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Equity of Access to Cultural Heritage: The Influence of the Museum Experience on Learning in Children with Autism Spectrum Disorder

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EQUITY OF ACCESS TO CULTURAL HERITAGE: THE INFLUENCE OF THE MUSEUM EXPERIENCE ON LEARNING IN CHILDREN WITH AUTISM SPECTRUM DISORDER

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DEDICATION

This dissertation is dedicated to my family and my parents as well as to each of the children who participated in the study.

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ABSTRACT

Autism is one of the fastest-growing developmental disorders in the United States. Due to impairments in social interaction and communication, autistic children face challenges in traditional education settings where instruction is based mainly on one-way communication between teachers and students. On the other hand, current research indicates that the museum environment offers opportunities for free-choice, object-based, and inquiry-based learning suitable for the educational and social needs of autistic children. However, there is a paucity of professional literature assessing the impact of such unconventional settings as museums on the learning experience of autistic children.

To narrow this gap in our knowledge, this dissertation investigated the effects of museum cultural experience on learning and behaviors of children with autism, under the theoretical framework of Falk and Dierking's Contextual Model of Learning that has been used to examine museum learning in personal, sociocultural, and physical contexts. Structurally, this research was conducted during a series of visits to the Columbia Museum of Art by a group of autistic children selected for participation by specific inclusion and exclusion criteria. Methodologically, the researcher used a mixed methods approach that employed the standardized Social Responsiveness Scale, parent surveys, behavioral observations, task evaluations, and follow-up parent interviews to record changes in the subjects' content knowledge and behaviors throughout the museum visits.

The findings of the study provided support for its key argument that participation in a tailored educational museum program positively impacts cognitive and social behaviors of children living with autism. This research illuminated the capacity of art museums to contribute to the overall well-being of autistic children by providing a diverse cultural and educational experience that meets their unique needs. Another implication of this study was that it stimulated the dialogue between the autism community and the cultural sector about the role of social justice principles in making museums more inclusive. Finally, the findings of the study intended to help other museums in the region and nationwide to establish quality access programs with long-term benefits for special needs communities.

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INTRODUCTION

1. 1 Background of the Study

Autism is one of the fastest-growing developmental disabilities in the United States (Centers for Disease Control and Prevention, 2014). Autism can cause significant social, communication, movement, and behavioral challenges in children (American Psychiatric Association, 2013). Due to impairments in social interaction and communication, children diagnosed with autism may also face challenges in traditional education settings that employ a linear model of knowledge transmission from the teacher to students. Professional literature (Greenspan & Wieder, 2006) indicates that the challenges for autistic children increase especially as the curriculum and intellectual demands become more rigorous. Therefore, providing alternative or supplementary educational solutions tailored to the specific needs of autistic students has become an issue of national concern (Centers for Disease Control and Prevention, 2014).

Moreover, creating opportunities for accessible and inclusive education is of paramount importance for ensuring the overall well-being of families affected by autism and enhancing their cultural and recreational experience (Coyne & Fullerton, 2004). Rapp (2005) also calls for a more decisive move toward inclusive education based on the recognition of diversity and respect for multiple intelligences and different learning styles. Museums present an ideal environment in this regard. For years, museums have

demonstrated their public value as educational providers, community anchors, and stewards of our national heritage (American Alliance of Museums, 2013). Now, museums are playing an increasingly significant role in many health care issues. Currently, the scope of many museum services is expanding to include visitors with special needs by designing access programs and activities suitable for people with physical and intellectual disabilities (Langa et al., 2013).

Thus, museums as public learning institutions are adding to their traditional roles of connecting visitors to their communities, culture and history and are becoming more and more integral to public health (American Alliance of Museums, 2013). The existing museum practice (Baldino, 2012; Gardner, 1991; Museum Access Consortium, n.d.; Stringer, 2014) indicates that autistic children, especially those who are high-functioning, tend to be interested in museum activities and may benefit from unique interactive opportunities available in the museum environment. The sensory needs of autistic children can also be satisfied through object-centered, inquiry-based learning that is at the forefront of most modern museum education initiatives (Stringer, 2014). Falk & Dierking (2000) call museum learning free-choice as it happens through visual thinking, craft making, storytelling, and other forms of engagement. It is clear then that the lives of autistic children can be enriched through leisure pursuits and participation in organized recreation, such as museum visitation (Coyne & Fullerton, 2004).

