

How Sophie Finds a Friend got started...

My final project for my Master's degree in Canine Life Science culminated all the research and study I have done in the Master's program into a children's book for children diagnosed with Autism Spectrum Disorder (ASD) - introducing emotion and empathy from a dog's point of view. Based on research in evolution and domestication, the personality of the dog, early intervention therapy for children on the autism spectrum, animal assisted therapies, dog cognition and body language, humane education and the Biophilia Hypothesis, Sophie Finds A Friend is a simple but well researched project. Additionally, all the design concepts, illustrations and accompanying materials were created exclusively by me.

The main focus of the book uses the non-verbal communication between a shy boy and a young Labrador retriever dog. It will be used to facilitate animal assisted therapy for young children on the autism spectrum. I have written the book under the pseudonym JM Murry – my maiden name.

Project Statement and Intentions

My project began with research and study of dog personality, their emotions and the human/canine bond. After doing the research, I began to think of creating a children's book to be used as a teaching tool. In creating the book, I planned to focus on the personality and body language of the dog to help bring the dog to life, comprising of an easy loving character to please a young child. The book will be starring "Sophie" a

small, rotund, yellow Labrador puppy as she goes through an adventure where she and the child discover and react with their emotions and empathy. Emotions being shared by the puppy could be happy, sad, fear, comfort, curiosity, joy, etc., as well as strengthening empathy between the two characters. The writing style of the book and illustrations I will create will be approachable and audience specific for children affected by Autism Spectrum Disorder (ASD). According the Center for Disease Control, one child in 56 is now showing symptoms of some form of autism. Boys are affected 5 times more than girls. I will be concentrating this research on dogs and emotion to target the non-verbal type of communication from a dog to a child with this diagnosis, ages 1-5. This targeted age group is where early intervention therapy has been shown to help children on the autism spectrum increase their social learning and communication by helping them to understand social relationships.

The purpose of the book is twofold. First, I will be creating a story line using a sweet, lovable puppy discovering and learning things all children need to learn; emotions and empathy. Secondly, the book will use elements of humane education to educate parents and professionals about the emotions of dogs and the importance of the connection between humans and canines. Humane education programs are based on acknowledging the powerful connections between humans and non-human animals. This connection is extremely important as we learn more about how dogs can help children on the autism spectrum.

Currently in my research, I have not discovered any children's books or materials that focus on early intervention for autism that uses an animal to help explain feelings and

emotion. Most of the materials found (books) are only human-to-human interface or fictional/fantasy animal to fictional/fantasy animal. I wanted my book to be as real as possible so that a child can identify with the little dog (Sophie) and with any other dogs they meet or other service/therapy dogs they may encounter. The body language (non-verbal communication) of the dog and the boy is key to the interactions between them.

Literature Review and Other Background Information

Personality and Emotion in Dogs

By applying theories of human personality to dogs, we are not anthropomorphizing the dog. We are only turning our attention to the personality of dogs they have always had. Noted behaviorist Marc Bekoff states that the burden of proof now falls on those who still argue that animals don't experience emotion (Bekoff 2002). "Sometimes I read about someone saying with great authority that animals have no intention and no feelings, and I wonder, "Doesn't this guy have a dog?" –Frans de Waal, interview, New York Times, 25 June 2001 (Bekoff, M., 2002).

Adam Miklosi in his book *Dog Behaviour, Evolution and Cognition* (2010), describes personality as "defined by an array of behavioural traits that are under the influence of selective processes and are the result of some sort of adaptive mechanism." He also states that people often interchange the words "personality" and "temperament"; the former being the ethnologist and the latter being the behaviorist. Miklosi prefers the word "personality" to "temperament" as he considers the terms in human literature indicates the word personality describes an adult, and the word temperament is used to describe a developing child. Therefore, as a result of the selective processes and

adaptability in the maturation process, an adult dog would develop into his “personality”. Stanley Coren, in his book, *The Intelligence of Dogs* (1994) ranks the Labrador Retriever and Golden Retriever in the top ten of dog intelligence by breed. Stemming from this theory, it could conclude that other (less intelligent or other specific) breeds may be more problematic in the service dog arena.

