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Assessing Portrait Drawings Created by Children and Adolescents With Autism Spectrum Disorder

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Abstract

The ability to attend to the human face is a striking and possibly characteristic deficit for individuals with autism spectrum disorder (ASD). This study collected and reviewed data on how people with ASD approach the drawing task and represent faces in particular. Drawings that were created by 25 children and adolescents with autism spectrum disorder and 15 neurotypical children were collected for a pilot study of the Portrait Drawing Assessment. Participants with ASD were rated as more engaged and conversational during the art therapy assessment than their neurotypical counterparts, contradicting widespread characterization of people with ASD as asocial. Portrait drawing was found to be successful as a structured, concrete means for engaging in relationships and holds potential as a therapeutic task for developing face processing and face recognition skills.

Introduction

"Autistics have problems learning things that cannot be thought about in pictures." (Grandin, 1996, p. 29)

For reasons still not fully understood, people with autism have difficulty interacting with the faces of others. Yet as an art therapist, I have always enjoyed drawing my clients' portraits and having them reciprocate with their portraits of me. When viewing my drawings, often a look would come over the faces of my clients with ASD that seemed to say: This is *me?* This intervention was portrait drawing with all of the magic and none of the usual insecurity encountered by the task, because individuals with ASD seem generally indifferent to socially based concerns such as drawing skill or enduring the gaze of another person. Autism is one of few disorders characterized by this unusual and problematic relationship with the human face, yet drawing has been a way in which these children and I seem to connect. This study was inspired by such experiences, and a desire to document both the process and products of a drawing session with young people with ASD. I developed the Portrait Drawing Assessment (PDA) to look for trends in the data and to initiate a more comprehensive look at art made by children and adolescents with ASD.

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Literature Review

Autism as a disorder

Autism spectrum disorder (ASD), also called "autism," is a neurodevelopmental condition characterized by qualitative impairment in social interaction and communication as well as the presence of restricted, repetitive, and stereotyped patterns of behaviors, interests, and activities (American Psychiatric Association, 2000). ASD is a nonscientific term describing any individual with a diagnosis on the autism "spectrum" (Childhood Disintegrative Disorder, Autistic Disorder, Rett's Disorder, Pervasive Developmental Disorder, and Asperger's Syndrome). Communication, imagination, and social relationships comprise the traditional triad of deficiencies in individuals with ASD. Although not a national estimate, recent statistics from the Centers for Disease Control and Prevention (CDCR) report that in the 20 U.S. communities surveyed, between 6 and 7 children in 1,000 have an ASD diagnosis (about 1 in 150 children) (CDCR, 2007). ASD is present in equal numbers across cultures and social classes; however, ASD is three to four times more likely to manifest itself in males rather than females. ASD is by definition an early onset disorder and signs of its presence must be noted prior to age three (American Psychiatric Association, 2000).

Brain imaging technology reveals that the range of typical behaviors presented in a child with ASD (such as perseverating, difficulty reading social cues, and sensory over/under stimulation) is due to unique challenges in perceptual filtering and sensory processing (Belmonte et al., 2004). Either the lack or excess of sensory stimulation can cause frustration, fear, and confusion in the minds of children with ASD. Self-stimulating behaviors such as rocking, hand-flapping, humming, or spinning objects, as well as unusual motor activity like walking on tiptoe, are usually present to some degree in children with ASD.

Scientific research on the etiology of ASD currently clusters around three areas: brain abnormalities, immunologic vulnerability factors, and genetics. Contemporary imaging technology has revealed a variety of abnormalities including unusual serotonin levels within several brain structures of individuals with ASD (Belmonte et al., 2004; Schultz & Klin, 2002). The inability to pinpoint a specific ASD site in the brain suggests a pervasive alteration of neural processing (Belmonte et al., 2004). Potential environmental factors that have been explored are numerous and include trauma at birth, food allergies, exposure to elements such as mercury and cadmium, and an imbalance of diges-

tion hormones (Newschaffer, 2006). Since the human genome code was mapped, a handful of chromosomes implicated in autism have been found. Research trends indicate that ASD likely will be described in the future as a genetic susceptibility aggravated by environmental factors.

