ATHABASCA UNIVERSITY

ART THERAPY AND ASPERGER SYNDROME:

AN ART THERAPY MANUAL FOR INTERVENTION WITH ADOLESCENTS WITH ASPERGER SYNDROME

BY

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ABSTRACT

This project entailed an extensive literature review in two areas: Asperger syndrome and Art Therapy. The nature and causes of Asperger syndrome were investigated, as were the theoretical concepts and healing mechanisms associated with art therapy. The goal of the project was to identify how art therapy could be effectively applied in the treatment of adolescents with Asperger syndrome. The product of this investigation is *An Art Therapy Manual for Intervention with Adolescents with Asperger Syndrome,* intended for use by art therapists working in this field. The manual presents 12 detailed sessions that address specific therapeutic issues common to adolescents with Asperger syndrome.

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CHAPTER 1

Introduction

For the past 30 years, the term Asperger syndrome (AS), or Asperger disorder, has experienced a marked increase in usage as a diagnostic label. Asperger syndrome is commonly understood to be a neuro-behavioural developmental disorder of childhood; it is characterised by clinically significant impairment in social functioning along with deficits in communication skills and restricted interests and repetitive patterns of behaviours. These traits manifest despite intact cognitive and language development (Klin, Volkmar, & Sparrow, 2000). Current prevalence rates are unclear due to evolving diagnostic criteria. Literature reports vary from estimates of 2.6 per 10 000 (Fombonne, 2005) to 48 per 10 000 children (Kadesjo, Gillberg, & Hagberg, 1999). Some clinicians are concerned that loosely defined diagnostic criteria have led to a modern epidemic of AS (Stiefel, Shields, Swains, & Innes, 2008). Others feel that clinicians are identifying only half of the affected population (Attwood, 2006). The increased prevalence in the use of the term *Asperger syndrome* has occurred regardless of this lack of consensus. Diagnostic ambiguities compound the challenges facing parents and professionals trying to provide effective support and interventions for individuals with AS.

In my work as a behaviour interventionist for a school district in southern Alberta, I have become aware of the following issues pertaining to adolescents with AS, and have found them to be consistent with the literature on this subject:

(a) AS still appears to be widely misunderstood by parents and the teaching community (Rayner, 2005);

(b) delayed diagnosis and misdiagnosis frequently result in mismanagement of children with AS (Stewart, 2002);

(c) few interventions have been identified that are considered effective in treating AS (Lord et al., 2005);

(d) adolescence poses increased vulnerability for social and emotional problems for children with AS (Konstantareas, 2005);

(e) children with AS appear to be at greater risk of developing serious psychological problems (Barnhill, 2001; Klin, Jones, Schultz, Volkmar, & Cohen, 2002); and

(f) children with AS commonly experience victimization and bullying (Smith Myles & Simpson, 1998).

Clinicians tend to agree that AS is a complex disorder involving dysfunction in the domains of social, behavioural, emotional, cognitive, sensory, and motor skills. Over the last two decades significant amounts of research have been conducted into neurological processes and how they relate to mental-health functioning, brain plasticity, and neurogenesis (Doidge, 2007; Rossi, 2002). These findings may have important implications in the management and prognosis of children with AS. For example, neurological studies of AS have shown that the disorder is characterised by clear deficiencies in executive functioning and social-emotional processing (Schultz, Romanski, & Tsatsanis, 2000). Therapeutic approaches that target improved neurological functioning and emotional regulation have great potential in the treatment of AS.

Effective intervention also requires an understanding that each individual has a unique profile of deficits and strengths that demands personalised attention (Knott, Dunlop, & MacKay, 2006).

Art therapy is an emerging intervention approach that has received little attention in the field of AS intervention. This may be due to the common perception that AS is associated with inflexible thought patterns and intractable behaviours (Attwood, 2006), traits which may not, on the surface, seem to lend themselves to creative activities. Asperger syndrome is also a disability often characterised by deficits not only in social skills but also in imagination (Evans & Dubowski, 2001). However, some researchers now believe that creative processes can have a positive effect on neurological processes and subsequently ameliorate some dysfunctional behaviours (Kandel, 1998) as cited in Rossi, 2002). In addition, other researchers (Fitzgerald, 2006, Evans & Dubowski, 2001) believe that rigid and hyperlogical thinking can be effectively channelled through creative processes.

Art therapy is a therapeutic approach that integrates the concept of creativity both with the products and process of art making (Malchiodi, 2003). It is already an established therapeutic approach for several common issues encountered by the AS population (Grossman, 1981; Stewart, 2002): affective disorders, mood disorders, anger, and frustration. Art therapy can enhance standard therapy through its useful insights into thought patterns, belief systems, memory, and aspects of executive function. Art therapy can also directly facilitate cognitive, motor, and sensory experience at both conscious and unconscious levels (Hass-Cohen, 2008; Tibbetts & Stone, 1990). Due to its inherent

nature as an interactive, hands-on way of engaging with clients, art therapy generates many opportunities for the development of social skills (Evans & Dubowski, 2001).

In recent years there has been some movement towards empirically based research on how art therapy works. Increased use of brain imaging techniques to study the effects of the creative process on the brain has offered some validation of the benefits attributed to art therapy, and has also created new frontiers for the evaluation of art therapy techniques (Lusebrink, 2004). Of particular relevance to this project are the art-therapy relational neuroscience principles (ATR-N), which link art-therapy practice with clinical neuroscience (Hass-Cohen, 2008).

The goal of this project is to develop for mental-health practitioners an art therapy intervention manual that offers guidance and information for therapeutic work with AS. The manual focuses on the unique problems associated with AS during adolescence, which include deficits in social skills, impoverished communication skills, and emotional dysregulation (exacerbated by peer rejection, victimization, and bullying). Special consideration is given to the developmental milestones negotiated in adolescence that are compromised in AS (e.g., individuation and peer interaction). At this age, a growing awareness of their deficits often contributes to the development of anxiety, depression, and anger (Barnhill, 200; Wing, 2005). The manual comprises sample sessions that specifically address therapeutic domains associated with AS.

The primary objective of this research is the preparation of the Art Therapy Intervention Manual for Adolescents with Asperger syndrome. It focuses on the points of intersection between the therapeutic benefits of art therapy and the therapeutic challenges present in adolescents with AS. The manual aims to incorporate available intervention

techniques into practical ideas for the treatment of individuals with AS. The secondary objective, achieved through an extensive literature review, is to highlight some areas of interest that might direct future research into the effectiveness of alternative interventions when dealing with AS. Emphasis is placed on the potential effectiveness of art therapy as an alternative intervention modality for AS.

Procedures

This investigation of art therapy as a treatment modality in AS is composed of three sections. The first section is a literature review of AS and art therapy. The second section is a synthesis of the research literature that highlights the intersection between the therapeutic needs of adolescents with AS and the therapeutic attributes of art therapy. The third and final section completes this synthesis in the form of an art therapy intervention manual for use with AS.

The literature review follows steps advocated by Mertens (1998) and Leedy and Ormrod (2005). Search keywords and phrases included: Asperger syndrome, neurological and Asperger syndrome, interventions and Asperger syndrome, art therapy, art therapy and Asperger syndrome, art therapy and autistic-spectrum disorders (ASDs), and art therapy and neurology. Library databases accessed include PsycINFO, Academic Search Premier, EBSCOhost, and Ovid. To ensure a contemporary view of AS and art therapy, the literature search focuses on the last 20 years of publications, with consideration for how the last 50 years of research has informed current intervention approaches.

Included are Asperger's (1944/1991) original account of AS, Wing's (1981) clinical review of this disorder, and several investigations into psychobiology and brain

plasticity (Rossi, 2002; Doidge, 2007), as well as a recent contribution to the area of art therapy and neuroscience by Hass-Cohen and Carr (2008). Leading contributors to therapeutic approaches that incorporate art therapy are reviewed, with particular attention given to approaches that address the domains of social interaction, emotional processing, repetitive and restricted and repetitive patterns of interest and behaviour, and executive functioning. These authors include Malchiodi (2003), Wadeson, 1980, Naumberg (1950/1966), Winnicott (1971/2005), and Hass-Cohen and Carr (2008). Current intervention protocols for AS are also reviewed, including the developmental approach of art therapy.

Reviewing these two bodies of literature serves two main purposes. First, the review gathers in one place current knowledge about the theoretical principles and mechanisms attributed to art therapy, as well as the causes and behavioural idiosyncrasies associated with AS. Second, the synthesis of these findings establishes a framework for the development of the art-therapy manual and sample sessions that specifically target therapeutic domains in AS. Therefore, through a synthesis of these findings, what emerges from this literature review are ways of applying art therapy as an intervention tool with AS.

The Art Therapy Intervention Manual is presented as a series of sample sessions. Each session targets a specific therapeutic domain characteristic to adolescents with AS. These domains include the enhancement of social skills, communication skills, emotional regulation, sensory integration, and motor skills. Special considerations are made for the idiosyncratic behaviours of adolescents with AS, including their special interest areas and

the cognitive, emotional, and social profiles that are commonly associated with this disorder.

CHAPTER 2

WHAT IS ASPERGER SYNDROME?

Historical Background

In the early 1940s, two physicians trained in Vienna but separated by an ocean and a World War, published accounts of what each believed to be a new clinical disorder in children. Leo Kanner of Baltimore, Maryland and Hans Aperger of Vienna independently described children who displayed "severe and characteristic difficulties of social integration" (Frith, 1991). Kanner (1943) named his new disorder "early infantile autism." Asperger (1944/1991) used the term "autistic psychopathy." Both employed the Greek word "autos" (self) to describe a condition characterised by abnormal self-absorption and lack of responsiveness.

Kanner's work was widely read and led to establishment forty years later of a diagnosable disorder popularly known as autism in the 1980 American Psychiatric Association's *Diagnostic and Statistical Manual, third edition* (DSM- III). Asperger's account described a similar syndrome but with more intact language and cognitive abilities. His work, published in German only, was largely ignored in the English-speaking world until it was critically analysed by Wing in 1981. Frith (1991) later translated it into English. Asperger syndrome (AS) was subsequently included as a distinct diagnosis by the World Health Organisation and the American Psychiatric Association.

Prior to Asperger's study, a German study by Sucharewa (1926, as cited in Wolff, 2004) made similar observations in six boys that the researcher referred to as suffering from "schizoid personality of childhood." This terminology illustrates the belief, persisting until the mid-1960s, that autistic traits in children were the result of emotional disorders and associated with schizophrenia. Both Asperger and Kanner challenged this belief and alluded to evidence of a biological basis for this disorder: unlike other cases of childhood psychosis, these children's symptoms were evident in infancy and remained relatively stable over time.

Kanner noted significant difficulties with communication in his patients: mutism, echolalia, and social aloofness. Asperger described a socially interested but inept child with good language ability. Both researchers observed a lack of empathy; an inability to interact with others; restricted and repetitive interests and patterns of behaviours; and well-developed rote learning abilities. Kanner described fascination with parts and movements of objects. Asperger noted special interest areas in which the child would amass large amounts of knowledge. Both noted the significantly higher incidence of the syndromes among boys; this led Asperger to claim that his syndrome was an extreme variant of male intelligence (1944/1991). The main difference in their observations at this time was that the children Asperger described appeared to have greater cognitive and language abilities. He went as far as to refer to some of them as "little professors" (1944/ 1991).

The term "Asperger syndrome" was introduced in 1981 by Lorna Wing. She was the first researcher to attempt to describe and classify this disorder since Asperger. Wing (1981) became aware of Asperger's work while conducting an epidemiology study on

mental-health illnesses in children. The many children she encountered presented with deficits and abilities described by Kanner and Asperger (Wing, 1981).

She saw many complementarities in their work, but considered Asperger to be the father of AS for several reasons. He was the first to argue that the unique pattern of behaviours and abilities we associate with this syndrome today requires a distinct diagnosis. In addition, his studies of over 400 children distinguished between children with both lower and higher abilities who presented with some of the features characteristic of autistic psychopathy. For this reason, he is credited with identifying AS as a disorder on the autistic spectrum (Frith, 2004).

Asperger was further credited for his dedication to championing the cause of these children throughout his life. He was concerned with the misunderstanding and victimisation that resulted for children with this disorder, often as result of their pedantic speech patterns and behavioural eccentricities. Their success, he believed, depended on an educational approach that would enhance their unique abilities. To further his cause, Asperger established special hospitals and educational programs, which led to remarkable achievement for some of his patients. Sadly, it appears that he became less optimistic over time due to the intractable nature of the disorder in the majority of cases (Frith, 1991; Volkmar & Klin, 2000).

Wing (1981) preferred the term *Asperger syndrome* to *autistic psychopathy* because she believed the latter term suggested sociopathic behaviour instead of "impairment in certain aspects of cognitive and social development." She concluded that children on the autistic spectrum shared common deficits in the areas of social interaction, communication, and imagination; she called this the "triad" of impairments.

Her observations also led her to challenge many of Asperger's findings, especially in the areas of age of onset of symptoms and the assumed superiority of cognitive and language abilities. While Asperger claimed that symptoms were not evident before the age of three, Wing's (1981) research revealed that most children with AS showed traits of the disorder in early infancy. This was demonstrated by a lack of reciprocity (limited babbling and abnormal eye gaze) and general interest in others, including family members. Wing also challenged Asperger's description of superior language ability. She believed that in individuals with AS, speech was generally impoverished and often learned by rote. Wing further challenged his assertion about superior intelligence: Asperger had never conducted standardised intelligence tests to prove this fact. Her observations were that there was a distinct lack of common sense and imaginative thought in these children, which she attributed to a style of thinking that was literal, hyper-logical, and restricted.

Wing's (1981) paper expanded the profession's view of Asperger syndrome by establishing a credible diagnostic framework. She believed that AS could be associated with any level of intelligence and with many other physical and mental disabilities, such as epilepsy and affective disorders (Frith, 1991; Wing, 1981). Wing concluded that AS and autism were different expressions of the same syndrome and that children with AS were set apart from those with autism by their greater ability with language as well as their "active but odd" manner of engaging socially as opposed to the socially aloof children associated with autism. On this basis she believed it would be helpful to clinicians, parents, and teachers to have a separate diagnostic label for children who displayed this pattern of behaviours (Wing, 1981).

After the publication of Wing's paper and the later translation of Asperger's (1944/1991) "Die Autistischen Pyschopathen im Kindesalter" into English by Frith (1991), there was a huge surge of research interest in AS. Much of the new work centered on establishing diagnostic criteria for AS and distinguishing it from high-functioning autism. These efforts led to the recent inclusion of AS in the DSM-IV (1994) as a diagnosable disorder of childhood and comprehensive accounts of the syndrome (Klin et al., 2000). In spite of many unresolved questions about the definition and diagnostic criteria (Mayes, Calhoun, & Crites, 2001), the term Asperger syndrome appears to resonate with the public and mental-health professionals: it is now widely used to describe socially inept, somewhat eccentric children who exhibit autistic symptoms in the presence of intact language and cognitive skills.

Aetiology of Asperger Syndrome

As late as 1971, the general consensus was that children developed autistic symptoms due to environmental factors, and in particular, the cold and aloof parenting styles of their mothers. Betelheim (1967) was the first to coin the term "refrigerator mothers" in his book *The Empty Fortress: Infantile Autism and the Birth of the Self*. The persistence of this notion greatly exacerbated the distress in families already dealing with the difficult task of rearing these children (Wing, 1996). Currently, much of the information on the cause and incidence of AS has been inferred from a much larger body of research on autistic disorder. There is consensus in the literature, however, that AS is largely a genetic disorder in which neurological abnormalities play a significant role, as

do environmental factors—but to a smaller degree (Stoddart, 2005; Szatmari, Bartoluci, & Bremner, 2008).

Hans Asperger (1944/1991) noticed that traits of the disorder were commonly found in other family members, which led to his belief that the disorder is genetic in nature. Current literature suggests that there is a stronger genetic link in the incidence of AS than in autistic disorder. For example, a study by Ghaziuddin (2005) found that in families of children with AS there were more autistic traits as well as psychotic symptoms than in families of children with autistic disorder. In Gillberg and Cederland's (2005) study, based on a large group of 100 children diagnosed with AS, 71% showed signs of genetic causality. It remains unclear which specific genes are involved, but current theories support the view that "susceptible genes" are located on chromosomes 2, 7, and 13 (Szatmari et al., 2008). Genome scans indicate that regions on chromosome 7 are most consistently associated with autistic-spectrum disorders, in particular the RELN gene, which influences the development of neural structures in the cortical regions of the brain (Holden & Liu, 2005; Rinehart, Bradshaw, Brereton, & Tonge, 2002; Szatmari et al., 2008). The difficulty in identifying genetic loci is not surprising considering the highly variable nature of AS, so there is a trend in the research to establish subgroups within AS that are based in more homogenous phenotypes.

The influence of environmental factors on the incidence and progression of this disorder is evident in the claim that early identification and intervention often results in a significant reduction in symptoms (Holden & Liu, 2005). Some environmental factors that have been implicated include thalidomide-induced embryopathy and the effects of certain anticonvulsants ingested during pregnancy (Szatmari et al., 2008). One area of

great controversy has been the claim by many parents and researchers that the measles, mumps, and rubella (MMR) vaccine may trigger autistic-spectrum disorder (Wakefield et al., 1998). Current research appears to have strongly refuted this claim (Taylor et al., 2002; Halsey & Hyman, 2001) but some parents remain unconvinced (Fowler, 2000).

Many different medical conditions have been associated with the incidence of AS although few of these claims have been scientifically established. One suggestion is that perinatal factors may play a significant role. Gillberg and Cederland's (2005) study found that 13% of AS cases had experienced some problem during birth and that 58% had problems in the peri- and/or neonatal periods. Some of these problems are clearly associated with brain injury: fetal alcohol syndrome, diplegia (paralysis), epilepsy, and facial nerve palsy are examples. It has been suggested that birthing problems may be the result—not the cause—of AS abnormalities (Wing, 1996; also Gillberg & Cederland, 2005). There also appears to be an association between AS and disorders of the gastric intestinal system, including bowel retention, excessive fluid intake, swallowing difficulties, and limited diets (Roberts & Kagan-Kushnir, 2005). Again, cause and effect have yet to be resolved. The more recent consensus is that these problems are largely a result of the restrictive and repetitive behaviour patterns and motor coordination difficulties that are characteristic of AS (Szatmari et al., 2008). Abnormalities in serotonin and secretin levels may also be involved in malabsorption, digestive difficulties, and vitamin deficiencies, all of which may play a role in the development of this disorder (Szatmari et al., 2008; Wing, 1996). In addition, the role of genetic illnesses such as tuberose sclerosis is being investigated for a connection with AS (Roberts & Kagan-Kushnir, 2005).

Investigations into the aetiology of AS are somewhat undermined by the persisting debate about what clinically constitutes AS (Frith, 2004). An improved understanding of diagnostic criteria will contribute to the integrity of any research aimed at revealing the causal mechanisms in AS. This in turn will certainly aid in developing and improving interventions and outcomes for children with this disorder. At the same time, enough is known about this disorder to continue work on establishing effective interventions even without definitive diagnostic and aetiological findings. The following section will examine recent neurological findings associated with AS and why these are important in explaining the many traits associated with this disorder.

