregiver's heads, squish it, and bring it close to his face when he is feeling overwhelmed. He will "clear the table", jump and move around when he is feeling bored or uninterested, and when he is feeling distressed or is upset he will eat paper items such as wall paper and books. Subject 09 is also reported to have a tic. He will respond to comfort when offered by others by holding someone's hands or getting squishes. Subject 10 reportedly does not use any strategies to help remain focused and when he is overwhelmed he will "blow up", want to run away, scream, punch, and swear. Allegedly when he is feeling angry, frustrated, fearful and sad, he will punch, kick, swear, scream, run away, or lash out. The caregiver indicated that her son does not like to be touched and will engage in behaviors similar to those mentioned previously when offered comfort. Subject 10's caregiver indicated that it is often best to leave him alone when he is angry or distressed, He will usually go to his room and punch, kick, swear, and scream to help recover from these feelings. Subject 13's caregiver indicated that her son responds to anger and frustration by hitting his face and pulling his hair out. When he is trying to stay on task he will use others to give him squishes, squeeze his

hands, or to wrap himself up in a blanket. Also Subject 13 is reported to retreat to a quiet area of the house when it is too noisy. Subject 13 responds to happiness and silliness by hitting his legs with his hands.

CHAPTER V: DISCUSSION

The hypotheses in investigation were that the children who are diagnosed with Autistic disorder, Asperger's disorder, and PDD-NOS, and who exhibited higher scores on prosocial behavior would display decreased level of repetitive behavior or stereotyped behaviors, would seek support in times of stress or dysregulation, and would experience decreased levels of maladaptive behavioral responses during times of stress. In fact, none of the information collected with the instruments support these hypotheses.

Self-Regulation

Caregiver Support

'Close to average' scores on the SDQ indicates that the child being rated as behaving the same or close to the same as same-aged children, two children in this study scored in the close to average range in the prosocial domain. Caregivers of these children noted that the children had been in home-based programming, including various services, for seven years, the families both lived in rural areas and had weekly or daily contact with extended family, and their church community. The qualitative information provided by these caregivers suggested that the caregivers accepted their children for who they were and what they do as a part of their children's identity and self-development. The language used was positive and direct; it brought a reasonable amount of history into the survey to reference gains in their children's development. Thus, the responses in the SQD may reflect an understanding of what the children is capable of, measuring the children against individual expectations rather than what would be expected from typically functioning same-aged children. In the other surveys, the quality of the language that was

used did seem to coincide with prosocial ratings. The quality of language may reflect caregiver sensitivity but may also reflect the “unspoken” circumstances of the caregiver’s day, thus caution is being used when making a statement about caregiver sensitivity. Caregivers’ attitudes towards a child’s prosocial skills may also be reflected by the chronological age and developmental stage the child was at when diagnosed with Autistic disorder, Asperger’s disorder, or PDD-NOS, and the amount of time it took to receive a definitive diagnosis. In addition to the process involved in gaining a diagnosis, caregiver attitude can also be based on the types of services are in place in the home and school, and how supported the caregiver feels.

Caregiver perception of how he or she is able to read their child’s signs would also be assumed to contribute to scores in prosocial skills, but this was not observed in by the author in this study due to limitations in the methods used in this investigation. In fact, subject 02, had “close to average” prosocial scores and appeared to have limited caregiver confidence level. In categorizing the caregiver’s ability to recognize and respond to his or her child’s internal regulatory systems the respondent indicated having the skills ‘some of the time’ (score of 1), where as respondent 06 indicated that he or she could read and respond to his or her son’s needs in most areas ‘most of the time’. Yet, respondent 06 appears to respond to his or her child’s many feelings with the same response, deep pressure touch, and admits that he or she has “not figured out” a way to effectively communicate a message the child.

Another indication of maternal sensitivity is from the information provided by the caregiver when asked what the child does when offered comfort. All caregivers’

responded to this question, but some answered more generally or seemed to associate comfort with many different behaviors. For example, in response to the question regarding how the child seeks comfort, respondents said, “ “he hugs back”(subject 01), “no, she does not like to be touched, she stiffens up”(subject 02), “loves it-will hug back if he is given a hug”(subject 03), “does not like to be cuddled by anyone, will push away and start to move and throw things”(subject 04), “he likes to get hugged or squeeze. He gets close to you but does not ask to be hugged. He likes deep pressure touch”(subject 06), “by me (mom) but usually I distract him with an activity or something, he does not like hugs”(subject 07), “will give family members hugs” (subject 08), “hold hand, squish, will stay for 10-20 seconds then look close in the eye”(subject 09), “does not like to be touched, would rather be alone, punch, scream, swear, run”(subject 10), and finally, “he will respond to others, specifically aids, parents, and grandparents” (subject 13).”

