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Understanding the Expressive Cartoon Drawings of a Student with Autism Spectrum Disorder

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Art Education at Virginia Commonwealth University.

by

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Bachelor of Fine Arts, Virginia Commonwealth University, 2006  
Master of Art Education, Virginia Commonwealth University, 2017

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## Abstract

### UNDERSTANDING THE EXPRESSIVE CARTOON DRAWINGS OF A STUDENT WITH AUTISM SPECTRUM DISORDER

By Michael Sean Collins, MAE

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Art Education at Virginia Commonwealth University.

Virginia Commonwealth University, 2017.

Major Director: Ryan M. Patton, Assistant Professor, Art Education

This study focuses on the highly expressive comic drawings of Amy, a child with autism. This study connects larger fields of research: the study of how people with autism spectrum disorder [ASD] process faces and emotions; and, research about artists with ASD. Amy's understanding of emotion was analyzed by asking her to view and identify humans and cartoon characters expressing different emotions. Her ability to illustrate emotion is tested by asking her to respond to various drawing prompts. The study concluded that Amy has difficulty identifying the emotions of humans and cartoons, but she does have the ability to illustrate characters that express a range of emotions. This individual case study shows that students with autism were able to process visual expressions of emotion with a high degree of accuracy. The results provide art educators a model with which to investigate how their students with autism process emotional expression.



## Introduction

Art educators working in the field today are likely to encounter students with autism in their schools. In the United States, one in ninety children is diagnosed with autism each year (Furniss, 2010a). Autism is a pervasive developmental disorder on a spectrum affecting a person's communication and social behaviors (Furniss, 2008b; Powell & Monteggia, 2013; Yapko, 2003). Asperger's syndrome and Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS) are the other two disorders making up the autism spectrum. Individuals with Asperger's syndrome typically have fewer communication challenges and tend to test as having higher IQs than people with autism. PDD-NOS is the diagnosis used for those on the spectrum displaying some but not all of the symptoms necessary for an autism or Aspergers diagnosis (Schall & McDonough, 2010). In order to receive a diagnosis on the autism spectrum, there must be evident impairments in communication and socialization, along with repetitive or restrictive behaviors. Other less prevalent symptoms may include, "hypersensitivities in processing sensory information such as sound, touch or sight" and speech and language impairments (Furniss, 2008b, p. 8).

Under the Individuals with Disabilities Education Act, federal law states all students with disabilities, including autism, have the right to a free public education (Furniss, 2008a). It may be intimidating for some art teachers to consider teaching students with autism, but that should not be the case. Dr. Temple Grandin, a professor of animal science and a renowned expert on

autism who is on the autism spectrum herself, claimed people with autism often demonstrate excellent visual and spatial skills (Grandin, 1995, pp. 19-20) and many people with autism excelled in the visual arts.

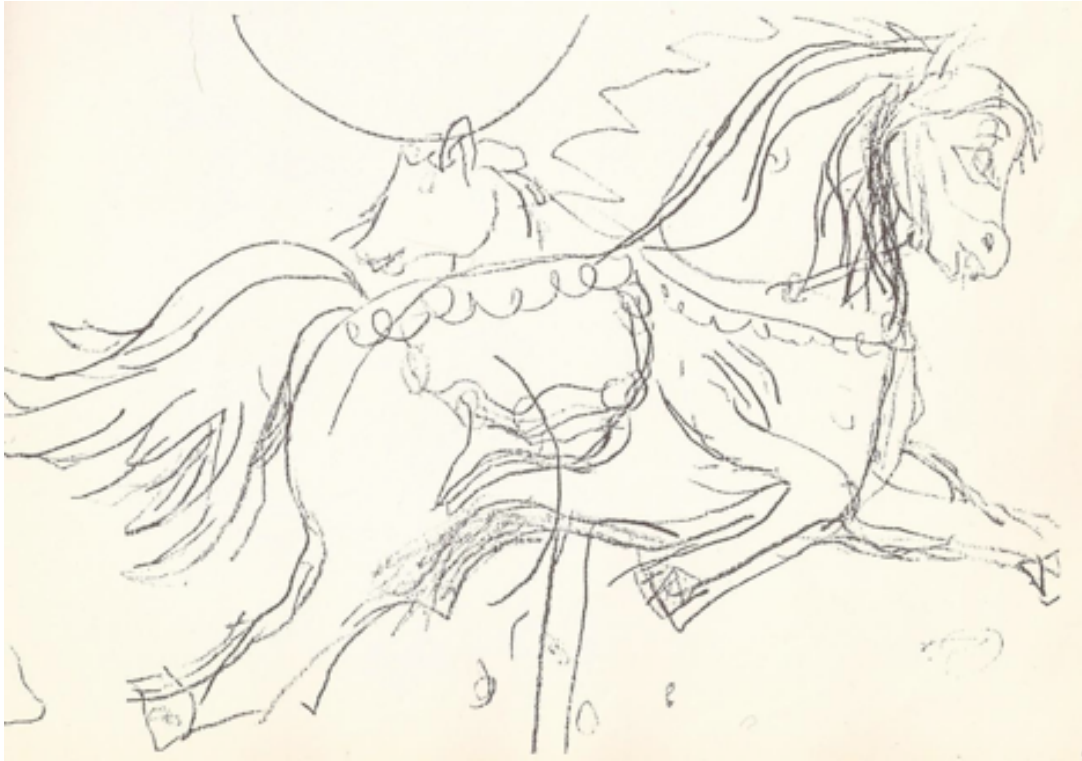
The purpose of this individual case study is to examine the drawing skills of Amy, a nine-year-old girl diagnosed with high functioning autism. Amy has a unique comic drawing style effectively conveying her character's emotions. The ability to illustrate emotion in the faces of her characters is unique for a person with autism, because "[m]any studies have shown that children and adults with autism are impaired in their ability to [recognize] emotions from facial expressions (Ryan & Charragáin , 2010, p. 1505). This study will attempt to understand what has led to Amy's ability to understand emotion and express it in her own artwork.

In this study, I will attempt to understand many facets of Amy's understanding of emotion. Through this individual case study, I will investigate whether Amy's ability to identify emotions is more accurate if she is asked to recognize the emotions of humans, human cartoon characters or non human cartoon characters based on visual cues alone. If prompted, can Amy draw characters expressing certain emotions? Can she show changes in characters' emotions throughout the narrative of a comic? I will investigate if Amy's understanding of emotion is influenced by the visual culture she consumes. With this study I hope to gain a better understanding of what influences Amy's drawing style and how those influences relate to her understanding of the emotions of others.

## Literature Review

Amy's drawing talent is far more advanced than her classmates who would be described as typically developing. Extraordinary drawing talent is frequently observed among people with autism. The art and processes of several adult artists with autism are well documented over the last four decades (Furniss, 2008b; Kellman, 2001; Park, 2001; Self, 1997; Sacks, 1995). Over the past fifteen years an increased amount of research on child artists with autism has been written (Cox & Eames, 1999; Kellman, 1999; Kellman, 2001; Kellman, 2004). Like the artists, the artwork of people with autism is varied and diverse. Upon closer examination, there are many commonalities between the art of adults and children with autism.

One of the most consistent similarities between children and adults with autism is the early evidence of drawing talent. Nadia, who as a child became the subject of Lorna Selfe's (1977) book, *Nadia: A Case of Extraordinary Drawing Ability in an Autistic Child*, suddenly at the age of three and a half exhibited gifted drawing abilities (see Figure 1). Similarly, the drawing talent of the celebrated professional artist with autism, Stephen Wiltshire, emerged at the age of five (Kellman, 2001). Typically developing children do not exhibit gifted drawing abilities at such a young age, which made the cases of Nadia and Wiltshire so interesting.

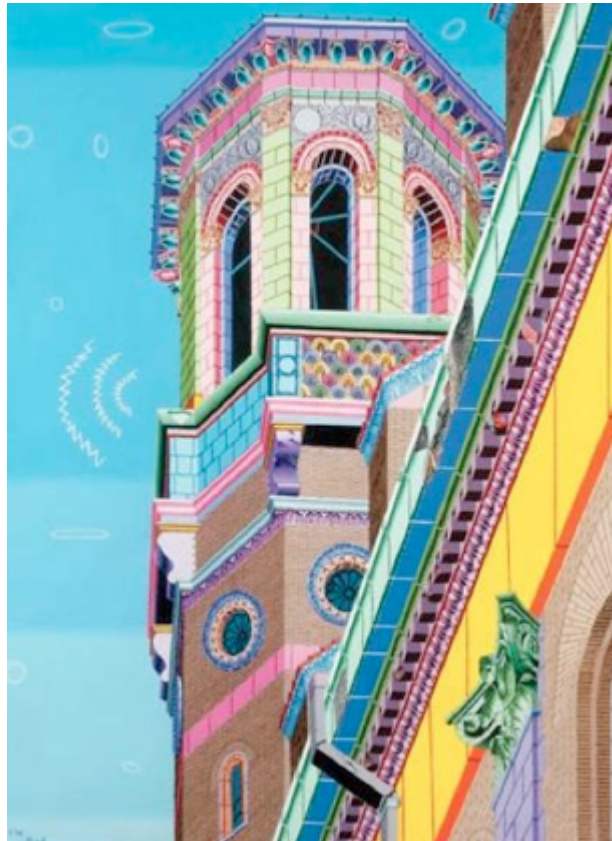


*Figure 1.* An example of Nadia's drawing from between the ages of three and five months and four (Selfe, 1977).

In her article, "Drawing with Peter," Julia Kellman (1999) explained that when given their first mark making tool, many children with autism could produce very accomplished foreshortened images (pp. 263-264). An advanced understanding of space and perspective is a characteristic shared by many artists with autism. Oliver Sacks (1995) described the work of Nadia, as an accomplished young artist with autism "qualitatively different from those of other children: she had a sense of space, an ability to depict appearances and shadows, a sense of perspective such as the most gifted normal child might only develop at three times her age" (pp. 255-256).

The heightened sense of space and perspective is evident throughout the careers of many accomplished artists with autism, especially in the work of Stephen Wiltshire and Jessica Park (see Figure 2). This same sense of space and perspective is evident in the art of children and adolescents with autism as well. Two case studies, one from the United Kingdom and one from

the United States, gave examples of two boys whose art demonstrated advanced spatial awareness and linear perspective (Cox and Eames, 1999; Kellman, 1999).



*Figure 2. St. Paul's and St. Andrew's Church an example of the current work of Jessica Park (Furniss, 2010b, p. 193)*

A case study from the United Kingdom examined the artwork of a teenager known only by the initials BX (Cox and Eames, 1999). BX began drawing bridges at the age of fifteen with no previous interest or instruction in drawing. Cox and Eames (1999) described these drawings as, “notable in terms of their precise linear style and perspective” (p. 399) (see Figure 3).

Julia Kellman (1999) described the art of Peter, a boy with autism, as having advanced three-dimensional qualities. Peter often draws characters from his favorite movie, *The Wizard of Oz*. His drawings imply three-dimensional space; often the figures are lined up on a diagonal from left to right. Kellman (1999) believed it was an attempt to show the characters walking into

the distance. Though she acknowledges Peter's representations of three-dimensional space were not as advanced as artists like Wiltshire or Nadia, Kellman (1999) noted his artwork exhibited many three-dimensional drawing skills like foreshortening and overlapping.

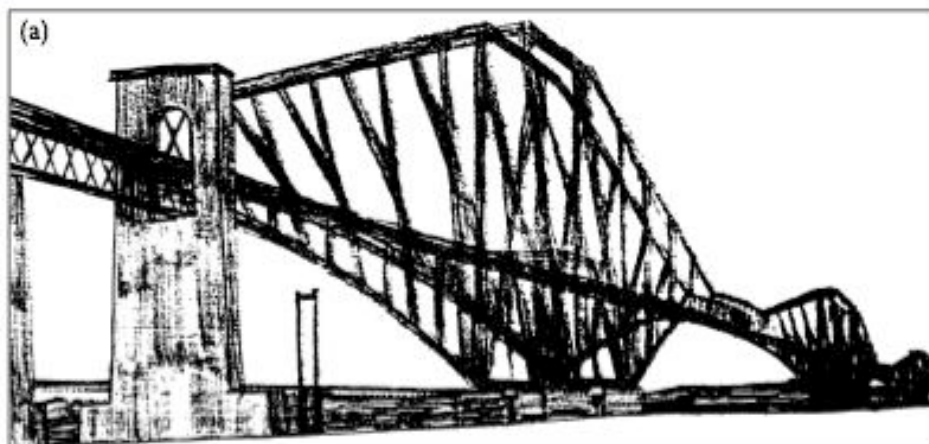


Figure 3. “Examples of BX’s drawings of the Forth bridges ” (Cox & Eames, 1999, p. 400).

These accounts of artists with autism describe their ability to render three-dimensional space, but perhaps more astonishing is the ability of many of these artists to recreate a scene or an image only after a quick glance. Nadia was said to be able to glimpse at an image in a picture book and be able to replicate it matching many of the drawing's spatial characteristics (Kellman, 2001, p. 12). In her book, *Autism, Art, and Children: The Stories We Draw*, Kellman (2001) described the work of Richard Warwo, an adult artist with autism. When creating his oil crayon landscapes, Warwo drew images he saw from a variety of print sources. Incredibly, he created his art from scenes he saw briefly on television or walking around his town of Edinburgh. These images appeared in his work weeks after seeing these scenes (Kellman, 2001).

Oliver Sacks (1995) described an occasion when Stephen Wiltshire visited his house. Sacks asked Wiltshire to draw a picture of his home. Stephen went outside and took a “quick, indifferent look” at Sacks’ home. Sacks (1995) wrote that, “there hardly seemed any act of

attention” before Stephen asked to go back inside to begin drawing (p. 283). Once inside, Stephen became engulfed in his drawing, ignoring all other distractions. Sacks (1995) described Stephen’s approach to drawing by writing, “Stephen did not make any sketch or outline, but just started at one edge of the paper (I had a feeling he might have started anywhere at all) and steadily moved across it, as if transcribing some tenacious inner image or visualization” (p. 283) (see Figure 4). Cox and Eames (1999) described a similar process while documenting BX’s drawing style.

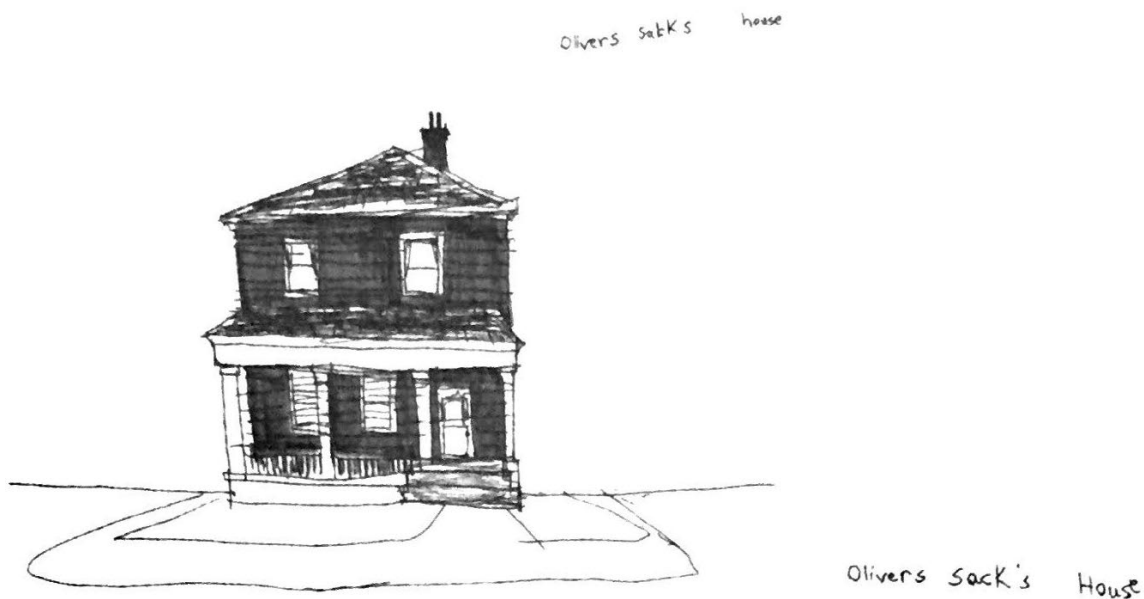


Figure 4. Stephen Wiltshire’s first drawing of Oliver Sack’s home (Sacks, 1995, p. 218).