Asperger Syndrome and the Brain

Research over the past few decades has revealed the presence of atypical anatomy (McKelvey, Lambert, Mottron, & Shevell, 1995) and abnormal neurological function (Murphy et al., 2002) in individuals with AS. Modern technologies and improvements in neuro-imaging have expanded our understanding of brain functioning (Lusebrink, 2004), facilitating cognitive and psychological modeling of this disorder. Atypical neurological factors influence cognitive processes and also impact the behaviours and abilities of individuals with AS. Consideration of the neuropathology of AS is of paramount importance to a holistic understanding of this disorder.

Asperger Syndrome and Brain Anatomy

Although research is not as extensive for AS as for autism, researchers have found incidence of abnormal structural abnormalities in the brains of children and adults with AS. In his study of 23 individuals with AS, Gillberg (1989) found neurological

abnormalities in 61% of them. Asperger syndrome has also been associated with enlarged brain and head size (megalencephaly) (Courchesne et al., 2001; Ozonoff & Griffith, 2000). The increase in brain size appears to be at the expense of the neuronal density and hence connectivity in the brain (Gunter, Ghaziuddin, Ellis, & Hadyn, 2002). In addition, The brains of those with AS appear to have significantly less grey matter in the frontal striatal pathways and cerebellar areas (McAlonan et al., 2002). This study also found abnormalities in the density of white matter associated with AS: deficits in the left hemisphere and an excess in the basal ganglia area. Furthermore, evidence from post mortem studies of the brain reveal further structural abnormalities in the brain stem, temporal lobes, and limbic system as well as in areas of the cerebellum and the frontal lobes (McAlonan et al., 2002; Schultz et al., 2000; Wing, 2000).

The amygdala appears to play a central role in the neuropsychology of AS (Schultz et al., 2000). The amygdala is part of the limbic system and has widespread connections with other regions of the brain.[0] Abnormal packing density and reduced neuron size have been found in the amygdala (Bauman & Kemper, 1985, 1994 as cited in Schultz et al., 2000). With its numerous reciprocal connections to areas in the cortex, the amygdala appears to play an important role in emotional arousal, social emotional functions, abnormality of prosody, visual-spatial processing, and the assignment of emotional meaning to stimuli. Dysfunction in the prefrontal cortex region and the frontal lobe are also linked to social and emotional deficits that are characteristic of AS (Schultz et al., 2000; also Carr, 2008).

Neuropsychology and Asperger Syndrome

"Between behaviour and the brain there is a legitimate level of description: the mind, writes Uta Frith in her 1991 overview of autism and Asperger syndrome (p.16). The concept of the mind and its associated mental processes and mechanisms provides us with a cognitive explanation for behaviours. Neuropsychology is the branch of neurology that studies the connections between the brain and behaviour through explanatory cognitive and psychological models. The following are the main neuropsychological constructs that have been associated with AS: theory of mind, executive function deficits, weak central coherence, and right hemisphere dysfunction.

1. Theory of mind (TOM). Theory of mind appears to be the most popular cognitive model used to explain the lack of social and emotional reciprocity in autistic-spectrum disorder (Hill & Frith, 2003). The basis of this model is that individuals on the autistic spectrum have difficulty conceptualising their own mental state or the mental states of others. This is referred to in the literature as "mind blindness" (Attwood, 2006): an inability to "intuitively mentalise" about others (Ozonoff & Griffith, 2000). Intuitive mentalising appears to activate areas of the medial, prefrontal, and temporal cortex, which, as previously discussed, appear to be anatomically dysfunctional in AS (Frith, 2004).

Asperger himself (1944/1991) noted in his original account of AS that the children he observed did have an ability to take a perspective about others. However, it is often a "stripped down" (Tantam, 2000, p. 382) or naïve interpretation compared to that of a normal individual. TOM abilities, although they appear to be more intact in AS than in autistic disorder and to be mediated by cognitive and verbal abilities, remain

compromised in AS (Ozonoff & Griffith, 2000). This compromise is explained by Ozonoff and Jenson (1999) as the ability of those with AS to complete TOM tasks but an inability to apply them in real-life situations. These findings are still not scientifically established for AS, but they may help to explain the characteristic difficulties that children with this disorder have: inferring the intention of others, understanding how their behaviours affect others, and turn taking. Theory of mind is seen as the most explanatory model for the deficits in social and communication abilities in AS (Wing, 2005).

2. Executive function deficits. Children with AS have been found to have deficits in several executive functions (higher-order cognitive skills) that include set shifting, visual working memory, planning, semantics, inhibition of response, and interference control (Meyer & Minshew, 2002; Verte, Guerts, Roeyers, Oosterlaan, & Sergeant, 2006). Deficits in executive function have also been linked to compromised motor skills, which are common in AS.

Executive functions are facilitated by the processing and assimilation of information from internal and external sources. They appear to be centered in the prefrontal cortex region of the brain. The dorso-lateral prefrontal cortex has been linked to working memory and other higher-level executive functions. The orbital and medial prefrontal regions of the brain are linked to social and emotional behaviours (Sarazin et al., 1998). Researchers postulate that deficits in executive function may explain the pattern of cognitive and socialization difficulties experienced by those with AS. The executive functions commonly associated with AS are set shifting and working memory.

Set shifting, or cognitive flexibility dysfunction, has recently emerged in the research as the executive function that is most applicable in explaining AS (Frith, 2004;

Ozonoff & Miller, 1995). This dysfunction accounts for perseveration in movement and interests that are characteristic of children with AS, and in particular their inability to disengage from an activity that they enjoy or override a routine response (Frith, 2004). This dysfunction also explains the inability of those with AS to be guided by environmental or internal stimuli or rules because of their tendency toward linear thinking, which results in routine responses that are devoid of context (Burke, 2005; Frith, 2004). The lack of cognitive flexibility in AS is also explained by an inability to generate new ideas or to cope with novel situations (Rinehart et al., 2002).

Deficits in working memory are associated with characteristic cognitive impairments associated with AS. McGonigle-Chalmers, Bodner, Fox-Pitt, and Nicholson (2008) describe this as an inability to sustain effective attentional channels long enough for the information procession required for an effective response to occur. Difficulties with joint attention may play a role in some nonverbal communication difficulties seen in AS, such as the characteristic abnormal eye gaze, inappropriate use of gestures, and paucity in facial expression (Meyer & Minshew, 2002).

Motor-skill deficits, which are common to AS, are often seen as the result of compromised executive functions that are responsible for the "formulation of goals and planning of actions but also the ability to initiate actions" (Smith, 2000, p. 115). The motor abilities that are commonly found to be impaired in AS include gait (locomotion), ball-catching abilities, balance, manual dexterity, graphomotor skills, rapid movements, rhythm, and the ability to imitate and initiate movement (dyspraxia). The literature on AS suggests that motor and motor perceptual difficulties are common to 50–90 % of individuals with AS (Ehlers & Gilberg, 1993; Ghaziuddin, Butler, Tsai, & Ghaziuddin,

1994.). In AS the ability to integrate visual and kinetic information appears to be impaired due to poor information processing skills, sensory integration issues, and visual perception difficulties (Smith, 2000). Neurological studies suggest that the cerebellum is the area of the brain most likely to be associated with regulating movement (timing, posture, and balance), muscle tone, and sensory integration (Courchesne, Townsend, & Saito, 1994; McKelvey et al., 1995).

3. Weak central coherence. Theory of mind may provide an explanation for three behaviours characteristic of autistic-spectrum disorders (i.e., imagination, communication, and socialization) but not for others. Behaviours not explained include restricted and repetitive interests and patterns of behaviour, an obsessive desire for sameness, special abilities, preoccupation with parts of a whole, and significant rote memory abilities (Asperger, 1944/1991; Kanner, 1943; Rinehart et al., 2002). Frith (1989) and Happé (1994) explained some of the further deficits in autistic disorder with a cognitive model called the "weak central coherence" model, which may explain the same traits in AS. Frith (1989) described central coherence as a cognitive function that normally enables the integration of incoming information to achieve higher-order meaning (gist) or form (gestalt) at the expense of memory for detail.

There have been a number of studies conducted based on this processing model with regards to the way children with autistic-spectrum disorder process their perception of faces with a detail bias and how this may influence face recognition (Deruelle, Rondan, Gepner, & Tardif, 2004; Jolliffe & Baron-Cohen, 1999; Tanaka & Farah, 1993). According to Frith and Snowling (1983) and Lopez & Leekham, (2003), weak central coherence may also explain the difficulties children with autistic-spectrum disorders have

with linking words into a contextual whole, even though they are often very skilled at spelling and single-word definitions. This impairment appears to be more severe in those with autistic disorder (Rinehart et al., 2002).

Weak central coherence is postulated to interfere with social cognition and communication by interfering with an individual's ability to arrive at context-driven responses (e.g., the processing of facial features). It is considered one of several neuropsychological constructs that may explain the deficits associated with autistic-spectrum disorder, including Theory of Mind and executive function deficits.

4. Right-hemisphere dysfunction. Right-hemisphere dysfunction is a cognitive model proposed by Rourke (1989) and Klin, Sparrow, Volkmar, Cichetti, and Rourke (1995) to explain nonverbal learning disorder. Children with nonverbal learning disorder and AS share many cognitive and behavioural characteristics, including difficulties in social interaction, impaired spatial and abstract reasoning, and motor-skills deficits (Denkla, 1986; Rourke & Tsatsanis, 2000). In both AS and nonverbal learning disorder, the degree of compromise to neuronal integrity is associated with the severity of symptoms present (Ellis & Gunter, 1999; Murphy et al., 2002).

Research has established that the right hemisphere plays an important role in visual-spatial processing, including object recognition and mental rotation, the recognition and processing of emotions (Ellis & Leafhead, 1996), and the pragmatics and prosody of language (Happé, 1994; Van Lancker & Pachana, 1998). Of particular relevance to AS are the visual-spatial abilities involved in face recognition (Ellis, Ellis, Fraser, & Debs, 1994). In the right-hemisphere dysfunction model, face recognition is associated with the inferior temporal regions of the right hemisphere. Schultz et al.

(2000) reviewed research that has linked the visual processing of faces in autistic-spectrum disorders with an area of the brain that is normally associated with object identification (inferior temporal gyrus). From a developmental perspective, they suggest that there may have been a lack of interest in faces initially, which over time inhibited the development of areas of the brain normally linked to this function (fusifrom gyrus).

Intelligence testing has been found to consistently reveal that individuals with nonverbal learning disorder have a significantly higher verbal intelligence quotient (VIQ) to performance IQ (PIQ) (Gunter et al., 2002; Klin et al., 1995). Although there have been many similar findings with AS, the literature on this topic is not consistent, with some researchers finding no significant discrepancy between VIQ and PIQ in AS (Szatmari, Bartolucci, Finlayson, & Tuff, 1990). In spite of inconsistencies in the research, the right-hemisphere dysfunction model presents some credible explanations for aspects of this complex disorder.

Overall, understanding neurological processes provides useful frameworks to further our understanding of the unique way that children with AS interact with the world. The evidence to date suggests that impaired neurological processes (neuronal connectivity in particular) play a significant role in the expression of this syndrome. In addition, brain anatomy and dysfunction in both the left and in particular the right hemisphere, appear to be implicated in AS (McKelvey et al., 1995).

Diagnosis and Diagnostic Issues Associated with AS

Following is an overview of diagnostic issues and associated psychiatric disorders as they relate to AS. This information is included because effective assessment and

diagnosis provide an important framework for intervention. In AS the number and heterogeneity of symptoms continue to make diagnosis challenging (Ellis & Gunter, 1999). The symptoms of AS also bear similarities to many related disorders. Furthermore, the inconsistent use of diagnostic criteria threatens the integrity of research findings (Kopra, von Wendt, Neiminen-von Wendt, & Paavonen, 2008; Klin, 1994). These issues have threatened the value of AS as a diagnostic entity.

Establishing Diagnostic Criteria

Several different diagnostic algorithms AS have been established for AS since it was described by Wing (1981). For the purpose of this project the author has chosen to refer to diagnostic criteria outlined in the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders.* According to the DSM- IV (1994) and its current text revision, the DSM-V-TR (2000), there are three core features associated with AS. The first is a severe qualitative impairment in reciprocal social interaction, especially nonverbal behaviours such as paucity of eye gaze, poor body posture, and awkward gestures. The second feature is idiosyncratic, restricted, and repetitive patterns of behaviour, interests, and routines, which includes a preoccupation with parts of objects. The third feature is that impairments in social and occupational functioning are clinically significant.

The DSM-V-TR notes the wide range of cognitive abilities possible with AS. It also notes a characteristic disparity in communication abilities: children with AS characteristically display strength in verbal skills and rote auditory memory while showing weakness in nonverbal areas involving visual-spatial and visual-motor skills (Ozonoff & Griffith, 2000). Other associated features of AS mentioned in the DSM-V-R

are attention-deficit behaviours, poor motor skills, and a high incidence of mood disorders.

Clinical Presentation of AS

In practice many clinicians prefer to look at the individual needs and presentation of each child rather than following diagnostic criteria too strictly, to avoid excluding individuals who require support (Leekam, Libby, Wing, Gould, & Gillberg, 2000; Stoddart, 2005). The most common approach to clinical diagnosis involves extensive interviews with the child and parents, and observations of the child in different settings. The individual's developmental history, along with social, communicative, academic, and adaptive functions, is examined using various clinically established instruments to measure different traits (Elder, Caterino, Chao, Shacknai, & De Simone, 2006).

Early developmental history—including a child's responsiveness to his environment and caregivers, his ability to cope with change, and early signs of symptoms—offers clues for diagnosis. Achievement of common developmental milestones is also important, in particular the acquisition of language and motor skills. A common diagnostic mantra used by clinicians is "early talking, late walking" In AS, however, rapid speech acquisition is usually combined with a noticeable lag in language pragmatics (Lindblad, 2005).

The socialization difficulties associated with AS children often become apparent in the early school years. Conversation style is lengthy, one-sided, and inappropriately centered on an intense interest. The use of pedantic language gives the false impression of advanced language skills but in fact usually masks a delay in receptive language abilities (Lindblad, 2005; Saalasti et al., 2008). Other communication abnormalities

include lack of eye contact, lack of expression, irregular speech pragmatics, and irregular prosody (Eisenmajer et al., 1996; Mayes et al., 2001; Woodbury-Smith & Volkmar, 2009). Children with AS are often marginalised by peers because they have a poor understanding of social cues, boundaries, and manners; an inability to respond to nonverbal cues from others (Stoddart, 2005; also Frith, 2004); a lack of empathy; inflexible and linear thought leading to an exaggerated sense of fairness (Attwood, 2006); motor-skills deficits that impact their ability to participate in team sports (Attwood, 2006; Smith Myles, Tapscott-Cook, Miller, Rinner, & Robbins, 2000); inability to adjust class expectations and schedules (Rayner, 2005); attention and sensory issues; and deficient coping abilities, especially during adolescence (Stoddart, 2005).

Associated Psychiatric Disorders

Many AS symptoms are shared by several other psychiatric disorders. Symptoms can also stem from comorbidity with another disorder. This can lead to misdiagnosis, incomplete treatment (Freeman, Cronin, & Candela, 2002; Gibbons & Goins, 2008), and misconceptions about the severity of AS deficits (Frith, 2004; Gillberg & Cedarlund, 2005).

1. AS and high-functioning autism. Researchers continue to debate as to whether AS is a distinct disorder from high-functioning autism (Gillberg, 2002; Szatmari et al., 2000; Wing, 2000). Some question whether it even belongs on the "high" end of the autistic spectrum (Macintosh & Dissanayake, 2007; Miller & Ozonoff, 2000). The balance of opinion appears to be in favor of distinguishing the two on the basis of symptom severity, cognitive ability, and adaptability (Fein et al., 1999; Prior et al., 1998; Volkmar, Klin, & Cohen, 1997). On reviewing the research, Macintosh and Dissanayake

(2007) found these conclusive differences: the AS group displayed greater verbal ability while the high-functioning autistic group displayed relative strength in visual-spatial function. The shared deficits are numerous and include imagination, ability to imitate others (dyspraxia), non verbal communication, social propriety and awareness, adaptability, repetitive behaviours, and a figurative understanding of language.

Despite these issues, and despite the undermining of research by inconsistent diagnostic criteria and poor research design (Ghaziuddin, Tsai, & Ghaziuddin, 1992; Klin, Pauls, Schultz, & Bolkman, 2005), clinicians appear to be in favour of defining subgroups on the autism spectrum—to ensure that children receive the greatest possible understanding and support (Wing, 2005).

2. AS and schizoid personality disorder. According to the DSM-IV-TR (2000), schizoid personality disorder shares many diagnostic features with AS: tendencies toward social isolation, lack of empathy, inflexible thought patterns, and unusual communication styles. Core features unique to individuals with schizoid personality disorder include: normal to high IQ; areas of special interest more sophisticated than those described for AS; dismissive, avoidant styles of relating to others with or without communication difficulties (Tantam, 2000); unusual fantasy lives that commonly involve "pathological lying and the adoption of aliases" (Wolff, 2000, p. 288); extreme sensitivity to criticism; suspiciousness; and psychotic thinking (Tantam, 2000).

3. AS and obsessive-compulsive disorder. Obsessive-compulsive disorder is the second most common disorder associated with AS (Leyfer et al., 2006). Intense focus in AS on special interests sometimes leads to the diagnosis of obsessive-compulsive disorder. The distinguishing factor is how the child relates to the source of the obsession.

In AS, intense preoccupation is simply described as obsessive, while in obsessive-compulsive disorder, obsession is commonly associated with ritualistic-attempts to avoid a fear of some sort (Schnurr, 2005). Furthermore, although individuals with obsessive-compulsive disorder usually have effective socialization skills (Ghaziuddin, 2002), their compulsive behaviours are often obstructive to interpersonal relations.

4. AS and attention-deficit hyperactivity disorder (ADHD). Children with AS are commonly diagnosed as having ADHD prior to being diagnosed with AS. Comorbidity is common. ADHD is associated with symptoms of hyperactivity and impulsive behaviours. Misdiagnosis often occurs due to the inattention of children with AS, but it may be differentiated. ADHD is distinguished if inattention arises due to an inability to focus generally or a lack of interest in anything other than areas of special interest (Ghaziuddin, 2002; Schnurr, 2005). Medication has been found to be largely ineffective when applied in the AS population, and has even shown undesirable side effects (Tsai, 2007). But when the condition is severe enough, a diagnosis of ADHD becomes the primary focus of treatment.

5. AS and Tourette syndrome. There is a close relationship between the tic disorders of AS and Tourette syndrome (Kadesjo & Gillberg, 2000; also Canitano & Vivanti, 2007). The occurrence of tics including facial grimacing is particularly common in children with AS. Researchers have found that AS, autistic disorder, and Tourette syndrome may share common sub-cortical brain abnormalities.

6. AS and mood disorders. It is well established that mood disorders (in particular major depression, dysthymia, and bipolar disorder) are comorbid with AS (Elder et al., 2006; Ghaziuddin, 2002; Kim, Szatmari, Bryson, Streiner, & Wilson, 2000). These

disorders are commonly diagnosed and treated separately from AS, depending on the severity of symptoms (Ghaziuddin, 2002; Schnurr, 2005). They strongly correlate with the behavioural problems of this group (Konstantareas, 2005).