Service dog organizations go to great lengths to accurately assess a dog’s personality before pairing that dog with a particular client. Many use the Wilson’s Learning Styles of personality assessment. This strategy of assessment describes personality as being focused in one of four basic areas: sociable, assertive, expressive or analytical (Arnold, J. 2010). The personality can be combinations of the four areas as well. Originally designed for humans, the Wilson Learning Styles has been adapted for dogs and works well for personality testing in service dogs (Bergin, B. Bergin College of Canine Studies).

Evolution, Domestication and Emotions

Questions regarding evolution and domestication have arisen regarding a dogs emotions and empathy. Did the emotions of the dog occur as a result of their domestication? Do dogs experience human empathy? These hypotheses are currently being discussed and debated. Convergent evolution may have led humans and dogs to develop similar cognitive abilities and perhaps emotions as well. “Therefore, in conclusion, we suggest that the findings we have available now remain completely consistent with the hypothesis that the unusual skills of domestic dogs in using human communicative cues most likely evolved during and as a result of human

domestication.” (Hare, et al, 2010). However emotions in dogs evolved, humans are becoming more and more aware of the presence of emotion in dogs. For what is a personality if it is not the particular response (emotion) to a set of stimuli in a given instance?

Dog Cognition and autism

Scientists today are also researching “mirror neurons” in humans, primates, elephants and birds that may have a connection to empathy (or lack of it). Empathy, emotion and personality are all closely intertwined. Mirror neurons are neurons in the brain that fire when behavior is “mirrored”. The neurons are activated when an animal performs a function, then sees that function performed. Research with mirror neurons in animals may find human/dog commonalities that have evolved over time during the domestication process that will further enhance studies of emotion in dogs. Studies done at the DNA Learning Center- Cold Springs Harbor Laboratory in New York have discovered abnormalities in the mirror neurons that have been associated with persons on the autism spectrum. “The study of these mirror neurons is one of the most promising areas of research of the disorder.” (www.dnalc.org/view/871-Mirror-Neurons-and-autism-2.html)

Dog brains are very similar to our own but they evolved with a different way of communicating. At some point of domestication dog emotions have seem to become tied to human response. Studies in dog cognition show that dogs have developed a strategy of looking to humans to help them problem solve. No other non-human specie does this. The strong attachment bonds that formed during domestication have

had an effect on the problem-solving skills in dogs, who look to the human for clues. Dogs may actually delegate decision making to any human closest to them. In a study done in 2008, dogs have shown they will respond erroneously to a food choice test if the owner advises the dog incorrectly (Prato-Previde, E. et al). Dogs choose to respond to human cues as opposed to non-human cues with notable individual variations (Howell, T. et, al 2011).

Dogs can read our behavior and emotions, but we still are unable to correctly read theirs. “Almost invariably, dogs are more attentive to their owners than their owners are to them”. (Serpell J. A., 1986a). A different study in 2009 (Gallager) was done to see if humans could *accurately* describe dog behaviors. The humans in the study were 60 experience and inexperienced observers in 4 categories: dog trainers, veterinarians, dog-owners and non-owners (no experience with dogs). They were shown video clips of dogs interacting with various people and were asked to define the behavior they witnessed. There were a variety of missed cues and misunderstandings across all categories. The human participants seemed to rely mainly on the position of the tail of the dog for understanding. Even the highly trained experts did not clearly understand the body language of the dogs and yet there is a strong desire in humans to understand the behavior in human terms.

Theory of Mind

In 2000, Shukamit Riblatt designed a study (based on the 1989 research of Chandler, Fritz and Hala) to determine if 2-3 year old children have a developed Theory of Mind. Theory of Mind is a phrase used by psychologists to describe our capacity to

understand feelings, desires, hope and intention. In the study, the tasks used to test this hypothesis were games children were asked to play that tested false belief (pretense) in young children. The outcome of the games determined if a child was able to effectively deceive another child. The results found that 2-year olds *do* have a beginning of Theory of Mind. They have difficulty distinguishing between reality and fantasy prior to age 3. Riblatt and Astington (2010) believe that as language begins to develop, pretend play and false belief expand in concert with Theory of Mind in child development. The study also states that children with language deficiencies' tend to be shyer and more passive, however this may or may not affect their success in completing the Theory of Mind tasks. Even without language, children can and will participate in pretend play. The conclusion of this study shows pretend play (and language) is essential for social development and Theory of Mind. Children in their pretend play also use non-verbal gestures, knowing looks and smiles, exaggerated motions to increase the understanding of others involved with the play. Pretense play is found in all cultures of the world "Pretense may have allowed general knowledge to be acquired by children in the distant past, and may continue to do this today." (Sutherland, 2012).