A possible explanation for this phenomenon may lie in the analysis of BX’s *Benton Visual Retention Test*, a tool to assess short-term visual memory (Cox & Eames, 1999). This test is comprised of exposure to an image for various amounts of time and the ability to reproduce the image. When there was a delay between BX’s exposure to the image and when he was asked to reproduce it, his scores improved. This shows BX’s drawing style was based on memory, not

copying (p. 403-404). According to Cox and Eames, BX's drawing style was similar to most other artists with autism, specifically Nadia and Wiltshire (p. 405).

Of all the artists discussed in this paper, no two shared identical styles or techniques, though many similarities can be seen throughout their art and art making. The commonalities of these artists might be due in part to their autism (Kellman, 2001; Furrniss, 2008b; Grandin, 1995). Kellman (2001) suggested the similarities in these artists' use of space, line and perspective, along with the early evidence of drawing talent may be the result of a shared cognitive process. She went on to explain, "[t]he presence and exceptional nature of these...artists' drawings and paintings can be seen to grow out of single, bright visual moments – moments made longer and more accessible by their autism (Kellman, 2001, p. 17). Autistic thinkers are focused on their current experience; the images they see are not subject to conceptualization like those without autism. When non-autistic artists recognize an object, their recall becomes confused with their conceptualized idea of the object (Kellman, 2001). Artists with autism seem to lack conceptualization skills allowing them to “convey a wonderfully direct...view of the world” (Kellman, 2001 p. 17).

Sheppard, Ropar, and Mitchell (2009) also found evidence when drawing, artists with autism used fewer conceptualization skills than non-autistic artists. Individuals with and without an autism diagnosis were asked to copy line drawings of three-dimensional objects. It was noted the majority of participants with autism copied the two-dimensional outline of the figure before drawing the interior lines. The participants without autism used drawing techniques that “[took] into account the 3-D structure of the object” (p. 1104). The researchers concluded this was “consistent with the perception of those with autism being less conceptually driven” (p. 1104).



It has been suggested people with autism view the world this way due to a weak central coherence (Cox & Eames, 1999; Furniss, 2011). Across the general population, levels of central coherence vary (Briskman, Happe & Firth, 2001). Briskman, Happe, and Firth (2001) described the spectrum of central coherence as ranging from weak to strong. A weak central coherence being described as “preference for parts over wholes, e.g. surface form retained without gist” and strong being described as “meaning extracted but surface form lost, e.g. typos missed” (Briskman, Happe & Firth, 2001, p. 300). This is often found in individuals with autism, preventing them from creating a whole from pieces of information, but is attributed to excellent visual-spatial skills and rote-memory (Furniss, 2011). It is believed that Nadia and Stephen Wiltshire accessed their drawing skills through this “abnormal processing” associated with a weak central coherence (Cox & Eames, 1999 p. 406). The childhood artwork of Jessica Park also showed evidence of this form of processing. She would not omit certain objects from her drawings. As a result of a weak central coherence Jessica’s realistic drawing style, was unlike other children her age because it “included everything within her view” (Furniss, 2011, p. 191).

Furniss (2011) also suggested Park’s drawing ability may also be attributed to enhanced perceptual function. Enhanced perceptual function is a theory describing “enhanced memory of the surface properties of visual and auditory patterns” (Mottron, Dawson, Soulières, Hubert, & Burack, 2006, p. 28) of people with autism. Furniss (2011) believed this theory may support Park’s early use of patterns and the fact she did not progress through typical phases of artistic development.

In her book, *Thinking in Pictures*, Dr. Temple Grandin (1995) offered a much simpler, but equally valid explanation. She wrote:

In autism, it is possible that the visual system has expanded to make up for verbal and sequencing deficits. The nervous system has a remarkable ability to compensate when it is damaged. Another part can take over for a damaged part (p. 39).

Dr. Grandin is a celebrated woman with autism, well respected in the field of autism research. Though she does not cite specific resources to back up this claim, her thoughts are important to note. Due to the limited verbal skills of many individuals with autism, it may be possible for their brains to compensate with heightened visual abilities (Grandin, 1995). The work of Nadia comes to mind when considering this theory because as her language skills strengthened, her drawing ability decreased. The artwork created by Park, Warwo, and Wiltshire as adults has been discussed at length in literature, but the discussion of Nadia's artwork stops at the age of nine when her talent and interest in creating art diminished (Kellman, 2001; Sacks, 1995; Furniss, 2008; Selfe, 1977).

Nadia, who began creating astonishingly accurate line drawings at the age of three, showed noticeable decline in the quality of her artwork around the age of nine. David Pariser (1981) noted the "decline coincided with Nadia's acquisition of social skills and a little language" (p. 22). About a year and a half earlier, Nadia began to attend a school for students with autism; this resulted in improved behavior and an increase in spoken language. By the age of seven and a half, her artwork started to resemble that of students her own age (see Figures 5 and 6).



*Figure 5.* An example of Nadia's drawings at the age of 5, the trumpeter on the horse was a frequent subject of her drawings (Pariser, 1981, p. 30).



*Figure 6.* An example of Nadia's drawings at the age of 9, this portrait represents Derek Wilson, a psychologist that worked with Nadia often (Pariser, 1981, p. 31).

Pariser (1981) stated blaming Nadia's school setting and language acquisition as the decline of her drawing skill is unfounded. He suggested Nadia's change in drawing style may not be considered a decline, but instead a development of her central coherence. It is possible this time in her life coincided with a "time when concepts became wedded to the act of drawing" (p. 27). An enhanced ability to conceptualize the images she saw as parts of a whole would account for her decrease in visual-spatial skills.

Unlike the artists discussed in this literature, Amy's artwork is usually in comic strip form and consists of stylized cartoon characters with extremely expressive faces. This ability to draw expressive emotions is unique for someone with autism, because "many studies have shown that children and adults with autism are impaired in their ability to recognize emotion from facial expressions" (Ryan & Charragáin, 2010, p. 1506). This suggests facial expressions have a "decreased impact" to people with autism (Rosset, D. B., Santos, A., Da Fonseca, D., Poinso, F., O'Connor, K., & Deruelle, C, 2007, p. 919). A study by Deruelle, Rondan, Gepner, & Tardif (2004) concluded a weak central coherence contributed to the facial processing ability of people with autism. So it is possible the same phenomenon that could contribute to Amy's drawing talent could also limit her understanding of human facial expressions. A possible explanation of Amy's ability to create expressive cartoons could be children with ASD process human faces and cartoon faces differently (Rosset et al., 2007; Rosset, et al., 2010; Bronson, Johnson, Grawmeyer, Chapman, & Benton, 2015).

The areas of the brain typically involved with processing facial expressions are referred to as the Fusiform Face Area [FFA]. According to Rosset et al. (2007) when viewing human faces, people with ASD show less activity in their FFA than typically developing people who are presented with the same stimuli. A recent neuroimaging case study by Grelotti et al. (2005) has shown children with ASD show an increased interest in cartoon faces over human faces. One child in the study who was particularly interested in cartoons showed no FFA activation when viewing human faces but did show FFA activation when viewing cartoon faces. These findings suggest children with ASD process cartoon faces in the same way typically developing children process human faces.

Rosset et al. (2007) describe several other studies that give insight to people with autism's preference towards cartoons. The results have shown when viewing cartoon scenes, individuals with ASD focus longer and more often on the faces of the characters than the objects in the scene. When learning to recognize emotions, students with ASD made more gains when the curriculum included cartoon faces instead of human faces (Rosset et al., 2007).

Several factors could contribute to why students with ASD prefer cartoons over human faces. Rosset et al. suggest in their 2010 study, cartoon faces are seen only on television and comics and human faces are encountered during social interaction. This means when seeing cartoon faces, people with ASD are not concerned with decoding its relevance to the social situation. In an earlier 2007 study, Rosset et al. inferred the "reduced complexity" of cartoon faces may contribute to people with ASD processing them as typically developing people would process objects.

The majority of the current literature about art education and autism focuses on the benefits of art therapy to individuals with autism (Harris, Rosal, Gussak, & Van Lith, 2015; Liu & Harrison, 2016; Talusan-Dunn, Cruz, Betts, Forninash & Kirby, 2012) and inclusive methods for teaching students with autism (Burdick, Causton-Theoharis, Biklen and Rolling, 2011; MacLean, 2008; Wexler & Luethi-Garrecht, 2015). In contrast, this study focuses on a student with autism's ability to recognize and incorporate facial expressions in drawing. As shown above, there is an abundance of research about artists with autism, and considerable more recent research analyzing how people with ASD process faces and emotions and their preference of cartoon faces over real faces. Unfortunately there are gaps in the research where those two topics overlap, where artists with autism whose breadth of work deals with emotion or facial expressions. This study intends to bridge the gap between those two fields of research.

## Methodology

I approached this study of Amy as an individual case-study. A case-study typically involves observation and description of a single person or small group. The data collected will be analyzed from a qualitative point of view, this approach is supported because the goal of this study is to understand a phenomenon occurs in a certain context. (Buffington & Wilson-McKay, 2013).

I conducted interviews with Amy and her mother to gain insight into her drawing process. Observing Amy draw prompted and unprompted subject matter was integral to my research. These observational methods are similar to the methods used by authors like Oliver Sacks (1985, 1995), Julia Kellman (1999), Clara Claiborne Park (1990) and Lorna Selfe (1977) during their case studies of artists with autism.

Individual case studies are a common methodology used to research artists with autism. Acclaimed neurologist and best selling author, Oliver Sacks followed a similar methodology when writing about two particular artists with autism, Stephen Wiltshire and one only known as José (Sacks, 1985; Sacks, 1995). Upon meeting Wiltshire, Sacks was already aware of his drawing abilities. Sacks encouraged Wiltshire to draw specific objects or places so he could get a better understanding of Wiltshire's process and style (Sacks, 1995). When Sacks first met José, he was not aware of his drawing ability. In his 1985 book *The Man Who Mistook his Wife for a Hat*, Sacks said he often asks patients to draw or write so he can develop an "index of various

competences, but also as an expression of ‘character’ or ‘style.’” (p. 215). Once José’s drawing abilities were realized, Sacks continued one on one meetings with José. Information gathered from those sessions, combined with what Sacks learned from José’s family and doctors allowed Sacks to develop a detailed understanding of his condition and abilities (Sacks, 1985).

Another individual case study, which Sacks cited in his works about José and Wiltshire, is the work of Lorna Selfe and her research with Nadia Chomyn, a child with autism. Selfe’s(1977) book, *Nadia - A Case of Extraordinary Drawing Ability in an Autistic Child*, gives in-depth insight into the artwork of a young girl with autism. Selfe’s research is similar to Sacks’ because it is an individual case study, their research differs because Nadia could not respond to drawing prompts. Selfe gathered her research by observing Nadia drawing on many different occasions and through discussions with her family and doctors (Paine, 1981). Another author cited by Sacks is Clara Claiborne Park (1990). *The Siege* , is Park’s personal narrative about raising her daughter, Jessica, who is on the autism spectrum. Park did not use reseach in the traditional sense like Sacks’ or Selfe, but she did focus on the artistic development and abilities of one individual.

The works of Selfe, Park and Sacks were cited by art educator and researcher, Julia Kellman (1999). Kellman’s individual case study *Drawing with Peter: Autobiography, Narrative, and the Art of a Child with Autism* (1999) focused on the drawing ability of one student with autism. Kellman describes her methods of data collection as participant observation, formal and informal family interviews, reviewing Peter’s drawings from the past several years and Peter’s yearly psychological evaluation records (p. 260-261). Kellman concentrated on the work of one child but felt, like many others, research about other individuals with autism was relevant and supported her research.

Sacks (1985, 1995), Selfe (1977), Park (1990) and Kellman (1999) all followed similar research methodologies in their work. Even though they each only focused on one individual, their works referenced in this paper have been cited in research 4,745 times according to Google Scholar (n.d.). Yet over 4,300 of those citations are from Sacks' two books focusing on several conditions other than artists with autism, and they both also happen to be bestsellers (oliversacks.com, 2016). These numbers may be skewed by Sacks' popularity; however, the conclusions drawn by these individual case studies showing how drawing ability can manifest for people with Autism is generalizable enough to be considered by valuable to other researchers in the field.

Amy is the main focus of this case study. At the time this study was conducted, Amy was a nine-year-old and in the fourth grade. She is an African American girl from central Virginia, diagnosed as having high functioning autistic characteristics. The research was conducted in a classroom setting with myself, Amy, and her mother supervising. Interviews and discussions between Amy, her mother, and myself were recorded to increase accuracy when analyzing the data.

To develop a greater understanding of Amy and her background, I spoke with Amy's mother to learn when they first noticed her drawing ability and how her abilities developed, and to get a better understanding of the types of visual culture Amy consumes, specifically the cartoons or comics she finds most interesting. Through the study, I showed Amy images of human faces expressing different emotions from the Mind Reading: Emotions Library (Baron-Cohen, Golan, & Wheelwright, 2003). Images from this library were used in the research of Rosset et al. (2007) and many other autism researchers (Mind Reading Emotions Library, 2014). I showed Amy the faces of human cartoon characters and non human cartoon characters



expressing the same emotions to see if she was more accurate at identifying one group over another. I used two groups of characters during this process, one set of characters familiar to Amy, and a second set of unfamiliar characters. A complete set of images depicting one cartoon animal definitively expressing the fifteen different emotions used in this study was not available. Although Amy viewed images of Donald Duck from a variety of sources, due to this inconsistency of the source material, this data was not analyzed. Amy was asked to draw comics based on prompts dealing with emotion. The prompts would ask her to draw several characters expressing specific emotions and to draw comic strips where a character's emotion changes throughout the narrative of the strip.

When analyzing the data, I looked to see which set of facial expression images Amy most accurately identified. If the prompts match her illustrations, I looked to see if they showed insight into her understanding of emotion. Through the study, I intended to find out if Amy's understanding of emotion is limited to cartoon characters and if her ability to illustrate emotion is intentional. By analyzing the visual culture Amy enjoyed, I looked for influences on her artwork. For example, when Amy drew an excited character, was she borrowing features from the excited characters she sees on television or in books, or from her own logic? Unfortunately due to gaps in the data, this information could not be analyzed.

### Significance of the Study

This study intends to make meaningful and significant connections between the research on autistic artists and research on how autistic individuals process faces and emotions, preferring cartoon faces over real faces. Gaining insight into Amy's creative process may allow those who

work with her in the future to have a better understanding of her talent. This research could potentially enhance the practice of other art educators who teach students with autism. Since this is a case study of only one student with very unique abilities, the validity of this research may be limited. Since every person with autism has unique and individual strengths and weaknesses, the transferability or generalizability of this research may be limited.