Depression often emerges in adolescent-aged individuals with AS. It is often expressed in withdrawn behaviours or outbursts of anger, which are commonly misinterpreted as oppositional and defiant (Schnurr, 2005; Green, Gilchrist, Burton, & Cox, 2000). Depression in AS is strongly correlated with social failure (Barnhill, 2001) and communication difficulties (Klin et al., 2000). Victimization by peers has emerged in the literature as a significant issue for children and adolescents with AS. Shtayermman (2007) found a significant correlation with depression and suicidal ideation in a sample of young adolescents with AS. This suggests that bullying is a significant risk factor for both depression and anxiety. Suicidal thoughts and suicide itself are more common in AS than is generally recognised. Both are generally associated with a history of chronic depression (Ghaziuddin, 2005; Gillberg, 2002). There is a strong preoccupation with death and morbid themes in adolescents with this disorder, which is evident in self-harming behaviours (Gillberg, 2002).

7. AS, anxiety, and phobias. Children with AS exhibit significantly higher levels of generalised anxiety disorder than normal children (Attwood, 2006; Kim et al., 2000). Generalised anxiety often arises when inflexible thinking patterns confront changes in routine and structure in the child's immediate environment (Lefeyer et al., 2006). In the face of anxiety, individuals with AS often retreat into their special interests areas or restricted and repetitive routines (Klin et al., 2000). Severe and prolonged anxiety can lead to the development of obsessive-compulsive-type behaviours as a coping

mechanism. Sensory issues (to noise, touch, and taste) are significant sources of anxiety for those with AS (Dunn, Saiter, & Rinner, 2002). So are environmental issues like high levels of family stress or mismanagement of these children in schools (Konstantareus, 2005). Attwood (2006) and Green et al. (2000) state that the most stressful activity for a child with AS is engaging with others socially, especially in adolescence. Anxiety is often hard to measure in AS due to the limited communication abilities that accompany the disorder (Ghaziuddin, 2002).

8. AS and psychosis. Certain symptoms of AS may well lead clinicians to a misdiagnosis of psychotic or delusional behaviour if viewed without knowledge of the individual's developmental history. Individuals with AS display social withdrawal, obsession with private fantasy worlds, oversensitivity to criticism, one-sided communication, and perceptual distortions (Landa, 2000, p. 125). In practice, psychotic disorders are rare in AS (Stoddart, 2005).

9. AS and learning disorders. Children with AS are often believed to have learning disorders due to their difficulties with social cognition. The two most common learning disabilities that are confused with AS are nonverbal learning disorder and semantic- pragmatic disorder (Schnurr, 2005).

Nonverbal learning disorder has been discussed in greater detail in the previous section, "AS and the Brain." This disorder shares with AS a similar right-hemisphere dysfunction affecting problem-solving abilities and communication skills (verbal and nonverbal) (Barnhill, Hagiwara, Smith Myles, & Simpson, 2000; David, David, & Riley, 2003). Isolated nonverbal learning disorder does not exhibit restricted and repetitive patterns of interest and behaviours (Little, 2002).

In both semantic-pragmatic disorder and AS the communication value of speech (semantics and pragmatics) is lacking, in spite of adequate language acquisition (syntax and phonology) (Volkmar & Klin, 2000). Semantic-pragmatic disorder can present in isolation.

Diagnostic Issues in AS and Adolescence

Adolescence is an important time diagnostically for individuals with AS. This is often the age when, after being labeled with many other disorders, individuals with AS are finally diagnosed (Stoddart, 2005; Shtayermman, 2007). Asperger traits may become pronounced under increased stressors like hormonal changes, increased academic demands, and the need for greater organizational skills (Ozonoff, Pennington, & Rogers, 1991*)*. In addition, the social disabilities of adolescents with AS become more obvious as they try to meet more complex social demands (Tantam, 2000). Increased stress and a growing awareness of their differences make them particularly vulnerable to comorbid mood and anxiety disorders (Stoddart, 2005). Knowledge of the adolescent's developmental history, their habits of relating to peers, and the influence of comorbid disorders is especially important for clinicians working with an adolescent with AS.

Therapeutic Domains and Interventions in AS

This section discusses a series of AS deficits and the various therapeutic modalities used to combat them. Employment of an effective combination of therapies during intervention requires consideration for the individual strengths and weaknesses of the client (Attwood, 2003; Klin & Volkmar, 2000; Solomon, Goodlin-Jones, & Anders,

2004). Interventions must be "thoughtful, consistent (across settings, staff members and situations) and individualized in manner" (Klin & Volkmar, 2000, p. 347).

Social Skills and Communication

Intervention strategies generally focus on the most significant deficits associated with AS: deficits in social skills and communication (Bock, 2007; Klin & Volkmar, 2000; Mesibov, 1984, 1986). These skills become increasingly important during adolescence when there is an increased interest in peer interaction. Relationships at this stage are normally based on areas of common interest, emotional awareness, and increasing self awareness (Attwood, 2006). Limited social skills in AS and an inability to recognise age-appropriate social customs interfere with attempts to build relationships (Bock, 2007; Stoddart, 2005; Tse, Strulovitch, Tagalakis, Meng, & Fombonne, 2007).

There has been some success reported with the approach of rote learning of social skills. This involves role playing, self-monitoring skills (e.g., learning about personal boundaries), and work with language pragmatics and prosody (Grossman, Klin, Carter, & Volkmar, 2000; Klin & Volkmar, 2000). In a small study involving four adolescents with AS, Bock (2007) taught participants a new way of thinking that improved social effectiveness for a sustained period of time.

Learning about social skills requires intervention in three areas: (1) the acquisition of social skills, (2) the performance of social skills, and (3) fluency in the use of social skills (Klin & Volkmar, 2000). To acquire new social skills, one must attend to social cues, understand these cues, and then select specific behaviours appropriate to a given situation. One strategy for teaching these steps is called SODA (Bock, 2007), an acronym for stop (S), observe (O), deliberate (D), and then act (A). Self-questioning and self-talk

is encouraged to guide the learner through the initial phases. A self-generated list of possible actions suggests possible responses. Social stories (Gray, 1994) incorporate narrative into learning social cues; with this approach the child's direct experience is used and analyzed, and corrective measures are suggested in story form by the child himself. These strategies accommodate the linear thinking style and lack of intuition common in this disorder and allow for repetitive practice of new social skills.

In adolescence, the development of perspective (theory of mind) on how others think and feel grows in importance as peer interactions become more sophisticated (Ozonoff & Miller, 1995). Comic-strip conversations have been used by some researchers (Gray, 2000; 1994) to help develop perspective and emotional awareness in individuals with AS. Conducting "social autopsies" of events or experiences is also used to address inappropriate social behaviours (Bieber, 1994).

One approach to enhancing fluency in social situations is the use of social scripts (Barnhill, 2002): social scripts constructed for specific situations are memorised (e.g., how to start a conversation with a classmate) or taught directly by a mentor (Attwood, 2006). Improved social fluency may also result when the child with AS is able to expand their conversational repertoire. The use of a "topic box" encourages discussion about randomly chosen subjects that are outside of the individual's special interest (Bieber, 1994).

The ability of adolescents with AS to effectively explore their emerging sexuality is positively correlated with their social aptitude. There are many reported incidents of the inability of those with AS to cope in this area. This can result in inappropriate and aggressive behaviours (Henault, 2005; Tantam, 2000). For example, masturbation in

public may occur when there is a lack of awareness about social conventions guiding this behaviour. Adolescents with AS may also become fixated and aggressive about establishing a sexual relationship with someone who is unwilling (Murrie, Warren, Kristiansson, & Dietz, 2002). Psycho-educational programs are advocated to address a lack of sexual knowledge and build appropriate social skills. In addition, joining self-help groups focused on social and communication skills can allow the individual with AS to develop relationships within a supportive and safe setting (Henault, 2005).

The format for social-skills training needs to be designed around individual profiles and needs. Individual therapy allows the therapist to focus on the individual's strengths and deficits. Individual therapy is often recommended (Attwood, 2006) because those with AS are not seen as natural team members. One-on-one situations allow for a thorough assessment of abilities and facilitate use of themes related to special interest areas (Stoddart, Muskat, & Mishna, 2005). Many adolescents with AS find group work very stressful and are easily overstimulated in group situations. This can result in disruptive behaviours (Stoddart et al., 2005; Solomon et al., 2004). On the other hand, engagement in group work allows for socialization opportunities and provides a forum for practicing newly acquired social skills. Group therapy can also be helpful for adolescents with AS. Family therapy may be required if the primary problem lies with family relationships and organizational structures.

The literature indicates that social and communication deficits are the most resistant to intervention in AS (Howlin, 2003). However, creative approaches are being applied in this domain. One example is the recent use of computers games to teach emotional intelligence. This medium is naturally appealing to those with AS (Silver &

Oaks, 2001). Drama, puppetry, music, and dance are other areas being explored with this population to teach social and communication skills (Tubbs, 2008).

Mood and Affect Disorders

The presence of anxiety and mood disorders in AS is often masked by frustration and aggression. The literature recommends a systematic investigation into possible sources of anxiety and stressors when planning intervention with AS. Insight into thoughts and feelings is an important element of intervention strategies. It can be encouraged by visual representations of anxiety and mood levels (scales, thermometers, comic strips) (Stoddart et al., 2005). Improvements in social and communication skills can alleviate mood disorders (Konstantareas, 2005). Visual material (maps, schedules) and stronger communication between home and school are advocated to manage transitions and reduce anxiety. Educating teachers and support staff about the traits of AS encourages more effective management in school. One method that has met with success is providing "islands of solitude" during school time to prevent sensory overload (Attwood, 2006, p 154). Physical activity is also recommended to burn up nervous energy and elevate mood.

Interventions that improve problem solving help to reduce anxiety and depression in AS (Klin & Volkmar, 2000; Solomon et al., 2004). The Social Adjustment Enhancement Group, recommended for clients with AS, is a multimodal form of group therapy that uses drama, games, and visual templates to teach problem identification and resolution techniques (Solomon et al., 2004).

Medication is commonly prescribed for debilitating anxiety and mood disorders that coexist with AS. However, Kim et al. (2000) state that there is an excessive use of

medication in AS cases. Cognitive and behavioural approaches that address the cause of mood disorders are preferred to medications that merely palliate the symptoms.

Executive Function

Many behavioural problems that accompany AS are attributed to deficits in executive function. These result in compromised self regulation, inflexible thinking patterns, and behavioural management. Lack of executive function also contributes to poor organizational and self-management skills in this population.

1. Anger management issues. Frustration, loneliness, and difficulty with impulse control often lead to self-regulation difficulties in AS, especially anger management issues (Konstantareas, 2005). The dynamic is exacerbated by the widespread bullying of adolescents with AS. They tend to react to this treatment in excessive and blatant ways that in turn attract negative attention from teachers, parents, and supervisors (Attwood, 2006; Konstantereas, 2005). Intervention techniques for anger management focus on emotional understanding and control. Understanding emotions can be addressed by teaching the individual how to recognise and articulate signs that they are getting angry (Attwood, 2006).

Medication is commonly used to control anger, aggression, and tantrums occurring with AS, with varying effects. Respiridone and Olanzapine are antipsychotic agents commonly used for emotional regulation. Unfortunately, there are many side effects associated with their use, the most significant of which is weight gain (Sloman, 2005). Therapeutic techniques may be effective alone or in combination with medication. Teaching the individual with AS how to identify triggers and calming activities can help (Ernsperger, 2008). Allowing time to be spent on special interest areas can help

individuals with AS to regain composure (Boyd, Conroy, Mancil, Nakao, & Alter, 2007). Relaxation techniques like deep breathing, muscle relaxation, and walking can also be helpful in establishing emotional regulation.

2. Inflexible thought and behaviour patterns. Inflexible thinking patterns and accompanying emotional and socialization difficulties are characteristic of AS (Epstein, Saltzman-Benaiah, O'Hare, Goll, & Tuck, 2005). Executive dysfunction is often deep-rooted, which makes the teaching of alternative ways of thinking difficult, as well as resistant to simple behavioural approaches (e.g., reward and punishment). Greene & Ablon (2006) has proposed the Collaborative Problem Solving approach that recommends a philosophical shift in the management of inflexible behaviours. It places the focus of intervention on the parent or teacher dealing with the behaviour. Greene and Ablon contend that inflexibility in AS is due to the deficit in emotional processing and sensory or social skills. Proponents of Collaborative Problem Solving encourage parents, teachers, and caregivers to learn the approach in order to identify troublesome deficits, target these for intervention, and use preventive measures to create a less frustrating environment for the child.

Rigid thinking patterns are reflected in two behaviours that are characteristic of AS: restricted and repetitive interests in special interest areas and dependence on routines. Both impact the social and emotional functioning of the individual with AS by restricting his engagement with other activities. The management of these behaviours is very challenging in both school and home environments (Epstein et al., 2005; Attwood, 2006). They also appear to increase in intensity over time (South, Ozonoff, & McMahon, 2005). Areas of special interest appear to change over a person's lifetime from an

obsession with specific objects in earlier years to topics of interest, such as train schedules or electronic games. These interests are usually solitary and tend to dominate the person's life.

Two intervention approaches that aim to reduce these inflexible behaviours are "controlled access" and "gradual reduction" (Attwood, 2006; Wing, 1996). Controlled access involves using a stopwatch or timer to limit time spent on special interest areas. Gradual reduction uses a similar approach but gradually reduces the time spent on the activity (Ernsperger, 2008). When a special interest area is deemed dangerous or illegal, there is a more urgent need to have it eliminated or contained.

Winter-Messiers et al. (2007) and Boyd et al. (2007) advocate a strength-based model that incorporates special interest areas into intervention. Positive enhancement of social, communication, and emotional regulation can occur through the greater attention and motivational skills applied to special interest areas. They can also be directly embedded into academic or social learning. This approach follows the philosophical trend established by Greene and Ablon (2006) that focuses on adapting the environment to accommodate the strengths and deficits of the child instead of trying only to eliminate undesired behaviours.

Routines in AS are repetitive, sequenced behavioural patterns that have a centering or calming effect (Attwood, 2006). Routines often become excessive in AS under the higher stress of middle-school and high-school years (Adreon & Stella, 2001). Joosten and Bundy (2008) advocate identification of the factors that motivate engagement with routines, such as task avoidance. Parents and educators need to insist that the routine be compromised, and alternative behaviours should be introduced.

Reducing sources of anxiety can also lead indirectly to a reduction in inflexible behaviour (Wing, 1996).

3. Lack of organizational skills. Organizational skill is defined as the ability to concentrate, plan, make decisions and sequence behaviours to achieve a goal or task. Deficit in this area grows more obvious as individuals with AS enter adolescence (Winter-Messiers et al., 2007).

Organizational abilities are influenced by the inability of children with AS to plan and sequence tasks in order to achieve a goal (Klin & Volkmar, 2000). This problem is exacerbated by their tendency to engage in counterproductive routines instead of being goal oriented and by an inability to learn from past experience. The latter problem is caused by short-term memory deficit, often compromised in AS (Winter-Messiers, 2007).

The most common approach to improving organizational skills is to identify specific problem tasks and then break these down into workable components. Presenting this strategy in the form of a visual or pictorial script or an electronic organiser can improve on-task behaviours. Video modeling is increasingly used to demonstrate sequencing and planning with this population (Nikopoulos & Keenan, 2007). Several visual tools have shown success in improving organization in AS. They also provide a common reference point and prompting tool for teachers and parents (Attwood, 2006).

4. Weak problem-solving skills. The lack of organizational skills in AS contributes to significant difficulty with problem solving. The literature suggests that problem-solving skills be taught in an explicit manner, with ongoing practice and reinforcement. Skills required for problem solving include the ability to identify and name the problem, prioritise aspects of it, and identify appropriate solutions (Solomon et al., 2004). In AS,

problem solving is compromised by an inability to break down tasks into workable components. Individuals with AS also struggle to understand ambiguity, cause and effect, reciprocity, and feedback from social engagement (Lindblad, 2005; Muskat, 2005). Common strategies for dealing with these deficits in AS include the use of visual tools, games, and role-playing activities to highlight these concepts and break down a problem into workable tasks (Solomon et al., 2004).

5. Sensory sensitivity. Baranek (2002) conducted a literature review on abnormal sensory sensitivity in autistic-spectrum disorders and found an incidence rate of up to 88%. Sensory issues in AS are characterised by hypo- or hyper-sensitivity, preoccupation with sensory components of an object, and distorted perception. The most commonly impaired senses in autistic-spectrum disorders are the auditory and tactile senses; less frequently affected are visual and olfactory senses (Greenspan & Weider, 1998). It is also common in AS to experience a high tolerance to pain and temperature (Aquilla, Yak, & Sutton, 2005; Attwood, 2006). Sensory issues can contribute to many of the characteristic behavioural problems associated with AS (Gillberg & Coleman, 1992; Smith, 2000; Smith Myles et al., 2000) and may necessitate the involvement of occupational therapists (Aquilla et al., 2005).

6. Motor-skills deficits. Motor-skill impairments are common in AS and high-functioning autism (Manjivona & Prior, 1995; Smith, 2000). Some explanation for motor disturbances in AS is accounted for by *praxis*. Praxis is the ability to conceptualise and execute a planned action (Bundy, 2002). It is compromised in AS due to difficulties with imitation skills and sensory-integration issues (Aquilla et al., 2005; Attwood, 2006; Smith, 2000). Commonly affected motor-skills abilities are upper- and lower-limb

coordination (locomotion), ball skills, balance, and manual dexterity. In addition, graphomotor skills (handwriting), muscle tone, and rhythm are often compromised in this population. In the school setting, adjusting the physical education curriculum may be helpful. Ball skills and team sports are particularly challenging for those with AS, and their awkwardness when involved with these activities may set them up for ridicule. Individual sports (swimming, for example) are recommended that support the health and recreational needs of these individuals without compromising their self esteem (Tantam, 1991; Wing, 1996).

An understanding of the sensory, motor, and behavioural profile of the adolescent with AS will allow the clinician to develop specific strategies for addressing fine and gross motor skills (Dunn et al., 2002). An individual's environment can be altered to accommodate motor skills deficits. On a practical level, those with AS may need a task to be broken down into sequential components or allowed extra time to complete school work or chores (Smith, 2000).

Repetition and corrective feedback are recommended when teaching motor skills (e.g., posture) to those with AS. Skills can be demonstrated while seated side by side with a therapist, or in a mirror, to avoid the potential problems with face-to-face interaction (Smith, 2000). Computer technologies can mitigate difficulties with handwriting and attention skills (Silver & Oaks, 2001; Smith 2000). Video recording and feedback have been used successfully to teach social skills to adolescents with AS and may also be an effective method of teaching motor skills (Nikopoulos & Keenan, 2007). Overall, a thorough assessment of an individual's motor-skills history, including development milestones, is essential to the intervention process.

Social-skills deficits, communication deficits, mood disorders, and executive-function deficits are all major targets of AS intervention. A broad gamut of therapeutic techniques show promise in each area. Often, improvement of one deficit will have a positive effect on other areas of deficits. However, most of the interventions currently employed with the AS population involve repetitive rote learning, which is not generalised across situations of settings. Addressing developmental delays and nurturing some level of insight and intuition has the potential for more effective and meaningful intervention techniques. It should also be emphasised that the effectiveness and compatibility of various therapeutic modalities will depend on a particular client's idiosyncrasies.

CHAPTER 3

WHAT IS ART THERAPY?