1. 2 Statement of the Problem

Numerous museums nationwide are beginning to understand the premise behind the American Alliance of Museums' *Diversity and Inclusion Policy Statement* (American Alliance of Museums, 2014). Although they are opening their doors to special needs

populations, extensive research is needed to grasp the not yet fully-understood capacity of cultural institutions to reach out to users who have long been marginalized. In addition, our understanding of visitors with special needs and the nature of their learning and social interactions in leisure settings is not yet well-established.

Despite efforts to create diverse and inclusive learning environments in museums, there is a paucity of museum accessibility literature assessing the impact of such unconventional settings on the learning experience of children with Autism Spectrum Disorder (Langa et al., 2013). The problem exists because until now much of the autism research has focused on the medical aspects of this disorder, such as causes, treatment options, and behavior improvements that can be made in formal educational settings (Koegel, R., Bradshaw, Ashbaugh, & Koegel, L., 2014). At the same time, scholars and educators in the United States have not devoted enough attention to investigating how leisure environments, such as museums and other cultural institutions, may contribute to knowledge acquisition, cognitive development, and reduction in social or communication deficits typical for children on the autism spectrum. Therefore, there is a clear need to narrow the gap in the existing knowledge by exploring how a tailored museum experience affects learning and behaviors of autistic children.

1.3 Research Questions

This dissertation addressed broad issues of inclusion and equity of access to cultural heritage in the context of contemporary museums. A growing number of museums are now exercising their exceptional capacity to provide learning-rich experiences and information resources for visitors with special needs who have previously been marginalized. Children with Autism Spectrum Disorder represent one of

those populations. The purpose of the proposed research was to investigate the effect of museum experience on learning of children with Autism Spectrum Disorder. The study addressed the following main question:

How does the museum experience influence learning and behaviors of children diagnosed with Autism Spectrum Disorder?

In this study, museum experience was operationally defined as a series of six museum visits within the specified period of time during spring 2015. Each visit consisted of an inquiry-based guided gallery tour followed by a related hands-on art-making activity. Furthermore, learning was operationally defined as changes in the knowledge of the art-related concepts, as well as improvement in social behaviors of autistic children. Lastly, social behaviors were defined as participating in mutual positive interactions with others and responding appropriately to others' social cues (Beaumont & Sofronoff, 2008).

In an effort to answer the main question in this study, a series of sub-questions were considered:

1. What are museum experiences of children diagnosed with Autism Spectrum Disorder?
2. How does the Contextual Model of Learning (Falk & Dierking, 2000) apply to the educational and social museum experiences of children diagnosed with Autism Spectrum Disorder?
3. What are the needs and motivations of families affected by Autism Spectrum Disorder for visiting the museum?

4. Does the museum experience increase the autistic children's knowledge in a particular cognitive domain?

1. 4 Significance of the Study

Museums can be effective public educational institutions only when they meet the needs and expectations of a diverse population of visitors (Adams, Falk, & Dierking, 2003; Chang, 2006; Hooper-Greenhill, 1999). For years, museums have demonstrated their public value as educational providers, community anchors, and stewards of our national heritage. Presently, museums are playing a significant role in many health care issues. They are expanding the scope of their services to include visitors with special needs by designing access programs and activities suitable for people with physical and intellectual disabilities.

The exploration of the cultural and learning experience autistic children gain in museums is a critical area of research because it allows for a better understanding of the value museums hold for special populations. This research aimed to bridge the gap among several disciplines and draw attention to the broad issues of accessibility of cultural institutions and equity of access to cultural heritage. It used the art museum setting to establish and quantify the potential of contemporary cultural heritage institutions to provide rich learning and social experiences to visitors with special needs. Expanding the boundaries of traditional research on special needs populations, this study attempted to prove that museums could play a vital role in enhancing the well-being and the overall quality of life of children living with autism. These improvements could be made because of the unique environment offered by museums with the emphasis on visitor-centered and object-based learning.

The other goal of the study was to inform and inspire more museums to take advantage of what is already in place—a setting conducive to multisensory, engaging, and free-choice learning—the type of learning environment where children with autism can reach their potential. Further, this research was intended to stimulate dialogue between the autism community and the cultural sector about integrating the principles of social justice into current educational practices of cultural institutions to make our field more inclusive and relevant to all of its service communities. From a broader perspective, this research was undertaken to find out how cultural institutions could be transformed to ensure equity of access to human cultural heritage for all users, regardless of their physical or intellectual ability. Therefore, this study will serve as a model for other museums looking to enhance their programmatic offerings to local communities with special needs.