## Amy's Introduction

At the time this research began I had known Amy as a student for just over a year. She moved to the elementary school at which I teach, midway through her third-grade year. Our first interaction was when Amy's special education teacher brought her on a tour of the school along with her family, mom, dad, a younger brother, and sister. When I met Amy, she told me she liked art and her mother added she wanted to be an animator when she grew up. At first, I didn't ascribe importance to the latter comment because it is normal for students to tell an art teacher they like art. It wasn't long before I realized Amy's drawing ability was far more advanced than her peers. My interactions with Amy were typically limited to our weekly 45 minute art classes where Amy would frequently rush through her projects so she could "free draw," an opportunity to draw whatever students choose when they have free time in my class. I typically allowed Amy more opportunities to free draw than other students because I was fascinated by her drawing ability. I quickly noticed Amy's ability to draw characters with a wide variety of facial features. I thought this was unique because students with ASD typically have a difficult time understanding and processing facial expressions (Ryan & Charragáin, 2010).

It was not until the end of Amy's fourth grade year when I began this research. Before our research started, I met with Amy's mother to discuss Amy's general development and the development of her artistic style. In this section I describe the personal communication I had with Amy's mother (PERSONAL COMMUNICATION, 2016). Amy's mother described her as a "typical" baby; the only abnormality was at eighteen months, Amy had not developed any

speech. Their pediatrician directed the family to the Children's Hospital, which had too many cases, so it directed the family to their local school division. The school division tested Amy and gave her the diagnosis of developmentally delayed. Amy was given this diagnosis in part because of the fact Amy was what her mother identified as "hyperlexic." The Center for Speech and Language (CSLD) disorders defines hyperlexia as a "syndrome that is characterized by a child's precocious ability to read (far above what would be expected at their age), significant difficulty in understanding and using verbal language (or a profound nonverbal learning disability) and significant problems during social interactions" (Martins Miller, n.d.). The CSLD goes on to describe hyperlexia as "not a stand-alone diagnosis, [r]ather, it exists on a continuum with other disorders, such as autism spectrum disorders" (Martins Miller, n.d.). Amy's mother claimed her hyperlexia "threw off her tests" and did allow her to receive an ASD diagnosis at the time. Amy displayed many hyperlexic behaviors by the age of two. Before the age of three, Amy would organize her blocks into alphabetical order, then progress into spelling words. Her mother recalls Amy spelled "Geico," assuming Amy learned the word from a television commercial. Amy began using her blocks to spell much longer words, sometimes up to ten letters. She would also use an Etch-a-Sketch to write out long words.

Amy entered the school division's early childhood special education program when she became eligible at the age of three. Her mother explained at time Amy could speak but not explain what she meant. Around the age of two or three Amy's parents noticed she displayed an interest in drawing. Amy's mother described her early drawings as exceptional for Amy's age and knew right away her drawing ability was not typical. Amy's first drawings were expressive with three-dimensional qualities, quickly developing a "comic or story style" according to her mother, who added that Amy was illustrating complete books by first grade.

Amy's mother explained Amy sometimes uses her drawings to express abstract thoughts she could not verbalize. She described a recent instance where the family had to spend the day cleaning the house. Amy never spoke up, or told anyone she was frustrated by doing the chores, but the next day she drew a comic of an angry-looking parent yelling at cowering children, telling them to clean their room. Her mother explained she and her husband weren't yelling at Amy, but they were making Amy do chores she did not want to do and assumed this is how she felt they were acting.

Since Amy's early drawings, her mother feels her style has not changed much. Her drawings have gotten more expressive the older Amy gets, but the characters she draws are similar to her early work. When I asked her mother if she had any ideas about who or what has influenced Amy's style, she told me Amy never mimics or copies other drawings; she always draws her own characters. She did explain Amy is very analytical and focused on branding. She'll often draw ideas for a new cereal brand or mascot. In the past she has drawn advertisements and comics about "Yum Burger," a fictional fast food restaurant Amy made up. Amy has a unique sense of humor and her mother notices it influences her art. I have made the same observations of Amy's work. Puns and underwear are among Amy's favorite comedic devices. Characters who are meant to be funny often only wear underwear or mention it as a punchline. Some of Amy's more recent comics show Mexican food saying things like "it is nacho cheese-ness" and "do you want to taco bout it?[sic]" (see Figure 7). One comic was all about Sonic the Hedgehog, a videogame character, working at a Sonic fast food restaurant. After talking to Amy about the drawing, it was evident she was not very familiar with Sonic the game character, but was amused he had the same name as the restaurant. The similar names and an

“onion ring/onion drink” confusion were the two big jokes in that comic which Amy found particularly funny (see Figure 8).

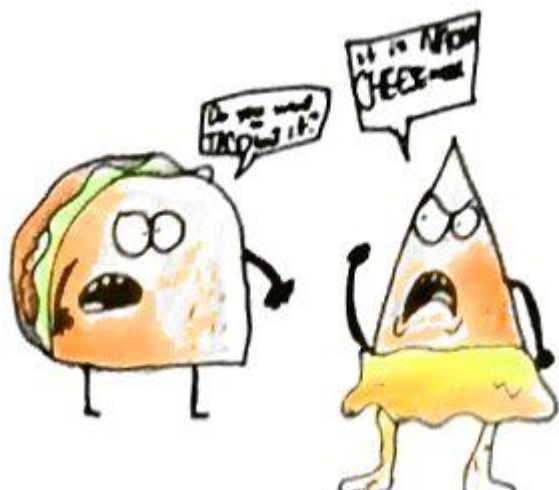


Figure 7. A recent example of a pun used in one of Amy’s comics



Figure 8. Amy’s comic *Sonic at Sonic*

Amy’s current interests are straying away from her typical pencil and paper drawings as she becomes more interested in stop-motion animation. She has recently discovered this art form on YouTube and has made several videos including a shot for shot replica of her favorite video, “Apples and Bananas.” Amy’s mother says she has no idea how she makes these videos other than Amy uses an app on her iPad. Amy says no one taught her, her “brain just knows how to do it” (PERSONAL COMMUNICATION, 2016). It is my assumption Amy either watched a tutorial or watched the video so many times she figured out how it was done. Either way, her video was remarkable for someone who is nine years old working independently, Amy’s drawing ability is far beyond her typically developing peers. Her ability to draw characters who express specific emotions is unlike any artist or student with autism I have found in my research.

I plan to determine if Amy's ability to draw emotions is linked to her ability to recognize emotions in humans or cartoon characters.

## Viewing Emotions

Over the course of three weeks, Amy met with me for six one-hour sessions after school. At the beginning of each session, Amy was asked to view series of human faces expressing different emotions from a video series as well as still images of cartoon characters. The video clips are from the *Mind Reading Emotions Library* and have been used in similar research by Rosset et al. (2007) and many other autism researchers (Mind Reading Emotions Library, 2014). Amy viewed three sets of emotion examples video clips and images each day: 1) short video clips of children expressing emotions; 2) still images of a cartoon person expressing emotions; and, 3) images of a non human cartoon character expressing emotions. When viewing each image or video, Amy was asked how she thought the person or character was feeling and how she could know just by looking at them. This was an attempt to get Amy to articulate what facial features were most important when identifying emotions. After viewing each day's clips and images, Amy was given several different drawing prompts that dealt with emotions viewed at the beginning of the same session. In this section I will describe Amy's responses to watching the video clips of children expressing different emotions.

## Human Emotions

During the first session, Amy viewed videos of children showing the emotions: happy, sad, angry, surprised and nervous. She correctly identified all of the video clips. When asked to



articulate how she knew each person was feeling the emotional categories of the clips and images, Amy mimicked the video. When asked, “How do you know that person is sad?,” Amy responded “Because his head is like this,” and she hung her head in a more exaggerated fashion than the sad video. When asked how she knew the person was happy, she simply smiled. When she was asked to “use her words” to explain why she knew he was happy, she said, “because he’s smiling.” Amy mimicked the video when asked how she could tell how each person was feeling when asked about nervous, surprised and angry examples. She needed a prompt to explain the nervous person was “looking everywhere,” the surprised person’s “eyes are popping out” and they have a “surprised mouth” and the angry person had “gritty teeth.”

During the second session, Amy was asked to identify the emotions angry, nervous, proud, happy, surprised, bored and tired from the videos. Amy started the session by singing to herself and sang her response to the first four emotions. She correctly identified “happy” and explained the person in the video was smiling. She identified the “angry” video as “mad,” and for the purpose of this study I conclude her answer is correct. She claimed the character was mad because they were “showing their teeth.” She could not verbally articulate why the “surprised” person was surprised, Amy mimicked the surprised character in the video with an open mouth and a gasp. She indicated the “nervous” video was actually scared, she mimicked the video and when questioned she said it was “because his eyebrows looked like that” noticing the boy’s furrowed eyebrows in the video clip. The “bored” person feels “sad because he is hanging his head down.” She correctly identifies “tired” and says it is because the girl is “blinking.” Amy incorrectly identified “proud” as “winking, because she is winking.” When asked, “She feels winking?” Amy confirmed that is indeed what she thought. During her second session, Amy

correctly identified four of the seven emotions and with prompting she articulated why she knew each person felt that way more accurately than she did during session one.

When reflecting on my research between sessions two and three, I felt like I was leading Amy's responses when I asked her to use her words to describe how she knew what the person was feeling. So starting in session three, if Amy responded by mimicking the video, I did not ask her to clarify verbally. During session three, Amy was asked to identify the following ten emotions: tired, overjoyed, proud, grumpy, afraid, excited, confused, silly, bored and embarrassed. Amy only correctly identified the "tired" person, claiming she knew they were tired because they were "yawning...[and] closing her eyes and blinking." She identified the "grumpy" person as "angry" and the "afraid" person as "scared." As a researcher I deemed these as appropriate responses since they were synonyms of the correct answers. Confused was identified as "thinking" because the boy in the video rubbed his chin. Amy was not able to explain the term with words, only by imitating the boy. Amy incorrectly identified both "overjoyed" and "embarrassed" as "nervous." She could not articulate any reasoning why the overjoyed video seemed nervous to her; she could only mimic the video. She explained the embarrassed person in the video was "smirking" and when asked "how does he feel?," Amy responded by saying "nervous." The "embarrassed" video clip showed a boy hanging his head, looking side to side having difficulty making eye contact with the viewer along with a nervous smile. "Nervous" could be an appropriate guess for this emotions, but not because the boy was smirking like Amy suggested. When asked to explain smirking, Amy could only imitate it. "Excited" and "silly" were both identified as "angry" because of their "gritted teeth." The excited person showed clenched teeth through a large smile and arched eyebrows indicating joy or excitement. Amy frequently uses eyebrows to express emotions in her drawings, but did not

notice or take into consideration the eyebrows of this example. The silly video clip also showed clenched or “gritty” teeth through a big smile and a slightly furrowed brow. I did not think it was easy to recognize this clip as “silly,” but classifying it as “angry” seemed like a stretch. Consistently over all three sessions, Amy has classified someone with “gritty” or clenched teeth as “angry.”

During the fourth session, Amy was shown the same emotions she saw in session three. She identified them all exactly the same, with the exception of “embarrassed.” She originally said the boy “doesn’t know what he is looking at” then quickly changed her answer to “I don’t know.”

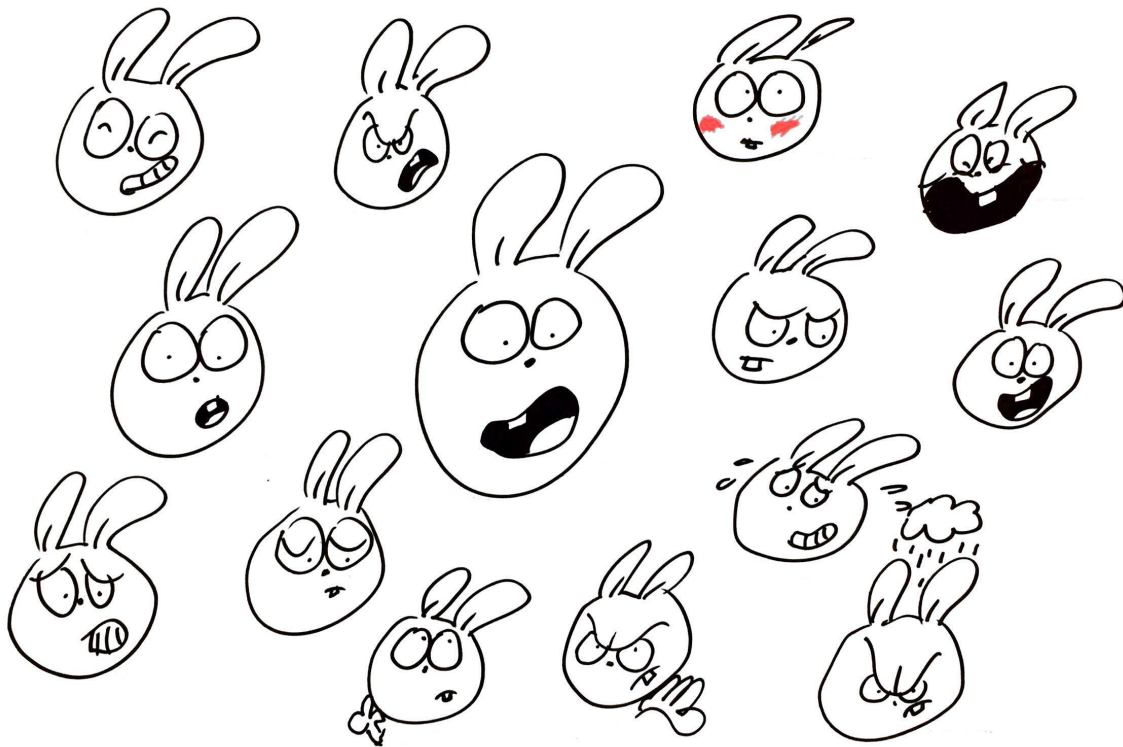
By the end of the fourth session it was evident Amy was becoming fatigued with the visual identification exercise. Asking Amy to identify the emotions before our sessions began was frustrating her and negatively impacting the artwork I was asking her to create later in the session. With this in mind, I decided to limit the visual identification exercise to four sessions. Amy was consistent in her responses and I felt enough visual identification data was collected in the first four sessions. I thought her expressive vocabulary was preventing Amy from being able to effectively communicate what she knew about the emotions. I wanted to see if asking her to explain certain emotions would allow Amy to show more of what she knew about the different emotion types.

During the fifth session, instead of starting with emotional identification from the videos, I asked Amy to explain what the different emotions meant in her own words. I started by asking her about emotions she seemed to easily understand. When asked to explain what sad meant Amy said in a low, sad tone of voice “I’m too sad to look at anyone.” Then her voice changed to a high pitch when asked about happy, she explained it by saying “Let’s all go to the park!”

Amy's voice became deep when asked about angry, she said "I am going to flip the table!" to explain what it meant to feel angry. Her voice trembled when she explained nervous by saying "I don't want to look at you," and she gasped before she said, "Don't you touch my beautiful picture" when she was demonstrating what surprised meant to her. As I continued to question her, she continued to give responses using a tone of voice matching the emotion she was asked to explain, but her responses became more difficult to understand and more gibberish than actual words. To try to get Amy to tell me in words instead of sounds, I asked her to think if she were going to write a sentence about each emotion, what would she write. Her responses became easier to understand but still in a tones of voice matching the emotions. Amy explained confused by saying "What do I do?"; grumpy was "I don't like anything!" She explained silly by saying, "I like to eat a table and wear my head on my back" in a manic tone of voice. "No, no, no! Don't eat me!" is how Amy explained scared.