Definition and Historical Background

Definition of Art Therapy

The American Art Therapy Association defines art therapy as: "a mental health profession that uses the creative process of art making to improve and enhance the physical, mental and emotional well-being of individuals of all ages. It is based on the belief that the creative process involved in artistic self expression helps people to resolve conflicts and problems, develop interpersonal skills, manage behaviours, reduce stress, increase self esteem and self-awareness, and achieve insight" (AATA, 2009).

Art therapy has emerged over the last 50 years as a therapeutic modality influenced by the disciplines of art, psychiatry, psychology, and neuroscience (Malchiodi, Kim, & Choy, 2003). In North America art therapy has traditionally been confined to work with visual art forms. This project considers the broader European definition that includes any form of creative expression used in a therapeutic way as art therapy.

Rhyne (1984) believed that the playful engagement with fantasy can sharpen visual perception and catalyze change in awareness. A therapeutic approach based in creative activities allows for "a new experience in communication" (Landgarten, 1981, p. 4). The symbolic expression of feeling and human experience in art therapy provides a unique opportunity for the client to gain insight and for the therapist to enter the client's world (Case & Dalley, 2006; Rhyne, 1984). There are two basic premises in art therapy:

1. All individuals have the capacity to be creative.

2. The creative process can allow individuals to find new meaning, to achieve resolution to problems, and to promote healthier functioning.

Art therapy maintains a focus on relationship and awareness building central to common forms of therapy, but it is unique in its consideration of art making and creative expression as central to the therapeutic process. Art making itself is seen as beneficial to therapy because it is non-threatening, instinctive, and spontaneous—particularly in children (Malchiodi, 2003). These qualities are beneficial in therapy in that they facilitate disclosure by helping to build a relationship with the therapist and reducing defenses. The art products themselves become tangible points of reference over the course of intervention, because they are symbolic representations of the client's mental state and sense of being. Through nonverbal and symbolic communication, art therapy also allows an externalised expression of memories and feelings that may be limited or impossible through verbal articulation (Kozlowska & Hanney, 2001). The modern view is that art therapy is a mind-body intervention "designed to facilitate the mind's capacity to influence body function and symptoms" (Malchiodi, 2003, p.17).

The emergence of art therapy as a profession has been influenced by society's attitude towards mental illness (the psychiatric movement) and the different art movements in the 20th century (Edwards, 2004). It has benefited from the profession's establishment of theoretical foundations and effective practice guidelines. Art therapy is now used in the treatment of posttraumatic stress disorder, mood disorders, sexual abuse, and addiction. It also finds application in treating the psychological effects of physical

illness, developmental delays, communication and social impairment, and cognitive delays.

A History of Therapeutic Art-making and the Evolution of Art Therapy

The therapeutic benefits of art making are evidenced since prehistoric times. Our ancestors represented their reality, dreams, and fears in symbolic ways. Over the centuries, imagery has continued to carry great meaning and significance in healing rituals and religious ceremonies (McNiff, 1998). Ellenberger (1994) identified the initial incorporation of art into psychotherapeutic techniques in 1803 by the German psychiatrist Johann Reil. Recent changes in attitude towards art, psychiatry, and the mentally ill continue to spur the evolution of art therapy as a theory and a profession (Edwards, 2004; Wadeson, 1980).

The early-twentieth-century emergence of psychoanalytic theory underscores the therapeutic value of art. Freud and Jung both emphasised the importance of the creative process as a mechanism for change. Freud, who developed the concepts of the unconscious and free association, saw in his patients' symbolic expressions a reflection of their conflicted inner worlds (Edwards, 2004). Jung, considered the father of art therapy, developed a theory about the role of symbolic expression in his version of psychoanalysis called analytical psychology. Jung proposed the concept of the *active imagination,* which involves the client's engagement with their imagination through spontaneous art making that enhances his relationship with the therapist. Jung claimed that "often the hands know how to solve a riddle that the intellect has struggled with in vain" (Jung, 1997, p. 57).

Trends in art have influenced the evolution of art therapy. At the beginning of the 20th century there was a movement away from realism towards new schools of thought such as romanticism and expressionism. These movements valued a closer relationship with nature, emphasised emotion over reason, and stressed the importance of self expression. This was particularly evident in the works of the expressionists (e.g., Van Gogh) and surrealists (e.g., Andre Breton) who valued the expression of extreme emotional states and the cultivation of imagination. A further influence on art therapy was growing consideration for the artistic expression of the mentally ill. Psychiatrist and art historian Hans Prinzhorn focused attention on art created in mental asylums through his 1922 Heidelberg Collection (Edwards, 2004). He was particularly interested in the process and origins of creative impulses in the mentally ill. The artist Jean Dubuffet also generated significant interest in the expressive and therapeutic potential of art in his collections of "Art Brut" (the art of the insane), yet another attempt to understand mental illness through imagery (Edwards, 2004).

Attitudes toward mental illness exerted great influence on the evolution of the art therapy profession. In the 19th century, Western society moved away from the idea of demonic possession in madness and began to consider mental dysfunction as an illness. Mental asylums began to proliferate and provide a forum where the first art therapists did their work. In the 1960s and 1970s, the therapeutic benefits of art were devalued when mental illness was increasingly seen as a result of brain dysfunction and biological predisposition (Edwards, 2004; Wadeson, 1980). This trend was the result of a closer alignment of psychiatry with medicine. The role of the art therapist became limited to recreational and assessment work. The art therapy movement started to align with the

Human Potential Movement, commonly referred to as "the third force in psychology." This movement was a reaction against the predominant psychoanalytical trends of behaviourism and psychoanalysis, and was rooted in existential and humanistic therapies (Edwards, 2004; Wadeson, 1980).

The Profession of Art Therapy

The term "art therapy" was first used by artist Adrian Hill in 1942 (Edwards, 2004). He claimed the creative energies of art making facilitated his personal convalescence from tuberculosis. In the 1940s, important work in the promotion of art as a therapeutic practice was undertaken by Irene and Gilbert Champernowne, who established the Withymeade Center in Devon, Britain, in 1942 (Edwards, 2004). This institution strongly promoted the inclusion of arts in psychotherapy and became a popular centre for training in art therapy. Several decades later a further influence of great significance was the work of psychoanalyst Margaret Naumberg (1950/1966). She incorporated spontaneous drawing and free association with imagery into her work. Her work was instrumental to the professional recognition of art therapy in the United States in the late 1960s with her contributions to the establishment of the *American Journal of Art Therapy* and the *American Art Therapy Association.*

Naumberg and Hill represent two philosophical polarities in art therapy. Hill, and later Kramer (1979), emphasised the healing properties of the creative process itself (art in therapy), while Naumberg saw art as the "basis of insight" within the framework of verbal psychotherapy (art in therapy) (Wadeson, 1980, p. 17). The contemporary view is an acknowledgement that the healing dynamic in art therapy lies in both the product and

process of art making as well as in the relationship that emerges between the therapist, the client, and the products of therapy (Edwards, 2004).

Integral to the practice of art therapy is the presence of the art therapist. The training and experience of the art therapist facilitates understanding of the client's symbolic expression and creative experiences in a therapeutic way (Malchiodi, 2003). Currently art therapists can be found working in a variety of settings, including crisis-intervention clinics, hospitals, elder-care homes, addictions centers, private clinics, and, more recently, educational settings (Malchiodi, 2003; Wadeson, 1980).

Theoretical Concepts and Frameworks of Art Therapy

Traditionally rooted in psychoanalytical theory, art therapy was later influenced by early-twentieth-century developments in psychotherapy (Kahn, 1999; Malchiodi et al., 2003). Therapeutic art therapy has been integrated into several theoretical frameworks within the context of traditional psychotherapy. These include client-centered, cognitive-behavioural, and solution-focused approaches (Guttman & Regev, 2004). Clinically, most art therapists approach their work from an eclective perspective in order to meet the complex needs of their clients (Vick, 2003). Art therapy places high value on the use of imagery and creative activity in the therapeutic process. This has earned it a unique position in the field of psychotherapy.

What Distinguishes Art Therapy from Traditional Therapies

In art therapy, the process and products of art making are central to the therapeutic process. They help to form a *triangular relationship* between the client, therapist, and art (Edwards, 2004, Malchiodi, 2003). One school of thought emphasises

the relationship between the client and the art-making process. Another sees the therapeutic relationship as the primary mechanism that brings about change (Malchiodi, 2003). The contemporary view is that the healing dynamic in art therapy is created by a synthesis in the relationship between all three parts (Schaverian, 1994).

Art therapy differs from other therapeutic modalities in that tangible art products are created during therapy. The making of art can facilitate *objectification,* a process that allows for the externalization of thoughts and feelings in concrete form (Kahn, 1999; Wadeson, 1980). This can allow the client a broader and more neutral understanding of their issues and a more successful integration of emotional content associated with the issue. Art-making and its products also promote *permanence:* a concrete record of the therapeutic experience that is not manipulated over time and can be a useful marker of change (Kahn, 1999; Wadeson, 1980).

The process of engaging in creative expression involves physical and mental energies that enrich healing through mind-body connections (Malchiodi, 2003; Hass-Cohen, 2008). This energising process is said to result in emotional *catharsis* that can enhance the verbal ability of the client and promote self-awareness (Gross & Haynes, 1998; Kahn, 1999). Issue resolution can sometimes be achieved through the manipulation of the art product (Case & Dalley, 2006). At the very least, focusing on creating concrete expressions can alleviate the anxiety of therapeutic encounters by allowing individuals to avoid eye contact while discussing sensitive issues (Malchiodi, 2003).

In art therapy, the client does not have to conform to the linear logic of verbal communication (Wadeson, 1980). Visual expression occurs in a space that is traditionally referred to in art therapy as a *spatial matrix.* Visual representations in a spatial matrix

allow the client to explore different relationships simultaneously (Kahn, 1999; Wadeson, 1980).

Art therapy involves the generation of new thoughts and concepts (Malchiodi, 2003; Rogers, 2001.). Creativity is essential to the adaptive process that allows individuals to find solutions for internal tensions: to generate alternatives, to exercise flexibility among these options, and then to take a position of receptiveness to change (Rogers, 2001). Imagination is considered to be a mental tool that allows creativity; it allows visualization that can bring about awareness and change (Malchiodi, 2003; McNiff, 1998; Rogers, 2001).

Art materials themselves have certain qualities of resistance or fluidity that can be applied therapeutically (Malchiodi, 2007). The client has less control over fluid art media like watercolour paints and clay. These media can be stimulating and energy producing for some, but stress inducing for others. The more resistive media like pencil and pencil crayons may be more appropriate where impulsivity is a concern or a feeling of containment is important. Generally the client is encouraged to choose the media that they are most comfortable with. In some cases, the therapist will introduce a media in order to facilitate a therapeutic goal (Malchiodi, 2003; Wadeson, 1980). The inclusion of tangible visual expressions into therapy, the attributes of the art-making process, and the mechanism of creativity are what distinguish art therapy from other forms of psychotherapy.

The Influence of Psychoanalysis

The influence of psychoanalytical theory is evident in art therapy today in the way sessions are structured, therapeutic processes are relied upon, and products of therapy are

interpreted (Edwards, 2004). Despite criticism that some of its original constructs are outdated (id, ego, superego, complex, libido) and misogynistic (Gazzaniga, 1992; Hogan, 2001), psychoanalysis continues to inform many art therapists.

Proponents of psychoanalytical theory established the idea that boundaries and frames exist around therapy sessions and that these borders relate to both physical and metaphorical aspects of therapy. The boundaries of the image are seen as a metaphor for the borders of the imaginary world where the therapeutic process will unfold (Schaverian, 1992). Boundaries in art therapy also relate to spatial containment of where the therapy session takes place. The establishment of a physical space nurtures feelings of safety and encourages reflection (Gray, 1994; Wadeson, 1980). Overall, the concept of *containment* is invoked: the idea that the physical space, art materials, art products, and therapeutic relationship are receptacles for the products of therapy (Edwards, 2004; Wadeson, 1980).

Art therapy is closely aligned with the psychoanalytical goal of accessing the unconscious through the mechanisms of transference, countertransference, and resistance. In art therapy, the creation of imagery and symbolic expression is encouraged in order to elicit *unconscious thought* through the Freudian process of *free association* (Naumberg, 1950/1966). Naumberg (1950/1966) postulated that because symbolic expression preceded verbal communication in the evolutionary process, the former is a more authentic form of communication. In this way the expression and interpretation of unconscious material through art making is seen to develop insight and awareness (Case & Dalley, 2006; Malchiodi, 2003; Mosak, 2005).

Transference is the therapeutic process in psychoanalysis through which the therapist becomes aware of unconscious material as it emerges in session. Through the

process of transference, the client is seen to re-enact and direct onto the therapist suppressed memories of unresolved conflicts, attitudes, and emotional states that were previously directed towards other significant people in their lives (Rathe, 2008). In art therapy, this process is mediated by the imagery created by a client (Schaverian, 1992). Psychoanalysts believe that the creation of imagery accelerates the transference process. The interpretation of imagery may also allow the client to deflect the intensity of transference onto the image itself (Edwards, 2004; Naumberg, 1950/1966).

Countertransference occurs at two levels (Rathe, 2008): first is the therapist's personal reaction to the client, which is influenced by the therapist's own experiences. This reaction can be damaging to the therapeutic relationship and necessitates vigilance on the part of the therapist. Second is the therapist's reaction to transference material, including the projection of their unconscious thoughts to the artwork created by the client (Arlow, 2000).

Resistance describes the client's struggle to engage either directly or indirectly in the therapeutic process. This reaction often reflects established coping and defence mechanisms, which can then become the focus for intervention (Rathe, 2008). In art therapy, resistance may be represented by a reluctance to engage in art making or in defensive art making—both of which indicate that the client is attempting to avoid engaging in a potentially painful experience (Kramer, 1979). Defense mechanisms are considered as coping strategies for anxiety and stress, but often they are indirectly expressed (Edwards, 2004). Moschini (2005) believed that through the projection of repressed, forbidden feelings and thoughts into imagery, the client is able to achieve some insight into the intensity of their feelings. *Sublimation* is a defense mechanism that

has become increasingly important in the vocabulary of art therapists. This psychoanalytical process involves the creative transformation of socially unacceptable urges (sexual or aggressive) into something of social value like art or literary works (Klein, 1964).

The concepts of *playing* and *reality,* important to art therapy, also emerged out of psychoanalytical theory. Winnicott (1971/2005), a British child psychiatrist, promoted play as a mechanism that can result in positive growth and healing. He strongly advocated play and fantasy in his work with children to facilitate self discovery and understanding. It can also function as a relationship and communication building tool: "It is in playing and only in playing that the individual is able to be creative and to use the whole personality, and it is only in being creative that the individual discovers the self." (Winnicott, 1971/2005, p. 73).

Many art therapists today incorporate Winnicott's techniques to elicit spontaneous expression in their clients. One such technique is the "squiggle game," an interactive drawing game where the therapist draws a random line on a piece of paper and hands this to the client to complete as an image (Winnicott, 1971/2005). This technique involves the principles of free association and projection. Winnicott (1971/2005) also contributed the idea of the *transitional object:* an object that is created or given to the client that represents the interface between their fantasy world and reality. Transitional objects help clients transition from different states and developmental stages. They also serve to remind the client of their therapeutic experience beyond the session. As noted by Evans and Dubowski (2001, p. 24), "symbols have a great potential for the alleviation of

anxiety; they allow us to anchor onto something of importance even when it is physically absent."

From the psychoanalytical perspective, the process of creating art is not seen as therapy in itself but as a mechanism for activating therapeutic and psychological processes. In art therapy this approach was often referred to as "art-in-therapy" (Edwards, 2004). Even though art is seen to represent the inner world of the client, little value is given to the image itself or the process that created it. In an art-in-therapy approach, the aesthetic value, emotional power, and context in which the images were created are secondary to the role of the image as a repository for unconscious material (Edwards, 2004; Malchiodi, 2003). Interpretation of the client's imagery is largely the concern of the therapist and not the client in this approach (Edwards, 2004; Naumberg, 1950/1966).

The Influence of the Humanistic Psychotherapies on Art Therapy

The humanistic psychotherapies, which include the client-centered approach, gestalt therapy, and phenomenological therapy, made a significant contribution to the way art therapy is practiced today. The main shift in attitude was towards client-centered therapy. This change led to a different attitude towards how imagery was interpreted in art therapy and to the idea that wellness is achieved through a process of "creative exploration" (Kaplan, 2000; Malchiodi, 2003).

Carl Rogers (1951, 1969) was the leading proponent of the humanistic psychotherapies. In his client-centered therapy, *active listening* and *empathy* are the mechanisms that bring about therapeutic change. Rogers postulated that inherent in each individual was the ability to self-actualise through self expression. Art therapy lends itself well to client-centered therapy because it allows the therapist to "actively see" the client's

perspective and facilitate possibilities for change. The role of the therapist is to convey *acceptance* through "unconditional positive regard" of the client and their problems (Malchiodi, 2003, p. 62).

Gestalt therapy, which emerged from Fritz Perla's (1969) theories, also sees the client as a self-regulating organism that moves from a state of *fragmentation* to a state of *wholeness* through active engagement with the therapist. Janie Rhyne (1984) was the first to promote the Gestalt Art Therapy Experience. *Conscious awareness*, a core concept in Gestalt therapy, was described by Rhyne (1984, p.6) as emerging from "dreaming, feeling, thinking and acting, and being aware at the same time that you are the person doing this." Gestalt therapy places great importance on interpersonal and intrapersonal relationships (Yontef & Jacobs, 2005). Rhyne (1984) incorporated the full range of human expression in her work, including visuals, sounds, physical movement, and verbal communication (Malchiodi, 2003). Rhyne believed that experimentation with different expressive modalities and media would help clients tap into their unexpected expressive possibilities and subsequently expand their problem-solving strategies (Amendt-Lyon, 2001).

Therapists practicing in the humanist tradition encourage clients to fully and actively engage in creative expression to promote sensory-motor activation (Malchiodi, 2003). They also promote the idea of *holism:* the notion that clients should be regarded in the context of their environments (Yonteff & Jacobs, 2005). The humanistic approaches moved art therapy away from psychoanalytical theory by defining the therapist's role as a facilitator rather than a director of therapy (Rubin, 1987). This principle is particularly

relevant to therapy with children and adolescents because it avoids imposing adult standards on their creative expressions.

Art Therapy and Cognitive-behavioural Therapy

The therapeutic use of imagery is effectively applied in traditionally verbal and cognitive-based therapies like cognitive-behavioural (Beck, 1987) and rational-emotive therapies (Ellis, 2004). The central premise of these approaches to psychotherapy is that negative thinking patterns result in negative emotions, which subsequently cause dysfunctional behaviours. The role of the therapist in cognitive-behavioural therapy is to assist the client in identifying the rules, beliefs, and expectations *(schema*) that govern their actions. In this way, the *restructuring* or *reframing* of cognitive schema becomes the goal of therapy. The use of imagery in cognitive-behavioural therapy allows clients to expand their ability to communicate their problems and the thinking that created the problems. Imagery in art therapy involves imagining situations and encourages adaptive patterns of thinking (Rozum & Malchiodi, 2003). Imagery allows clients to explore irrational thoughts and to process their reactions to thoughts (Malchiodi, 2003; Kahn, 1999). The use of imagery in problem solving allows the client to visually depict the problems as a series of manageable components. The art-making process itself also has stress-reducing properties (Rozum & Malchiodi, 2003). Collaborative approaches using cognitive-behavioural techniques and art therapy have shown much promise.