CHAPTER 2

REVIEW OF THE LITERATURE

This chapter presents a review of the literature relevant to the research focus of the study. The chapter begins with the general discussion of Autism Spectrum Disorder, including its features, characteristics, and challenges it presents to children affected by this developmental disorder. The chapter continues with an overview of the evolution of the accessibility movement in cultural institutions, with the special emphasis on its legal underpinnings. In order to more appropriately frame the study in the context of the current museum research and practice, the chapter considers some of the best inclusive practices that have already been adopted by museums nationwide. The chapter then examines the Contextual Model of Learning that was used as the study's theoretical framework. Finally, the review offers a broad perspective of the nature of museum learning and concludes with the discussion of its applicability to the museum experience of special needs children.

2.1 Autism Spectrum Disorder

Autism was first described in the 1940s by pediatrician Leo Kanner (Kanner, 1943) and today it is one of the fastest-growing developmental disabilities in the United States. In March 2014, the Centers for Disease Control and Prevention (CDC) cited the incidence of autism at an alarming rate of one in 68 children and one in 42 boys (Centers

for Disease Control and Prevention, 2014), so that CDC regarded it as an issue of national concern.

There are still many unknowns about this extensive group of developmental disorders but our understanding of the variability of the condition has improved over time. Autism Spectrum Disorder (ASD) and autism are both general terms for a group of complex disorders of brain development. In the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-V),* Autism Spectrum Disorder is described as a range of complex neurodevelopment disorders characterized by social impairments, communication difficulties, and restricted, repetitive, and stereotyped patterns of behavior (American Psychiatric Association, 2013). Autistic disorder, sometimes called autism or classical ASD, is the most severe form of ASD, while other conditions along the spectrum include milder forms of autism such as high-functioning autism, childhood disintegrative disorder, and pervasive developmental disorder not otherwise specified (American Psychiatric Association, 2013).

Autism is a spectrum disorder that is genetically linked and typically appears in the first three years of life. Manifestations of autism vary, including different degrees of severity of symptoms, the starting age, and communication impairments and language delay. Many features of autism impact the children's learning ability and participation in recreational activities. Learning and recreational activities have inherent social aspects. The first major feature of Autism Spectrum Disorder is impairments in social interaction. Since autistic children may appear aloof and indifferent to other people, their behavior does not easily fit into others' perception of what is normal. Individuals with autism may have difficulty reading social cues or maintaining eye contact. The second major feature

is impairments in verbal and nonverbal communication, such as gestures or facial expressions (American Psychiatric Association, 2013).

These impairments are exhibited in difficulty processing spoken or written language, or difficulty using language in a typical manner. Autistic children may have problems understanding abstract concepts and experiences, which affects their engagement with cultural content and instructional materials. Communication problems are often caused by the unusual way information is processed, organized, and used by an autistic individual. Understanding gestures and facial expressions is also difficult for autistic children, even smiles and nods that encourage good behavior are hard for them to comprehend and process. Since they lack the skills to communicate their intentions properly, autistic children often express themselves by screaming, scratching, kicking, and saying, “No” (American Psychiatric Association, 2013).

The third major feature is repetitive and stereotyped behavior. It can negatively affect the children’s ability to participate in learning and recreational activities. Due to the narrow range of interests, it may be hard for teachers to find activities that would motivate autistic children. They tend to enjoy simple expressions and manipulations of objects, such as banging, twisting, and lining up according to size, color and shape. The fourth feature is resistance to environmental change or to change in daily routines. Autistic children find stressful those situations in which they are asked to make even minor changes to their routines. They experience difficulty with transitions and making adjustments. Without support, autistic children are not likely to enjoy new activities or explore new environments on their own (American Psychiatric Association, 2013).

The fifth and final major feature of autistic children is unusual responses to sensory experiences. They can be over-stimulated by lights, excessive sounds, crowds, and other environmental elements. These factors may cause extreme anxiety and discomfort. Sensory overload may result in aggressive behaviors and consequently lead to exclusion of an autistic child from regular recreational or cultural activities (American Psychiatric Association, 2013).

Understanding all these characteristics is important for museum educators and program providers as they design special programs for the children with autism. Lack of knowledge of special needs populations, particularly children with ASD, as well as lack of understanding of the required support mechanisms can deny them access to cultural heritage and resultant learning opportunities. Therefore, it is vital for museum professionals to equip themselves with the knowledge and skills to deal with special behaviors caused by autism in order to effectively plan and manage access programs in contemporary museums and other cultural institutions.