After asking Amy to define all of the emotions, I asked her if she could draw a character expressing each of those emotions. She chose to draw a character named "Baby Carrot" that appears occasionally in her work. Amy drew Baby Carrot expressing the fifteen different emotions we had discussed during our previous sessions. Amy quickly and purposely drew fifteen different heads, each with a different emotion. Even the emotions she couldn't verbally identify or define she could illustrate. She drew each head like she had drawn them hundreds of times before. It appeared that she had a fully developed understanding of Baby Carrot's complete range of emotions already in her mind, and she could illustrate them without having to stop and think (see Figure 9). Later in the paper I describe Amy's ability to respond to a variety of specific drawing prompts.

Overall, Amy had a general understanding of what each emotion was when asked, but had a very difficult time articulating them with words. I feel this may have been the reason so many of her responses during the viewing emotions session were so similar and often involved physically mimicking the emotions she saw. Amy's understanding of emotion seemed advanced when asked to illustrate instead of verbally articulate.



*Figure 9. Baby Carrot's range of emotions*

#### Cartoon Emotions

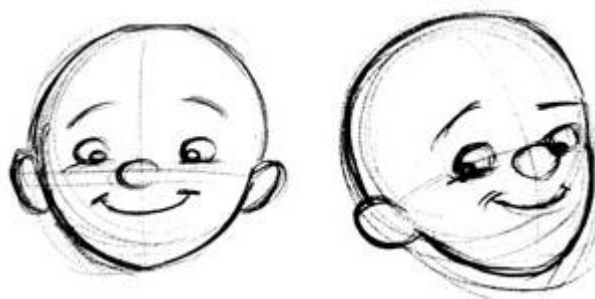
In each session, after Amy viewed a set of humans expressing emotions, she saw images of a cartoon characters expressing the same emotions. The cartoon images were taken from the blog of artist and writer Dani Jones. Ms. Jones' "work has been used in picture books, magazines, and educational publishing" (Jones, 2016). From 2005-2014 Jones operated a blog

titled Dani Draws (<http://www.danidraws.com>), and in 2007 she authored a blog post titled “50 Facial Expressions and How to Draw Them” (Jones, 2007). The post contains fifty illustrations of the same gender-neutral human head expressing different emotions. On her site, each illustration has a caption indicating which emotion the character is expressing. Amy viewed the images of facial expressions but not their descriptions and just like when viewing the videos, she was asked what emotion she thought the character was expressing and why.

During the first session Amy saw the expressions happy, sad, angry, surprised, and nervous. She correctly identified each of the emotions just as she did when viewing the human emotions on day one. When she was asked how she knew how each character was feeling, she gave appropriate verbal explanations. The surprised character was “making his ‘O’ mouth”; the angry person’s eyebrows were “scrunched up,” and the happy character was “showing a smile.” Getting Amy to explain sad took a little bit more prompting. She first said, “He doesn’t want anyone to be near him.” When I asked her to elaborate, she said she could tell because “he was putting his head down.” When explaining how she could tell the final character was nervous, she said it was because he was “showing his teeth” and “his eyebrows look sad.” I tried to get her to explain what it means for your eyebrows to look “sad,” but the only explanation she could offer was, “That’s how they look to me.”

During the second session, Amy saw images of cartoon faces that were happy, angry, surprised, bored, tired, nervous and proud. Amy was moderately successful identifying these faces, she correctly identified happy, angry (“mad”), nervous and surprised. She thought bored was “sad” and tired was “very sad.” These two images were viewed back to back and did share many similar features. I feel that is why she chose to distinguish between the two. She gave a similar answer when viewing the proud and happy images. She identified proud as “happy” and

happy as “normally happy.” Again, the two images were shown back to back and shared many similar features. The happy image was drawn straight on while the proud face was drawn at the three-quarter view. The mouth on the happy was in a more traditional smile shape, which is why I thought she said it was “normally happy.” She told me for both images that she could tell they were happy because of their smile. The normally happy image had a “normal smile and a normal face” (see Figure 10).



*Figure 10.* Cartoon images of happy (left) and proud (right) (Jones, 2007).

During the third session, Amy saw ten cartoon images and she only correctly identified two which is only one more than she got right when viewing human faces showing the same emotions. Of the cartoon images, she correctly identified scared and tired. She explained she recognized scared because “his eyebrows look like that” but could not articulate further. She understood tired because the character’s “eyelids look sleepy.” She incorrectly identified goofy (surprised), proud (happy), ecstatic (“laughing”), excited (happy), grumpy (angry), embarrassed (scared), confused (thinking) and bored (sad). In four of the incorrect responses she said she could tell because of the mouth, and in the other four she could tell because of the eyes.

During the fourth session she saw the same emotions as she did in the third. Again she correctly identified tired. She described confused by saying “I don’t know; he looks like he’s saying, ‘I don’t know.’” For research purposes, I feel that answer is correct. In this fourth session

Amy gave the same answers for proud, grumpy and embarrassed as she did in session three. Goofy changed from surprised to scared, ecstatic went from laughing to surprised, excited changed from happy to surprised, and bored changed from sad to tired. Again of the eight incorrect answers, she identified four based on what the character's mouth was doing and four based on what the character's eyebrows were doing.

I decided to stop this exercise after four sessions for the same reason I stopped the exercise where Amy observed human emotion. Amy was becoming fatigued with this exercise, and her frustration negatively impacted the artwork I was asking her to make later in the same session. Amy was consistent in her responses and I felt enough data was collected in the first four sessions. I thought her expressive vocabulary was preventing her from being able to effectively communicate what she knew about the emotions. It had become evident that Amy's strength was in illustrating emotions, not articulating them. A more complete analysis of the data gathered in this section can be found in the discussion and analysis section.



## Drawing Prompts

After the viewing emotions exercise, Amy was asked to respond to several drawing prompts. The prompts were related to the emotions viewed during that session and typically involved drawing characters or comics helping shed some light on Amy's ability to understand and illustrate emotion.

In the first session, Amy was asked to draw a character feeling happy. She quickly began drawing without hesitation. She began with a circle for the head and an oval in the lower third that would become a mouth. Two oval eyes with curved lines across the middle of the eyes to indicate the eyelids were closed. The character also had two ears and a body with two arms by its side. The mouth consists of two concentric ovals; the smaller inside oval contained three horizontal lines to indicate teeth. When asked to explain the second oval around the mouth she told me it was his beak. She explained the character was "Muck the Man Duck" (see Figure 11). This entire drawing took less than thirty seconds for Amy to complete. When asked to explain her drawing, she didn't respond, she only added two dots above the eyebrows to show only the bottom eyelids were closed.

When asked to draw a sad character, she completed a drawing of the same character in even less time than it took to draw the happy version. In this drawing, Muck has a slightly slouched posture, his beak is an oval with a slightly curved frown inside. Muck's eyes are half ovals connected with a horizontal line, like an eyebrow, and his pupils indicate he is looking down and to his left (see Figure 11).

The angry version of Muck also has him in a slightly slouched posture. He has his sharp teeth tightly clenched, as indicated by the zigzag line in his mouth. His eyes are very similar to how they looked when they were sad except the eyebrow is showing a much more severe curve and his pupils are raised to just below his eyebrows. This is the first time we see Muck's arms away from the side of his body. One arm crosses diagonally across his body, and the other is raised in the air with a clenched fist (see Figure 11).

When asked to draw a nervous character, Amy drew Muck again. Nervous Muck was characterized by sweat droplets coming from his forehead, two curved eyebrows over one connected unibrow. His mouth was closed and off to the side, a small curved line around the lip gave the illusion of depth, almost as if the lips were pouting. Mucks hands and arms were in odd position--his elbows were bent and his wrists were limp allowing his hands to hang awkwardly in front of him. Amy's surprised character was also Muck. His mouth was open and colored in black, except for a small area at the top showing a tiny amount of his teeth. Muck's eyes were large circles with small dots in the center for pupils. Small curved lines on the outside of his eyes indicated his cheeks were slightly covering his eyes. Both of his arms were straight down, next to his body (see Figure 11).



*Figure 11.* Muck the Man Duck's range of emotions (left to right) happy, sad, angry, nervous and surprised.

During our second session, I asked Amy to draw characters expressing specific emotions. Without being prompted she began to draw Muck (the Man-Duck) again. Her first illustration showed Muck being bored. Bored Muck's chin and hands were resting on a table or counter he was sitting behind. His mouth was small, closed, and off to the side. His eyes were circles with curved eyebrows breaking the plane. Small dot pupils were situated in the lower third of the eyeballs. For the first time during the drawing prompts, Amy added a speech balloon. She drew the balloon shape first, then wrote inside of it, "There is nothing to do?" Her words fit perfectly in the balloon as if she knew the size and layout of the text when making the balloon shape (see Figure 12).

Tired Muck has one hand on his stomach and one on his head. His mouth is slightly open and his eyes have bags under them. His eyes are wide open, but the pupils are in the lower third and appear to be slightly crossed. He has four drops of sweat coming from his brow. During this drawing Amy makes a change to Muck's appearance by adding underwear. When drawing tired Muck, she started with the head, then added the two arms. After she completed the hand placed on his stomach, she drew a horizontal line from his fingertips to the other side of his body, then connected both ends of the line with a curve underneath (see Figure 12). She continued to finish drawing the rest of tired Muck and then reached for a red chisel tip Sharpie. She used the Sharpie to add red circles which she quickly changed to hearts. When questioned, Amy confirms this is the same character from yesterday. As she colored his beak in light blue, I asked why he was in his underwear, she paused for a moment and said "He is a very funny guy." Amy offered no more explanation and quickly moved on to the next prompt.

Proud Muck was the subject of her next drawing. Proud Muck has a smile off to the side showing his teeth. His eyes are closed and look similar to the shape of an upside down 7. He has

one hand in the air giving peace sign and the other on his hip while confetti rains down around him. This version of Muck is also in underwear and has a blue beak that was colored during the drawing, not afterward like she did in the previous drawing. This was also the first appearance of Muck's feet, which are the same color blue as his beak. When asked why he was proud, Amy gave context to her drawing by explaining Muck is proud because he "[made] a sandwich for his mom." She elaborated this was a banana sandwich (see Figure 12). I showed Amy the first drawing of bored Muck and asked if I could see the rest of his body, would he be wearing underwear? Not responding to the question about Muck's wardrobe, she took the paper and quickly colored his beak to match the more recent drawings.



*Figure 12.* Muck the Man Duck's range of emotions (left to right) bored, tired and proud.

At the beginning of session three, Amy began drawing a new character. There was no explanation to why she did not continue with Muck. It may have been because more time had passed between sessions two and three than between sessions one and two. Amy's new character is named NutPea, a peanut who wears a crown. NutPea is made up of two ovals, one for his head and one for his body. He has two arms and two legs, each coming out of the lower body oval. He has hands with four fingers and socks and shoes on his feet. There is an area of cross hatching in

the lower right side of his body oval to indicate the texture of a peanut shell. Amy explained he was called NutPea because he “looks like a peanut and loves to eat peas.” When asked how she came up with him, she responded, “I got him from my brain.” I asked, “Is your brain thinking up characters all the time?” She replied with “Yeah.” Amy later explained she had just thought of NutPea during our sessions and had not imagined him before.

Amy was first asked to draw a tired character. Tired NutPea is very different than tired Muck. Tired Muck was drawn in session two, appeared to be tired because he was worn out. Tired NutPea appears sleepy. His mouth is open to the side, and there are teeth at top and a tongue at bottom. His eyes closed and his hand up covering mouth as if he is yawning and there are three Z’s above his head (see Figure 13).

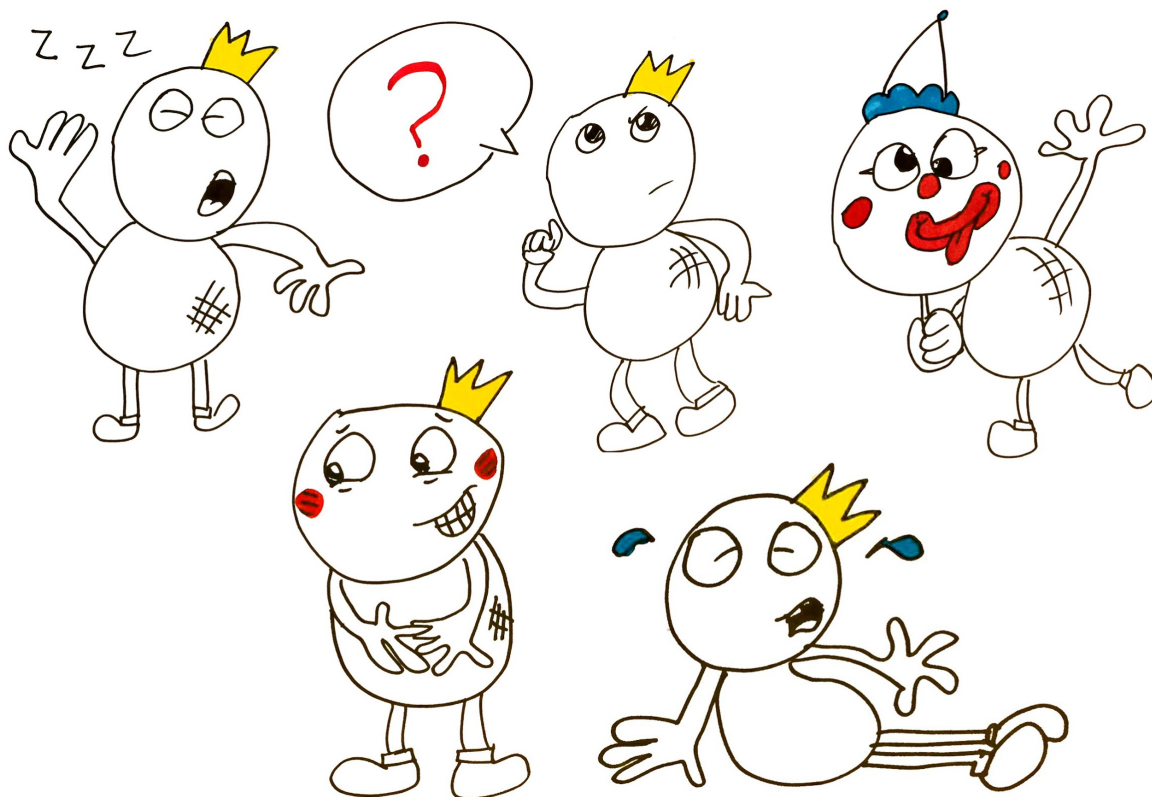
When asked to draw a confused character, NutPea was chosen again. He has a small closed mouth and his eyes were looking up to the right. This was the first time Amy illustrated a character’s pupils, they were larger than Muck’s and had an area left white to show a reflection. Confused NutPea has one hand on his hip and finger on chin. Again Amy uses a question mark in a speech balloon to add clarity to her drawing. When asked to explain her drawing, Amy said the question mark indicated Muck was confused and his finger on his chin meant he was thinking (see Figure 13).

Amy's next prompt was silly; she started with NutPea’s face. He has a smiling mouth and his tongue was out. His eyes were crossed, and he had a circle nose and circles on his cheeks. Amy drew a stick down from the chin and a hand holding it, then she continued drawing the rest of the body. She later explained silly NutPea was holding a “silly clown mask” (see Figure 13).

Next, Amy was asked to draw an embarrassed NutPea. She started with a small, smiling mouth with teeth showing. His cheeks seemed to cover part the lower section of his eyes similar

to the surprised Muck she drew in session one. Embarrassed NutPea only has one eyebrow which was slanting to the outside of his face, he also had three hashes on his cheeks that were colored red to show he was blushing. Embarrassed NutPea's hands were crossed in front of him, Amy described it as he was "doing them like he's naked." She assured me he was not really naked but only pretending (see Figure 13).