Art Therapy and Solution-focused Therapy

Solution-focused therapy has emerged more recently with the growing pressure on psychotherapists to provide more cost-effective work (de Shazer, 1980; 1991). This collaborative approach is directed towards eliciting “solution talk” as well as revealing

the strengths of a client instead of their weaknesses (Kahn, 1999; Riley, & Malchiodi, 2003). Decreasing the client's *resistance* is one of the primary goals of solution-focused therapy. Art therapy attempts to achieve this by combining visual and verbal expression in order to formulate meaningful therapeutic goals for the client (Riley & Malchiodi, 2000).

Solution-focused therapy uses specific questioning techniques to enrich the solution-making process. Two types of question are central: the *exception finding question* and the *miracle question* (de Shazer, 1991). Exception-finding questions are aimed at revealing situations that neutralise a problem and expose possible strategies for change. This line of questioning helps the client consider how things could be different if something were to change in the structure of their problem (e.g., their perception of the problem or their behaviour). Exception-finding questions also help identify possible areas or sources of strength for the client, which can be developed in the therapeutic process (Kahn, 1999).

The miracle question is a technique that aims to promote creative problem solving by imagining how the client's life would be if the presenting issue did not exist (de Shazer, 1991). Through the creation of imagery, clients are able to creatively explore effective resolutions of the problem. Imagery provides a concrete expression of this insightful process and allows for a way of physically and mentally engaging with the solution-making process.

Art Therapy and Narrative Therapy

Narrative therapy (White & Epston, 1990) is a further reflection of the shift in psychotherapies away from the retrieval of unconscious material to the reframing of

experience through storytelling and letter writing (Fonagy & Target, 1998, as cited in Case & Dalley, 2006). Narrative therapy (White & Epston, 1990) emerged primarily as a form of family therapy but is effectively used in individual therapy for all ages. The main goal in narrative therapy is to externalise the problem so that it can be viewed more objectively. Narrative therapy lends itself well to art therapy because imagery can supplement or replace verbal or written language and therefore enhance the expressive abilities of the client. In narrative therapy the client and therapist work in a collaborative fashion using play, creativity, and a solution-focused approach to identify and solve problems. By externalizing and objectifying the problem, the client is encouraged to gain a sense of mastery over it (Riley & Malchiodi, 2000). Narrative therapy embraces the use of humour, which is very effective with children because it allows reframing of perspectives in a playful way and subsequently reduces the angst associated with internal conflict and feelings of inadequacy (Freeman, Epston, & Lobovits, 1997).

Art Therapy and Developmental Therapy

There are developmental norms associated with artistic development and the stages of cognitive development. Developmental art therapy is largely informed by Piaget's (1959) stages of cognitive development and Lowenfeld and Brittain's (1987) stages of artistic ability. Lowenfeld and Brittain (1987), Kramer (1979), and Linesch (1988) promote the power of creativity as a process that facilitates emotional well-being, growth and development. The contemporary approach to developmental art therapy incorporates norms from all developmental perspectives: psychosexual, psychosocial, motor, cognitive, and artistic (Henley, 1992). This approach has gained popularity in

work with children who suffer from developmental delays as well as emotional disabilities (Malchiodi, 1993).

Lowenfeld and Brittain's (1987) framework for artistic development isolates six stages of artistic expression (see table 1), each of which reflects a different level of motor skills, emotional content, attention, and narrative quality. They postulate that most individuals never reach the later stages of artistic development due to a lack of opportunity for art-making activities. Knowledge about the stages of normal artistic development as well as developmental norms associated with social competence, the ability to play, and motor skills has allowed for the development of assessment and intervention protocols for developmental art therapists. One assessment that is being used with increasing frequency is the Silver Drawing Test (Silver, 2002). It uses three different drawing tasks to assess different cognitive abilities within Piaget and Inhelder's (1971) developmental framework: predictive drawing, which assesses the ability to sequence; observational drawing, which assesses the ability to represent spatial relationships; and imaginative drawing, which reflects emotional content, abstract thinking, and creativity. Intervention approaches are designed to incorporate art materials, art making, and other creative activities that target the specific abilities identified as deficient in the developmental assessment (Malchiodi et al., 2003).

The therapeutic benefits of incorporating art making into developmental therapy include *skill acquisition* and *sensory stimulation*. Art-making activities facilitate skill development through the accomplishment of hands-on tasks in a sequential manner (Gabriels, 2000). The use and nature of the art materials enhances sensory stimulation, in particular tactile (e.g., the use of a sand tray, water, and clay), visual (e.g., colour and

form), and auditory (e.g., music) senses. Integral to the developmental art-therapy approach is the idea that assessment and intervention practices based on the creative abilities of the client will effectively direct the therapeutic process (Kahn, 1999; Malchiodi et al., 2003).

Art therapy is not simply the introduction of art making into a therapeutic process; it is a distinct therapeutic modality that embraces creativity and art making. Its principles can be incorporated into a variety of therapeutic approaches. With the inclusion of visual language, art therapists are able to enhance the client's ability to understand his own thoughts, feelings, and perceptions. The effectiveness of art therapy depends on the soundness and versatility of its theoretical constructs, which structure the multidirectional relationships between the client, therapist, and products of therapy.

Art Therapy and the Brain

Research to date suggests that art therapy enhances cognitive and emotional growth (Kaplan, 2000; Malchiodi, 2003); promotes physical, emotional, and mental healing (Hass-Cohen, 2008; Malchiodi, 2003); and promotes rehabilitation of some physical impairments (Councill, 2003; Kaplan, 2000). Alland (1977) argues that creativity and art making are beneficial from an evolutionary perspective: creative activities allow for exploratory behaviour and the enhancement of communication skills necessary for the cohesion of social groups. This hypothesis is now being supported by empirical evidence. With the use of new neuro-imaging techniques, art therapists are gaining insight into how the creative process is linked to neurological structures and functions (Hass-Cohen & Carr, 2008; Kaplan, 1998; Malchiodi, 2003) and how the brain

is influenced by sensory and emotional stimulation (Hass-Cohen, 2008; Lusebrink, 2004; Malchiodi, 2003).

Brain Structure and Art Therapy

The left and right hemispheres of the brain are associated with different functions. Traditionally the left hemisphere is thought to process verbal information while the right hemisphere processes visual-spatial information, visual imagery, and visual memory (Lusebrink, 2004). Normal functioning requires that both hemispheres are engaged and that they interact through the corpus callosum. Split brain studies have revealed that the left hemisphere is associated with providing details in images while the right hemisphere is involved in the perception of contours—evidence that normal functioning is dependent on inter-hemispheric processes (Gilinsky, 1984; Kimura, 1992). Malchiodi (2003) and McNamee (2004) believe art therapy facilitates the activation of sensory material and the integration of material from both sides of the brain. McNamee (2004) sees art therapy as an integrative effort to "recapture right brain truths" (p. 137). Art therapy achieves this because it allows nonverbal processes to drive verbal processes and gives the left hemisphere an interpretive function. The art-making process is also believed to engage the various brain components involved with motor, somatosensory, and information processing (Hass-Cohen, 2008).

Art Therapy and Mind-body Connectivity

Mind-body connectivity is described as the interactions between the "nervous, endocrine and immune systems that compose physiological and psychological changes" (Hass-Cohen, 2008, p. 21). Art therapy has been established as a mind-body intervention through its ability to ameliorate acute stress (Achterberg, Dossey, & Kolkmeier, 1994)

and provide other physiological benefits such as feelings of well-being (Dissanayake, 1992). This notion is substantiated by recent research that evaluates the effects of incorporating art therapy techniques into clinical interventions to bring about physiological change (Delue, 1999, as cited in Malchiodi, 2003), reduce anxiety (Curry & Kasser, 2005), and reduce chronic pain levels (Camic, 1999). Further evidence of art therapy and the mind-body connection is demonstrated by Benson (1996), who shows the positive effects of this therapeutic approach on relaxation and the immune system. Understanding the different ways in which an art product, art materials, creative expression, and the emotional content of images are translated into neurological and psychological processes has important implications for the practice of art therapy (Hass-Cohen, 2008; Malchiodi, 2003).

The CREATE Model

Hass-Cohen (2008) has collated recent findings in neuroscience to develop the CREATE framework. It consists of six "art therapy relational neuroscience principles (ATR-N)" (p. 283). CREATE is an acronym for: Creativity in action; Relational resonance; Expressive communication and emotional regulation; Adaptive responses; Transformation; and Empathy. The six ATR-Ns provide an explanatory framework that describes the potential effects of the art therapy process on mind-body systems, including the nervous, immune, endocrine, sensory, motor, and visual systems.

Creativity in action underscores the important effect that the kinaesthetic properties of art therapy have on alleviating stress. An activity-based, action-oriented approach to therapy allows the client to externalise their inner state by combining motor and perceptual skills. The premise of mind-body interactivity in art therapy is that the

physical engagement of art making restores a balance between the sympathetic and parasympathetic nervous systems and also activates the somatic nervous system. Emotions can be released in a safe, contained environment. This process can provide psychological relief for the client through feelings of mastery and control over the art-making process and the presenting problem (Hass-Cohen, 2008; Malchiodi, 2003).

Relational resonance refers to the client-therapist attachment. It is promoted through the sensory, motor, and relationship-building properties of art therapy. (Malchiodi, 2003; Riley, 1999). The use of art therapy to improve relational resonance is guided by Bowlby's (1969) attachment theory that a healthy, engaging relationship between an infant and a primary caregiver is necessary for normal brain development and the organization of neurological structures involved with emotion, memory, and motivation. Insecure attachment has an impact on synaptic development and hormonal levels (stress and growth hormones) (Weiss & Bellinger, 2006). Secure attachment promotes the development of neurological structures involved with psychological resilience (Riley, 1999; Spangler & Zimmerman, 1999). The attachment process influences development across a lifespan and provides a useful explanatory framework in psychology for dysfunctional adolescent and adult behaviours. Creative activity facilitates language acquisition and communication skills, both of which are necessary in promoting the attachment process. This is based on findings from PET scans demonstrating that language development and manual dexterity, required for art-making tasks, are stimulated by the same complex neurological pathways (Frith & Law, 1995). This technique provides evidence that the enhancement of language abilities through art

based activities promotes the ability of a client to engage interactively and therefore promotes relational resonance.

Improved *expressive communication* and *emotional regulation* can increase quality of life by facilitating self expression (Stewart, 2004). Art therapy can improve regulation of limbic system arousal by promoting connectivity with related cortical areas of the brain involved with logic and insight. Stress reactions are influenced by insight into perceptions and thoughts. Ramanchandran and Blakeslee (1998) postulated that beyond the enhanced communication earned from visual expression, the viewing of art in itself can stimulate limbic structures to produce feelings of pleasure. It has also been postulated that the development of skills and techniques through art making influences serotonin levels; serotonin is a neuro-modulator heavily involved with mood regulation (Malchiodi, 2003).

Increased connectivity between emotional arousal centers and the prefrontal cortex (communication center) means increased integration of left- and right-hemisphere functions (McNamee, 2004). In particular, stimulating left-hemisphere function through verbalisation of emotional content (i.e., labelling and talking about feelings) has been shown to enhance emotional regulation through its impact on the amygdala and indirectly on the sympathetic and parasympathetic nervous systems (Lieberman 2007). The amygdala's function is regulated by a higher limbic structure called the anterior cingulate cortex. Research has revealed that the integrative nature of art therapy enhances emotional regulation by engaging the anterior cingulate cortex and regulatory centres in the cerebral cortex (Kravits, 2008).

Adaptive responses to stress are facilitated by the client's awareness of the stress response system and how stress negatively impacts mind-body systems. Unique to art therapy is the manipulation of materials that elicits different levels of sensory stimulation. This can lead to more adaptive sensory responses. For example, with some clients the tactile nature of clay has the effect of encouraging playfulness, spontaneity, and pleasure. For others, the same medium may stimulate a stressful sensory reaction (Betensky, 1995). Verbal recognition and interpretation of sensory responses are known to activate the regions of the middle prefrontal cortex. This provides regulatory feedback that ameliorates anxiety and fear responses (King-West & Hass-Cohen, 2008; Rothchild, 2000).

Transformation and empathy refer to the neurobiological organization (see "Art Therapy, Brain Plasticity, and Neurogenesis" section, below) necessary for normal interpersonal functioning (Hass-Cohen, 2008). Hass-Cohen (2008) suggests that transformation in art therapy occurs through the stimulation of neurological processes and circuitry. This elicits more adaptable and flexible responses during relationship building. Art making allows both the therapist and the client to gain insight into the client's perspective. This insight then permits the reframing of experiences and thoughts that allows for enhanced behavioural and emotional regulation (Case & Dalley, 2006).

Empathetic responses are learned through the stimulation of mirror neurons during activities that involve a response to the purposeful activity of others (Hass-Cohen, 2008). The development of empathetic responses is encouraged by the interactive nature of art therapy. Similar brain areas are stimulated in both the therapist and the client

during a therapeutic encounter—evidence that art therapy facilitates learning through imitation (Gallese, 2006; Rizzolatti & Craighero, 2004).

Art Therapy, Imagery, and the Brain

An understanding of the visual system and of how imagery is processed can guide art therapy. Restak (1994) established that multiple neural pathways are involved in the processing of imagery. Findings that the brain responds in similar ways to real or imagined imagery have implications for therapeutic practice: both forms of imagery can be incorporated effectively into therapeutic practice (Damasio, 1994, as cited in Malchiodi, 2003; Kosslyn, Thompson, & Ganis, 2006). Recent research has also established that the creation and processing of visual stimuli involve both hemispheres of the brain. Cognitive mechanisms involved with image formation are seated in the left hemisphere, while the activation of creativity emerges in the right hemisphere (Gazzaniga, Ivry, & Magnum, 2002; Katz, 1983; Ramanchandran & Blakeslee, 1998). Knowledge of how the visual system functions allows art therapists to introduce new techniques into their work to bring about change. For example, changing sensory stimulation by introducing new media or using emotionally laden imagery can help to engage clients (Hass-Cohen & Loya, 2008).

Art Therapy, Neurogenesis, and Brain Plasticity

Brain plasticity is the brain's ability to regenerate tissue (neurogenesis), rewire circuitry, and strengthen existing neural connections. The established belief that brain plasticity and growth only occur during early childhood has recently been challenged by neuroscience research that suggests this process is continual and associated with engagement in physical and mental activities (Kandel, 1998; May & Gaser, 2006). The

fact that change and adaptation can occur across an individual's lifetime has wide-ranging implications for psychotherapy. Neuro-imaging studies reveal that brain growth occurs when brain usage is promoted (Mechelli et al., 2004) and that certain therapeutic approaches (e.g., cognitive-behavioural) can result in modifications to neural circuitry (Lazar et al., 2005). The art therapy creative process has enormous potential to provide challenging and novel experiences that stimulate the brain on many sensory, motor, and perceptual levels (Hass-Cohen, 2008). Creativity combined with positive psychological experiences can impact gene expression and neurogenesis (Rossi, 2002). Adaptive gene expression can enhance problem-solving abilities and stimulate brain plasticity that enhances healing and development. The "evolutionary function of the creative arts and sciences is to evoke experiences of novelty and numinosum that drive gene expression" (Rossi, 2002).

Research that connects specific neurological processes with creative experience challenges the view that art therapists are "anti-theoretical" and "anti-authoritarian" (Vick, 2003). Elucidation of the links between neurobiology and art therapy will continue to guide the effective practice of art therapy and encourage the integration of its principles into other psychotherapeutic modalities.

Art Therapy and Adolescents

Adolescence is a challenging time emotionally and physically; it is a time when young people are often in conflict with adults, questioning their values, and inclined to narcissistic attitudes as they negotiate the developmental process of individuation. Art therapy is particularly suited as a therapeutic modality for adolescents (Kahn, 1999;

Riley, 1999). Art making in therapy enhances the ability of teens to express their frustration while at the same time allowing them control over the interpretation of their imagery. Art therapy has been effectively applied in cases of depression and anxiety, which are common in this age group; the generating of personalised symbols and imagery can enhance their ability to communicate in a nonthreatening, nonconfrontational way (Kahn, 1999; Riley, 2003).

Purely verbal approaches to therapy may not be effective with this age group because often "their resistance to therapy is so strong and their sense of disillusionment so pervasive" (Riley, 2003, p. 220). Central to all art therapy approaches with adolescents is the intuitive role of the therapist in determining how and when art making should be included in the therapeutic process. This is evident in Kahn's (1999) three-stage model of adolescent counseling, which involves Entry, Exploration, and Action-taking stages. In the Entry phase, open-ended directives encourage adolescents to introduce themselves through imagery while feeling safe and in control of their attempts at self expression. The Exploration phase is aimed at encouraging self expression about problems that have been identified. The therapist encourages the exploration of thoughts, feelings, and behaviours in a nonjudgmental, client-centered manner, nurturing trust and guiding the adolescent toward a deeper understanding of issues. This is achieved through using what Kahn describes as "open processing questions" and a pacing of the process that depends on the individual client's ability to "integrate meaning" while moving through the art therapy process (Kahn 1999, p.295). In the Action-taking stage, therapeutic goals are established and possible solutions examined through carefully chosen directives that will reveal what and how obstacles can be overcome. By incorporating narrative and imagery into this

process, the adolescent's ability to communicate, explore alternative viewpoints, and take risks within the safety of a contained therapeutic setting are enhanced.

Overall, the effectiveness art therapy has with adolescents arises from its ability to open up communication and encourage self expression that is more personalised and less censured than traditional verbal therapies allow (Riley, 2003). Compared to earlier developmental stages, adolescence is characterised by more complex thinking patterns, and specifically the ability to use or think in metaphor, which lends itself well to more creative forms of expression (Riley, 1999). Art therapy involves active physical, emotional, and cognitive engagement in the therapeutic process, and these forms of engagement stimulate the brain on many different levels, which can promote feelings of well-being (Hass-Cohen & Loya, 2008). Art therapy nurtures feelings of self respect and self esteem by promoting self expression and allowing opportunities for the client to feel a sense of mastery and control in the art-making process. At the same time, issues of empowerment can be addressed as adolescent clients are able to creatively explore and discuss their often idealised viewpoints, and through discussion around a concrete object be encouraged to imagine alternative points of view (Kahn 1999). The artwork and creative process allow for the externalization and objectification of therapeutic issues, affording the therapist and client enhanced insight into the client's world and, thus, opportunity for facilitating healing (Malchiodi, 2003). Most importantly art therapy is an expressive modality that could potentially enhance the development of communication and social skills for adolescents with AS and, in so doing, ameliorate many of the difficulties they face when attempting to integrate into their schools, communities, and peer groups.

CHAPTER 4

ART THERAPY AND ADOLESCENTS WITH ASPERGER SYNDROME

Art therapy has the potential to improve expression, communication, and relationship building when applied in cases of AS. Unfortunately, there is little literature to date examining art therapy specifically as an AS intervention. General art therapy models exist that address the entire autistic spectrum (Evans & Dubowski, 2001; Gabriels, 2000), but they do not give special consideration to the strengths and idiosyncrasies of the AS population. A growing understanding of the neurological basis of AS and a growing consensus on diagnostic methods has led to increased efforts among clinicians and researchers to establish art therapy as a concrete therapeutic modality for AS.