Art therapy and ASD

Art therapy with children with ASD has focused on engaging the child in art making in order to address deficits in communication and imagination (Evans & Dubowski, 2001). As a graphic, nonverbal means of communication, art can provide relief to the child for whom verbal communication is frustrating, overwhelming, too direct, or even nonexistent. Art therapy is occasionally the child's primary treatment, especially if the child is nonverbal, is primarily impaired by emotional factors, or responds poorly to behavioral interventions (Kornreich & Schimmel, 1991). Art therapy projects are structured to address goals such as improving fine and gross motor skills, nonverbal communication, socialization, creativity and imagination, expression of feelings, and sensory exploration and regulation. By helping autistic children progress from schematic (formulaic) drawing to the realm of representational drawing and symbolic thinking, art becomes a tool for them to make sense of their environment.

Making an image provides the child with a sense of mastery, autonomy, visual pleasure, and a link to the world at large. Children with autism often are very visually-oriented and have a strong need for sensory input. In my experience, I have found that art therapy can utilize the child's visual strengths to address treatment goals while providing a socially appropriate outlet for self-stimulatory behaviors and sensory needs. For many children with ASD, the art-making process attracts them more than a desire to complete a finished product (Emery, 2004). By adapting projects to meet the child's individual needs, the art therapist ensures success so that the child can participate as a creative and productive person in a normalizing experience (Henley, 1992; Rosal, 1996).

Very little has been written to date on the artistic development of children with ASD. A neurotypical child's drawing skills are traditionally seen as a progression from scribbling in early childhood, to a symbolic or schematic representation of the child's environment in middle childhood, to an increasing concern with achieving realism in the drawings of adolescence and beyond (Lowenfeld & Brittain, 1987). These developmental shifts are generally viewed as both influenced by and having an influence on concurrent cognitive gains. The drawing development of a child with ASD is related to the child's nonverbal mental age and appears to follow the normal developmental sequence (Charman & Baron-Cohen, 1993), albeit often at a slower pace. Even for autistic children with savant artistic skills there appear to be no difference in the mental structures that they use when reproducing pictures as compared with the performance of neurotypical children (Pring & Hermelin, 1993).

Autism and faces

Sensory issues related to ASD interfere with one of the most fundamental ways in which children learn, that is, by "reading" adult faces. For children with ASD, attending to the human face is a challenge and forced eye contact is uncomfortable. Visual information about others is usually gathered by stolen, even peripheral, glances. Tyler Fihe, a 14-year-old with ASD, described his experiences with human faces as follows:

> My eyes are unable to move up and down and left to right at will without me moving my head in the direction I'm facing. I can see things really well from the corner of my eyes. When I look at someone facing me sometimes I see three eyes instead of two, and it looks scary so I avoid directly looking at people sometimes. This makes it hard for people to know whether I'm paying attention to them or not. (Willoughby, 2003, p. 89)

Interacting with human faces seems to present a unique challenge to children with ASD, as does being able to distinguish between subtle differences in emotion within the self and with others, particularly socially-based emotions such as embarrassment (Capps, Yirmiya, & Sigman, 1992). When tested to match photographs of both intact faces and faces with some facial clues missing (e.g., eyebrows, mouth) according to emotion and identity, the scores of adolescents with ASD were lower than for non-autistic controls (Hobson, Ouston, & Lee, 1988). However, when the same faces were presented to the children upside down, the adolescents with ASD showed a remarkable improvement in scores and performed better than their typical peers, whose scores dropped. It may be that the reason for the autistic adolescents' superior performance on an upside-down face task is due to what Bruner (1964) identified as an iconic way of thinking in people with ASD. Iconic thinking is "concrete and dominated by immediate input and surface appearances" (Mitchell, 1996, p. 202).