Amy's final drawing allowed her to choose NutPea's emotion. She chose sad and again, it did not show the same characteristics as sad Muck. Sad NutPea is sitting on the ground crying with his mouth open. His eyes are closed, and there are tears on either side of his eyes. When asked, Amy explained NutPea was sad because he lost his toy (see Figure 13). This is in contrast to sad Muck, who appears to be disappointed or depressed.



*Figure 13.* NutPea's range of emotions (top row; left to right) tired, confused and silly; (bottom row; left to right) embarrassed and sad.

I began the fourth drawing session by asking Amy to draw someone who was grumpy. She did not begin with the familiar round head, but instead she drew half of the head shape which led into an arm and then a hand with three fingers. She began to draw the other arm and hand then completed the head. Inside the circle she has drawn for the head, she drew two sloping diagonal lines for eyebrows and three quarters of a circle underneath it as the eyes. She completed the face with an exaggerated frown. Above the character she added a cloud and raindrops falling down. Next, she drew overalls between the character's two arms and drew what appears to be a desk or table that he is sitting behind. At this point she began drawing another character to the left of her first. She started with a head, eyes and a mouth; then she drew a round shape around the mouth to indicate that it is a beak. She gave the new character a comb on its head and two outstretched wings like a chicken. Finally, she framed the new character in a television and drew a speech balloon or thought bubble around the television. She capped her Sharpie marker and set it down only to pick it up a seconds later to add a some details to the overalls. This entire drawing was made with a blue Sharpie marker, a departure from her typical color of choice, black. She used a red Sharpie marker to add color to the comb of the character on television. When I asked Amy to explain why her character was grumpy she said "because he wants to watch TV, but he has to do homework." This was the first time Amy added context to why a single character was feeling a specific way when given this type of prompt (see Figure 14).



*Figure 14. Amy's drawing of a grumpy character from session three.*

Her second drawing of the day also had two characters but the context of why the character was feeling a certain way was less developed. I asked Amy to draw a character who felt silly. She begins with a round head with two small hairs coming out of the top, a smile and a tongue sticking out below the smile. She drew one large eye and put a line underneath it that gave the appearance of bag under the eyes. She paused and also added that same detail to her previous drawing. It became evident this was the same character as in the grumpy prompt, and she was continuing to develop its appearance. This was not a new behavior for Amy, she went back and added new details to earlier drafts of her characters every time she imagined a new one. After adding the lines under the eyes of the grumpy character, Amy went back to work on the silly character by adding two outstretched arms, the familiar overalls and legs that appeared to be dancing or preparing to click heels. She added some wavy lines down the character's hands and arms that gave the appearance that they were dirty. She then added a smaller character to the left of the silly character. This character was not the bird that appeared in an earlier drawing. This



new character was similar to the silly character but smaller with sloping eyebrows, an open mouth, the same bags under the eyes and two more hairs. His hands were on the table and his elbows bent in an aggressive position. She continued the horizontal line that defined the edge of the table or counter behind the first character and added a bottle of mustard tipped on its side.

Amy explained that the new silly character was named Splinker and his dad was to the left. I asked, “Why does Splinker feel silly?” She explained because he liked to play in mustard. I questioned how Splinker’s dad felt, whereupon Amy began to speak but could not find her words. She stopped trying to explain her answer and quickly drew a speech balloon coming from the father that said “Go to your room!” After making the speech balloon she explained that the dad felt angry (see Figure 15).



*Figure 15. Silly Splinker*

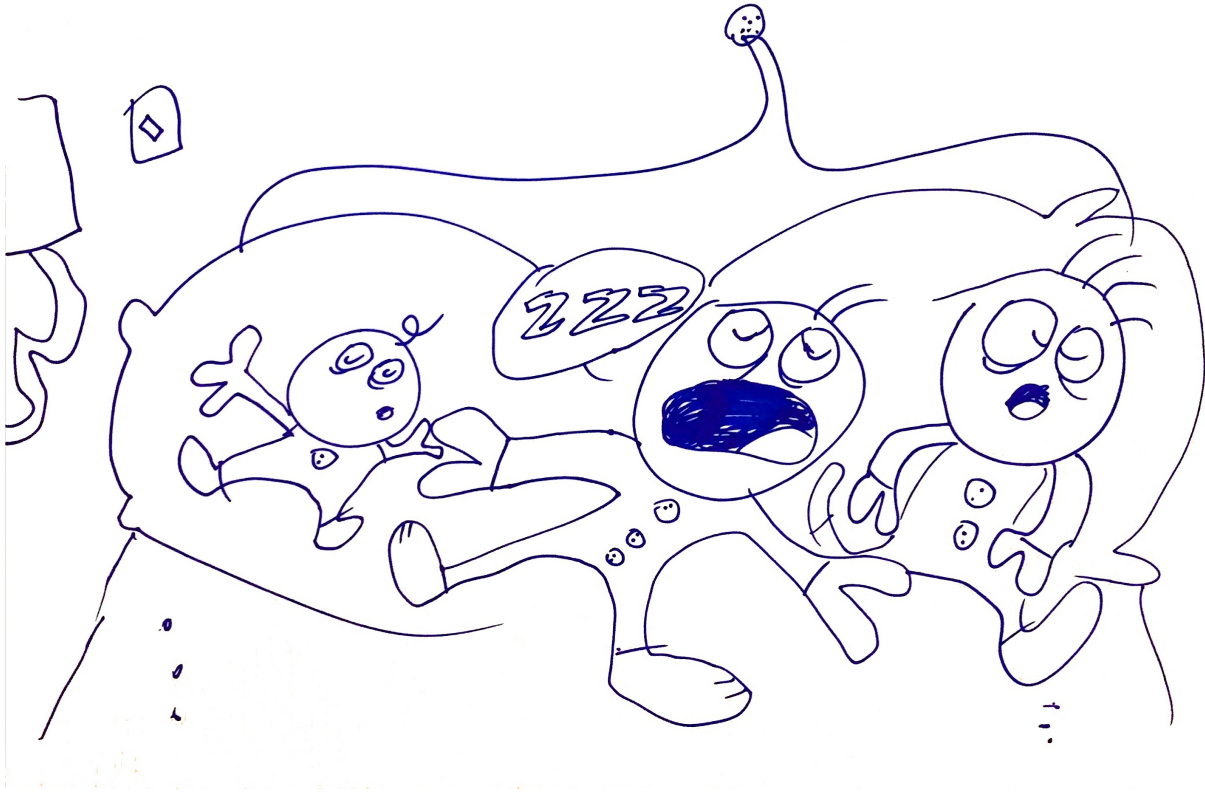
The third prompt I gave Amy was to draw a character who was “overjoyed.” I asked her if she knew what overjoyed meant, and she did not respond, she just began drawing. She began with a round head, and inside she drew an open mouth with a tongue. She added two circle eyes

with bags underneath them and dots for pupils that looked down. She drew three small triangles around the side of one head similar to the sweat droplets that she drew in previous sessions. She continued to draw Splinker sitting down with his legs stretched out in front of him. In his lap was a box that he was unwrapping; inside was a smaller box labeled “candy.” Off to the left Amy drew a very stylized Christmas tree with ornaments and a star. She added a horizontal line to illustrate where the floor and the wall meet. I asked Amy to explain her drawing. She told me, “He is overjoyed because he got candy for Christmas!” I asked Amy a second time if she could explain what overjoyed meant. She said, it meant “happy.” I tried to get her to elaborate by using a phrase she had used earlier by asking, “Do you mean ‘normal happy’?” Amy responded, “So happy! He was super happy!” (see Figure 16).



*Figure 16. Overjoyed Splinker*

For Amy's final drawing prompt, I asked her to draw a character who was tired. She began with the same round head and two eyes for Splinker. Instead of pupils she drew small curves inside the circles to indicate that his eyes were closed. She added bags under Splinker's eyes and a large open mouth with a tongue. Splinker's arms and legs were spread way out, almost like a starfish. She opted to forego the overalls from the previous drawings but added three circles down the center of his torso: the buttons of his pajamas. Three capital Zs were added to a speech bubble to the left of Splinker's head. He was flanked on either side by smaller sleeping characters. One was "Dad" from an earlier drawing, and the other Amy had not drawn before but later identified as "B the Baby." Large curved lines appeared to be two pillows behind the three sleeping characters and a large Seussian headboard was visible above the pillows. To the left of the bed was a diamond surrounded by a hastily drawn rectangle and some odd wavy lines. She finished her drawing, slid it over and explained "They're all tired!" Amy explained the shapes to the left of the bed were a lightswitch and a lamp, only half of which was visible on the picture plane (see Figure 17). The drawings Amy created based on these prompts gave a greater understanding to how she approaches drawing. A detailed description can be found in the discussion and analysis section.



*Figure 17. Tired Splinker*

#### Comics Drawing Prompts

In addition to having Amy draw individual characters expressing specific emotions in each session, I had her draw comics featuring her characters to gain a better understanding of her ability to illustrate emotions in context. Amy frequently draws comics during her free time at home and at school. These short narratives generally have six panels or less and feature her endless cast of characters telling their stories through speech balloons, expressive text and facial expressions. Over the two years I've known Amy, her comic style has not changed, but the content of the comics has become easier to follow. When I first met Amy, it was obvious she had her own unique sense of humor, often evident in her comics. These comics did not always make

sense to the readers, but Amy would laugh and laugh when explaining them. The explanations usually did not help the reader make sense of the comic, but it did give insight to Amy's personal sense of humor, which typically involved underwear (see Figure 18).

At the time the research for the paper was conducted, Amy was mere weeks away from completing the fourth grade. She still loved to create characters and comics but the content of her comics had evolved to a point where other people understood the humor. Amy was using puns and wordplay made her comics funny and understandable to most readers. Examples include a concerned taco asking an angry nacho, "Do you want to taco bout it?[sic]" and the video game character Sonic working at the fast food restaurant of the same name (see Figures 7 and 8).

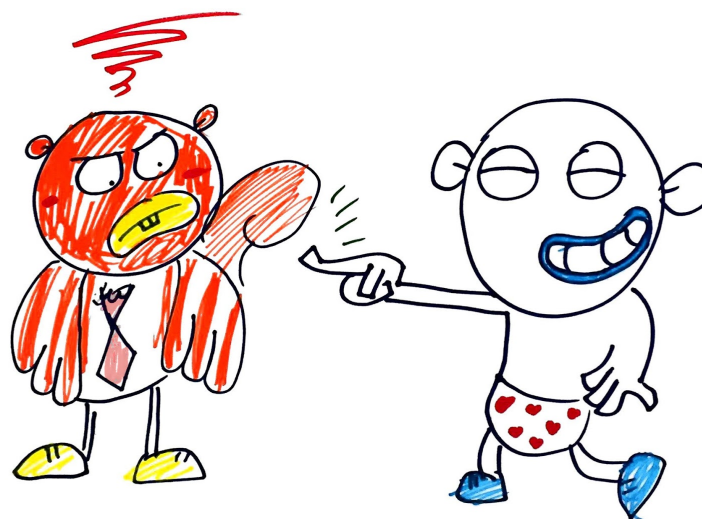
In an effort to see how Amy came up with these comics I gave her several drawing prompts with varying degrees of difficulty. The first prompt asked Amy to draw several one panel comics with two characters, each expressing one emotion. For her first drawing, I asked her to draw two characters, one who was happy and one who was angry. Before I could finish



Figure 18. An example of a comic Amy created while in third grade that gives insight into her personal sense of humor

explaining the prompt, Amy began drawing. She started with her character Muck, whom she had already drawn several times during this particular session. Muck was standing pointing with his right index finger and his left hand on his hip. He had a big smile showing his teeth and his eyes were closed tight. Amy paused a few times while drawing Muck and stared off for a second or two as if she were thinking. She quickly began drawing again, finishing Muck and starting a new character. Her new character was standing to the left of Muck and was who Muck was pointing at. She explained when she was done drawing, that this was Birrel, the bird-squirrel. Birrel was orange with a round head and oval body, with wings instead of arms. Birrel had a beak similar to Muck's, but it was yellow and had two large front teeth. He also has a large squirrel tail and

skinny bird legs with shoes on his feet. Later drawings of Birrel included a pink necktie. When asked, Amy said she had never thought of Birrel before the moment when she began to draw him. She explained, “I made him up from my brain.” Amy quickly colored Birrel orange with a Sharpie marker, her favorite medium. She colored quickly but neatly, allowing her marker to go right to but never going outside of the black line she had drawn moments earlier. Amy exhibited a level of control over her marker most children her age are not able to achieve. Her mother, who was sitting in on this session, explained Amy “never messes up” the picture in her head and there is never any erasing. Amy was not worried about completely coloring in her character; she added just enough color so the viewer understood Birrel was that orange (see Figure 19).



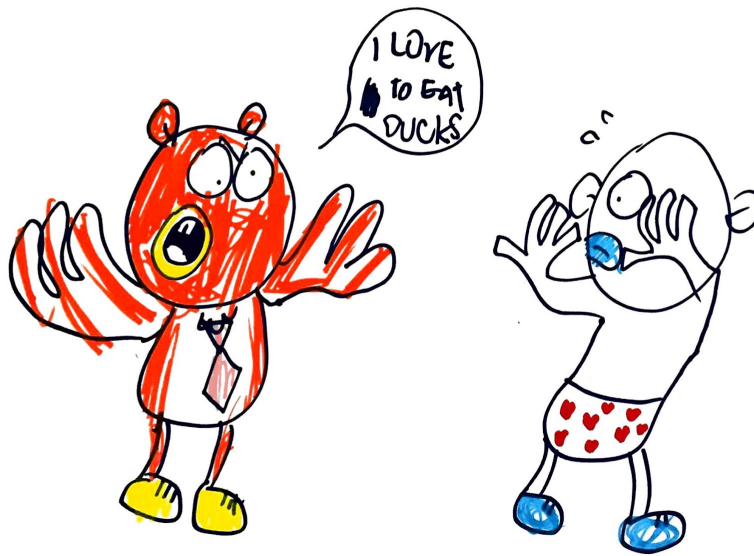
*Figure 19.* Comic drawing prompt with one happy character and one angry character.

In this particular drawing, Birrel was supposed to be the angry character. Birrel’s posture was rigid, and his eyes were glaring at Muck, with horizontal eyebrows covering the top of Birrel’s eyes. I asked Amy to explain the interaction happening between Muck and Birrel by first asking why Muck is happy. She responded by saying, “He is touching Birrel and Birrel gets

mad.” I asked if Muck were happy because he is making Birrel mad or if he is happy because he gets to touch Birrel. Amy clarified “He is happy because he gets to touch [Birrel].” I followed up by asking why Muck likes to touch Birrel, Amy let me know it was because Muck likes to annoy people.

For the second prompt, I asked Amy to draw Muck and Birrel again, but I wanted one of them to be nervous and the other to be surprised. As Amy began to draw, she started with Birrel and looked to her previous drawing as a reference. Birrel had wide eyes, an open mouth; his wings were in the air and he had a speech balloon reading, “I love to eat ducks!” Muck was drawn recoiling with his hands in front of his face and two sweat droplets coming from his brow. Amy added Birrel’s pink neck tie to this drawing and quickly added it to the previous drawing of Birrel. Amy explained she added the tie because she wants Birrel to “be like Muck who is always in his underpants.” I assumed the juxtaposition of underpants to necktie represented the characters’ opposite personalities. When I asked if she meant they were opposites, Amy said, “Yes. He’s always in a bad mood. He likes to eat ducks. Ducks are his favorite food.” It was obvious from the text and Muck’s expression, that Muck was scared of being eaten by Birrel, but there was no context given in the drawing or conversation as to why Birrel was surprised. It could be interpreted Birrel was surprised to see Muck, who happened to be his favorite food (see Figure 20).