Current autism literature and research mainly focus on the problems and medical needs of individuals with ASD. With a growing number of studies about diagnosis and interventional possibilities, there is limited literature assessing the educational potential of the museum setting for children with ASD as well as the impact of such a setting on their behaviors and social skills. Nevertheless, museums and other cultural organizations across the country are responding to the call for greater inclusiveness and diversity. They are implementing programs that support individuals with special needs in their learning and recreation activities. Those efforts can suggest practical tips for colleagues in the field who are concerned with building more inclusive service communities. Steps like

preparing sensory bags or social stories to get autistic children ready for a museum visit, more expressive communication, using visual schedules to reinforce the day's plan, and simply focusing on the students in the room can help museums to take advantage of what is already in place—a multisensory setting conducive to active learning and student engagement (Baldino, 2012).

2.2 Accessibility of Cultural Institutions and Its History

According to the Institute of Museum and Library Services, there are more than 17,000 museums in the United States (Institute of Museum and Library Services, 2009). The term "museums" is used broadly and encompasses other cultural institutions, such as zoos, historic sites, botanical gardens, and aquariums. They are known as public service and learning institutions carrying out the mission to serve the general public by making their programs and facilities as broadly accessible as possible. As museums expand their role in contemporary society and evolve into centers of community engagement and learning, accessibility of their collections and educational services becomes an issue of primary concern for their administrators.

The Museum Access Consortium, a flagship New York-based advocacy organization in the Northeast, defines accessibility broadly, to include architectural, physical, programmatic, communication, attitudinal and other forms of access (Museum Access Consortium. (n.d.). The accessibility movement has been gaining momentum among cultural heritage institutions since the 1970s. Operating under this basic but powerful tenet, museums strive to become more equitable, diverse, and widely-inclusive. The first step in this direction is to open their doors to people with disabilities and grant them access to the riches of human cultural heritage. Meeting the needs of special

populations is an important part of the effort to diversify museum audiences and market museum services to a growing segment of the community that has previously been marginalized and excluded. Therefore, cultural institutions have made consistent efforts to embed diversity and equality into their policies and practice.

Visitors with disabilities present both an opportunity and a challenge for the cultural sector. Millions of Americans with physical or developmental disabilities pay taxes, attend schools, and are part of the workforce. Their number has been on a steady rise. In the United States, more than fifty-six million people, or approximately 18.7% of the total population, live with a disability (Stoddard, 2014). Although they receive educational support, their involvement with the cultural sector is insufficient (Coyne & Fullerton, 2004). To change this situation, contemporary museums invest time and money to remove barriers from their facilities, design accessible exhibitions, and provide effective communication for their programs. There is a growing awareness in museums that providing a variety of ways to access cultural information can facilitate a wide range of learning experiences as well as improve access for more people.

The movement toward accessibility of cultural institutions is deeply rooted in the notions of civil rights and diversity. The second half of the twentieth century saw the emergence and an increase in influence of the disability rights movement in the United States. In the mid-1970s, there were several landmark historical and legal developments that brought people with disabilities into the mainstream of society. The first of those significant laws was the Rehabilitation Act of 1973 (1974). This Act affects a wide range of rights and services, including recreational services. Section 504 prohibits discrimination on the basis of disability in programs conducted by federal agencies,

including cultural and recreational programs. Furthermore, the Individuals with Disabilities Education Act (IDEA) was passed in 1972 (Office of Special Education Programs, 2007). IDEA is a regulation that describes how states and public agencies should provide early intervention, special education, and related services to eligible children and youth with disabilities. IDEA is the key federal legislation relevant to children with autism.

Finally, another piece of legislation worth mentioning is the Americans with Disabilities Act (ADA) of 1990 (1991). Under the ADA, no individual may be discriminated against on the basis of disability with regard to equal enjoyment of goods and services in places of public accommodation, including museums. This law provides similar protection against discrimination for disabled people as the Civil Rights Act of 1964 (1965). The significance of the ADA is that it has changed the public perception of the concept of accessibility as something related only to physical conditions. The ADA redefined disability to include both mental and physical conditions. Under the ADA, disability also began to be understood as a legal term rather than just a medical term. Therefore, the ADA was the first major legislation that provided the promise of equality to all people with disabilities. The ADA specified that a condition did not need to be severe or permanent to be a disability, which enabled more visitors to participate in special programs offered by cultural institutions.

These congressional statutes have helped to form a solid legal foundation for integrating the principles of diversity and accessibility into cultural organizations' long-term strategic planning. The concept of "Access for All" began to factor in day-to-day operations of museums, from general programming to audience development process.