There are many versions of touch in the first year of life, for children who are hypersensitive, does touch hurt or cause the infant psychological harm? To the hyposensitive child, does a gentle caress provide enough feedback, or does the child feel deprived of touch stimulus? In this study the majority of respondents made reference to sensory input or sensory needs in the survey. Nine out of 10 respondents recognize that their children either respond to touch by pushing away or stiffening, indicating a hypersensitivity to touch, or by seeking hugs and deep pressure, which indicates hyposensitivity to touch. Interestingly, sensory processing is not a criteria for a diagnosis of any of the Autistic Spectrum Disorders (ASD). Additionally, when investigating touch, in and of itself, this modality of communication is used almost right from conception and

throughout childhood in humans. For example, when a woman is pregnant she often can be observed touching her belly, when the fetus kicks or moves, a sensitive mother responds with touch. After the birth of a child the caregiver will give a gentle caress or a tight swaddle in response to the child's cry. Sensory information, in this case touch, is a powerful form of communication between a caregiver and child, and recognizing the response to touch is even more important in forming positive attachment relationships.

Prosocial and Repetitive Behaviors

The prediction of higher scores in prosocial behaviors and decreased use of repetitive behavior was inconsistent in the findings. In fact, the two subjects that had "close to average" scores in their prosocial skills both indicated that their children used repetitive behaviors in play or as a calming and/or focusing strategy. Specifically, Subject 02 was noted to, "line them [stuffed cats] up, put them in pairs, puts in a basket and cover them with blanket" and Subject 03 had animals or trucks repeatedly migrate in a big line from one area to another.

Less than half of the respondents report the use of "stims" or repetitive behaviors, which are fundamental to the diagnosis of Autistic disorder, Asperger's disorder, and PDD-NOS. This finding raises many questions, including: Is it that the respondents no longer notice these behaviors? Do these behaviors decrease as the child gets older, or have these behaviors been extinguished or replaced?

Prosocial and Maladaptive Behavioral Responses

In this section, the autonomic nervous system's response to stress or the feeling of being threatened will be used to depict a "maladaptive response". Maladaptive responses

usually occur at a time of extreme stress or when safety is a concern. For example, when a person touches something hot and automatically pulls back his or her hand. This process bypasses the cognitive process and acts in response to the environment to protect the person.

Fight. To fight is defined as verbally or physically lashing out at an object or a person. One would expect that individuals with higher prosocial scores would not exhibit flight behaviors, but this was not the case in this sample. Additionally, one would predict that into middle and late childhood that these types of “fight” behaviors would no longer occur or occur in decreased frequency in response to stress. Four respondents reported that their children would lash out in response to the child being over taxed cognitively, when the child was frustrated, or in response to comfort offered by a caregiver.

Flight. Over half of the respondents indicated that their child responded to various situations with a flight response. Flight is defined as hastily removing oneself from a stressful situation. Many children will withdraw themselves from a situation or seek caregiver support when faced with stress or anxiety. The respondents indicated that their children would go to an extreme when they perceived a situation as threatening or to difficult. Among the behaviors described by caregivers are: hiding behind a bed, running away, walking away, or turning into a cat (this author considers this flight as it appears to be a disassociation).

Freeze. Three respondents indicated that their children responded to various situations with “zoning out”, “ignoring everyone”, and “shutting down”. Interestingly, the majority of the respondents commented on their child’s lack of or limited eye contact,

however, the freeze or withdrawal behaviors were not commented on, as this author was predicted.