There is much debate among animal behaviorists and psychologists as to whether or not dogs have a Theory of Mind. It seems to reason that if false belief (pretend play) is what Theory of Mind is based on for the 2 year old child, dogs unequivocally qualify with Theory of Mind. Puppies play within their reality, but in their early development they learn to deceive in their play. Puppies will hide bones or toys so

littermates can't find them. Puppies pretend to fight (bite inhibition), pretend to stalk and hunt while learning what is appropriate in play. Puppies will hide themselves during play, or change direction in the chase to fool the one who chases after. As the dog accelerates towards adulthood, the evolution in play towards morality and Theory of Mind development occurs rapidly, while the child is just beginning to understand and learn these same things. Human cognitive development continues after age 2 until adulthood when the synapses of our much larger sized brain are able to construct abstract thought. Dog cognition at the age of two in his much smaller sized brain, seems to have accumulated all the information necessary to think and survive as an adult dog. Some dogs excel in this regard, but generally speaking, the dog is thinking like a dog, responding cognitively to its environment and not a puppy anymore at age 2. They make fewer mistakes, know more about the world and are comfortable with their role in it.

Children on the autism spectrum struggle with Theory of Mind. Based in empathy, these children often have difficulty with social interaction. "The finding that Theory of Mind (in autism) differentiates into Social and Intrapersonal Theory of Mind has important research and clinical implications" (Tine, M. 2012) These findings may help to understand better ways of intervening in cognitive development in autism.

Early Intervention in Autism

According to the National Institute of Mental Health (NIMH), children affected by autism show a wide variety of symptoms. No two children are alike in their abilities

and disabilities but the NIMH have narrowed distinctive symptoms to three basic areas. The three basic areas of impairment are, 1) Social Impairment, 2) communication difficulties and 3) repetitive or stereotyped behaviors.

<http://www.nimh.nih.gov/health/topics/autism-spectrum-disorders-pervasive-developmental-disorders/index.shtml>.

Studies conducted at the Mind Institute at the University of California at Davis have explored a relatively new method of intensive interaction approach with children from 1-4 years of age called the Early Start Denver Model (ESDM). The ESDM is a relationship-based curriculum model, showing an increased improvement in developmental learning. The ESDM “is the empirical knowledge-base of infant-toddler learning and development and the effects of early autism. ... The aim of ESDM is to increase the rates of the development in all domains for children with ASD as it simultaneously aims to decrease the symptoms of autism.”

www.ucdavis.edu/mindinstitute/research/esdm) – Note: this research is from 2013 and hasn't been updated)

Children on the autism spectrum often have difficulty understanding, reflecting and differentiating emotions. Misunderstanding emotion and social cues create difficulty for the child to integrate into social relationships. “Current research suggests that interventions that combine motivational and social components can create meaningful changes in social functioning. Simultaneously, it is hypothesized that parent delivery of such strategies can invoke increases in these core social behaviors and parent engagement.” (Vernon, et. al. 2012). This same study examined the effects of teaching parents to implement a *social engagement intervention* (i.e reading social

stories) with their children. The results of the study indicated that the use of this parent-delivered social intervention led to “(a) increases in their children’s use of eye contact, directed positive affect, and verbal initiations, (b) increases in parent positive affect and synchronous engagement, and (c) generalized increases in parent and child behaviors.” (Vernon, et. al. 2012). These early intervention techniques are showing significant improvements in early cognitive learning.

Dr. Temple Grandin, noted Professor of Animal Sciences and individual diagnosed with high functioning autism, has written many best-selling books regarding animal and autism cognition similarities. She is the author of *Thinking in Pictures*, *Genetics and the Behavior of Domestic Animals*, *Animals Make Us Human* and *Animals in Translation*. In *Animals in Translation*, she introduces the connections between three areas: animals, cognition and autism. Dr. Grandin’s work theorizes that language is not a requirement for consciousness. Her insightful observations support the theory of emotions in animals and their unique abilities that are similar to autism. Dr. Grandin hypothesizes that children and adults with Autism Spectrum Disorder respond well to animals due to a shared sensory-based type of thinking. Sensory-based thinking means that language is not the main way of understanding your environment.