The broadened notion of accessibility signified a shift in museums' approach to this issue. For decades before the ADA, museums had considered accessibility issues mainly in terms of barrier-free physical access while there was an obvious exclusion of people with intellectual disability from the museum world. With the consistent legal basis firmly in place, museums began working toward inclusion of all visitors, including those with intellectual or developmental disabilities. Museum administrators understood it was their legal obligation to provide accessible services to all target communities.

The way to put this new service philosophy to practice and meet the ADA requirements was through the application of the universal design principles that intend to remove all physical barriers to access. Universal design can be defined as the design of products and environments to be usable by all people without the need for adaptation or specialized design (Story, Mueller, & Mace, 1998). The guiding principle is that the universal design techniques enhance the educational experience for learners of all abilities. The principles of universal design, originated as an architecture concept, quickly expanded to broad-spectrum ideas that applied to buildings, exhibits and environments to make them inherently accessible to people of all ages, abilities and size. Gradually, universal design techniques spread beyond the physical aspect of museum operations. These principles were increasingly applied in the educational context to provide equal access to learning that was happening in museums. Using universal design to facilitate learning is a sign of progress in museums' attempts to position themselves as centers of teaching and learning. By now, museums across the country have committed to the universal design practices because visitors with disabilities are finally recognized as part of the diverse museum audience.

2.3 Diversity and Inclusiveness in Museums

Museums as cultural institutions have for a long time been considered as centers of public learning. There exists an extensive body of literature that discusses the evolution of museums from elitist institutions that served a limited public into agencies that support diversity and inclusion (Stringer, 2014). From their earlier days, many museums realized their great potential to advance knowledge among all members of society, and the calls for museums to embrace an educational mission came from both scholars and practitioners in the field (Falk & Dierking, 2000). More widespread adoption of inclusion policies has had a profound impact on museum educational practices. During the early 1990s, museums went through a paradigm shift from the focus on collections and objects preservation to their current emphasis on educational programming and visitor learning experience.

Although in the past museums served mainly as repositories of objects from wealthy donors, education is a primary goal of contemporary museums (Schwartz, 2006). In its project "Museums, Libraries, and the 21st Century Skills," the Institute of Museum and Library Services (2009) identifies museums as strong community anchors that, together with formal education and other community organizations, create a network of learning within a community. In this capacity, museums should have a mission to equip citizens with a range of skills necessary to succeed in the dynamic twenty-first century world. The International Council of Museums (ICOM) agrees with this assessment, identifying museums as places of education, study, creativity, and enjoyment for all (International Council of Museums, 2007).

In the early 1990s, many museums across the country made efforts to improve accessibility and diversify museum audiences. Several scholars have claimed that recreational opportunities and leisure experiences need to be prioritized in the education and preparation of citizens with disabilities (Fine, 1991; Dattilo & Schleien, 1994). Individuals with ASD represent a growing segment of the general population and therefore, it is important to provide them with an opportunity to engage in various museum and cultural activities.

The Standing Professional Committee on Education under the American Association of Museums (1990) first published its *Statement on Professional Standards for Museum Education* that was the first attempt to re-examine issues critical to museum education. The *Statement* promoted education as central to the museum mission and encouraged integration of education programming into a wide array of museums' activities. Since then, visitor education has come to the forefront of museums' strategic efforts. As Falk and Dierking (2012) observe, in recent decades museums have increasingly positioned themselves as educational institutions, which explains why a growing number of exhibitions, as well as websites, programs and other activities are driven by educational goals.

Numerous authors (Adams, Falk, & Dierking, 2003; Chang, 2006; Hooper-Greenhill, 1999) have argued that museums can be effective public educational institutions only when they meet the needs and expectations of a diverse population of visitors. Currently, museums are making efforts to respond to the call for greater inclusiveness by prioritizing programming that supports individuals with special needs in their learning and recreation activities (Golden & Walsh, 2013; Graham, 2013; Kirk,

2001). Further, the American Alliance of Museums (2014) published the *Diversity and Inclusion Policy Statement* that calls for promoting diversity of participation, thought, and action. In doing so, museums are recognizing their increased role in promoting social justice and advocating for human rights (United Nations General Assembly, 1948). Shepherd (2009) points out that the concept of inclusion within society is rooted in human rights. Inclusion as a phenomenon stems from a history of exclusion where individuals with 'special educational needs' have been traditionally segregated from society, especially in educational settings (Florian, 1998).