Implications for Treatment

There is very little research investigating the effects of attachment-based therapy with children diagnosed with Autistic disorder, Asperger's disorder, or PDD-NOS, but there is some research available about the implications of attachment-based therapy with children who have been exposed to abuse and neglect. The observable behavior in a child diagnosed with Autistic disorder, Asperger's disorder, or PDD-NOS in times of stress and anxiety is similar to children who have been exposed to abuse and neglect. Thus, it is possible that the therapeutic interventions that are chosen for children who have been exposed to trauma would be appropriate for children with Autistic disorder, Asperger's disorder, or PDD-NOS to support self-regulation. The interventions offered to caregivers are often functional, behavior-based interventions that support skill development in activities of daily living. Self-regulation is an activity of daily living, in fact, without the ability to regulate physiological and affective states, an individual diagnosed with Autistic disorder, Asperger's disorder, or PDD-NOS has more difficulties in reaching their potentials at home and in the community. An investigation of alternate therapeutic modalities, such as the ones summarized below, may be beneficial as an adjunct to developmental behavioral interventions that make use of positive behavior management strategies.

Theraplay. Theraplay is a form of play therapy that was originally developed to support attachment-related disorders in children and caregivers in a Head Start program

(Munns, 2000). The four main components of Theraplay consist of structure, engagement, challenge, and nurturing activities. This type of play therapy has been introduced to numerous populations with a tremendous amount of success (Jernberg & Booth, 2001; Munns, 2000). It uses the basic principles of attachment theory to rebuild disrupted relationships. The use of an assessment system, called the Marschak Interaction Method (MIM) investigates the four core areas and allows practitioners to develop treatment plans suited to the individual needs of the child-caregiver dyad to help build or re-establish attachment relationships. This form of treatment is useful for children diagnosed with Autistic disorder, Asperger's disorder, and PDD-NOS because it provides the structure and predictability these individuals require, while also working with the caregivers to engage and respond to their child in an attuned and responsive manner, mimicking typical early attachment interactions (Jernberg & Booth, 2001; Munns, 2000)

SCERTS. Social Communication Emotional Regulation and Transactional Support (SCERTS) is a multidisciplinary approach to the management and treatment of individuals diagnosed with ASD. This approach uses strategies and supports to structure the environment, facilitate functional use of language, and utilize the caregivers to facilitate function and regulation in daily living. Generally, the team of practitioners will work with family and community to build relationships with people and the environment. The SCERTS method focuses on the functions that the behaviors have in support of emotional regulation and help the caregivers to use pre-existing regulatory activities in more functional and appropriate ways (Prizant et al., 2006).

Dyadic developmental psychotherapy. Dyadic developmental therapy is an attachment based treatment, that supports the child and his or her caregiver(s) or the child and his or her therapist in forming a relationship that is attuned affectively and is contingent on collaboration (Becker-Weidman, 2006). This approach attempts to enable a deeper acceptance of the child's affect and experience by the caregiver with more emphasis being placed on the process, rather than on verbalizing the content. This would likely be beneficial to the Autistic population because experiential learning and the integration of experiences build on the strengths of these individuals, experience rather than words.

Non-directive play therapy. Non-directive play therapy is an intervention modality that allows the individual to tap into the subconscious levels and do therapeutic work at their own play level. This intervention type facilitates growth and self-regulation with the support of a trained therapist to help the child confront anxiety and stress in a safe environment. There are many benefits to non-directive play therapy with children diagnosed with Autistic disorder, Asperger's disorder and PDD-NOS, including the child using their preferred modality of play, allowing the child to function at his or her developmental level which provides insights into the discrepancies in emotional, and mental ages of the child. A psychodynamic approach to individual treatment examines the symbolic representation of the concrete, which invariably comes from deep within the child's psyche (Morra, 2002). Morra makes reference to Ogden's 1997 work on "pathological autism" by stating that "representing a failure of the mother-infant dyad to negotiate this delicate balance between mother-as-environment and the suspension of that

form of being” (p. 286). In one of Morra’s case study examples, Morra contends that the Autistic condition is brought out from early trauma during the birthing process. Non-directive Play Therapy attempts to integrate and process early experiences that have not reached one’s conscious level. These early processes are considered the traumatic events that are pivotal in current functioning. This play therapy approach is widely used to treat children who have experienced trauma, neglect, abuse, and/or sexual abuse (Ryan & Needham, 2001; Thomas, 2007).