The study by Hobson et al. (1988) posited that children with ASD see the human face more as an abstract pattern composed of different parts than an integrated map conveying emotional information about an individual. It was easier for the autistic adolescents to read the inverted image because its meaning did not change for them. "Ironically, then, the relatively good performance in categorizing faces upside-down in ASD appears to be a sign of impairment of perception of emotion in faces" (Mitchell, 1997, p. 107-108). For typical adults, factors like facial expression and familiarity complicated their abilities to recognize an inverted face (Valentine & Bruce, 1986).

Mitchell (1996) believed that iconic thinking in children with ASD is implicated in the ability of autistic savants to produce realistic drawings. As described by Charman and Baron-Cohen (1993), visual realism, or the ability to draw what one sees, may be a manifestation of iconic thought for artistically talented children with ASD. Mitchell (1996) reasoned that "it might be that clinically normal people have considerable difficulty in drawing perspective because their symbolic classification of the item as belonging to a given

category of thing then contaminates their ability to draw it precisely as it appears" (p. 208). It has even been suggested that autistic children's "relative lack of verbal and semantic engagement with their environment" may actually be an advantage in terms of drawing from observation, producing a kind of freedom from the general tendency to symbolize (Chatterjee, 2004, p. 1578). Beginning drawing students are encouraged by their teachers to "draw what you see, not what you know," to deny their impulse to draw a line that makes sense to them versus what is actually seen. In other words, if Mitchell is correct, drawing students are asked to be a little more "autistic."

Kanwisher, McDermott, and Chun (1997) used functional magnetic resonance imaging technology to confirm that when a neurotypical adult views a photograph of a face the area of the brain known as the fusiform gyrus is selectively activated. They found that people with ASD spend significantly less of their time engaged with human faces than do people without ASD. A processing deficit exclusively influences their interactions with faces and makes it difficult for them to distinguish familiar from unfamiliar faces but does not impact their ability to perceive difference in objects (Dawson et al., 2002). Recent research has shown that the fusiform gyrus is activated when an adult with ASD views a face (Hadjikhani et al., 2004), whereas earlier studies recorded only the activation of "aberrant and individual-specific neural sites" (Pierce, Müller, Ambrose, Allen, & Courchesne, 2001, p. 2059). Specialized training programs are now being designed to increase activation in the participant's fusiform gyrus (Schwarz, 2004).

One art activity that specifically addresses a child's ability to attend to and gather information from others is portrait drawing. When drawing the face of another person, the child is processing information about the emotion expressed on the subject's face using visual, cognitive, and motor skills. When a child with ASD and another person draw each other's portrait simultaneously, the child's sense of "me-ness" versus "you-ness"—a difficult concept as evidenced by abnormalities in personal pronoun usage among children with ASD (Lee, Hobson, & Chiat, 1994)—is exercised. Art therapist Costello-Du Bois (1989) noticed that observing others helped her clients to discover their own identity. She found that individuals with ASD receive intense individual attention, acceptance of their appearance, and the opportunity to see themselves through another person's eyes when having their portraits drawn by others. A drawing made by another person is concrete evidence of that person's unique brain activity and this serves those who need help grasping the concept of mind (Martin, 2005). By drawing a person's face from observation, the child with ASD can receive positive reinforcement for using his or her iconic-related skills with the goal of eventually becoming more comfortable with using the human face as a source of information.

Method

This pilot study was designed to gather data from the portrait drawings of children and adolescents with ASD to learn how they attend to faces and to determine whether evidence of iconic thinking could be found in their drawings. The method consisted of administering an assessment to a sample of neurotypical children as compared to a sample of children and adolescents with an ASD diagnosis. The Portrait Drawing Assessment (PDA) documented drawing characteristics (13 items) and behaviors (17 items) of each participant while drawing the facilitator's face. A critical component of the PDA is that both the participant and the facilitator draw each other's portrait. The facilitator's drawing functions as visual feedback on how the participant is perceived by another person, as well as showing evidence of the cognition (mind) of the facilitator. Each child received at least one score per item; on some items, more than one score per item was allowed (for example, a child might display a number of self-stimulating behaviors). Video recording of the sessions eliminated pressure on the facilitator to rely on memory alone while completing the scoring sheets.