In adolescents, Asperger syndrome is often accompanied by misdiagnosis, multiple symptoms, and emerging mental-health problems. Furthermore, adolescents with AS have common deficits in the areas of socialization, emotional regulation, and executive function (Schultz et al., 2000). Inflexible thinking styles and perseveration are also common features of the adolescent with AS. These complications are exacerbated by an inability to successfully interact with peers and navigate developmental demands. These deficits interfere with relationship building and the interactive process demanded by art therapy, increasing the demand on the art therapist to be persistent and attuned to the specific needs of each individual client (Gabriels, 2000).

The triangular relationship between the client, therapist, and art-making process that is central to art therapy may be hampered with adolescent clients because of interpersonal, perceptual, and communication difficulties. However, the activity of art making provides a neutral common ground that can ease the pressure teens feel about self-disclosure. It also palliates the common AS dislike in AS for direct eye contact (Konstantareas, 2005), addresses depression and anxiety, and provides an outlet for aggressive impulses.

AS and Developmental Delays

The value of the art product and art-making process in AS is linked to the client's insight, curiosity, and ability to use imagery as a communication tool. Developmental delays in concrete and abstract thinking interfere with the AS client's ability to engage in symbolic thinking. This in turn limits their potential for self expression (Case & Dalley, 2006). Normally developing teens are able to use symbolic thinking effectively in self expression, particularly with the use of metaphor (Riley, 2003). In spite of the challenges that adolescents with AS may have with creating cognitively or emotionally representational imagery, the use of visual tools for psycho-educational purposes has been effectively applied with this population. For example, Gray (2000) promoted the use of comic-strip conversations to demonstrate appropriate ways of communicating with others. There is direct evidence that art therapy and visual tools promote emotional and cognitive processing in adolescent clients with AS (Evans & Dubowski, 2001; Gabriels, 2000; Hass-Cohen, 2008). With regard to the neurological impact of creative activities that are sensory as well as kinaesthetic, the literature suggests that there is significant

therapeutic potential with the AS population (Evans & Dubowski, 2001; Hass-Cohen, 2008).

The deficits in symbolic and abstract thinking associated with AS are believed to affect imagination and communication potential (Evans & Dubowski, 2001; Attwood, 2006). This has cast doubt on the effectiveness of art therapy as an AS intervention. But recognition of AS as a developmental disability suggests creative thinking can be encouraged in the AS client if symbolic thought processes are nurtured. Relational possibilities in art therapy may encourage the development of symbolic thinking (Evans & Dubowski, 2001). This view is supported by Fitzgerald (2006), who believed that the rigid and hyperlogical thinking associated with AS can in fact be channeled in creative ways.

Psychotherapy, Art Therapy, and Asperger Syndrome in Adolescence

Several theoretical frameworks for art therapy practice have implications for work with AS. The psychoanalytical approach emphasises the importance of establishing a contained and safe relationship with the therapist and a therapy space that is conducive to a creative experience. These principles are relevant to AS in cases where inattentiveness is an issue or affect disorders are prevalent. The psychoanalytical concepts of the transitional object (Winnicott, 1971/2005) and attachment theory (Bowlby, 1969) both help to explain how developmental delays impact the emergence of symbolic thinking. The incorporation of strategies that promote attachment, and consideration of the relationship between objects and the self, may promote symbolic thinking in children and

adolescents with AS. However, it must be noted that therapeutic mechanisms associated with unconscious thought processes (transference, countertransference, and resistance) may not lend themselves well to a situation where a client's insight is not well developed, as is often the case with AS. Winnicott's (1971/2005) ideas about the importance of playfulness and reality in stimulating creativity, eliciting insight, and promoting relational responsiveness are also relevant (Elkis-Abuhoff, 2008; Evans & Dubowski, 2001). Furthermore, cognitive and behavioural approaches incorporating art therapy may be effective with AS to reveal new thinking patterns and transform brain circuitry through the use of imagery (Hass-Cohen, 2008).

Of great interest to art therapists working within the autistic-spectrum disorder is the theoretical framework offered by developmental art therapy (Evans & Dubowski, 2001; Malchiodi et al., 2003). This approach integrates the normal stages of mental growth (psychosexual, psychosocial, and object relations) with normal stages of creative growth (drawing ability and content) as defined by Lowenfeld and Brittain (1987). Developmental art therapy addresses developmental issues through activities that focus on sensory stimulation, skill acquisition, and adaptation in an effort to promote the use of symbolic language. Adolescents with AS often appear to have good communication skills, but an impoverished vocabulary impedes their ability to build relationships and to express complex inner feelings. A main tenet of developmental art therapy is that psychopathology be seen in the context of developmental milestones. The promotion of language development is key, and is achieved through the development of symbolic thought processes (Evans & Dubowski, 2001; Malchiodi et al., 2003).

Art Therapy, Asperger Syndrome, and the Brain

AS is largely a neurobehavioral disorder associated with abnormal neurological structure (Murphy et al., 2002) and connectivity (McAlonan et al., 2002). Brain imaging technology has revealed that purposeful and creative activities like art making can stimulate brain plasticity and neurogenesis (Hass-Cohen, 2008; Rossi, 2002).

AS dysfunction is linked to compromised connectivity and structural abnormalities in the brain stem, temporal lobes, limbic system, cerebellum, and frontal lobes (McAlonan et al., 2002; Schultz et al., 2000; Wing, 2000). The CREATE model outlines how the interactive and multi-sensory process of art therapy stimulate brain circuitry. Not only can expressive activities stimulate cerebral function and mind-body connectivity, but they can promote relational resonance by developing reflective thinking skills. Self expression, empathy, and emotional regulation can all be enhanced (Evans & Dubowski, 2001; also Elkis-Abuhoff, 2008). The development of symbolic language and abstract thinking (Evans & Dubowski, 2001; Malchiodi et al., 2003) are facilitated by art therapy and promote integration between visual and verbal concepts. The CREATE model also underscores art therapy's facilitation of motor-skill and physical-adaptive-skill development. Creative therapeutic tasks have been shown to stimulate connectivity between the cerebellum and amygdala, a process that could potentially mediate emotional regulation and sensory integration by balancing excitatory and inhibitory impulses (Hass-Cohen, 2008).

Art therapy has the potential to induce neurological transformation and neurogenesis through the creative process (Kandel, 1998; May & Gaser, 2006). The extent to which art therapy can establish and reinforce neurological pathways (Elkis-

Abuhoff, 2008) should be a focus of future research in art therapy. Consideration for art therapy as a neurobehavioral intervention could also impact the effectiveness of therapy.

How Art Therapy Can Mitigate in AS

Art therapy has the potential to effectively mitigate the following deficits in adolescents with AS:

1. *Social Skills.* Art therapy promotes inter- and intrapersonal relationship by enhancing self expression, self awareness, reciprocal interaction, and empathy skills.
2. *Communication.* Art therapy promotes the development of nonverbal and verbal language through interactive engagement with the therapist, the art materials, and the art product.
3. *Imagination and abstract thinking.* The stimulating and engaging nature of art therapy promotes cognitive flexibility through the development of symbolic language and creativity. Art therapy activities can also promote abstract thinking by encouraging the integration of concepts, ideas, and linking parts to a whole. This leads toward a more adaptive thinking style based on association and generalization instead of learned rules and literal interpretations.
4. *Executive function.* As noted above, improvement in adaptive and flexible thinking styles promotes executive function. Art therapy can also promote memory ability and organizational abilities by giving clients experience in breaking down and sequencing tasks.

5. *Sensory integration and regulation.* Art therapy allows for multi-sensory exploration and stimulation. The art therapist's knowledge of the client's sensory profile and mind-body stress response can direct intervention towards self regulation through the proper use of art materials, images, and art product.
6. *Emotional regulation.* Art therapy can help to externalise angst as well as promote connectivity between the sensory and cognitive mechanisms in the brain. This in turn promotes adaptive strategies in dealing with stress and mood disorders.
7. *Theory of mind.* Art therapy emphasises the visual aspects and meaning of facial expressions; as well, its interactive nature can build insight and awareness into how others think.
8. *Developmental goals.* Art therapy practice can stimulate the developmental process by promoting the development of symbolic thinking. At the same time art therapy can facilitate abstract thinking abilities, as well as sensory integration and motor skills, to advance social and relationship skills. In adolescence this will facilitate the process of individuation.
9. *Well-being.* Art therapy promotes well being through feelings of mastery and pleasure.

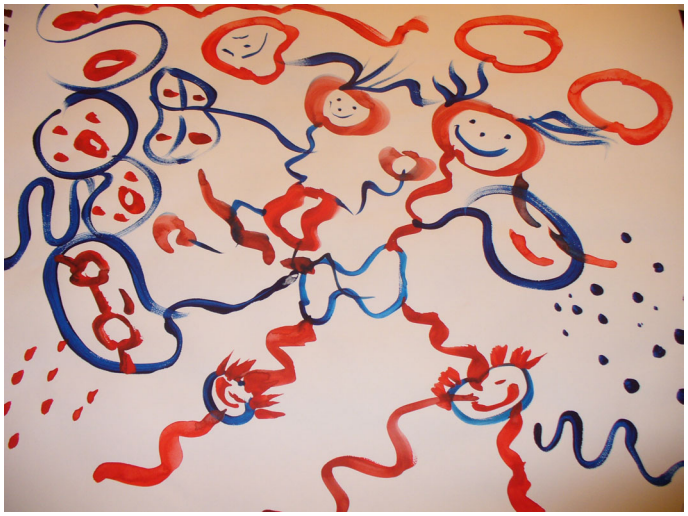
Art therapy can be applied to help adolescents with AS more effectively negotiate the demands of their environments, build resilience, and more effectively participate in their families, schools and communities.

CHAPTER 5

APPLIED PRODUCT

An Art Therapy Intervention Manual for

Adolescents with Asperger Syndrome



Carla Thorogood

Introduction

The following manual offers a series of art-therapy sessions developed with the needs of adolescents with Asperger syndrome in mind. My intention in developing this manual is to provide art therapists and mental-health professionals with a credible resource for using art therapy: one that is based on sound and established theoretical principals and informed by a careful review of the literature in both fields, art therapy and Asperger syndrome. The theoretical framework for the manual is based on integrating the benefits and therapeutic mechanisms of art therapy with the unique needs of adolescents with Asperger syndrome. The interventions described in this manual have been informed by findings from neurological research, in particular Noah Hass-Cohen's (2008) art-therapy relational neuroscience principles, which are explained in the CREATE model (see figure 1).

Each of the model sessions targets specific therapeutic domains associated with Asperger syndrome (see table 1). For the purposes of this manual, social-skills development is included in interventions that target relationship and communication. In developing the specific interventions I have incorporated established art-therapy techniques (e.g., Winnicott's scribble technique (1971/2005) and adapted them for the adolescent Asperger population. In addition, I have attempted to include some interventions that I have developed from a combination of approaches and theoretical concepts that are well established in psychotherapy. Although the manual targets the adolescent age group, with thoughtful modification the interventions could be applied to younger children and adults as well.

Special Considerations

When working with adolescents with Asperger syndrome, some elements of the therapeutic process will need special consideration. These considerations pertain to three main areas: (a) the relationship between therapist and client, (b) the art-therapy process, and (c) the art-therapy product.

Notes about the Therapeutic Relationship

1. Adolescents with AS have difficulty establishing relationships. It may take a protracted effort on the part of the therapist to effectively engage the client and gain their trust.

2. Anxiety is common in this age group and is often related to the adolescent's inability to negotiate social situations. Anxiety may be reflected in restricted and repetitive interests and behaviours that obstruct relationship building.

3. Eye contact often provokes anxiety for this age group, but feelings of discomfort can be ameliorated by engaging in activities while interacting with the therapist.

4. Focusing on the interactive qualities of the art-therapy process will promote relational resonance.

5. Physical proximity is often an issue and must be considered in the seating arrangements for the session (individual or group).

6. The therapist will need to engage with the Asperger-syndrome client in a more directive manner than is common to art therapy in order to initiate and nurture the creative process.

7. Videotaping sessions will help the therapist see small changes in the client's behaviours and may also reveal potential cues that could facilitate the interaction process.

Notes about the Art-therapy Process

1. The space set up for an art-therapy session should be quiet and contained to minimise attention difficulties and contain auditory-sensory issues that are common to the Asperger-syndrome population. Difficulties with maintaining attention are common in Asperger syndrome. The therapist may need to redirect

and refocus the client on an ongoing basis to achieve engagement and completion of activities.

2. Sessions should follow a regular routine, and activities should be structured as much as possible to alleviate anxiety and encourage organizational skills for the client.

3. Developmental delays need to be considered when evaluating how the client engages in the art-therapy process. In particular, the development of nonverbal and symbolic language skills needs to be considered to facilitate the attainment of developmental milestones.

4. Therapists should be cognizant of the therapeutic benefits of movement and sensory stimulation when planning art-therapy activities.

5. Clients with AS may have significant difficulty making associations between concepts, integrating concepts, and appreciating gestalt, but can learn to improve in these areas through experiential processes.

6. Sensory integration issues (e.g., hypersensitivity to touch and colours) need to be considered. For example, the tactile qualities of media presented to the client may inhibit or encourage their involvement in the therapeutic process.

7. The client may have a preference for one kind of art material. Adolescents with Asperger syndrome often prefer to use materials that afford more control (e.g., pencil and markers) because these choices lessen anxiety. The therapist should encourage a gradual transition to more expressive materials over time as the client's comfort levels improve.

8. Some clients with Asperger syndrome may refuse to engage with art materials. Other expressive modalities should be considered (for example, journaling, drama, and dance). Technology should be used if possible with this population as they have a natural affinity towards computers, videos, and cameras. Through these media the adolescent can explore their problems creatively without engaging with traditional art materials.

9. Areas of special interest should be incorporated into therapeutic activities as much as possible, particularly with the resistant client.

10. Small group work can facilitate interpersonal skill development, and should be encouraged.

11. Learning can be consolidated and generalised by using multiple expressive modalities to address the same problem (e.g., role play and videotaping of role play).

Notes about the Art-therapy Product

1. The therapist and client need to decide how the artwork should be collected and stored so that the therapist can assure the client of confidentiality.

2. The imagery created by the client may be formulaic, repetitive, and/or rigid. The therapist must take care not to expect artistic mastery or complexity from the client.

3. Therapists should be cognizant that developmental deficits, in particular those relating to symbolic language, may mean that there is a paucity of meaning and insight associated with the products of therapy.

4. Drawings may represent developmental stages and can assist in the assessment process when an appropriately trained professional is involved (see Lowenfeld and Brittain (1987), "Stages of Artistic Expression," (in table 1).

5. The products of therapy should be carefully stored and recorded along with session notes to complement other records and provide markers of progress and change.

The Art Therapy Sessions

The sessions should be preceded by an intake session with the client and their parents, the goal of which is to gain as much insight as possible into areas of dysfunction, idiosyncratic speech, and characteristic behaviours, as well as to procure a description of the presenting problems. Information relating to diagnostic, medical, and social history will be helpful in formulating therapeutic goals. In addition, it is ethically incumbent on the therapist to obtain informed consent from parents or caregivers prior to engaging in therapy. This will include consent to take photographs of the client's artwork for the therapist's records.

Assessment

For effective intervention, a full psychological evaluation of the client prior to the intervention process is ideal, but it is not always possible. An example of a useful instrument is the Wechsler Adult Intelligence Scale, which assesses the cognitive abilities and profile of the client (e.g., overall intelligence levels; differences in verbal and performance intelligence; verbal comprehension; and perceptual organization scores).

Session Structure

For the purposes of this manual, each session will target a specific therapeutic domain and will be structured as follows:

1. Warm up
2. Activity
3. Observations
4. Associated theoretical concepts
5. Clean up

The length of the sessions will vary according to the concentration abilities of the client as well as limitations set by the institution (school, agency, etc.). Forty minutes to an hour is ideal, with up to two hours needed for group work.

Sample Session 1

Therapeutic Domain: Social Skills Training

Initiating a Relationship

Therapeutic Goal: To familiarise client with how to initiate a relationship through introductions and familiarisation; also to introduce the client to the art-therapy process, space, and materials, and to introduce the client to activity and sensory stimulation in an interactive way.

Materials: One A1 sheet and eight A4 sized pieces of white paper; pencils, pencil crayons, and markers. (See table 2 for examples of paper sizes. Size of paper can vary according to availability and therapist preference.)

Warm-up Activity: Imitative Scribble

- Introduce yourself to the client and explain how doing creative activities together is a way of forming a relationship. Invite the client to introduce themselves in any way they choose.

- Choose one item from range of art material. Ask the client to choose a preferred item from same range of art materials.

- Divide larger sheet of paper into two equal sections and draw a large, slow scribble across one side of the sheet.

- Ask the client to draw a similar scribble in their section of the paper.

- Repeat activity progressively, increasing speed of the scribble.

Main Activity: Imitative Skills and Familiarization with Material

- Distribute four A4 pieces of white paper to the client and take the same for demonstration purposes.

- Choose four different art media (e.g., pencil, coloured markers, oil pastels, and clay). Ask client to do the same.

- Choose the least fluid medium (e.g., pencil) and draw an object/symbol that has some meaning to you while explaining the different ways that the chosen art material can be used (e.g., dark line, light line, shading, etc). Write your name and the name of the object on the piece of paper.

- Introduce the object/symbol to the client and explain why it is important to you.

- Invite the client to do the same, encouraging any form of representation or expression.

- Repeat process four times, but introduce a different media and different object on each occasion. After each demonstration, invite the client to engage in the same way. Progress from least fluid to most fluid medium.

- After all drawings are complete invite the client to introduce their chosen object(s)/symbol(s) and explain why this object/symbol is important to them.

- Invite the client to describe their experiences of using different media and rank numerically according to most enjoyed to least enjoyed.

- Reflect with client on the process of familiarization with each other and the experience of using different art materials and how introduction to and repeated engagement with experiences and people helps us to become more competent and comfortable when faced with new challenges.

- Inform client that session is not complete until clean up is complete and give a designated time for clean up (use stop watch or timing device). Have the client place artwork in the designated folder. Show client where materials are stored and system for clean up. (For this session and all future sessions, ensure there is an organised area for putting away art materials (boxes and jars) so the client knows where to return art materials.)

Observations

- Observe how the client interacts with the different media. They may experience discomfort with more fluid media, and in some cases may refuse to engage with certain art materials at all. This may be due to sensory issues.

- Make a note of the objects drawn and how strongly the client associates with this object, as it may indicate a special interest area that can be utilised in further sessions in a motivational way.

Associated Therapeutic Concepts/Techniques

1. Scribble technique (Winnicott, 1971/2005).

2. Apraxia (Frith, 2004).

3. Symbolic language development (Evans & Dubowski, 2001).

4. Art-therapy relational neuroscience principles (Hass-Cohen, 2008).

Sample Session 2

Therapeutic Domain: Social Skills Training

Developing Relationships with Peers: Group Session

Therapeutic Goal: To provide activity-based, sensory opportunities for interaction with peers. Restrict group size to three or four people. If possible, include one normally functioning adolescent as a role model. In a high-school situation, this could be a peer support student.

Materials: Large sheet of newsprint pinned to the wall/board; one large sheet of Bristol board (A1) cut into a large circle; pre-cut images from magazines; black marker, pencils, pencil crayons, markers, paints, and paintbrushes; jars of water; clean-up rags; stop watch.