Most of these therapeutic modalities attempt to optimize primary developmental milestones that are not consciously integrated. The therapies work on the subconscious, early neurodevelopment levels, often observed in early attachment behavior. All of the previously discussed therapeutic modalities naturally integrate activities that activate the brain systems involved in the development of self-regulation. These activities include massage, rhythm, touch, music and movement, and play (Perry, 2006). Perry states that the activities listed above optimally occur during critical periods of brain development, which are not based on chronological age but the developmental stage of the individual being seen. This means that the interventions discussed above are better received when the child diagnosed with Autistic disorder, Asperger’s disorder, and PDD-NOS reach a developmental level appropriate to the development of the skill. Specifically, a child diagnosed with Autistic disorder, Asperger’s disorder, and PDD-NOS would be more receptive in integrating the skills and experiences to support emotional and physiological regulation when he or she is developmentally ready. This means the introduction of

different therapies would be beneficial as the child diagnosed with ASD grows and matures.

Conclusions

An investigation into how individuals diagnosed with Autistic disorder, PDD-NOS and Asperger's disorder self-regulate in their middle childhood years was conducted. The author also attempted to connect common behaviors or deficits observed in the autistic population to their attempts to regulate affective and physiological states. Finally, the author explored the current diagnosis of RAD, the behavioral characteristics and the common links between ASD and RAD for implications in treatment and intervention to support self-regulation.

Due to the limited number of participants, the information gathered in this project cannot be generalized to a larger population. However, findings indicate that many of the children who participated in the study responded to stress in a maladaptive manner. In fact, their responses to emotional stress did not match strategies that are matched by peers with the same chronological age.

Further investigation into this area is warranted to provide additional insight to current treatment practices in the area of self-regulation. It would be interesting to investigate whether the strategies that children diagnosed on the Autistic Spectrum use match their emotional level, developmental level, or chronological age. For example, children who are maltreated are often 'stuck' at a certain emotional level, usually the times that they are first maltreated, and continue to utilize strategies into middle childhood that they used in their younger years. Making use of the information coming

out of the Romanian Institutions where children are found to have ‘autistic-like’ characteristics as an opportunity to adjust practice in early intervention programs may support children diagnosed on the Autistic Spectrum to better regulate affective and physiological states. If work can be done with a child’s developing brain targeting the developmental age rather than the chronological age, there may be increased opportunity for children on the Autistic Spectrum to more efficiently use strategies that they may be inappropriately accessing. Thus, investigating different therapies that directly target attachment and self-regulation in children diagnosed on the Autistic Spectrum can enhance functional abilities in the home and community settings.

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Appendix A

Sample of Advertisement

Poster and Newsletter

Help me help you. My name is Treena Huxley and I am studying for a Master's degree in Counselling. I am now working as a Behavioral Consultant for home-based programs. I am asking for your help in a study. This study will involve no contact with your child. The study is to look at how children relate to other people, their strengths and difficulties and how they calm themselves down. This study involves the parent or guardian filling in some questionnaires, which will take about forty minutes. If you want to participate in my study or have any questions please call me at (403)283 8509 and leave your first name and phone number. I will call you back to get your address and postal code and answer any questions that you have.

Thank you for your interest.

Script

Note: The advertisement has gone out. The participant has been requested to phone this author because they are interested in participating in this study. The participant is asked to leave only their first name and their phone number. This author returns their call and reads the following script to gain informed consent.

Hello, my name is Treena Huxley. First I would like to thank you for your interest in being a part of this study. There are a few things that I would like to tell you about and answer any questions you have before I ask for your address to mail you a package. It will take about five minutes or so depending on how many questions you have. Do you have time now or is there a better time for me to call you?

If no, arrange a time that works for the participant.

If yes:

The first thing I would like to tell you is that you do not have to help me in this study if you do not want to. Also even if you decide now that you want to help me and you change your mind later you do not have to fill out the forms. Do you understand that this is something that you do not have to do?

The next thing I want to tell you is that the information that you give me today and the information that you write down in your package will always stay private, your name and your child's name will not be on any of the papers and all the papers will be kept in a locked filing cabinet in my home office. The only other person who will see this information, which does not have your name, is my supervising Psychologist. We will keep all the information private and locked up. Do you have any questions? Do you

understand that there is no information on any of the forms to identify you or your child?

Do you understand that all of this information will be kept private?