Twenty-five children, adolescents, and young adults with an ASD spectrum diagnosis from two schools and one after-school program in the greater Chicago area participated in the study. Selection criteria were: (a) a diagnosis on the autism spectrum, (b) completion of both the consent form and the release of client artwork by the participant's parent or guardian, and (c) availability and willingness to work within the facilitator's time frame. Ages ranged from 6 years 4 months to 20 years; the mean age was approximately 13 years. The number of girls in the study (5 out of 25) occurred by chance, but this percentage is fairly representative of the ratio of females to males with ASD (Baron-Cohen & Bolton, 1993).

As a comparison group roughly matched for age, 15 children and adolescents without an ASD spectrum diagnosis (neurotypical) attending a parochial school in the greater Chicago area also completed the PDA. Selection criteria were: (a) no diagnosis on the autism spectrum and no known developmental disorder or learning disability of any kind, (b) completion of both the consent form (specific to neurotypical children) and the release of client artwork by the child's parent or guardian (for clients under the age of 18), and (c) availability and willingness to work within the facilitator's time frame. Ages ranged from 7 years 3 months to 14 years; the mean age was approximately 10.7 years. The number of girls in the study (5 out of 15) was requested by the author in order to reflect the ratio of boys to girls within the group with ASD.

Each participant was provided with a maximum of 30 minutes to complete the PDA and given a standardized set of drawing materials. Individuals participated with the facilitator on site in a quiet room with a table for drawing. Visual supports (a social story and instruction sheet with both words and pictures) were provided in order to assist participants with ASD, and were presented to both control and experimental groups for the sake of standardization. The pictures used on the visual supports were similar to those commonly used with children with ASD to facilitate nonverbal communication, such as the Picture Exchange Communication System (Frost & Bondy, 2002).

Figure 1 Portraits made by children and adolescents with ASD using the PDA

In an effort to standardize the function of the facilitator as a model as much as possible, I maintained a consistent facial expression with all participants and wore uniform clothing for every assessment. For each participant's portrait, I made a line drawing with selective shading in order to keep my technique consistent and speedy. The option to create a free drawing ("incentive drawings") after the portrait drawing was offered in an effort to capture and maintain the interest of those participants who desired more control over the procedure. However, only the child's portrait drawing was scored as part of the protocol.

Results

Artwork examples from the participants with ASD can be found in Figure 1. PDA scores were tallied for both the ASD spectrum disorder group (25 children) and the neurotypical group (15 children). The percentage of children who scored on each item was determined in order to detect general trends within or between the two groups (Tables 1 and 2). Only items that revealed findings relevant to the hypothesis of this project are discussed in this article.

A maximum of 30 minutes was allotted for each child to complete the PDA. The mean length of the assessment for both groups was similar (15.1 minutes for children and adolescents with ASD and 16.7 minutes for neurotypical children). The girls in both groups worked significantly longer on their drawings than did their male counterparts; their mean length of assessment was 23 minutes (ASD) and 20.4 minutes (neurotypical) compared to means of 13.2 minutes for the boys with ASD and 14.9 minutes for the neurotypical boys group. Incentive drawings were made by 64% of the participants with ASD whereas only 27% of the neurotypical participants chose to make one. I observed that longer drawing time almost always was related to interest level rather than drawing ability. Considering that the difference between the average length of assessment for each group is negligible, it appeared that the participants with ASD both worked faster and displayed more interest in drawing (Table 3).