Preparations Preceding Session: Cut the Bristol board circle into a number of puzzle pieces, each piece representing a group member (including the therapist).

Warm-up Activity: Joint Scribble

- Explain that this warm-up activity involves working together in a creative and fun way.
- Place the newsprint horizontally along the wall and divide into equal sections, one for each member of the group.
- Ask group members to choose from the range of art material either a pencil crayon or marker in a colour that they like and then stand in front of their section.
- Request that they write their names at the top of the paper, and then make a large squiggle shape as large as they can in their section of the paper.
- Direct group members to move down to the next space and add to the squiggle shape. Continue at steady pace until group participants are in their original spot.
- Complete exercises by annotating forms, shapes, or designs that they can see in the squiggle.
- Discuss with client any forms or shapes that emerge and possible associations.
- Discuss any difficulties encountered in executing this task.

Main Activity: Group Puzzle

- Hand out one pre-cut puzzle piece to each member of the group.
- Ask group members to draw anything that represents a unique characteristic or area of special interest that they would like to share with other group members.
- Encourage group members to use any range of art mediums, including collage. Explain that this will be a time-limited activity (set time and use stop watch), and to alleviate any stress, explain that completion of the activity is not necessary, only some engagement in the process.
- After set period of time, ask group members to place their respective puzzle pieces correctly into the circular puzzle shape.
- Invite them to come forward individually to discuss their respective imagery. Limit these discussions if necessary if they involve special interest areas and the client has difficulty containing their discussion.
- Discuss the concept of the circle as a whole shape and how this represents the group itself and the idea that we are all part of other groups, including our families, school community, etc., and yet, at the same time, how we are each distinct.
- Clean up. Consider leaving the image created by the group up on the wall so that it can be reflected on in future sessions.

Observations

- Observe client's ability to interact and follow instructions.
- Observe stress levels associated with interacting with others and adjust directions/expectations to reduce stress if necessary.
- Observe ability to create meaningful imagery from the abstract.
- Observe local-to-global processing ability in creating puzzle.

Associated Therapeutic Concepts/ Techniques

1. Squiggle game (Winnicott, 1971/2005).
2. Gestalt/local-to-global processing (Perla, 1969).
3. Symbolic language development (Evans & Dubowski, 2001).
4. Art-therapy relational neuroscience principles (Hass-Cohen, 2008).

Sample Session 3

Therapeutic Domain: Social Skills Training

Self-awareness

Therapeutic Goal: To assist client to develop a sense of self in order to promote relationship with others.

Materials: Two large pieces of white Bristol board (A1); black markers, oil pastels, pencil crayons, markers, and paints; pre-cut magazine images representing people, places, objects, and possible interests of client.

Preparations Preceding Session: Prepare a large but basic outline of two figures delineated by black dots placed two inches apart. Have pre-cut collage images available.

Warm-up Activity: Dot-to-dot Figure Outline

- With client, place figure outline on floor or wall, allowing space for movement.
- Direct client to join dots together to create figure outline.
- If client is willing, request that they fill in the figure outline with a colour that they like. Demonstrate how this can be done. Encourage use of more fluid medium (e.g., paint) for this task so that is does not take too long.

Main Activity: Who Am I?

- Use figure outlines completed in warm-up exercise.
- Discuss with client how this outline might represent who they are as a person.
- Discuss the idea of introducing yourself to others through a picture (representational imagery).
- Request that client use writing, drawing, painting and pre-cut magazine images to introduce themselves to you.
- Demonstrate this process by using different media, and encourage the client's participation through prompting and modeling.
- The client is encouraged to make as many images and word associations as possible on their figure drawing.
- Discuss your imagery and word associations as an introduction of who you are.

- Ask client to discuss their imagery and word associations as an introduction of who they are.
- Consider leaving the image created by the client up on the wall so that it can be reflected on in future sessions.
- Reflect on process with client. Discuss use of colours, words, imagery, and media. Explain the importance of self-awareness and how this affects how we relate to others.
- Clean up as in session 1.

Observations

- Observe client's ability to complete dot-to-dot exercise.
- Note any difficulties with sensory issues and ability to engage in representational art making.
- Observe client's level of self-awareness and ability to relate to imagery.

Associated Therapeutic Concepts/Techniques

1. Gestalt/local-to-global processing (Perla, 1969).
2. Symbolic language development (Evans & Dubowski, 2001).
3. Art-therapy relational neuroscience principles (Hass-Cohen, 2008).
4. Motor-skills development (Carr, 2008).
5. Insight (Case & Dalley, 2006).

Sample Session 4

Therapeutic Domain: Communication

Communicating Problems

Therapeutic Goal: To encourage clients to explore a concern or problem through cartooning.

Materials: Several A4-sized pieces of white paper; an assortment of pencils, markers, and oil pastels; ruler.

Warm-up Activity

- Discuss with client how the different basic emotions can be represented by colours and shapes (e.g., red and jagged outline with anger).
- Encourage client to form their own associations between emotions and colours. Compile index of these associations if possible.
- Using media of choice, describe an emotion with colour, line, and shape. Draw this emotion while describing it to the client, continuing to make associations between feelings and colours, lines, and shapes.
- Annotate the coloured shape with the name of the emotion it is meant to depict.
- Ask client to participate in exercise as demonstrated.
- Discuss triggers and associations with this emotion. Add them to picture.
- Repeat for other emotions.

Main Activity: Cartoon Script Describing a Concern of the Client's

- Share briefly some popular comic strips with client (e.g., Spiderman, Garfield, etc.).
- Briefly discuss a concern or difficulty that the client is experiencing at present. Prompt client if necessary if you are aware of an issue.
- Divide page into a series of blocks to facilitate comic-strip drawing.
- Ask client to use stick figures to make a cartoon describing the presenting issue and how they are dealing with it.
- Include narrative (in speech bubbles) that relates to the client's concern.

- Use coloured-line shape associations from warm-up exercises when drawing speech bubbles for the chosen narrative.
- Discuss how the client communicates in their narrative.
- Discuss different ways of communicating in the narrative that might change the outcome and the client's emotions and behaviours associated with the concern.
- Redraw comic strip using media in the same way as before and include changes as discussed.
- Role-play the new narrative several times with the client.
- Clean up as in session 1.

Observations

- Observe client's ability to make associations with emotions.
- Observe client's ability to express the issue of concern in the comic strip.
- Observe client's emotions and communication associated with the problems.
- Observe ability of client to role-play new narrative.

Associated Therapeutic Concepts/Techniques

1. Comic strip conversations (Gray, 1994).
2. Development of symbolic language (Evans & Dubowski, 2001).
3. Art-therapy relational neuroscience principles (Hass-Cohen, 2008).
4. Cognitive-behavioural therapy (Beck, 1987).
5. Role play (Tubbs, 2008).
6. Spatial matrix (Wadeson, 1980).
7. Reinforcement (Beck, 1987).

Sample Session 5

Therapeutic Domain: Communication

Communication with Peers: Small Group Session

Therapeutic Goal: To facilitate more adaptive communication patterns between the client and peers. This session aims to enhance interaction and communication in a small group, maximum three to four participants.

Materials: two large pieces of white paper (A1); pencils, coloured markers, and oil pastels; ruler; four puppets; video camera and tripod; screen/TV to view the video.

Preparations Preceding Session: Set up camera.

Warm-up Activity: Conversation in Crayon

- Introduce the idea of how communication is a two-way process and involves responding to what others do.
- Introduce the idea of a conversation in crayon, with group members responding to the crayon marks made by others.
- Pair up group members (include therapist to make up second pair if necessary).
- Invite each group member to choose a marker or oil pastel in their favourite colour, ensuring that each member of the pair has a different colour.
- Using one large piece of paper for each pair and, starting in the middle of the page, demonstrate the process of making a line or shape.
- Ask your partner (or any member of the group posing as your partner) for a response in the form of a line or shape.
- Invite all participants to continue this interactive process until page is full.

Main Activity: Exploring an Awkward Social Situation Using Hand Puppets

- Use simple hand puppets that depict characters from popular culture (e.g., superheroes).
- Identify an awkward social situation that the group relates to.
- Role-play a description of this problem followed by a possible solution, using one puppet on each hand.

- Hand out one puppet to each participant and request that they role-play a solution to the problem, as you have demonstrated.
- Discuss these responses as a group. Decide on the most socially acceptable response.
- Set up a role-play situation with group members, using the most socially acceptable response, and rehearse this a few times. Videotape role play.
- Watch videotape of role play and discuss why this is a socially acceptable response.
- Clean up as in session 1. Label and date videotape recording of role play so that this can be referred to in future sessions.

Observations

- Observe client's ability to interact with and respond to peers.
- Observe client's ability to frame a problem.
- Observe each member's response to the socially awkward situation.
- Observe client's ability to conceptualise solutions to problems.
- Observe client's ability to participate and learn from role-plays.

Associated Therapeutic Concepts/Techniques

1. Playing and reality (Winnicott, 1971/2005).
2. Modeling (Ernsperger, 2005).
3. Insight (Malchiodi, 2003).
4. Self expression, role plays, and narratives (Tubbs, 2008).
5. Reinforcement (Beck, 1987).
6. Art-therapy relational neuroscience principles (Hass-Cohen, 2008).

Sample Session 6

Therapeutic Domain: Executive Function

Inflexible Thinking: What Does It Look Like?

Therapeutic Goal: To demonstrate the difference between inflexible and flexible thinking through the use of rigid and pliable art materials.

Materials: Four pieces of medium sized paper; pencils, oils pastels, and coloured markers; ruler; plasticine; popsicle sticks; sparkly pipe cleaners; thin flexible wire; and masking tape.

Warm up Activity: Straight Line Versus Flexible Line Drawings

- Place two pieces of paper on large desk or floor.
- Demonstrate how to use ruler and drawing materials to create a design with straight lines only.
- On a second piece of paper, demonstrate a design using lines of different shapes (curves, squiggles, angular, etc.).
- Allow client to do the exercise on two fresh sheets of paper.

Main Activity: Sculpture with Inflexible and Flexible Materials

- Hand out popsicle sticks, masking tape, and plasticine.
- Demonstrate how to build a structure from these materials.
- Allow client to build a similar structure, assisting if necessary.
- Hand out metallic pipe cleaners and thin flexible wire.
- Demonstrate how to use these materials to build a structure/sculpture. Use simple forms and shapes.
- Allow client to engage in same process.
- Relate inflexible materials to the thought process and expand to a discussion around rigid (stick) versus flexible (sparkly) thinking. Demonstrate how a stick breaks under pressure, while wire can assume different shapes if bent and can also return to its original shape.
- Compare the two completed structures and the experience of building them.

- Give the client a stick and a sparkly pipe cleaner to take home to remind them of the importance of flexible thinking.

- Clean up as in session 1. Place artwork and structures in a safe place for future reference. Ensure you label and name these creations.

Observations

- Observe client's ability to use flexible lines in drawing.

- Observe and compare client's experience of building structures from flexible and inflexible materials.

- Note any sensory or fine-motor-skill issues during exercise.

- Observe client's fine motor abilities when building structures.

Associated Therapeutic Concepts/Techniques

1. Playing and reality (Winnicott, 1971/2005).

2. Executive function; flexible and inflexible thinking styles (Frith, 2004).

3. Insight (Malchiodi, 2003).

4. Transitional object (Winnicott, 1971/2005).

5. Art-therapy relational neuroscience principles (Hass-Cohen, 2008).

Sample Session 7

Therapeutic Domain: Executive Function

Local-to-Global Processing

Therapeutic Goal: To stimulate client's ability to arrange parts into a whole.

Materials: Block of clay; medium-sized sheet of white paper (A5), two images of an object or character relating to special interest area of client; small mirror and larger mirror.

Preparations Preceding Session: Choose an object or character from client's special interest area and obtain two copies of the same image. Enlarge one copy and paste it onto a piece of cardboard; cut the pasted image into a number of pieces, representing a puzzle. Determine number of pieces according to client's ability.

Warm-up Activity: Local to Global Processing with Clay Shapes

- Demonstrate how to roll a ball of clay. Roll six balls of similar size.
- Ask client to roll the same number of balls (or preferred shape).
- Create a recognisable form by arranging, modifying, and joining given shapes (e.g., a flower,with five balls as petals around a center).
- Invite client to create a form out of the six shapes as demonstrated.

This activity can be expanded if the client is receptive; for example, add to the balls of clay to make other objects like heads, animals, etc.

Main Activity: Arranging Parts into a Whole

- Present prepared puzzle pieces to client, along with the intact copy of the image.
- Explain that they have to put the puzzle together by referencing whole image.
- Prompt and guide if necessary.
- When exercise is complete, ask client to indicate with their finger where different facial features (eyes, nose, mouth, and ears) are on the image and then on self.
- Give client the large mirror so that they can see their whole face.

- Ask the client to demonstrate different expressions in the mirror and observe what happens to individual features as they do this.
- Discuss the concept of how parts make up a whole and how this relates to others perceive our expressions.
- Clean up as in session 1. Store clay creations in a cool, dry place; be sure to date and name all work and store all images in designated folder.

Observations

- Observe the client's sensory and fine-motor experience of working with clay.
- Observe the client's experience of building a complete image out of parts for both the warm-up and main activity.
- Note client's ability and comfort levels with making eye contact in mirror.
- Observe the client's comfort levels when working with facial features and their ability to create appropriate expressions.

Associated Therapeutic Concepts/Techniques

1. Gestalt/local-to-global processing (Perla, 1969; Rhyne, 1984).
2. Special interest areas (Boyd et al., 2007).
3. Perceptual processing (Tanaka & Farah, 1993).
4. Sensory integration and motor-skills development (Carr, 2008).
5. Art-therapy relational neuroscience principles (Hass-Cohen, 2008).
6. Dyspraxia (Smith, 2000).

Sample Session 8

Therapeutic Domain: Sensory Integration

Seeing with our Finger Tips

Therapeutic Goal: To provide sensory stimulation and integration through the use of art materials and the art-making process.

Materials: Four pieces of paper (A4); pencils, markers, and oil pastels; a range of familiar shapes or household objects that have different textures (attempt to include objects relating to special interest areas of special interest); several large white mitts (brushed cotton).

* This exercise can be done with old socks, but individuals with AS may be concerned that they are using socks on their hands due to their linear thinking style.

Preparations Preceding Session: Prior to session, place single objects, each of a different texture, inside each of the gloves.

Warm-up Activity: Creating a Sensory Profile

- Describe what the basic senses are to the client (i.e., touch, sound, sight, smell, taste).
- Ask the client about a recent activity or event that they have been involved in (e.g., camping trip or visit to the local mall).
- Ask the client to draw on a sheet of paper (using media of choice) how this event affected some or all of their senses.
- Demonstrate this process with a personal experience.

Main Activity: Tactile Stimulation, Hidden Objects

- Demonstrate how to place your hand inside the glove, feel and identify the object, and draw and name it on a piece of paper.
- Describe how the object feels.
- Ask client to repeat process with various objects, offering progressively more complex and tactile objects (e.g., from a plastic ball to a fluffy or spiky toy).
- Ensure that client draws and names object on separate piece of paper to facilitate sensory integration.

- Discuss the experience of identifying and drawing hidden objects.
- Encourage client to make associations to compare and contrast different sensory experiences associated with feeling objects with different textures and shapes.

Observations

- Observe client's ability to create a sensory profile of an event.
- Observe client's experience of feeling and perceiving different objects. Try to identify areas of hypo- and hypersensitivity, which will inform further work.
- Reflect on client's experience with sensory stimulation in main activity. Moderate activity according to client's response and anxiety levels.

Associated Therapeutic Concepts/Techniques

1. Sensory stimulation (Carr, 2008).
2. Sensory integration (Carr, 2008)
3. Inter-hemispheric integration (McKelvey et al., 1995).
4. Special interest areas (Boyd et al., 2007).
5. Art-therapy relational neuroscience principles (Hass-Cohen, 2008).

Sample Session 9

Therapeutic Domain: Emotional Regulation

Social Anxiety: Group Session

Therapeutic Goal: To provide regulated opportunities for social interaction using the art-making process.

Materials: One stool (large, close to the ground, and sturdy); one large piece of white newsprint attached to the wall; large black markers and large coloured markers; one large piece of white Bristol board (A1); pencils and oil pastels; a selection of pre-cut collage images; glue, scissors, and stopwatch.

Warm-up Activity: Group Cartoon

- Attach newsprint horizontally to wall in front of stool so that clients will have to stand on the stool to draw.
- Ask clients to choose one large marker each (different colours for each, if possible).
- Divide paper into equal-sized adjoining squares (two squares for each person), which will represent a blank cartoon strip.
- Ask first participant to draw a person doing something simple in the first frame. Explain that they are required to stand on the stool to do this, so they will have to think about balancing at the same time that they are drawing. Reward the smallest efforts at symbolic expression with praise. Encourage communication to communicate anxiety or concerns during drawing process.
- Ask next participant to repeat this process by completing the next image, hence beginning a narrative.
- When all squares are complete, initiate a group discussion on how people can connect ideas to make a story.
- Discuss the importance of sharing ideas in relationship building.

Main Activity: Group Collage Exploring Friendship

- Provide several pre-cut images representing adolescent themes and any interests that may pertain to group participants.
- Place Bristol board on a large table or the floor.

- Encourage each client to choose one image at a time to represent what friendship means to them. Demonstrate by choosing an image, then placing it and gluing it on the board.
- Ensure that participants annotate each image with a word or phrase.
- Ensure that all the images touch each other to get a cohesive collage.
- Ensure that each participant discusses their choice of imagery.
- Have a group discussion about what it means to have a friend and how this is depicted in the collage.
- Clean up as in session 1.

Observations

- Observe ability of group participants to climb and balance on stool. Adjust difficulty if required.
- Observe ability of group participants to create a cohesive narrative
- Observe and assist with group dynamics and each participant's attempts to express themselves.
- Observe anxiety levels when participating in these activities.
- Note any nonverbal behaviour (e.g., eye gaze) that impacts normal interaction with others and target these for future sessions.

Associated Therapeutic Concepts/Techniques

1. Motor-skills development (Hass-Cohen, 2008).
2. Narrative therapy (White & Epston, 1990).
3. Gestalt: Local-to-global processing (Perla, 1969; Rhyne, 1984).
4. Inter-hemispheric integration (McKelvey et al., 1995).
5. Development of symbolic language (Evans & Dubowski, 2001).
6. Art-therapy relational neuroscience principles (Hass-Cohen, 2008).

Sample Session 10

Therapeutic Domain: Emotional Regulation

Becoming Self Aware: Emotions and Mood

Therapeutic Goal: To create awareness about emotions and mood and how these impact the client.

Materials: Five transparent containers of same size; jug of water; food colouring in various colours; video clips depicting characters expressing different mood states (very sad, sad, calm, happy, ecstatic); small bags of popcorn; several pieces of paper (A5); various drawing media; large, stick-on numbers (1-5); and mirror. Attempt to use special interest when choosing video material.