While the concept of social inclusion is now a widely accepted notion, the challenge for cultural institutions is to develop programs, practices, and services that support the diversity of users' learning needs, especially for those with physical and developmental disabilities (Florian, 2008). Back in 2002, the American Association of Museums Committee on Education published *Excellence in Practice: Museum Education Principles and Standards* (2002) that combined the 1990 standards with more current directions in best practice. It is interesting to note that accessibility, inclusiveness, and equity of access was the first standard mentioned in the 2002 document, clearly indicating this as a top priority in museum work. Stringer (2014) also comments on the transformation of the museum from a place of research and knowledge for elite scholars to a place of learning for all audiences, including communities with special needs. These audiences can derive benefits from informal and creative learning opportunities presented by the museum environment.

The casual and informal style of teaching and learning through direct interaction with museum objects is in contrast with how learning happens in the traditional

classroom. Formal education typically takes place in a rigid environment with standards-based curricula and the standardized test atmosphere of schools (Gardner, 1991). It is not surprising that scholars, such as Rapp (2005), have urged museums to move toward more innovative, collaborative, and student-centered practices, particularly for students with learning and developmental disabilities. The valuable form of collaboration is described in recent studies (Tam, Nassivera, Rousseau, & Vreeland, 2000) as school-museum partnership for students with disabilities. It is necessary for every individual and society as a whole to embrace the need for diversity and inclusion. Now the notion of inclusive museum is becoming increasingly embedded in the design of physical and virtual exhibits as well as other education programs and practices. In such an inclusive environment, students of all abilities are able to complete their individualized learning tasks. All these access and inclusion efforts in modern museums are aimed at fulfilling a social justice agenda and making a difference in the lives of museum audiences.

2.4 Museum Access Programs: Best Practices

Museums are fulfilling their newly-defined roles in society and advancing their social justice agenda. In a broad sense, accessibility implies inclusiveness, diversity, equality, as well as creation of participatory culture. Specifically, accessibility can be understood as identifying barriers to cultural heritage, adapting content and delivery of programs to people with special needs.

A number of widely-known museums are on the forefront of the accessibility movement. They offer opportunities for adaptation and amplification for smaller museums and cultural centers. The Smithsonian Institution, a flagship cultural organization for the country, has created a number of special programs for families with

children on the autism spectrum. "Mornings at the Museum" is available for this population to visit the museum half an hour before it is open to the general public (Smithsonian Institution, n.d.). The purpose of this special time is to reduce the distractions that autistic children may face during the busy hours of the day. To reduce sensory stimuli, staff members lower the light level for the children and start with only one exhibit at a time. To reduce anxiety and the fear of the new experience, pre-visit materials called "social stories" are also available for the parents to share with their children before they visit the museum. Some materials offered by the Smithsonian Institution describe the future visit and the rules of behavior in a way that autistic children can easily understand. The Smithsonian has put these pre-visit materials online and intends to create a structure for a predictable environment so that autistic children know what they may expect in every specific situation or what will come next.

The New York Metropolitan Museum of Art (Met) is another example of a cultural institution that welcomes visitors with special needs, including children with ASD. The “Met for All” offers a series of multisensory workshops called “Discoveries” that include tactile opportunities and art-making activities (Metropolitan Museum of Art, n.d.). Each “Discoveries” workshop focuses on a theme, such as America: Yesterday, Today, and Tomorrow, Surrounded by Art, Shape Up!, Made from the Earth, and includes a gallery tour followed by a related art activity in the studio. Similar to the Smithsonian accessibility program, “Discoveries” workshops come together with online pre-visit resources including social narratives, interactive sensory friendly maps, Tips for Parents of Children on the Autism Spectrum, and My Met tour that parents can take with

their children. Besides assistance for autistic visitors, the Met provides extensive online resources for visitors with all disabilities.

The Museum of Fine Arts in Boston also has special programming targeted at visitors affected by autism. First, “Artful Healing” offers a specially designed program for children ages 8-12 on the autism spectrum (Museum of Fine Arts Boston, n.d.). Children attend this program accompanied by a parent or caregiver. All children go through a brief evaluation process and are divided into groups by age or their specific needs. Second, there is the “Beyond the Spectrum” program which meets one Saturday per month (Museum of Fine Arts Boston, n.d.). Each class lasts an hour and a half and combines gallery exploration with an art-making activity. Participating autistic children get a chance to develop their creativity and fine motor skills while working on hands-on tasks. These programs create a welcoming learning environment for families of autistic children. For example, the children can have a sensory break during their visit or are provided sensory cool-down items.