Scores on the children's attitudes towards their tasks were determined by my observation of the children's verbal and nonverbal behaviors and revealed an interesting and unexpected finding. Of the five PDA categories relating to

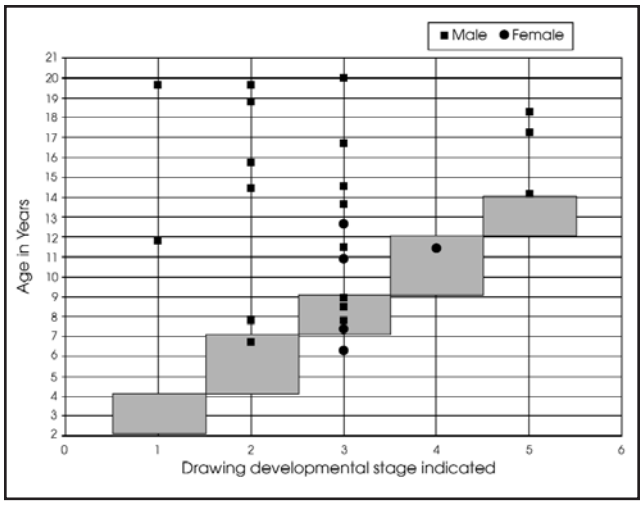

Figure 2 Distribution of Developmental Drawing Level Among ASD Participants (according to Lowenfeld stage theory)

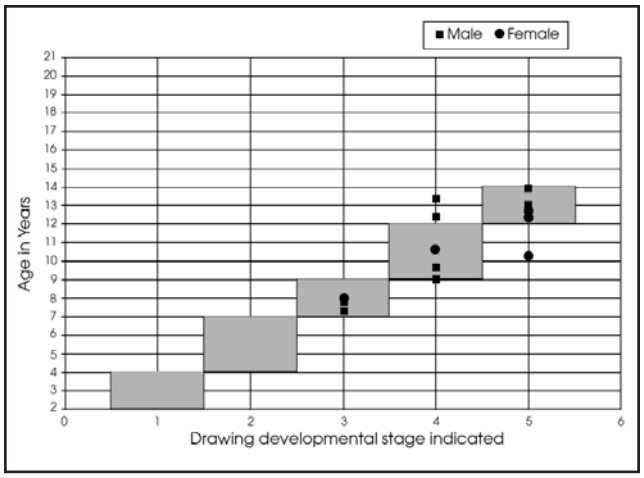

Figure 3 Distribution of Developmental Drawing Level Among Neurotypical Participants (according to Lowenfeld stage theory)

overall attitude, children and adolescents with ASD were most often rated as "interested/focused" (50%), whereas the neurotypical children were most often rated as "indifferent/casual" (47%). Many of the neurotypical children (particularly those who were older) appeared anxious to complete the minimum requirements of the task, whereas many of the children with ASD used the incentive drawing as an opportunity to share their personal lives and/or interests with me. I was surprised by the level of apparent indifference among the neurotypical participants and had also expected there to be more expressed frustration by the autistic participants. Determinations about a child's attitude were made only when I felt confident doing so; thus, the "unable to determine" category accounted for 33% of the participants with ASD and 20% of the neurotypical participants (Table 2).

Each participant's portrait drawing was rated according to Lowenfeld and Brittain's (1987) stage theory of drawing development in children, a tool used for decades by professionals in the fields of both art therapy and art education. Figures 2 and 3 plot each participant's position within this stage theory as determined by graphic characteristics in their drawing. Participants with ASD are represented across a variety of ages and drawing levels (Figure 2), reflecting the range of functioning within the diagnosis of ASD. These data suggest delayed drawing development as compared to the more uniform and predictable levels of drawing development in the neurotypical participants (Figure 3). Note that several of the scores in Figure 3 overlap, making it appear to illustrate fewer than 15 participants.

A number of PDA items looked at formal elements of the drawings and behaviors that relate to concrete (iconic) thinking and face processing. Participants with ASD had more trouble correctly identifying the facilitator and themselves in the portrait drawings than did the neurotypical group, and had a harder time following the instructions to draw only the face or head. It also was found that neurotypical participants looked at the facilitator's face more often while drawing and employed shading much more in their drawings than did the participants with ASD. Neurotypical participants more often used color as a tool to accurately represent the facilitator's face.