Animals are sensory based: their thoughts are based on sight, sound, taste and touch. Dr. Grandin believes that human’s ability for language covers up a natural sensory-based type of thinking. Non-verbal children are often taught sign language so that they can communicate with humans, but animals have no need of language. Both animals and autism have very specific and detailed awareness and fears. Their attention to detail is much more apparent than “normal” people who look at the “big picture”. Dr. Grandin also supports early intervention therapies for children on the

autism spectrum. In an interview in 2010 Dr. Grandin stated “I can’t emphasize enough the importance of early educational intervention... if you have a kid who is 2 or 3 years old and there’s no speech, just doing nothing (is) the worst thing you can do...” (Grandin, T., (<http://www.ageofautism.com/2010/10/temple-grandins-logical-mind-on-early-intervention-vaccines-and-more.html>))

Benefits of Animal Assisted Therapy and Intervention for Patients and Families

Assistance dogs placed with individuals with autism and their families have had tremendous successes. Dogs serve many functions far beyond what they are trained to do. When an individual with autism is paired with an assistance dog, the frequency of problematic behaviors are decreased, safety issues are reduced (Burrows, 2008) along with an increased overall engagement on the part the client (Silva 2011). Many books have been written describing the successes of assistance dogs placed with individuals on the autism spectrum: *The Golden Bridge* by Patti Dobbs Gross, *Paws and Effects*, a compilation of stories by Sharon Sakson, *Therapy Dogs Today* by Kris Butler, *Through a Dogs Eyes* by Jenifer Arnold, just to name a few. Even though these stories are anecdotal, scientific study is also being done to support these claims. Literature supports that dogs provide individuals with autism strong psychological and social support. Assistance dogs enhance the quality of life, the motivation, calming effects and a type of safety net to create a “normalizing effect” for patients and their families (Hart, 2010). According to the study by Burrows in 2008(c), a child having a service dog with them benefits the family when they are out in public by creating empathy and support for their child. When the general public sees children paired with a service dog they are more understanding of autistic behaviors that may

be presented. Families report that they feel more comfortable when in public as dogs bridge the gap of social differences, and the family becomes part of a “merged social identity”. Service dogs offer increased opportunity for social interaction (Burhardt 2003). The siblings of the autistic child benefit as well, as the focus shifts in the family dynamic from the child with a disability to the care and personality of the service dog. According to the study done by Burrows, she inferred that perhaps the value of the service dog trained for individuals with autism has more of a benefit to the family than to the child. However, Patty Dobbs-Gross states “despite the supposed autistic aversion to being touched or hugged by people, children with autism frequently sought out pets for tactile comfort, on their own terms and timetable.” (Dobbs-Gross, P., 2010).

Humane Education and Biophilia

Humane education is the philosophy of creating a just, humane and sustainable world through education. It advances the ideas to live with compassion, integrity and wisdom, and tools to put those values into action. These humane educators can be found in all areas of society, such as filmmaking, social work, classrooms and communities, infusing humane education in social work, law, health care, veterinary medicine and design (www.humaneeducation.org).

Biophilia literally means “love of life or living systems”. The *Biophilia Hypothesis* (Kellert, S. Wilson, O., 1994) suggests there is an instinctive bond between human beings and other living systems. In the book *Children and Nature* by Kahn and

Kellert, they describe the particularly close relationship of children with nature, especially animals. The significance of this relationship/bond in childhood development has yet to be explored. In *Children and Nature* Kahn and Kellert have assembled diverse essays from cognitive science, education, developmental psychology, political science, environmental studies, psychiatry, and social psychology that all support the Biophilia hypothesis of human connections to nature.

Some of the key points from this material are as follows:

Children and Nature

- Children have a natural affinity for animals and nature.
- Children take affection for animals beyond any adult modeling behavior.
- Humans have an innate need to be connected to nature and that need begins in childhood. (It should come as no surprise that children and dogs can relate and connect on many levels and types of communication.)
- Outdoor play (in nature) is slow and rhythmic and not themed. It includes socialization not isolation.
- In hunter-gatherer societies, children are exposed to environmental and social environments that provide extended play.

Animals in Society

- There is a preponderance of this human connection to animals historically across *all cultures*.
- People in industrialized societies tend to be more anthropomorphic than people who live among nature.
- Modern or western type society is losing the natural connection with nature, which is creating a “*generational amnesia*” of that natural connection.

- Societies differ on what they consider to be “alive” in nature. Some societies believe that plants, animals, fish, insects have cognition, others believe that all rocks mountains and seas are “alive”.