*Figure 20.* Comic drawing prompt with one surprised character and one nervous character.

Amy's mother explained in our initial meeting Amy's newest interest was creating claymation movies. I agreed to let her work on making some characters and short videos at the end of our sessions. For our final comic prompt during session two, I asked Amy to create a storyboard for a claymation video. Amy understood what a storyboard was and explained it as, "a comic you make before you make a claymation." To begin her storyboard, Amy asked for a ruler that she used to make a large rectangle which she divided into two panels. In the first panel, an angry looking Birrel is standing to the left of a sincere looking Muck; in the next panel Birrel is sitting on the ground crying and Muck is standing agape pointing at Birrel. Muck's eyes are wide open; his pupils are focusing in two different directions and he has what Amy refers to as "angry eyebrows." Amy passed me the paper after adding a title to the top, and I asked her to explain what was happening. She quickly slid the back and added text. In each panel it appears the text should be read from right to left. Muck says to Birrel, "I love you," Birrel responds, "I

do not.” In the second panel, Muck says, “well I DONT LIKE YOU[sic]” and Birrel, who is crying on the ground, says, “WaWAWA!” After writing, Amy passes the paper back to me and says “WaWaWa.” I think the promise of making characters out of clay and the unstructured prompt allowed Amy to rush through this drawing (see Figure 21).



Figure 21. Storyboard for a claymation video featuring Muck and Birrel

For the first comic prompt of session three, I asked Amy to draw a comic about Muck and Birrel, but it had to be longer than the two panel comic from the previous session. I did not give her a set number of panels, nor did I give her a topic to follow. Amy starts by drawing a horizontal line across the top of an 12 x 18 sheet of paper, then a straight line down about a third of the way from the left side of the paper. Next she divides the larger of the rectangles in half

with a horizontal line. Finally, she divides the smaller rectangle with a diagonal line and a curved line. This is a very unique and non-traditional layout for a comic.

It appears Amy has already developed a plan for the layout in the few seconds after she heard the directions. She quickly, but meticulously, draws and colors a comic about Muck and Birrel arguing about making dinner and getting a job. While drawing, Amy follows a typical linear order when illustrating the panels but jumps around to other panels to color or add titles. The comic show's Birrel getting upset that Muck has not made him a sandwich for lunch and demanding Muck get a job. Amy explained Birrel was tired of Muck being lazy and not doing anything. Birrel then orders a pizza for lunch (see Figure 22).



Figure 22. Comic drawing prompt from session three. The only criteria was that the comic needed to be longer than two panels.

Several parts of this comic stood out to me. First was the name of the restaurant, “Pizza Face.” Amy said she has never heard of someone being called a “pizza face” before as a joke, but

she did tell me their slogan was, “Pizza Face, the pizza place that always gets a smile on your face!” The is reflective of the branding her mother said fascinates her. Amy also showed the conversation between the pizza man and Birrel was happening simultaneously by placing them in the same panel, but separating them by a diagonal line. I questioned Amy about this, and when I suggested she may have seen something like this before in a comic book or on a television show, Amy answered yes, she had. Her “yes” answers to a lot of questions about her experience with comic books were disputed by her mother. I asked if she read any comic books at home, Amy said she did, but her mother shook her head and disagreed. When I asked Amy what comics she read, she did not know. I thought Amy's use of nontraditional panels and the way she staggered her speech balloons so they would be read in order could be explained by the fact she previously saw them in comics she frequently reads. Amy's mother disputed the fact she reads comics at home, but during our initial meeting, she said Amy's nose is always in a book. Unfortunately, Amy’s mother could not provide details to what books Amy enjoyed reading. When discussing Amy's reading habits with her fourth grade teacher, she told me Amy loves to read *Highlights Magazine*. *Highlights* is a magazine geared towards children ages six to twelve and frequently contains comic stories and comic strips (Highlights.com, accessed 8/25/16). I think it is very improbable Amy knew and understood how to use these comic devices without seeing them before. I questioned Amy about how quickly she organized her paper into panels. I asked if she already had a story in her brain when she started drawing the panels, and she said she did. Amy explained, as usual, that she did not think of the story until she was ready to draw it.

I asked Amy to draw a second comic during session three involving NutPea, a character she first drew earlier that day. I told Amy I’d like NutPea to start the comic feeling nervous, and

by the end he would feel surprised. She began to lay out her comics before I was finished giving directions. She appeared to be starting a two panel comic when she asked if it could be a short comic. I told Amy I wanted it to be at least three panels, and she split her second panel in half horizontally. She paused, scratched her head, then continued drawing. I asked if the three panel criteria messed her up and she did not respond but just continued to draw.

She starts in the first panel and draws NutPea's body, but not his face. She then moves to the title panel and starts to write NUTPEA in bubble letters. She volunteers the information "every comic has to have words in it,"; when I ask her to clarify, she explains every comic that she makes has to have words in it. She adds some details to her title and goes back to draw NutPea's face. He looks appropriately nervous, his clinched teeth can be seen through his open lips and his wide eyes are looking down and to the left, one eyebrow is slightly covering his right eye. In the second panel she draws NutPea with a small open mouth, wide eyes rolling back in his head, long wavy arms and a spiral line on either side of his head. This panel lacks the detail and craft that Amy's drawings typically have. She moves to panel three and begins drawing NutPea in her typical style. NutPea's wide eyes, smiling open mouth and posture indicate he is surprised. She adds a speech bubble in the third panel saying "I love eating [scribbles]." She moves back to the first panel and begins to add another character. The new character starts as a narrow oval with two eyes near the top that don't seem to fit. Amy begins to draw what appears to be an arm but quickly goes across the oval and draws what looks like a mouth. She then starts drawing a very fragmented line around the character, and then begins to add text that reads in the finished comic as: "Not a real drawing but scribbles." The text is not enclosed by a speech balloon, but it does have a line pointing to indicate it is about or being said by the new character. As she continues to write, the text gets closer and closer to NutPea. When

she no longer has room to write she abruptly stops and says in a petulant tone “I don't have any room.” I offer her the opportunity to restart her drawing. She doesn't acknowledge my comment, and she continues to write two new lines of text. Then she stops suddenly and begins to scribble over the new character, and says “I don't need to do it again,” before resuming scribbling. Amy then adjusts her grip and holds the Sharpie in her fist as she starts to scribble in every panel of the comic. When Amy stops scribbling, she adds a second speech balloon to the final panel that reads “ME TOO” (see Figure 23). She capped her marker and slid her paper towards me. I asked her if she could explain what was happening. She agreed and pointed to the first panel and said, “He's nervous.” Her tone becomes very apprehensive as she points to the second panel and says, “He's...I don't know!” She points to the final panel and says, “He's excited, now can I do clay?”

This was the first time I saw Amy get upset or frustrated while drawing. A few factors could have contributed to this Amy's frustration. She could have been rushing through the drawing to get to an activity with clay that she enjoyed more. It could be that she did not understand how emotions could progress from nervous to surprised. I feel that those maybe two underlying reasons that were amplified by Amy being given additional requirements after she began to draw. Amy already laid out her two panel comic before I explained that I wanted this comic to have three panels. My hope in requiring three panels was to avoid having a nervous character in the first panel and a surprised character in the second. I wanted to see if Amy could illustrate an appropriate situation where nervousness could naturally evolve into surprise and my hope was

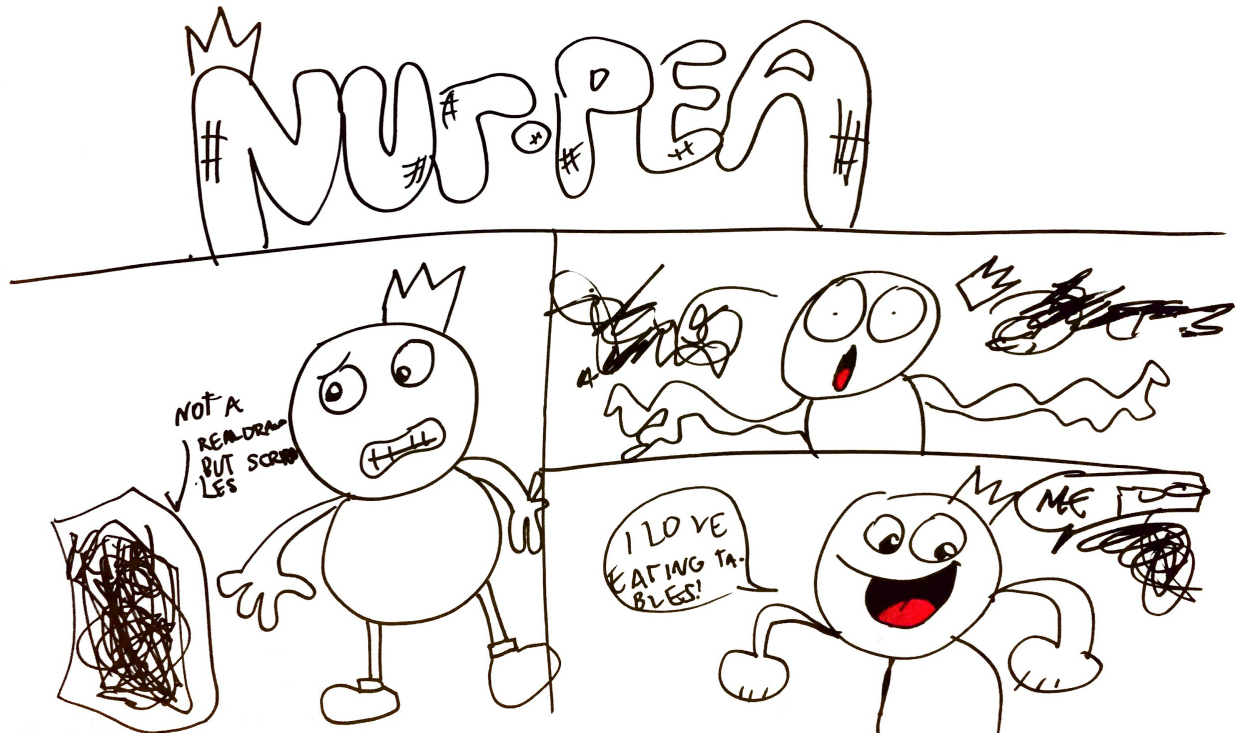


Figure 23. Comic drawing prompt from session three where the criteria changed after Amy began drawing.

that the action in the second panel would explain why the character's emotion changed. Amy draws so quickly and with such authority over her subject matter she rarely takes time to plan what she is drawing. Many of the other artists discussed in literature review work in a similar way (Kellman, 2001; Park, 2001; Self, 1997; Sacks, 1995). Oliver Sacks explained that Stephen Wiltshire went outside, glanced at the front of his house, then came inside and drew an almost identical representation of Mr. Sacks' home (Sacks, 1995). It appears that Amy works likewise. She has an immediate idea in her mind of what she wants to draw and cannot easily deviate from it. I think that she started drawing her idea and then heard the additional criteria, which contradicted her plan. The process of changing her idea to fit my criteria became overwhelming. I am unsure if she would have been that overwhelmed if she wasn't in a rush to work with clay or if she had a better understanding of the content she was asked to illustrate. If I have the

opportunity to work further with Amy, I will take steps to ensure that she hears all criteria before she begins drawing.

During our fourth session, I attempted to see if a written prompt would yield a different result than a verbal prompt. I gave Amy the following written on a piece of paper: “Draw a comic with Muck and Birrel; one should feel confused and one should feel scared.” Amy began drawing with the blue Sharpie she used for the previous three drawings that day but quickly decided she wanted to start again with black Sharpie. Before she started drawing, I emphasized I wanted her to make a “whole comic strip” but I did not give her any quantitative guidelines. Amy first drew a circle in the right half of the paper, then divided the paper into two sections with a non-traditional line. She moves to the left panel and starts drawing Birrel without her typical level of craftsmanship but in her typical style. Birrel has wide eyes, a furrowed brow and his mouth is agape. His hands are up as if he is covering his mouth. Birrel’s appearance has changed in this comic, he is missing his large squirrel tail and he is not wearing shoes. He also has three speech balloons saying: “I love you”; “I eat tables”; and, finally, “My brain is talking.” Muck is drawn in the right hand panel and the original circle Amy drew became his head. The drawing of Muck also lacks Amy’s typical level craft, but her personal style is still evident. Muck’s eyes are wide and his mouth is open. He has one curved eyebrow over his eyes, one hand on his chin and one on his hip. Muck also has three speech balloons containing, “I know nothing,” “ZZZ,” and “Nothing” (see Figure 24).





Figure 24. Comic drawn from written prompt in session four.

After she was finished, I asked Amy to tell me what I wanted her to draw. She pointed to her drawing and said, “That’s Muck, that’s Birrel,” then she remembered to add Birrel’s neck tie. I asked again, “Tell me what I wanted you to draw.” Amy pointed to the speech balloons and read them aloud. I then read the prompt to Amy and asked her which character felt confused. She pointed to Muck. I asked “How do I know?” Amy responded by saying “He’s...” and putting her hand on her chin like Muck was doing in the drawing. “Can I tell by his face or the words he is saying?” Amy points to a speech balloon and reads “I know nothing.” I ask Amy if Muck’s face also tells me he is confused, and she agreed that it was. Amy explained Muck’s face shows he is confused because “His hand is on his chin.” Amy continues her explanation but has trouble

finding the words she wants to use. She finally is able to say, his eyebrows are “in a strip”. When I ask how Birrel feels, she quickly responds by saying, “Scared because his eyebrows are careful.” She draws the eyebrow shape in the air as she explains, making a humming sound to as she moves her finger. I ask her to explain Birrel’s mouth and she tells me “It’s circles because he’s talking.” I ask her if she would like to draw a comic strip with Muck and Birrel about anything she wants. She declined but asked if she could draw a comic with different characters and I agreed.

Amy’s comic about Muck and Birrel was not as successful as many of the comics that began as a verbal prompt. This made me consider that a language processing issue may have a larger impact on Amy’s drawings than I originally anticipated. Amy’s hyperlexia led me to believe that she had an advanced reading level. According to one of Amy’s exceptional education teachers, Amy’s attention issues allowed her to have an accommodation where her tests in math, social studies and science were read aloud to her. This accommodation was not granted during her language arts testing due to her advanced reading level. Since the directions I gave Amy were short and direct, I do not feel giving her a written prompt negatively impacted her drawing. Multiple factors could have contributed to the poor quality of this comic; however, the one I believe to be most convincing was Amy did not want to draw what the prompt indicated. This seems like the most likely scenario because she began working with new characters in the very next comic.

Amy began working on her new comic without hesitation. She started with a horizontal line to begin dividing the comic into panels. She started with the title, paused to begin drawing a character and then she went back and finished the title. She continued to work quickly, and was very focused on her task. When she was finished, she slid the paper to me and I asked her to

explain it (see Figure 25). She told me it was a recipe. The comic is titled “Baby Carrot,” and in the first panel shows a rabbit, who is named Baby Carrot, saying “How to make a Carrot Cake!” Baby Carrot is not shown in the following panels, but the ingredients used to make carrot cake and vague instructions are shown. I ask Amy after she finishes, which is easier for her, drawing a comic I ask her to draw, or a comic she comes up with. Amy tells me it is easier when she thinks of an idea. When I ask why, she explains, “Because I create all my own ideas.” Trying to clarify I ask if all of her ideas are already in her brain and ready to be put on paper. She simply says “Yes.” I ask her if she has any other ideas she wants to put on paper: she quietly says “Yes...Baby Carrot,” as she reaches for a new paper.