Warm-up Activity: Constructing a Personal Mood/Emotional State Scale

- Have a brief discussion about different types and levels of mood/emotional states (e.g., sad, calm, happy, excited, angry) and how we can represent this on a scale (e.g., 1-5 with 1 being low and 5 being high).
- Ask client to identify up to five different moods they have felt in the past three days.
- Ask client to choose a colour to represent each of five different moods/ emotional states they have identified. Write down mood/emotional states and associated colour on a piece of paper.
- Ask client to fill to the top the chosen number of containers with colours representing their identified moods/ emotional states. Explain that a full container represents the most intense level of that mood.
- Ask client to identify the level of each mood/emotional state by drawing a line with a black marker along the side of each container. Place a number sticker representing level of mood next to this mark.
- Ascertain from scale which level of mood/emotional state the client is experiencing that day. Record noted levels next to corresponding mood/ emotional state list. Compare and discuss findings.

Main Activity: Moods and Movies

- Approach session in a playful manner by suggesting that client is attending the movies (hence the popcorn) to explore different emotional states.

- Show video clip that portrays various moods/emotional states. Try to include material related to areas of special interest if possible (e.g., Star wars).
- Follow each clip with discussion to ensure that client has some understanding of different moods and their impact on self and others.
- After each clip, invite client to practice expressions that represent moods/ emotional state shown in the video clips.
- Attempt to ascertain which mood the client is experiencing that day (i.e. have the client show it deliberately, with facial expression).
- Discuss the importance of mood awareness as part of self regulation.
- Clean up as in session 1.

Observations

- Observe client's ability to recognise different moods.
- Observe client's ability to pour water.
- Observe client's ability to make associations between their own mood and a mood scale.
- Observe client's ability to make associations with movie clips and mood.
- Observe client's ability to relate movie clips to personal experience.

Associated Therapeutic Concepts/Techniques

1. Motor-skills development (Hass-Cohen, 2008).
2. Development of symbolic language (Evans & Dubowski, 2001).
3. Special interest areas (Boyd et al., 2007).
4. Inter-hemispheric integration (McKelvey et al., 1995).
5. Reinforcement (Beck, 1987).
6. Art-therapy relational neuroscience principles (Hass-Cohen, 2008).

Sample Session 11

Therapeutic Domain: Theory of Mind

Session 1 of 2

Reciprocity and Relationship

Therapeutic Goal: To stimulate insightful thinking and engagement with others through photography.

Materials: Maps (for examples), white paper (A5), markers, crayons, oil pastels, pencils, paints and brushes, and ruler.

Warm-up Activity: Designing a Personal Map

- Discuss the importance of maps to help us locate important places and people in our lives as well as helping us know where we are.
- Have some examples of maps to show the client.
- Lay out a large piece of white paper and various art materials.
- Ask client to draw a type of personal map that includes where they are, and also where significant people in their lives (teachers, parents, siblings, etc.) may be and what they might be doing at that moment at that time of day.
- Encourage client to represent others as objects or symbols.
- Reflect with client on their personal map and the experience of creating it.

Main Activity: Encountering Others through Photography

- Instruct client on how to use a basic digital camera.
- Discuss the importance of meeting and getting to know people (who they are and what they do), particularly those they encounter on a daily basis, in school or in the community.
- Compile a list of several questions you might ask others in order to get to know how they are feeling or thinking that day. (e.g., "How would you describe in one word how you are feeling today?")
- Explain socially appropriate ways of requesting permission from others to take a photograph of them. (E.g., "I am doing a project that involves getting to know

people around me. Would you mind if I asked you a few questions and then took a photograph of you?")

- Equip client with camera, notepad, and a list of questions, and then stroll through the building, playground, or community choosing key people to ask for an interview and photograph. (Informing others of this activity beforehand may be helpful.)
- Return to counseling room and reflect on experience with client.
- Clean up as in session 1.

Observations

Observe ability of client to:

- Observe client's ability to be aware of others in their immediate environment.
- Observe client's ability to engage with technical equipment.
- Observe client's ability to interact with others in an appropriate way.
- Observe client's ability to make observations about others.

Associated Theoretical Concepts/Techniques

1. Theory of mind (Hill & Frith, 2003).
2. Executive function: Organization of thoughts (Frith, 2004).
3. Social skills development (Hass-Cohen, 2008)
4. Behavioural strategies for appropriate interaction (Bieber, 1994).
5. Development of symbolic language (Evans & Dubowski, 2001).
6. Art-therapy relational neuroscience principles (Hass-Cohen, 2008).
7. Inter-hemispheric integration (McKelvey et al., 1995).
8. Use of technology (Nikopoulos & Keenan, 2007).

Sample Session 12

Therapeutic Domain: Theory of Mind

Session 2 of 2

Reciprocity and Relationship

Therapeutic Goal: To further stimulate insightful thinking and engagement with others through photography and the compilation of a record of what others were thinking and feeling on a particular day.

Materials: A4-sized piece of Styrofoam or cardboard, bulletin board pins, coloured craft wire, computer (equipped with programs that allow for downloading photographs and power point program).

Warm-up Activity: Connections

- Ask client to choose several different colours of Styrofoam or cardboard, with each representing someone important in their lives (include a bulletin board pin to represent them).
- Ask the client to place the pin representing them in the middle of the board and the other pins around it, creating a design if possible.
- Demonstrate how to wrap pieces of coloured wire around the pins so that all the pins are joined.
- Reflect with the client on what the design depicts (how they are connected with significant others).
- Discuss some of these connections.

Main Activity: Creating a Power Point Presentation

- Allow client to download photographs from session 1 onto the computer.
- Explain how the photographs and interview information will be used to make a Power Point presentation as a way of recording the experiences of session 1.
- Introduce client to the Power Point program.
- Request that the client compile slides with a photograph and interview information from each person encountered. Depending on the technical abilities of the client, assist and prompt where necessary.

- When presentation is complete, ask client to deliver presentation, encouraging them to verbally introduce the subjects they have photographed, and how they perceive these subjects were feeling at the time the photographs were taken.

- Reflect on the experience of compiling a record of people around us and gaining an insight into their lives during a moment in time.

- Reflect on the importance of being aware of the people around us, what they do, and the different states of mind we each experience on a daily basis.

- Clean up as in session 1.

Observations

- Observe client's ability to manipulate wire around pins, as this involves fine-motor skills.

- Observe client's ability to make associations with wire-and-pin design and relationships with others.

- Observe client's ability to manipulate computer technology and programs to create Power Point presentation.

- Observe client's ability to recognise and describe emotional states of others.

- Observe client's ability to recognise their connections with others after the experience of interviewing and photographing them.

Associated Theoretical Concepts/Techniques

1. Theory of mind (Hill & Frith, 2003).

2. Communication skills (Attwood, 2006).

3. Fine-motor-skill development (Hass-Cohen & Carr, 2008).

4. Development of symbolic language (Evans & Dubowski, 2001).

5. Use of technology (Nikopoulos & Keenan, 2007).

6. Art-therapy relational neuroscience principles (Hass-Cohen, 2008).

CHAPTER 6

SYNTHESIS AND IMPLICATIONS

Potential Implications

AS is often considered an intractable condition characterised by deficits in communication and imagination (Wing, 1996; Evans & Dubowski, 2001), which to some might indicate an incompatibility with creative or art-based interventions. But the use of art in therapeutic practice shows promise as an intervention modality because of its ability to facilitate communication. This occurs through the purposeful integration and development of verbal and nonverbal language abilities. Art therapy also shows promise therapeutically because it involves the creation of an object or tangible expression that may become a symbolic form of communication for the client. Overall, the expressive possibilities of young clients may be expanded when their therapy protocol incorporates sensory-based, interactive activities like art making.

Because the art-therapy process is an established approach for dealing with the psychological problems and distress commonly associated with adolescence, its therapeutic possibilities for adolescents with AS are significant. The creation of an art product allows the therapist to explore the unique worldview of a child with AS and to use the insight to identify the difficulties and challenges that the child is facing. When a therapist can achieve this insight, there is real potential for a meaningful therapeutic encounter. Furthermore, art therapy naturally calls out areas of special interest, which can

result in greater compliance in the therapeutic encounter, and more meaningful results as well (Gabriels, 2000).

By offering a thorough overview of Asperger syndrome and elucidating the therapeutic mechanisms of art therapy that address the strengths and deficits of the AS profile, this project contributes to the knowledge base available to interventionists working with adolescents with this disorder. For therapists working in middle- and high-school settings, a greater knowledge about both AS and art therapy may allow for much more productive work, as well as the opportunity to inform and advise teachers about how best to work with their students with AS.

Addressing the therapeutic potential of art-therapy interventions in AS may also generate future qualitative and quantitative research in this area. One area of potential research is the development of an empirically based art-therapy program that focuses on the development of symbolic thinking and the impact this has on communication and social skills in AS cases.

Of significant interest to the goals of this project are the contributions by researchers like Hass-Cohen and Carr (2008), Rossi (2002), Lusebrink (1990), and Kaplan (2000), who have incorporated some empirically based investigations of the therapeutic potential of creative activities into their work. Their research provides evidence and models to explain ways in which an art-therapy process can impact brain plasticity and neurogenesis over a lifespan (Hass-Cohen, 2008; Kandel, 1998). The creation of more adaptable brain circuitry translates into enhanced cognitive and emotional flexibility, which has the potential to alleviate many of the symptoms associated with AS. In addition, the psychobiological effects of creative experiences in

therapy, as discussed by Rossi (2002) and Hass-Cohen and Carr (2008), may have significant implications in facilitating gene expression and increased adaptive behaviours in AS.

Further explorations of AS and art therapy from a neurological perspective will be important to validate claims associated with the therapeutic possibilities of art-therapy processes. The clinical adaptability of art therapy shows enormous potential for effective incorporation into existing treatment programs in schools, where there is currently a great need for effective interventions. Funding in public education is always inadequate and often restricted to empirically proven methods; and currently these "proven" methods are not always effective in the long term. The scientific validation of art therapy will help to promote acceptance of creative and art-based therapies, which will impact funding and support in general for incorporation of creative alternatives into intervention programs and alternative teaching strategies.

The resource manual developed from the literature review is intended to help fill the void that exists where alternative interventions with the adolescent AS population are concerned. By expanding the tools available to therapists and increasing awareness of the neurological processes affected by creative activities, the manual has the potential to improve the effectiveness of intervention programs for children diagnosed with AS. Because there is potential for art making to be used by untrained professionals as a diagnostic technique rather than a therapeutic tool (Malchiodi, 1993), the literature review and accompanying manual also attempt to clarify the importance of an in-depth and accurate understanding of the creative process and the use of creative expression in therapy.

Limitations

This literature review was limited by the lack of empirical research on art therapy generally and, more specifically, on the ongoing diagnostic ambiguities relating to AS. Most of the research on art therapy was anecdotal in nature or informed by broad theoretical constructs. Pertinent to the findings on AS was the view that the number of diagnostic challenges associated with AS (Ellis & Gunter, 1999) has resulted in inconsistent applications of diagnostic criteria in research, which has subsequently undermined the integrity of findings reported in the literature (Klin, 1994; Kopra et al., 2008).

Further ambiguity was present in the small amount of literature available discussing the use of art therapy with AS. In most cases, the research focused on the application of art therapy in the range of pervasive developmental disorders by referring to autistic-spectrum disorder (Evans & Dubowski; 2001; Gabriels, 2000). This approach fails to recognise the language and cognitive abilities of the AS client and how these mediate communication and imagination deficits in the disorder. Elkis-Abuhoff's (2008) work with an adolescent diagnosed with AS was one of the few resources that provided anecdotal evidence of a practical intervention where the use of metaphor and imaginative abilities emerged as curative elements.

In much of the literature the terms "art therapy," "creativity," and "imagination" were loosely applied, leaving the reader unclear as to what exactly was being referred to. There is little consensus in the research concerning definition of these concepts; perhaps by their nature they are difficult to define, but meaningful research requires greater

precision. This lack of definition weakens some of the theoretical foundations for the efficacy of art therapy in the treatment of AS.

Until recently there was little understanding about art therapy's effectiveness as a mind-body intervention (Malchiodi, 2003). Recent work by Hass-Cohen and Carr (2008) has made a great contribution to our understanding of the neurological principles at work in art therapy, but there still exists a void in our understanding of how we can measure and define art-therapy interventions as well as how we can practically implement art-therapy principles in practice.

These limitations give direction to future research possibilities in the application of art therapy with AS. Constructive directions might include investigations into the role and impact of various expressive modalities; more empirical definitions of terminology like "creativity" and "imagination"; and, most importantly, attempts to increase our knowledge of how hands-on creative activity affects neurological processes. The increasing interest in the literature on art therapy as a mind-body intervention also suggests the need for further investigation. Our increasing knowledge on brain plasticity also points to a need for research on the impact of art therapy on all age groups affected by AS, notably adults, who have little in the way of therapeutic resources to turn to.

Most importantly, this project highlights the importance of presenting research findings in practical ways that can enhance the effectiveness of interventionists in the field. Undertaking this project informed the author on the importance of how understanding is informed by education and research, and how this in turn allows the emergence of more fully informed interventions with adolescents with AS to promote their well being, resiliency, and integration into their schools and communities.

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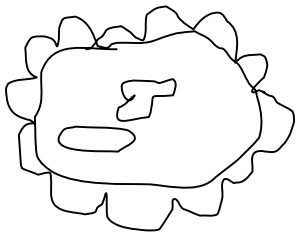
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TABLE 1

STAGES OF ARTISTIC EXPRESSION

Stage	Age	Common Characteristics of Drawings and Drawing Ability
1. Scribbling 	18 months to 3 years	Little control over drawing motions. Progresses to horizontal and vertical lines, circular shapes and dots, etc. No intentional use of colour. Limited attention span. Limited narrative value. Largely kinaesthetic experience.
2. Basic Forms 	3 to 4 years	Starting to name and relate to scribbles in a narrative way. Desire to talk about drawings emerges. Attention span and concentration still limited. No consistent meaning to imagery. Emergence of forms and shapes like triangles, squares, crosses, and rectangles. Drawing of shapes within shapes.
3. Human Forms 	4 to 6 years	Emergence of basic human form and basic schema, “primitive but charming” (Malchiodi, 2003). More interested in form than making associations with colour. Figures placed randomly in space. No conscious thought about composition or where objects lie in relation to each other in a space (e.g., some could be upside down).

4. Development of a Visual Schema 	6 to 9 years	Rapid progress in artistic abilities. Common symbolic representations emerge to to depict humans, animals, houses (e.g., house is usually a square topped by a triangular shaped roof). Objective use of colour (e.g., yellow for sun). Emergence of groundline and skyline. Able to draw and imagine layers in images (e.g., depict who is living in the house by omitting outer wall). Use variations in size to depict importance/ hierarchy. Beginning to perceive perspective, with objects that are further away placed higher on the page.
V. Realism 	9 to 12 years	Start depicting more realistic aspects in drawings. Able to create depth in drawings by having merging skyline with base line to create depth. Images reflect more accurate description of colours with range of hues (e.g., leaves on a tree have a range of colours). More details included in drawings to depict gender, build, clothing style etc. More technical ability and interest in exploring different media. Interest in photographic effect (literal interpretation) is reflected in imagery.
VI. Adolescence 	12 years and over	This stage only reached if drawing activities and interest continue. By approximately 13, have increased ability with art materials, include more details, better depiction of perspective. Greater attention given to colour and design. Able to create more abstract imagery.

Note: Art samples from author's family collection.

TABLE 2

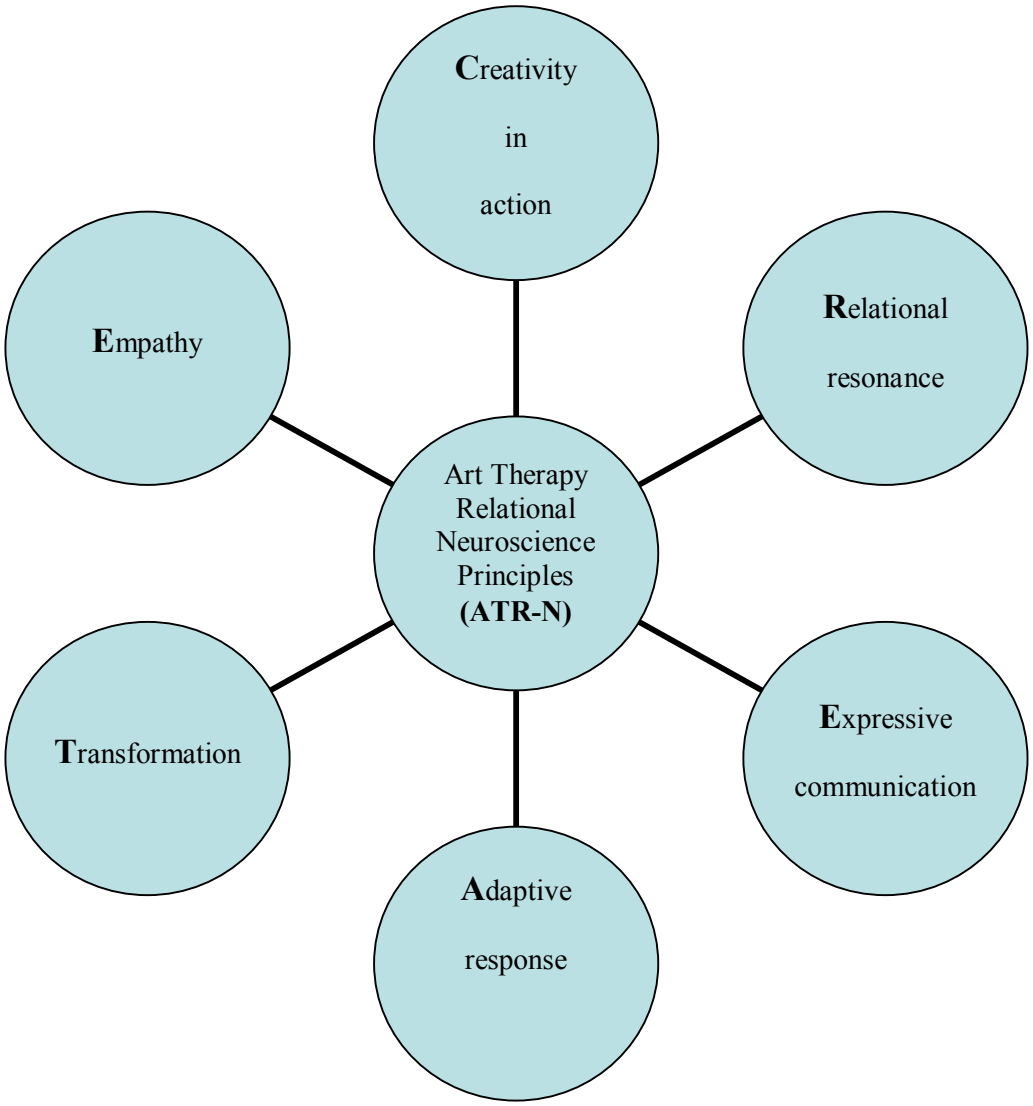
THE INTERNATIONAL PAPER SIZE STANDARD

	Millimeters		Inches	
	Height	Width	Height	Width
A0	1189	841	46.81	33.11
A1	841	594	33.11	23.39
A2	594	420	23.39	16.54
A3	420	297	16.54	11.69
A4	297	210	11.69	8.27
A5	210	148	8.27	5.83
A6	148	105	5.83	4.13
A7	105	74	4.13	2.91

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FIGURE 1

ART THERAPY RELATIONAL NEUROSCIENCE PRINCIPLES (ATR-N)



Note: This diagram depicts the CREATE Framework's six art-therapy neuroscience principles (Hass-Cohen, 2008).