Emerging Theories

- Dogs show an emerging theory of mind like that of a 2-3 year old child.
- Interaction with a dog increases social communication and helps a child obtain a sense of *self* from how the animal reacts to *them*. (Empathy)
- Animals being used in autism intervention show “immediate decrease in hostile and aggressive behavior”.

Humane Education/Biophilia

- Humane Education teaches compassion, respect, social justice and environmental issues as they relate to animal welfare.
- The Biophilia Hypothesis describes an “innate” or genetic component in humans that shapes our reactions with nature.
- Taking care of an animal involves receptivity where the one who cares for the animal tries to understand the feelings of the animal being cared for, creating *moral concern*.
- Ethical caring develops during early childhood

Discussion and analysis of the planning phase

Over the course of my master’s education I have researched many, many dog related topics. My original area of interest was and still is the value of assistance dogs to people with disabilities. Service dog organizations are doing a great job of training dogs for specific disabilities, but there is a tremendous percentage of dogs that fail (

and subsequently drop out) in those programs. I often wondered why they fail and what could we do to make sure these carefully selected and trained dogs could be used in other areas. An additional concern was the growing numbers of children diagnosed with ASD, and I became interested in the ability of placing service dogs to help the children and families cope with the diagnosis. Animal therapy that applies to autism is currently being researched and published and there are advocates and dissenters. When I began to focus on what I might attempt, I did some thorough brainstorming on service dogs and who they are. What do we know about them? What are we asking them to do? What makes a successful service dog? How can we make them more successful? I asked myself, how could I help with this current and very pressing issue and where was all the research leading me?

Even with all the research and countless books regarding dogs and training, I feel the general public is still uncertain of the information they are given about dogs. Do dogs think? Do they have a theory of mind? Do they have personality? Do they have fears? Desires? By reading scholars such as Marc Bekoff, (*Minding Animals*) Stanley Coren (*The Intelligence of Dogs*), Kellert and Wilson (*Biophilia Hypothesis*) Kahn and Kellert (*Children and Nature*) I became interested in what they have to say about what we may be lacking in our societies; a real and tangible access and connection to the natural world. When reading about humane education, the relationship between children and nature, I became extremely intrigued. I felt my direction of a project becoming stronger. I felt that bringing children with disabilities and nature together is something we must do. Children learn empathy when caring and being responsible

for animals. My question now became, how can I bring what I have learned about animal therapy, a passion to help families and a desire to educate together?

This is when the idea of the children's book on emotion and empathy from a puppy's point of view began to formulate in my mind. Can I apply the hypothesis of biophilia to children with an emotional disability such as autism? At first the project seemed too daunting and overwhelming. I wanted to do something that was fun and interesting while providing an opportunity for self-growth. From the very beginning, I have to say, I doubted myself. I have never attempted to write a book. I felt extremely isolated, as I have no one in my direct circle of family and friends that totally and completely understand what it is I am trying to do with my educational field. I get their raised eyebrows, an "excuse me, what?", and a patient patronizing smile from most when I try to explain Canine Life Science. With each step of this project I feel I am getting clearer in my decisions and my intent. I know that this field energizes me and elates me. This is a very fun adventure for me.

As I researched current children's book literature in bookstores, libraries and on-line, I decided to illustrate the book with watercolor images hand painted by me. I was disappointed with many of the illustrations in children's books that are currently available. I could have hired an illustrator to do the work, but I wanted a certain type of atmosphere and theme. I decided this artistic element would increase my personal growth, as well as my creative and artistic satisfaction with the project.

I continued my research to include what kinds of resources, books or social stories are available for children with autism on nationalautismresources.com, Autism

Reads.com, Autism.org.uk and Autism Speaks. I also researched other educational and retail book sites. There weren't as many as I had thought there might or should be and none addressed direct communication with animals. Most of the materials were broad in spectrum and not targeted to specific emotions.

After researching existing materials available to the public, I took the idea to put a puppy in several social situations with a child where it could begin to share emotion and empathy. As I read more and more on therapies and research, I had to remind myself that I wasn't researching autism as much as providing an opportunity to share emotions of dogs (original idea). It was easy for me to get off task.