Figure 25. Baby Carrot carrot cake recipe

Amy quickly draws another comic featuring Baby Carrot and a new character Ducker.

The entire five panel comic is about the two characters fighting over an actual carrot. The

characters are in Amy's typical style, but her level of craftsmanship decreases as the comic progresses (see Figure 26).



Figure 26. Amy's second free choice comic about Baby Carrot.

After she finishes, I ask Amy why she thinks she draws so fast. Amy struggles to find the words she wants to use but finally says, "Because sometimes when I'm thinking about something I have the good power of drawing in my 'thunker'." Thunker, she explained, means brain. I asked her if she drew slower she would forget the story in her brain. Amy disagreed with this theory and said "If you draw slower it will take a long time." I tried to clarify by asking if she was just trying to get to the next drawing and she agreed she was. I asked her what she thought the next thing was going to draw and she said, "another Baby Carrot comic," as she reached for another piece of paper. Amy started on a four panel Baby Carrot comic which was the neatest of the

three she made during this session. When Amy completed the comic, she explained Baby Carrot's emotions change from surprised, hungry, sick and scared throughout the comic (see Figure 27). At the end of session four, Amy was disappointed we did not have any time to work on her claymation videos so I promised we would make time for them during session five. Unfortunately that promise negatively impacted the drawings she made during session five.

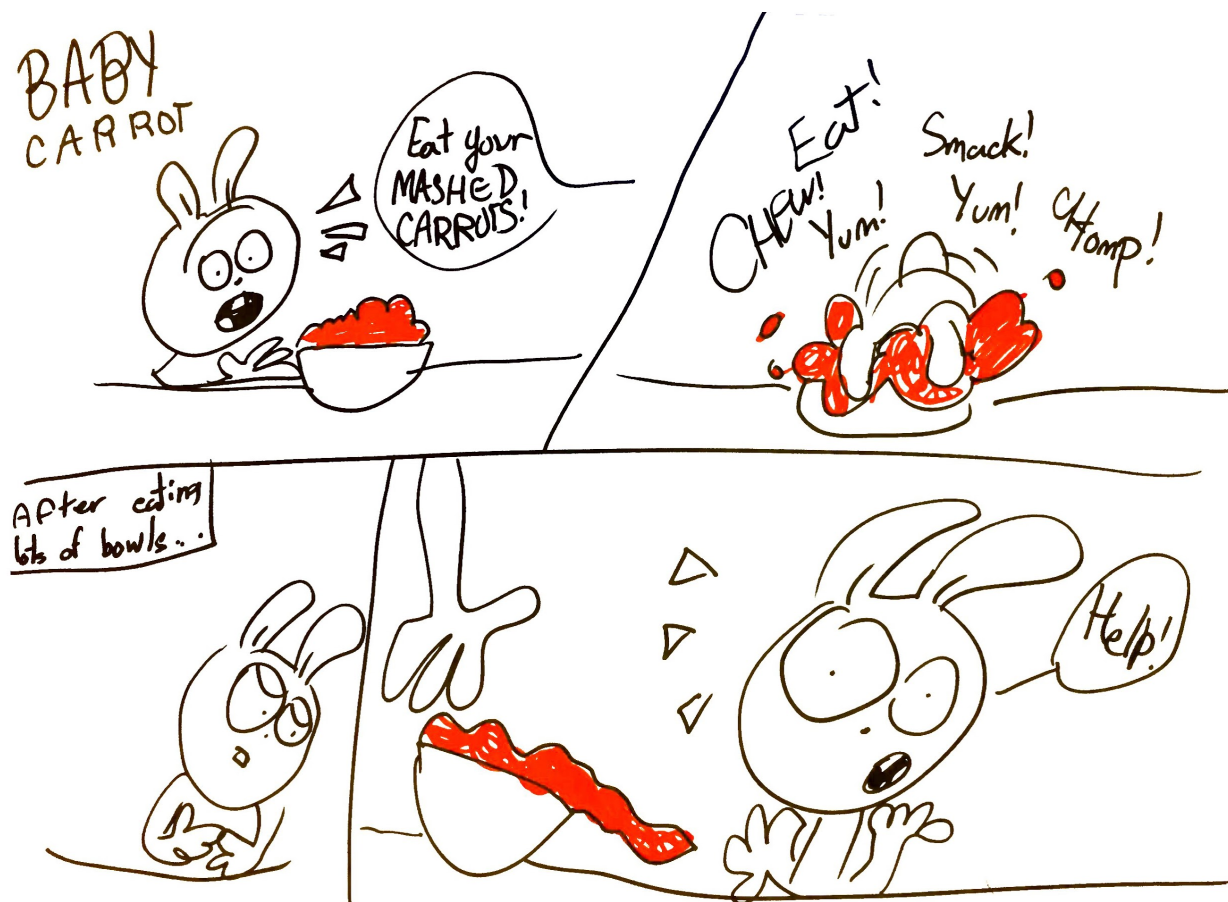


Figure 27. Amy's third free choice comic about Baby Carrot.

I asked Amy to draw a comic during session five. and she immediately seemed distressed. I asked her to listen to all of my directions before she started to draw. She interrupted while I gave the directions and blew her breath. I asked her to draw a comic about Muck and Birrel or Baby Carrot, and I wanted to see them feeling proud and confused. As she divided her paper into panels I asked if this task was hard or easy. She replied in a whiny tone, "It's a bit

hard.” Amy proceeded to scribble out one of the sloppiest drawings I’ve ever seen her create (see Figure 28).



Figure 28. Amy’s first comic of session five

She passed it to me and said, “Here you go, this is not a good picture.” I asked why is this not a good picture. She told me she “really tried.” I questioned her answer by asking, “Did you really try or did you rush?” In a defeated tone, she said “I rushed.” She explained she rushed because she wanted to work on “claymation.” I reassured her we would work on claymation, but we had to do some comics first. Flustered, Amy said “Ok, ok, ok!” as she grabbed a paper and started drawing. She started to draw a horizontal line across the paper to divide it into panels but when she made a mark on the table, she let out a nervous whimper. I tried to reassure her and get her to calm down. She continued to draw, she divided the paper into four panels, one for the title *FOO*

*DIES* and the remaining three for the comic. In the first panel a crudely drawn burger says to a box of fries, “I want to eat you.” The next panel shows an agitated box of fries saying “HELP” followed by the burger eating the fries and saying “NOM MMM” (see Figure 29).



Figure 29. FOO DIES, drawn during session five

This entire comic was hastily drawn in sixty-eight seconds, which was reflected in the craftsmanship. It was obvious Amy was not interested in drawing comics that day, she was focused on creating a stop motion animation movie that I promised we could work on after the drawing prompts. Amy was distraught, and I was unable to tell if she didn’t understand that I wanted her to draw first or if she wanted to rush through the drawings I asked her to make. In an effort to ease her anxiety, I offered to let her skip the rest of the comics I had planned and let her begin drawing a storyboard for her video. Even though she was still distressed, she agreed to

move on to the storyboard. Unfortunately, this did not ease Amy's apprehension. She fretted over the number of panels I asked her to draw and the number she planned on. I stopped her again and reassured her that I did not want her to be worried about any of the projects I was asking her to do and gave her the opportunity to restart her storyboard without any of my requirements. She agreed and created a twelve panel storyboard titled *Shrimpy*. Even with complete creative control Amy rushed through this drawing and it seriously lacked the detail and expressiveness typically found in her work (see Figure 30). The story was impossible to follow: The characters were sloppily drawn but it was evident that Amy tried to show the character's range of emotions. When I asked her to explain the story she stammered and said, "I don't feel good...I feel a bit off...I feel like I can't smile anything [sic]" because she only wanted to make "claymation." Since Amy was so distressed by this activity, I offered her the opportunity to make a video with no planning and no storyboard, to which she quickly agreed. This interaction gave me so much more insight into how Amy approaches drawing, insight that will be discussed in the following section.





Figure 30. Amy's attempt at a storyboard for her claymation video

## Discussion & Analysis

For this study, Amy was asked to view a series of faces expressing different emotions, one set of human faces, one set of cartoon faces, and one set of cartoon animal faces. A complete set of images depicting one cartoon animal expressing the fifteen different emotions used in this study was not available. Amy did view images of Donald Duck that were gathered from multiple sources. Since these images were not from a single source and were not definitively labeled like the other image sets, the data gathered in that part of the research was not analyzed. There was no significant difference in Amy's ability to identify emotions expressed by human faces or cartoon faces. The only emotions she could consistently identify correctly were happy, sad, angry, surprised, nervous and tired. She identified the majority of the emotions as one of the six she knew or a variation of them, like "normally happy." I believe that many factors could contribute to Amy's limited ability to identify emotions.

One possibility could be that Amy just doesn't understand all fifteen of the emotions I was asking her to identify. I think that is highly unlikely because of Amy's ability to accurately illustrate all fifteen emotions when prompted. This makes me think that Amy may have difficulty verbally expressing what she knows about emotion verbally. Another unlikely reason is that a Amy was rushing to get to the drawing activity that she enjoyed more than identifying emotions. I do not believe that is the case because Amy's tone of voice and mannerisms change when she is asked to do something she doesn't enjoy. She did not appear to be frustrated or upset when asked to complete these exercises.

One factor could be a verbal communication deficit associated with ASD (Furniss, 2008b; Powell & Monteggia, 2013; Yapko, 2003). It is possible that Amy understands what each of the fifteen emotions look like but can only express six of those emotions verbally. This could be a symptom of her ASD or it could be that her vocabulary is limited because of her age. One could draw parallels between Amy's behaviors and those of Owen Suskind. Owen is on the autism spectrum and is the subject of the book *Life Animated* (Suskind, 2014). Owen's father describes how his son does not communicate in a typical manner but instead quotes lines from Disney movies to express himself. Owen often recites movie dialogue that deals with his current social situation and gives others insight into what he is thinking or feeling. The same could be said about Amy; she may understand what each emotion is but the only way she is able to communicate it is through drawing.

Future research in this area would benefit from having an overall understanding of the subject's receptive and expressive vocabulary and that of a typically developing child. Additionally, researchers would benefit from having typically developing students of the same age view the same human and cartoon emotions. This would help develop a better baseline understanding of how typically developing students view emotion.

It is also entirely possible that Amy could not tell the difference between the different videos and photos. The emotion selections may be too nuanced for Amy to distinguish between. Tired and bored; surprised and overjoyed; many of the emotional expressions Amy viewed looked very similar.

Many people with ASD can recognize emotions expressed by cartoon characters easier than those expressed by humans. It is believed that human emotions are harder to understand because they happen in social situations, the context of which is often difficult for people with

ASD to decode (Rosset et al., 2007, Rosset et al., 2010). Unlike the research, Amy seemed to understand emotion in context. When asked to explain what each emotion meant during session five, the only way Amy could articulate what the emotions meant was to pretend to be in a situation that would evoke such an emotion. When asked “what does angry mean?” Amy responded in a quiet yell, “AHH! I’m going to flip the table!” “No, no, no! Don’t eat me!” is how Amy explained scared. It could be that a lack of context confused Amy’s understanding of the emotions she was asked to identify.

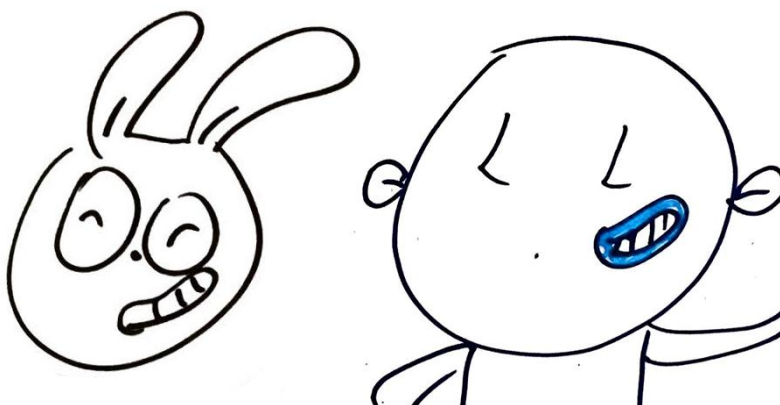
Many different factors could have contributed to Amy’s inability to correctly identify so many of the emotions. Her age, her autism diagnosis, her level of interest in the activity-- all of those could have had an impact on Amy’s performance. She did not seem to have a preference between human and cartoon faces as I originally thought she would. For the most part, her answers were similar for both groups of images. It was evident Amy had difficulty expressing her understanding of emotion verbally, but the drawings she created with me later in each session showed that she had a good understanding of how to illustrate emotion.

Having Amy do individual character drawings gave great insight into her drawing process, and her ability to understand emotion. I began this research study not knowing if Amy could be prompted to draw characters expressing certain emotions. She demonstrated that ability every day we worked together. When she was in control of what characters she was able to draw, she could illustrate them displaying a range of emotions.

It is my assumption that she has fully developed characters appear in her mind that she is able to flawlessly illustrate. She claimed that she thought of every character she drew in that specific moment. As she was drawing, she did not have to stop and consider what the character looked like from different angles, or how they moved or how they showed feeling. Amy did not

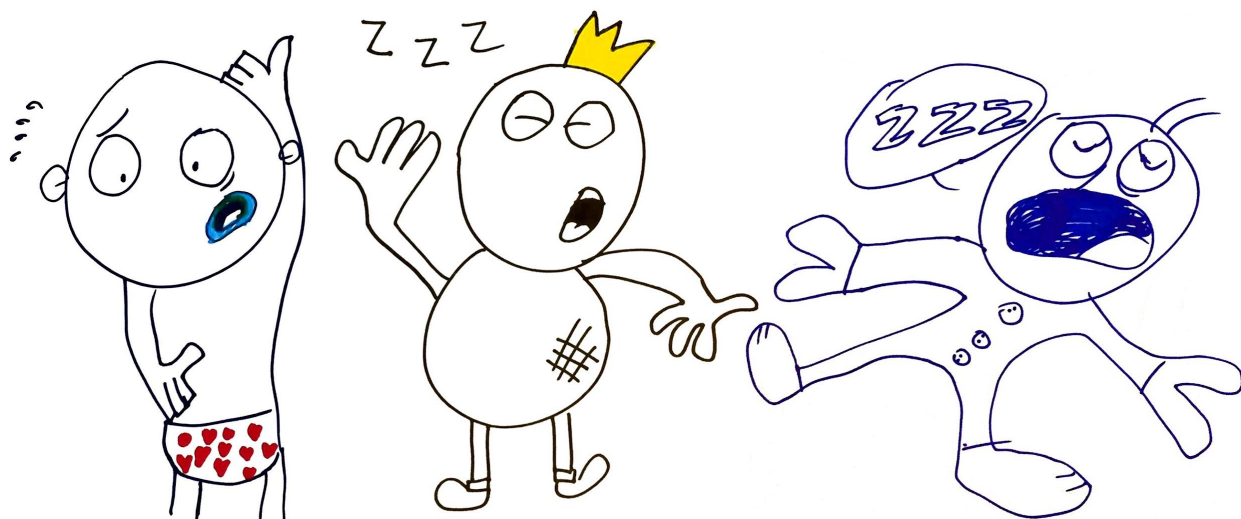
need to stop and think about how she was going to show how a specific character was angry or embarrassed. That was most evident when she did the character study of Baby Carrot. She needed no wait time, nor did she need to sketch or brain storm between drawings. She had a complete understanding of how a character she created in her mind only moments earlier would express a complete range of emotions.