Behaviors that are traditionally associated with ASD, with respect to their presence or absence, were also scored. The children with ASD presented a range of these behaviors, whereas the neurotypical children engaged in almost none of them. Half of the participants with ASD displayed none of the social behaviors listed in the PDA; nevertheless, a higher percentage of this group (33%) compared to the neurotypical group (20%) was assessed as using conversational verbal skills. The participants with ASD expressed less insecurity about their drawing skills than the neurotypical group and about one-third of the children with ASD either compulsively drew on my drawing (mostly filling in perceived gaps) or insisted on dictating what they wanted me to draw. A significant amount of prompting was necessary to help the participants with ASD remain on task, whereas the neurotypical participants, once given the instructions, needed no prompting (Table 2).

Both the drawing style and the time length (approximately 2-3 minutes) of the facilitator's portrait drawings were kept as consistent as possible. However, some drawings were less developed than others; this difference is an indicator of the participant's ability to sit still while being

Table 3
Mean Length of Assessment

PDA Data Relevant to Length of Assessment	ASD Participants	Neurotypical Participants
Mean length of assessment:		
All	15.1 min	16.7 min
Girls only	23 min	20.4 min
Boys only	13.2 min	14.9 min
Incentive drawings made?	64% Yes	27% Yes

Table 1
Percentage Scores of Drawing Characteristics for ASD and Neurotypical Children and Adolescents Using the PDA

PDA Data: Drawing Characteristics	ASD Participants (*N*=25)	Neurotypical Participants (*N*=15)
A) Resemblance to facilitator		
1. No drawing made or unidentifiable scribble	4%	0%
2. Named scribble	8%	0%
3. Stereotyped figure (nonspecific features)	32%	40%
4. Figure with features particular to facilitator	44%	47%
5. Recognizable likeness of facilitator	12%	13%
B) Pressure		
1. No drawing made/ indistinguishable line	0%	0%
2. Faint line/gentle pressure	4%	0%
3. Medium pressure/ pressure not noteworthy	76%	87%
4. Dark line/heavy pressure	20%	13%
5. Very heavy pressure/ pencil tip breaks at least once	0%	0%
C) Line quality		
1. Short/broken	16%	33%
2. Sketchy	12%	0%
3. Rhythmic/fluid	68%	67%
4. Shaky	8%	0%
5. Uncontrolled/scribbled line	16%	0%
D) Size		
1. Miniscule/an inch or less	8%	0%
2. Placed comfortably on page with margin on at least three sides	80%	100%
3. Distorted to fit page/ crammed to fit	4%	0%
4. Runs off page/draws on table	8%	0%
E) Detail		
1. No drawing made or unidentifiable scribble	8%	0%
2. Essentials only (e.g., eyes, mouth, nose)	12%	7%
3. Minimal detail (e.g., lips, neck, ears, hair)	32%	27%
4. Moderate detail (e.g., eye lashes, pupil/iris, hairstyle)	36%	60%
5. Highly detailed (e.g., part in hair, fine wrinkles)	12%	7%
F) Color use		
1. Representational (accurate to facilitator's appearance)	40%	67%
2. Abstract (color inaccurate to facilitator's appearance)	4%	0%
3. No color used/single color used	56%	33%
G) Shading		
1. Present in drawing, selective (e.g., eyes, hair)	44%	27%
2. Present in drawing, extensive (e.g., skin)	4%	40%
3. Not present/line only	52%	33%
H) Ability to follow instructions		
1. Only face or face/head drawn	48%	80%
2. Body included	20%	13%
3. Neck/shoulder included	24%	7%
4. Scribble/no recognizable drawing	8%	0%
5. Other drawing	0%	0%
I) Drawing developmental stage indicated (Lowenfeld & Brittain, 1987)		
1. Scribbling (2-4 yrs.)	8%	0%
2. Preschematic (4-7 yrs.)	24%	0%
3. Schematic (7-9 yrs.)	52%	27%
4. Gang age (9-12 yrs.)	4%	40%
5. Pseudo-naturalistic (12-14 yrs.)	12%	33%
6. Adolescent (14-17 yrs.)	0%	0%
J) Inaccurate schema attempted/used?		
1. Yes	32%	13%
2. No	68%	87%
K) Projection/identity confusion		
1. Child's features given to portrait of facilitator	12%	0%
2. N/A	88%	100%
L) Incentive drawings		
1. Made in correct order of tasks	56%	27%
2. Made out of order/ before portrait	8%	0%
3. None made (could not complete task)	20%	0%
4. None made (chose not to)	16%	73%
M) Text included in drawing		
1. Name	12%	0%
2. Facilitator's name	8%	0%
3. Other	0%	0%
4. None	84%	100%