I specifically chose a Labrador Retriever puppy as my main character because many service dog organizations use Labradors in this type of service. A Labrador has the unflappable type of personality that remains calm in most situations, they are food motivated therefore easy to train, and big and heavy enough to prevent a child from bolting should they be tethered together. I chose a boy for the child character, as research shows autism is more prevalent in boys than in girls. I chose the name Jimmy as it is still in the top 10 of popular boys names, and because my brother, who was disabled, was named Jimmy.

I contacted a social worker that works locally in the field of autism to be on my masters committee. During my meeting with the doctor, she spoke to me of her years of experience with children on the autism spectrum and how each child is unique in his/her abilities and disabilities. She told me that she wasn't aware of any therapists in

Sacramento that currently uses dogs trained for children with autism, which was unfortunate. I had hoped to be able to talk with more therapists who were actually using animal therapy with children on the autism spectrum. However, she was very positive towards my ideas and had several suggestions for me. I felt her suggestions were very good - some were not as closely related to my initial focus of this first book (focusing on the dog) but the suggestions will help me on any subsequent books, keeping autism at the forefront. She suggested I begin with only one or two emotions and to make them extremely clear. She also told me that the materials they as therapists use, called social stories, are based “around” empathy, but do not focus on it directly. She suggested adding a guide for parents and teachers to help them work with the children and the book. I greatly appreciated her time and input and ended up incorporating many of her ideas in the book. I created a one-page sheet of tips and resources for parents and teachers to be included in the book based on her input. I also incorporated some of her insights into the questions on my survey for parents.

Design Brief

Creating a design brief means researching to fully understand your topic.

The first aim of the book is to increase education about dogs, and how children and dogs can communicate non-verbally to understand one another. My secondary aim is to help parents, children and dogs to connect and learn from each other. The tertiary aim was to generate sales to distribute the book to service dog organizations, autism organizations, parents, teachers and therapists.

My primary target audience is male children, aged 1-4 ; The secondary target audience is parents: parents of children with autism, parents of young children, and may additionally include parents struggling with Post Traumatic Stress Disorder (PTSD). The tertiary audience is the general public education of dogs and their emotion and empathy.

Design Elements - The pictures will be hand done in watercolor. The imagery will be realistic but slightly stylized. The story will unfold with very little text to encourage questions and to be easy to read and memorize. The book will come with an insert of how to use the book. The atmosphere of the book will be non-threatening and comforting, using a continuous basic primary color palette of red, yellow and green. The book will have approximately 25-30 pages, be 8” x 8”, full color and hardbound. (I had to go with softbound due to costs).

Over time trial and error, I fleshed out a story and a storyboard. I drew faces and bodies, and animals all in a sketchbook. I began to understand how the paint behaves on the paper. I created a short “draft” of my story ideas and images. To ready the draft for field-testing, I Xerox-copied and assembled the story into small booklets of 4”x 5” greyscale to include with the surveys I was planning to send out. I created a survey for parents and educators and a separate survey for service dog organizations. I sent out 10 surveys, tips for parents and teachers and a draft copy of the book to select assistance dog organizations across the United States and Canada that are currently placing their service dogs with autism clients. I was hoping to get feedback from them if they address personality testing, emotion and empathy when placing their service dogs with autism clients. I also hoped to gain an insight into what

materials, if any, they used to support these concepts. I wanted to gather information on the type of dogs they use and where they get their dogs, so that I have a better understanding of how a child might meet a service dog or puppy and what that dog would look like.

I sent out over 20 drafts of the book, tips for parents and teachers, and a survey to family, friends, teachers, and professionals. With this survey I also hoped to get an idea of what the public thought of emotions and dogs. I hoped to gain feedback from parents of children with and without autism to see how they responded to the book and the images. In the tips for parents and teachers, I give instructions on how to interact with the child and the book. I included a list of references for further information on autism early intervention, animal assisted therapy, additional materials for children, service dog organizations currently placing dogs with autism clients, information on children and animals, and information on Humane Education and Biophilia.

Surveys

As it worked out, only two service dog organizations responded (Wilderwood and Northstar Dogs)*. Wilderwood was not as positive of the book as the Northstar Dogs organization. The feedback was still very useful as I realized how each organization is very different in their approach to service dogs and their placements. I also sent copies to Bergin University professors Dr. Marc Bekoff and to Dr. Stanley Coren, both of whom were positive. I received critical evaluation from all the surveys and feedback, which allowed me to modify the book based on the feedback. Some of the comments on the

survey results are as follows. Many of the recommendations were incorporated in the final book.