I want to tell you what I will use the information in the study for. I want to look at how your child can relate to other people, where your child has strengths and where there are difficulties in their life. I am also interested in how your child calms down when he or she is too excited, or too frustrated. I want this information to help me and other people work and play with you and your child better. The package will take about 40 minutes to complete, you may not have an answer for all the questions and that is okay. Do you have any questions? Do you understand why I am gathering this information and how I will use it? Do you understand that I will not ever have to meet you or your child?

May I send you a package?

If yes:

In the package there are forms with a code on them, please do not put your name on the package. There is also an envelope for you to return the form. It has a stamp and the address already. Answer as many questions as you can. If you do not have an answer you do not have to write anything down. Once you have the package, remember it is your choice to finish it and mail it. It is ok if you change your mind. Do you have any questions?

May I have your address?

Appendix B

Sample of Letter to Caregiver

P.O. Box XXX Station XXX
Calgary, AB XXX XXX
Date XXXX

Dear Parents and Guardians:

My name is Treena Huxley. Autism Calgary Association has given me permission to ask their members to participate in a study I am doing. To protect your confidentiality, Autism Calgary Association has agreed to put an advertisement in the newsletter and do an email to all the parents. I have not seen any of the names. If you want to help me, call me at my confidential private business number and leave your first name and your phone number. I will call you back and ask for your address and postal code. I will send you a package. The results will be published in The Autism Echo, Autism Calgary Association's newsletter, once the study is finished.

I have worked with children and teenagers with Autism, Asperger's and PDD-NOS and their families for the past seven years. My jobs have included classroom Aide and being an Aide in home-based programs, behavioral consultation to parents and schools, and I was a Service Provider for Intensive Behavioral Intervention before the new Family Support with Disabilities Act in 2004.

Now I am studying for a Master's degree in Counselling. This will help me to do an even better job with children and their families. As part of my degree, I am doing a small study to look at how children relate to other people, their strengths and difficulties and how they calm themselves down.

I am asking for your help. This study involves the parent or guardian filling in some questionnaires, which will take about forty minutes. Then you would mail them to me in a stamped envelope that I have included with this package. The study does not involve any contact with your child.

It is totally up to you whether you want to participate in this study or not. If you don't want to participate in this study you do not have to. If you want to participate call me at 283-8509 and leave your first name and phone number. I will call you back to get your address and postal code.

Participation in the study is anonymous. You do not have to put your name on the questionnaires – there will be a code on the questionnaire just to make sure that all the questionnaires don't get mixed up. You do not have to provide your address or phone number or any other information that would identify who you are or who your child is on the questionnaires. The questionnaires will be destroyed once the results have been put together.

I would be happy to answer questions you have, please call me at my confidential private practice phone at (403) 283-8509 and leave your first name and phone number.

My hope is to receive the questionnaires back by the end of November 2006. If you decide to participate, I thank you very much and appreciate your help!

Sincerely,

Treena Huxley, B.Sc. (Linguistics and Psychology)

Appendix C

Demographic Information

1. Which of the following categories best describes where you live? (circle one)

- a. City of 100,000+
- b. Suburb of a city
- c. Town of 50,000 to 100,000
- d. Town of 10,000 to 50,000
- e. Town of 5,000 to 10,000
- f. Town of 1,000 to 5,000
- g. Town of less than 1000
- h. Rural area

2. What is your child's official diagnosis and when was he or she diagnosed?

3. Who diagnosed your child? (circle one)

Psychologist Developmental Pediatrician Pediatrician Family Doctor Other

4. Have you been involved in a home-based intervention program? Y or N

If so describe the program (i.e., where treatment takes place, level of support, training, type of intervention, how long you have been involved in programming) . Circle all that is applicable and list hours/week.

- a. Aid _____
- b. Speech and Language Pathologist _____
- c. Occupational Therapist _____
- d. Psychologist _____
- e. Behavior Consultant _____
- f. Educational Consultant _____
- g. Counselor _____
- h. Total in-home hours/week _____

Additional Information

Appendix D

Strengths and Difficulties Questionnaire

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain. Please give your answers on the basis of your child's behavior over the last six months.