When comparing a variety of Amy's characters expressing the same emotions, several similarities appear. Proud characters are always smiling with their teeth showing and their eyes are closed. Sad characters have a portion of their eyes covered by their eyelids; their mouths are closed and they are looking down and away (see Figure 31).



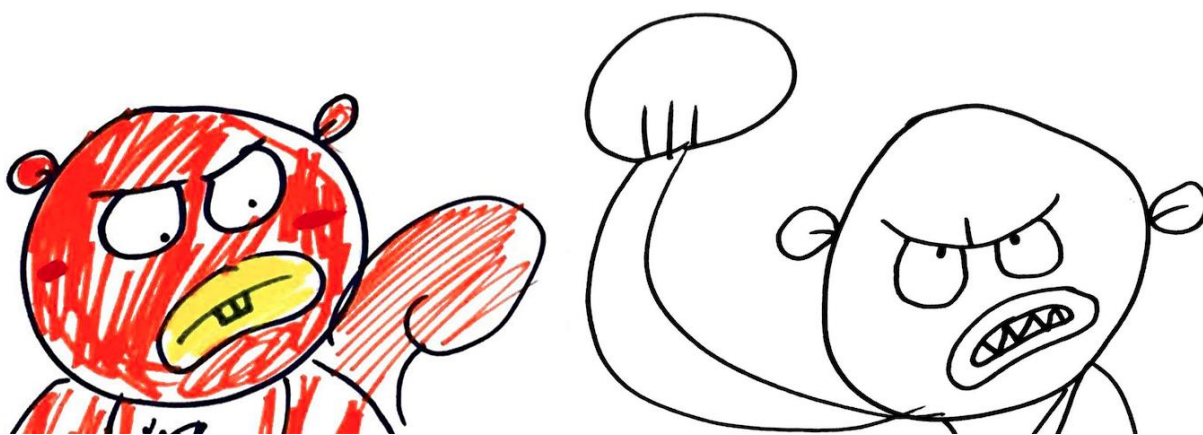
*Figure 31. Proud Baby Carrot and Proud Muck*

This is not true with every emotion and every character. For instance, tired was represented three different ways by different characters. Tired Muck appears to worn out or exhausted. This was indicated by the sweat coming from his brow and his mouth was open as if he was gasping for air. Tired Baby Carrot looked like he was about to fall asleep with heavy eyelids covering the majority of his eyes, and his mouth was small and closed. Tired Splinker was drawn sound asleep in the bed with his family, eyes closed, mouth open and “ZZZ” to indicate snoring (see Figure 32).



*Figure 32. Tired Muck, NutPea and Splinker*

There also appears to be subtle nuances between how each character shows a particular emotion. Angry Muck shows his clinched teeth, and angry Birrel does not. Birrel's eyelids are two sharp diagonals and Muck's are represented as one sweeping curve (see Figure 33). The two sets of eyes are virtually the same; and the viewer understands them to mean the same thing but each are unique to the character's style. This leads me to believe that Amy does not have a formulaic approach to drawing and these subtle differences could be viewed as Amy using artistic intent.



*Figure 33. Angry Birrel and Muck*

Amy was eager to draw when she had control of the majority of the content. She became anxious and uncooperative when her drawings had to meet specific criteria. Amy produced the best work when she had control over the content and the characters in her drawings (see Figure 34). When Amy was asked to draw a specific character or given specific content requirement, her artwork was not as well executed (see Figure 35). This was particularly evident during session three when I changed the criteria after Amy began drawing. Kellerman (2001) explains

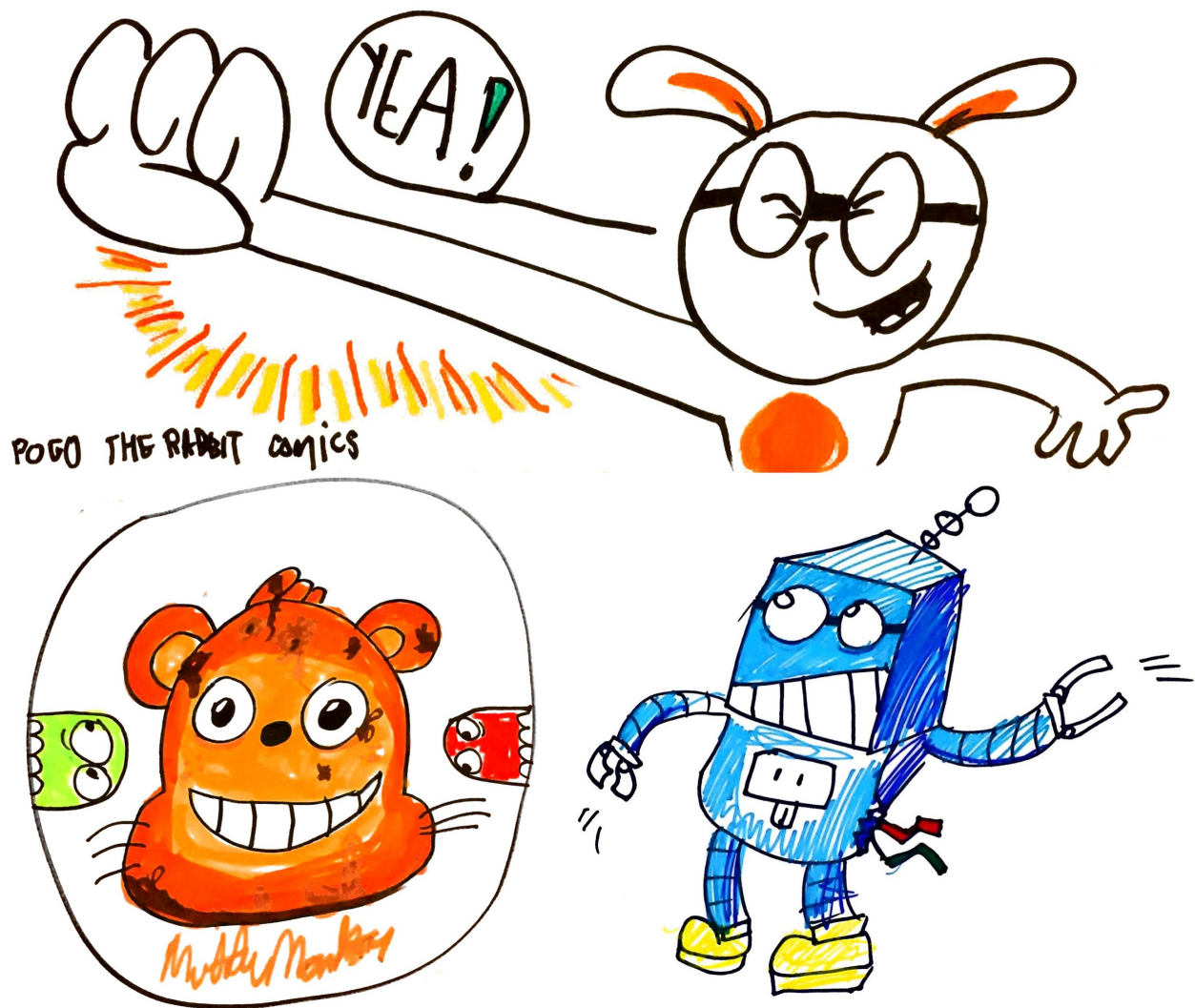


Figure 34. Examples of Amy's drawings when she is in complete control of the content



*Figure 35. Examples of Amy's drawings when she is not in control of the content*

that the work of many artists with autism “grow out of single, bright visual moments” (p.17).

Amy was not able to verbally articulate whether or not this was how she approached art making. It is my assumption that she has fully developed characters appear in her mind. Based on my experience with Amy, her ideas appear in an instant and are locked in her mind. Once she has decided what to make it is very difficult for her to deviate from her plan. It does not appear that Amy is refusing to draw certain things because she is being defiant. It appears that Amy can only accurately illustrate ideas that she imagines.

I asked Amy during a school day to draw a picture of herself, along with her exceptional education teacher, her classroom teacher and me. I chose those three adults because they are the people in our school that Amy spends the most time with, and in theory she would be most familiar with our appearances. Amy resisted claiming that she “couldn’t do it” but I finally convinced her to draw the four of us. Amy proceeded to make the worst drawing I have ever seen her create (see Figure 36). The characters she drew were barely recognizable as people, much less specific individuals. Amy insisted that she “[did not] know what we looked like” so she couldn’t draw us. I final coaxed from her that the lines above our heads represented our different types of hair: short, straight, curly and braided. This interaction made me consider that



Amy may only see her ideas clearly enough to effectively illustrate. Her hesitation was because she genuinely did not understand how to draw what I was asking.



*Figure 36. Amy and her teachers*

The process in which Amy draws has led me to the conclusion that she has not only has fully developed characters in her mind but she has fully developed comics as well. When drawing a comic, Amy's first tendency is to start with the layout. She begins dividing her paper into panels as soon as she starts to draw. These panels aren't always traditional squares or rectangles, but are often unique shapes that are an integral part the story. For instance, she started once by drawing a diagonal line as her first mark. The line eventually became a device used to separate two characters in one panel to indicate that they were on the phone with each other. The prompt was not about talking on the phone but Amy's idea was clear, her two characters were on the phone and she was going to show that by separating them with a diagonal line. Amy also illustrates in a nonlinear manner, she will jump from panel to panel while she works. Amy doesn't have to consider what will happen next; she can see the completed comic in her head,

which allows her to work on various parts as she desires. Amy's comics also often make sense and are funny, sometimes more so to Amy than to others; nevertheless, her comics tell a story. The idea of creating a coherent comic that follows a narrative is not necessarily outside the realm of possibility for a typical nine year old, but to develop one in your mind in mere seconds and then transfer it to paper with no planning, sketching, or brainstorming is extraordinary.

## Conclusion

Through my research, I tried to determine if Amy's understanding of emotion was limited to cartoon characters or if she could identify the emotions of cartoon characters easier than the emotions of humans. Over the course of our research, Amy was asked to view a series of faces expressing different emotions, one set of human faces and one set of cartoon faces. Amy was asked how she thought each person or character was feeling and why. Amy showed no significant difference in her ability to identify emotions expressed by human or cartoon faces. Of the fifteen emotions she viewed, the only emotions Amy could consistently identify were happy, sad, angry, surprised, nervous or tired. I believe that Amy's expressive vocabulary was preventing her from being able to effectively communicate verbally what she knew about the videos and images she was viewing. Many of Amy's responses were similar and often involved mimicking the emotions she saw using sounds or body language.

Various factors could have contributed to Amy's inability to correctly identify so many of the emotions. Her age, her autism diagnosis, her level of interest in the activity, could all have had an impact on Amy's performance. She did not seem to have a preference between human and cartoon faces as I originally thought she would. For the most part, her answers were similar for both groups of images. It was evident that Amy had difficulty expressing her understanding of emotion verbally.

I also set out to see if Amy's ability to illustrate emotion was intentional. The drawings she created with me in each session showed that she had a good understanding of how to

illustrate emotion. It is evident that Amy's strength is illustrating emotion, not articulating it verbally. I began this research study not knowing if Amy could be prompted to draw characters expressing certain emotions. She demonstrated that ability every day we worked together. When she was in control of what characters she was able to draw, she could illustrate them displaying a range of emotions. Each day Amy illustrated a new character that she claimed to have come up with in the very moment she began to draw. She never had to sketch or plan out her drawings, nor did she have to pause to consider how she was going to illustrate the character showing each emotion. I also planned to investigate if the visual culture Amy consumes influences her drawing style. Due to insufficient data I was unable to draw conclusions about that topic.

### Implication of the Research

It appears that Amy's drawing process mimics that of many other artists with autism. Julia Kellman (2001) claimed that artists with autism often create art that comes from "bright visual moments" in their minds (p. 17). Unlike the architectural drawings and paintings that are typically a result of this drawing process, Amy's "bright visual moments" typically consist of characters or comics.

Amy was not able to articulate whether or not this was how she approached art making. I believe that she has fully developed characters appear in her mind that she is able to flawlessly render. Every character she drew, she claimed that she thought of in that moment. As she was drawing, she did not have to stop and consider what the character looked like from different angles, or how they moved or how they showed feeling. This was most evident when she did the character study of Baby Carrot. I asked Amy to illustrate a character of her choice expressing fifteen different emotions. She needed no wait time, nor did she need to sketch or brain storm

between each drawing. She had a complete understanding of how a character she created in her mind only moments earlier would express a complete range of emotions.

Each character Amy developed during our time together had their own small nuances that show their emotion differently. The fact the angry expression is not identical for each character shows that Amy does not have a formulaic approach to drawing that is often associated with artists on the autism spectrum. When Amy was asked why these characters had these subtle differences, she would respond with a vague answer claiming “that’s just what he looks like.” One could ascribe these nuances to Amy’s artistic intent, or it could just be an example of her stylization.

It is my assumption that she not only has fully developed characters appear in her mind but she has fully developed comics appear as well. Amy knows what the finished comic will look like before she even begins to draw. She does not follow a linear path when illustrating her comics; she can bounce around from panel to panel and still create a cohesive narrative. This is even more evidence that these comics come from “bright visual moments” Amy sees in her mind (Kellman, 2001, p. 17).

Amy does appear to have trouble when asked to modify or deviate from her the idea she has created in her mind. Amy became anxious and her drawing skills diminished when she was asked to draw something that she did not choose or the criteria was changed after she had developed her idea. Several times while conducting this research, Amy became upset and refused to draw. I do not believe Amy was doing this to be defiant, but that she could only draw what she thought of in that moment and that she didn’t understand how to modify the idea she had in her mind. Amy often says “I made him up from my brain” or “My brain just knows how to do it.” Though she cannot articulate it eloquently, I conclude that Amy is confessing that she is not in

complete control of the ideas in her mind. When she was asked to draw a portrait of her teachers, she acted like it was an impossible task and the reality is that for Amy, it may have been. In contrast, when asked to develop a cast of characters and create storylines the characters all followed, Amy thrived and created remarkable characters and comics.

### Contributions

This individual case study shows that students with autism are able to process visual expressions of emotion with a high degree of accuracy. The study's methodology and results provide art educators a model to investigate how students with autism in their own classrooms process emotional expression.

The majority of the current literature about art education and autism focuses on the benefits of art therapy to individuals with autism (Harris, Rosal, Gussak, & Van Lith, 2015; Liu & Harrison, 2016; Talusan-Dunn, Cruz, Betts, Forninash & Kirby, 2012) and inclusive methods for teaching students with autism (Burdick, Causton-Theoharis, Biklen and Rolling, 2011; MacLean, 2008; Wexler & Luethi-Garrecht, 2015). While those types of studies are beneficial, it is important to remember autism displays differently in each individual. This study embraces that fact and sheds light onto the unique artwork of an individual with autism. The research found in this paper shows how one student with ASD approaches the drawing process and gives insight into how she understands her subject matter. The artwork Amy creates is unique to this field of research. Amy's drawing process, however, shares similarities with other artists with ASD. It is unlikely that there is another artist with autism that shares Amy's identical characteristics, but the information learned about her art making process can offer insight to other art educators and researchers.

Amy's artwork makes connections between two existing fields of research, the extraordinary drawing skills of artists with autism, and the more recent research analyzing how people with ASD process faces and emotions and their preference to cartoon faces over real faces. Until now those two topics did not overlap. This study is significant because it examines an artist with autism whose breadth of work deals with emotion and facial expressions. This study may not completely bridge the gap between those two fields of research, but it certainly begins to make connections that can benefit future researchers and art educators.

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