- “needs more emphasis on dog body language”
- “possibly like to see a follow up book”
- “more body language... broaden definitions with these kiddos. Concept and academics are not as difficult for them”
- “lengthen the story some...it could be a bit longer”
- “Sophie could write more stories... One about safety in the community or how to share”
- “it's a cute, good story, the watercolor works, Jimmy and the puppy make a good connection to the reader”
- “transition from goodbye to hello seems too sharp, perhaps more transition between the two moments”
- “LOVED LOVED LOVED the book! it was totally brilliant and liked seeing the emotions come out on the page”
- “I picked up on the dogs body language right away...a little more dialect written below to help emphasize the changes in Sophie’s expression.”
- “Great job! LOVE the illustrations!”
- “Body language needs more emphasis. Explain play bow, nervous look, tail wagging...”

* Jennifer Arnold of Canine Assistants in Georgia responded late with an email - “We received your package and LOVED the book! Unfortunately, we don't place dogs with children who have autism but if there is any other way we can help, please let us know!”

Personality and emotion- Personality is what attracts a person to dog. Personality is what increases sharing and enjoying each other’s point of view. Sophie’s playful personality in the book attracts and captures the boy’s attention.

Evolution and emotion - With the connections I found in my research I have confidence in asking, why not let a dog lead the way to understanding and connection of emotion to children with autism? The non-verbal communication is 14,000 years old and it is already in place. We just need to continue to develop it. Sophie shares her happiness and her sadness with the little boy and a bond is created where he had difficulty before.

Cognition - Dogs can be trained to do many things, and they have additional senses on which to rely. Science cannot explain how a dog knows that a child is about to have a seizure, or how an untrained dog can lead a person to safety, or address a hazard. There is so much left to discover in dog cognition and the ways that we, humans, are similar. In the story, Sophie is leading the boy, with his discovery of play, a new social relationship and introducing the emotions of happy and sad.

Humane education and Biophilia- supports the theory that people and animals (nature) need each other to survive. Animals provide our bridge to the natural world. Caring about animals may lead to a broader caring of environmental issues. Children together with their relationship to animals (dogs) brings a dimension to their lives like nothing else can. The boy in the story, who is shy, develops a social relationship with Sophie and is eager to continue that relationship where he was unable to so with his peers at school. He is discovering this need or connection to nature.

I found the connections to human/canine bonding, learning, cognition, mirroring, children and nature, animals and children, sensory learning and communication all come together

in the creation of this book (series) for children on the autism spectrum. The book is designed to

1) entertain and engage a child on the autism spectrum, 2) assist parents and teachers to interact with that child, 3) educate children and parents of the value of a canine that can relate to their emotions, 4) enlighten parents and children to the benefits of having a service dog in their life that goes beyond picking up objects and opening doors, 5) the importance of the human/canine bond, it being more important and necessary than we may have ever considered.

Conclusion and Reflection on Project Process and Outcomes

In looking backwards at the process, I would have liked to contact several therapists who were already working in autism with animal therapy, but could not find them in my time frame. Doing this would have developed my conceptual awareness of the problems and additional issues that a book (or several books) like mine could address. That being said, I tended to get too caught up in researching of the therapies instead of actually getting started creating the book. I realize now that I continued with the research for the first 3 months because I was afraid to start (or fail) on the image making. I had to force myself to start. I began with talking openly to illustrators and artists I am acquainted with about how they go about their illustration.

During this process, I have learned a great deal. The amalgamation of all I have studied at Bergin came together for me as I researched service dogs, their welfare, early interventions in autism, personality and emotions in dogs. There was an “ah ha”

moment when reading the Biophilia Hypothesis and Children and Nature. What I was planning to do with my book project took on a bigger, more meaningful mission.

While not an expert on animal therapy or autism, I felt that I do know about and have researched the overall effect nature and animals have on human beings. Science is now trying to find out the why and the how of these concepts, but humans have known for centuries that animals and nature make a difference in our lives. Just how much of a difference and how we can use this connection to bridge emotional gaps for those that have difficulty in learning empathy and emotion still remains to be explored. All the research I have done came together synthesized into a concept that an animal (specifically dogs) can bridge many gaps for people that suffer various disabilities. With this experience behind me I feel I can reach farther out and find the people that understand what I am trying to do with this information, as well as those that may need this type of book.

References available.