Your child's name: _____ code will be inputted here _____

Date of birth: _____

male/female

	Not True	Somewhat True	Certainly True
Considerate of other people's feelings			
Restless, overactive, cannot stay still for long			
Often complains of headaches, stomach-aches or sickness			
Shares readily with other children, for example toys, treats, pencils			
Often loses temper			
Rather solitary, prefers to play alone			
Generally well behaved, usually does what adults request			
Many worries or often seems worried			
Helpful if someone is hurt, upset or feeling ill			
Constantly fidgeting or squirming			
Has at least one good friend			
Often fights with other children or bullies them			
Often unhappy, depressed or tearful			
Generally like by other children			
Easily distracted, concentration wanders			
Nervous or clingy in new situations, easily loses confidence			
Kind to younger children			
Often lies or cheats			
Picked on or bullied by other children			
Often offers to help others (parents, teachers, other children)			
Thinks things out before acting			
Steals from home, school or elsewhere			
Gets along better with adults than with other children			
Many fears, easily scared			
Good attention span, sees chores or homework through to the end			

Do you have any other comments or concerns?

Overall, do you think that your child has difficulties in any of the following areas: emotions, concentration, behavior or being able to get along with other people?

No	Yes-minor difficulties	Yes- definite difficulties	Yes- Severe difficulties

If you have answered “Yes”, please answer the following questions about the difficulties:

- How long have these difficulties been present?

- Do the difficulties upset or distress your child?

- Do the difficulties interfere with your child’s everyday life in the following areas?

	Not at all	A little	A medium amount	A great deal
Home Life				
Friendships				
Classroom learning				
Leisure activities				

- Do the difficulties put a burden on you or the family as a whole?

Not at all	A little	A medium amount	A great deal

Mother / Father / Other (please specify)

Appendix E

Demographic Information and Professional Involvement

Subject	Diagnosis	Age	Population	Professional Involved
01	Asperger's Syndrome	10	10,000- 50,000	Aid Behav. Consult
02	Autism	10	Rural area	Aid Behav. Consult Counselor
03	Autism	10	Rural area	Aid SLP OT Behav. Consult
04	Autism	9	5000-10,000	Aid OT Behav. Consult
06	Autism	7	100,000 plus	Psychologist
07	Autism	6	100,000 plus	Aid OT SLP Psychologist Behav. Consult
08	PDD-NOS	10	10,000-50,000	Aid Behav. Consult Counselor
09	Autism	10	10,000-50,000	Aid SLP OT Behav. Consult Psychiatrist
10	PDD-NOS	7	10,000-50,000	Aid Behav. Consult
13	Autism	8	10,000-50,000	Aid SLP OT Psychologist Behav. Consult

Appendix F

Strength and Difficulties Scores by Individual Subject

Subject	Overall Stress	Emotional Distress	Behavior Difficulties	Hyperactivity and Attention	Peer Relation	Kind and Helpful	Impact child's life
01	Very high	High	Close to average	Slightly raised	Very high	Very low	Very high
02	Slightly raised	High	Close to average	Close to average	Slightly raised	Close to average	Very high
03	Slightly raised	Close to average	Slightly raised	Slightly raised	High	Close to average	Close to average
04	Very high	Very high	High	Very high	Very high	Very low	Very high
06	Slightly raised	Close to average	High	Slightly raised	High	Very low	Very high
07	High	Close to average	Close to average	Very high	High	Very low	Very high
08	Close to average	Close to average	Slightly raised	Close to average	Close to average	Very low	Close to average
09	Very high	High	Close to average	Very high	Very high	Very low	Very high
10	Very high	Slightly raised	Very high	Very high	Very high	Very low	Very high
13	Close to average	Close to average	Close to average	Slightly raised	Slightly raised	Very low	Very low

Appendix G

Regulation Strategies by Individual Subjects

Subject	Fight	Flight	Freeze	Repetitive Behavior or 'stim'	Reference to Sensory Input	Seek support
01	Yes	Yes	n/a	n/a	n/a	Yes
02	n/a	n/a	Yes	Yes	Yes	n/a
03	n/a	n/a	Yes	n/a	Yes	Yes and no
04	Yes	Yes	Yes	n/a	Yes	No
06	Yes	n/a	n/a	n/a	Yes	Yes
07	n/a	Yes	n/a	Yes	Yes	No
08	No	No	No	Yes	No	Yes
09	n/a	Yes	n/a	Yes	Yes	Yes
10	Yes	Yes	n/a	n/a	Yes	No
13	No	Yes	No	Yes	Yes	Yes