Table 2
Percentage Scores of Behavior Characteristics for ASD and Neurotypical Children and Adolescents Using the PDA

PDA Data: Drawing Characteristics	ASD Participants (*N*=25)	Neurotypical Participants (*N*=15)
A) Primary mode of communication		
1. Verbal	80%	100%
2. Vocal sounds, attempt at speech	16%	0%
3. Nonverbal, facial expressions/ gestures	0%	0%
4. Writing, typing (assistive technology)	4%	0%
B) Echolalia		
1. Present	50%	0%
2. Absent	50%	100%
C) Perseveration		
1. Present, logical association to present activity	33%	0%
2. Present, illogical association to present activity	21%	0%
3. Absent	54%	100%
D) Self-stimulating behaviors		
1. Hand flapping/wringing	8%	0%
2. Rocking	4%	0%
3. Hair twirling/scalp scratching	0%	0%
4. Humming/vocalizations	8%	0%
5. Other	29%	0%
6. None	54%	100%
E) Attention to facilitator's face while drawing		
1. None	29%	0%
2. Minimal/1-3 glances	21%	33%
3. Appropriate for task/continuous gaze from facilitator to paper	38%	67%
4. Intense/scrutinizing	0%	0%
5. Primarily looked at photograph of facilitator on visual instructions sheet	17%	0%
F) Eye contact		
1. None	13%	0%
2. Fleeting	46%	0%
3. Steady/typical	42%	100%
4. Intense/prolonged	0%	0%
G) Overall attitude toward task		
1. Indifferent/casual	0%	47%
2. Complaining/helplessness	0%	0%
3. Negative/aversive/anxious to leave	17%	0%
4. Interested/focused	50%	33%
5. Unable to determine	33%	20%
H) Affect		
1. Expressive	58%	93%
2. Flat	42%	7%

PDA Data: Drawing Characteristics	ASD Participants (*N*=25)	Neurotypical Participants (*N*=15)
I) Social behaviors		
1. Posed/smiled while having face drawn	42%	93%
2. Expressed insecurity (e.g., drawing skill)	8%	20%
3. Conversational	33%	20%
4. Appropriate help-seeking behaviors	8%	0%
5. None	50%	0%
J) Identification of portraits		
1. Correct name or pronoun given	59%	100%
2. Gesture made toward correct person	0%	0%
3. Incorrect I.D. made (verbal or gesture)	9%	0%
4. No response/prompted response	32%	0%
K) Frustration toward procedure		
1. Expressed behaviorally (e.g., tantrum)	38%	0%
2. Expressed appropriately	4%	0%
3. None observed	58%	100%
L) Intervention used to remain on task		
1. Physical prompt (e.g., point)	67%	0%
2. Verbal prompt (e.g., remind, encourage)	75%	0%
3. Hand over hand	13%	0%
4. None	17%	100%
M) Literacy		
1. Read directions independently	65%	87%
2. Some help required	17%	13%
3. Could not read/read by facilitator	17%	0%
N) Object attachment		
1. Kept free drawing	16%	20%
2. Tried to keep portrait	8%	7%
3. None	80%	80%
O) Compulsive or controlling behaviors		
1. Drew on facilitator's drawing	28%	0%
2. Dictated to facilitator what to draw	20%	0%
3. None	64%	100%
P) Handedness		
1. Right	74%	93%
2. Left	22%	7%
3. Undifferentiated	4%	0%
Q) Sensory exploration of materials		
1. Smell	0%	0%
2. Taste	8%	0%
3. Other	21%	0%
4. None	75%	100%

drawn. Facilitator drawings that had skewed proportions or look hastily drawn were actually more laborious to execute because I had to catch glimpses of the participant's face while the child's head was in motion. Only 42% of the participants with ASD, as compared to 93% of the typical participants, posed or deliberately held their head still while being drawn. Though the data do not reflect this, some of those with ASD who posed were much more constrained (such as smiling as if having their photograph taken) than the neurotypical children.