The Dallas Museum of Art features an initiative called “Autism Awareness Programs.” This program provides a safe, comfortable way to introduce the museum to children with autism and their families (Dallas Museum of Art, n.d.). For example, in January the museum offers a program with a winter theme featuring staff-led gallery experiences and snowy art-making experiments in the studio. Autistic families are encouraged to have an interactive performance with a music therapist and even relax in the sensory room facilitated by occupational therapy students from Texas Woman’s University. The museum offers free early admission to pre-registered families who can come before the museum opens to the public.

Discovery Museums in Acton, Massachusetts, have developed “Especially for Me!” in partnership with the Autism Alliance of MetroWest to serve families in the region affected by ASD (Discovery Museums, n.d.). Their two programs “ASD Friendly Afternoons” and “Free Evenings for Families of Children with an ASD” offer opportunities to explore and enjoy the museum without limitations and the fear of being judged. To make the visits more comfortable, the museum does not schedule school groups or birthday parties during the program time in order to avoid overcrowding and support access to exhibits for autistic families. A dedicated room is available to welcome families with an autistic child to orient them to the programs and provide a quiet space for children needing a break from the stimulation of the Discovery Museums.

Finally, the Museum of Contemporary Art in Jacksonville, Florida, has offered a program called “Rainbow Artists,” an educational initiative designed exclusively for children with ASD (Museum of Contemporary Art Jacksonville, n.d.). The program creators believe that the creative art-making activities enable autistic children to foster new means of self-expression and communication. Using art studio and galleries, the “Rainbow Artists” program focused on creating collaborative art projects, at the same time improving children’s motor and social skills. The program was created in 2007 and offered on Saturdays through 2014 with only five children enrolled at the very beginning. In seven years, the program grew to serve over two hundred autistic children and has been nationally recognized by museum associations and health care providers alike.

In all, what these initiatives have in common is the goal to make all visitors feel welcomed by providing consistent, effortless access to a wide range of programs, collections, and facilities. All these successful access programs help address the special

challenges autistic children have with social interaction, sensory processing, verbal and nonverbal communication, and repetitive behavior. In a broader sense, they illustrate the idea that museums which operate within the sphere of human rights are more effective in developing inclusive and diverse practices.

2.5 Theoretical Framework

The Contextual Model of Learning (Falk & Dierking, 2000) has been used in the museum scholarship as a major theoretical construct for examining and investigating learning within free-choice environments, such as museums and other public learning institutions. The Model is widely considered to be centerpiece for helping understand why and how people learn, as well as what they may take away from each learning experience. The Contextual Model of Learning can be better understood as a framework rather than a model because it does not aim to make predictions about the course of learning or its outcomes.

Falk and Dierking (2000) conceptualize learning as a conscious continuous effort of an individual to make meaning of the world around them. This effort takes place in a particular physical and sociocultural environment. The interaction between the individual and the environment is always situated within a set of contexts. Drawing from a number of constructivist, cognitive, and sociocultural theories, Falk and Dierking (2008) portray learning as both the process and the product of the interactions over time between three contexts: the personal, the sociocultural, and the physical. Although in theory these contexts can be separated into three distinct entities, in reality they are always intertwined and connected with each other. Thus, the three contexts allow one to consider learning as a holistic experience.

Personal context

The personal context is represented by a learner's motivation and expectations, previously-developed interests, prior knowledge and experience with the subject-matter, as well as the choice and control over what is to be learned and in which way. If personal expectations are met, then learning is facilitated and the visitor feels motivated to learn even more. On the other hand, if the visitor's initial motivations are not fulfilled during the visit, then learning takes place to a much lesser extent or does not happen at all.

Importantly, differences in visitor personal context help anticipate many of the differences in visitor behaviors and learning styles. Given that the ultimate goal of learning is meaning-making, the meaning is naturally unique for each individual so that they tend to define their own learning experiences that may best help to fulfill particular learning needs. Falk and Dierking (2000) conclude that museum learning is personal in nature because it is constructed around and determined by each visitor's personal background, and those backgrounds vary greatly across groups of visitors or even within the same group.

Sociocultural context

However, the personal context alone cannot fully explain the unique nature of each museum visitor experience. The sociocultural context must also be taken into consideration because each visitor's perspective is strongly influenced by it. The sociocultural context recognizes the social nature of human beings. In this context, people are viewed as integral parts of their culture and society. As typical free-choice learning settings, museums provide a fertile ground for individualized perception, interpretation, and knowledge construction. However, museum visitation does not take place in a

vacuum, so that visitors are presented with numerous opportunities to share their experiences and form social bonds in the process.