Discussion

This pilot study found that the portrait drawings did not indicate evidence of either hypo- or hyper-iconic skills in children and adolescents with ASD. If people with ASD do in fact relate to faces in a more iconic or concrete fashion (Hobson et al., 1998), this ability does not seem to result in above average drawing skill for nonsavant individuals with ASD. Drawing is an expressive form of communication that appears to be affected by ASD to an equal extent as verbal expression. This finding supports Charman and Baron-Cohen's (1993) conclusion that exceptional drawing skill is not a widespread feature of ASD.

Drawings made by the participants with ASD in this study were characterized by their variety in drawing style and ability, an apparent reflection of the range of levels of functioning within the diagnostic spectrum of the disorder. The experience of drawing appears to be holistic and reflective of the general developmental level of a person rather than an indication of a specific diagnosis. Although a useful tool for assessing developmental level in drawings, the Lowenfeld and Brittain (1987) scale is not designed to look specifically at portraits and the scores I have given may be open to debate.

Participants who paid close attention to the task made better drawings. Some participants (whether autistic or not) chose to look at the facilitator's face more frequently and this was reflected in their drawings. More of the participants with ASD had difficulty looking at the facilitator's face than did their neurotypical counterparts. Although there are no data on this point, the author hypothesizes that the PDA produced more eye contact from the participants with ASD than would have been the case without this structure.

Drawing a portrait was found to be an effective way to connect and engage in a relationship with the participants with ASD. They were more often rated as interested, less often rated as indifferent, and more often chose to extend the session by making an incentive drawing than did those in the neurotypical group. Participants with ASD were actually more conversational than most of their neurotypical counterparts. Drawing together functioned as more than just collecting data; it became a structured way to be in a relationship. One can only speculate on whether becoming familiar with the facilitator's face by drawing made it more or less comfortable for this relationship to develop.

My role as an artist was an integral part of the experience. As I drew the participant's face, I initiated a conversation about what was being drawn. Discussions about color, facial expressions and feelings, parts of the face, similarities and differences, pronoun concepts ("I" versus "you"), and turn-taking happened naturally and suggested possible ways that portrait drawing could be developed into a therapeutic task. The strength of my drawing directly depended upon the participant's ability to sit still; thus the experience of being drawn was by no means a passive activity. Nearly 50% of the participants with ASD displayed some form of compulsive or controlling behavior toward my drawing, for example, by drawing on it or dictating what to draw. This finding would not have been discovered had I not drawn the portraits of the participants.

Limitations of the study include the need for interrater reliability, which could be achieved by having multiple third parties view and score the video footage. To help control for environmental impacts on the participants' performances, control group participants should be recruited from multiple sites (as was the experimental group). Also, limiting the age of the sample studied rather than including a wide range of ages would help to control for developmental factors beyond the presence or lack of an ASD diagnosis. Although this would decrease the sample size within a particular geographic area, expanding the study to include participants in other parts of the country would increase both sample size and diversity.

Conclusion

This pilot study examined the visual dimensions of a deficit (face processing) that seems to affect all individuals with autism spectrum disorder regardless of their level of functioning. Instead of charting an individual's progress, it sought to find group trends from two comparison samples of children and adolescents with and without ASD. By collecting a body of drawings produced under standardized conditions, art therapists can begin to make some conclusions about the nature of the drawings made by children with ASD, free from the fascination with savant examples. Results from sitting down with a child and drawing each other's faces both confirm and confound our expectations, and it is no small task for a child with ASD. Drawing together satisfies a need to know that, despite sensory difficulties, individuals with autism can see us.

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