The sociocultural context of a museum visit covers the social interaction between the visitor and his or her immediate companions, as well as other visitors and even museum staff during the visit. Therefore, the sociocultural context consists of the following essential parts: learner cultural background, within group social mediation, and mediation by others outside the immediate social group. Simply put, the sociocultural context implies that learners are deeply influenced by the collaborations and interactions they have within their social group. The sociocultural context may refer to people with whom the learner primarily interacts, as well as those he or she may encounter during the learning process. These instances of socialization include interactions not only within groups but also between learners, and learners and staff. Research (Falk & Dierking, 2012) has demonstrated that interactions with others outside one's own social group, such as facilitators, performers, or other social groups, can make a substantial difference for the effectiveness of learning.

Physical context

Finally, the physical context describes the physical environment in which learning occurs, such as advanced organizers (supervisors), orientation to physical space, building architecture and the overall environment, as well as programming and technology available to learners. Since learners are influenced by the physical design, a stable physical context is particularly important for the learning process. In general, searching for meaning and making sense of the environment are deeply ingrained in the human nature. Therefore, people tend to learn better when they feel secure and oriented in their

surroundings. Additionally, the physical context may extend beyond the building walls, and learning may or should continue after the actual experience is completed. The acquired information is further processed in the learner's consciousness as it is enriched and made more meaningful after the learning experience by the contexts outside the original setting.

In *Learning from Museums: Visitor Experience and the Making of Meaning*, Falk and Dierking (2008) summarize the Contextual Model of Learning as a combination of the following factors: the personal context that consists of (1) visit motivation and expectations; (2) prior knowledge and experience; (3) Prior interests; and (4) choice and control. The sociocultural context consists of (1) visitor cultural background; (2) within group social mediation; and (3) mediation by others outside the immediate social group. The physical context consists of (1) advanced organizers and orientation to physical space; (2) building architecture and the overall environment; (3) programming and technology available in the museum; and (4) reinforcing experiences outside the museum.

Learning is an active and individual process that must take place in an engaging and safe environment. More specifically, learning is affected by the environment in which it takes place, by an individual's personal experiences, and by the sociocultural sphere. As a result, the three-dimensional nature of the Contextual Model of Learning is highly usable in the practice of cultural institutions, particularly museums. The Model helps to understand the museum experience from the visitor's perspective. Since the museum experience is inherently about learning and cognition, the Contextual Model of Learning provides museums with a better understanding of how museum visitors make sense of their experiences. Given the growing diversity of present-day museum visitors,

understanding why they decide to go to a museum, what they do there, and what they take away presents a considerable challenge. It is the Contextual Model of Learning that helps clarify the obscurity around the visitor experience by analyzing numerous factors or variables that contribute to visitor behavior and learning in the museum setting.

2.6 Nature of Museum Learning

In order to apply the Contextual Model of Learning to the current research, it is first necessary to examine and define the nature of learning in museums. Learning as it happens in the museum setting features several characteristics that distinguish museums from the traditional classroom.

Museum learning is, by its nature, free-choice because visitors get to decide what, how, and when they learn. Falk and Dierking (2000) argue that in this sense the museum experience is similar to other recreational activities people engage in, such as reading a newspaper, watching TV, or surfing the Internet. The visitor has considerable freedom if and when to engage in the learning process and what to take away from the visit. The idea of free-choice learning (Falk, Donovan, & Woods, 2001) describes the museum as a unique out-of-school environment that allows the learner to identify several learning options in a variety of spaces and finally to choose a specific option, theme, or space for learning. Since participation in museum activities is not compulsory, learning is a desired but not required outcome. Even guided museum tours provide visitors with a variety of activities to choose from, and what is more important, the visitors feel they can choose and control their exploration and learning activities.

Museum learning is also object-based. It builds on the human desire to explore things that are new, to grasp the unknown, and to get a glimpse of the past by interacting with objects and artifacts that exemplify the past. Baldino (2012) notes that a museum is a place where visitors can interact with objects and experiences directly without following some prescribed educational procedure. Object-based learning represents a hands-on, active mode of learning where learners naturally stay engaged with the content and are encouraged to use different ways of communication to express their attitudes to the experience of a museum visit. Moreover, learning in museums is inquiry-based. It involves a process of exploring the natural or material world that is supposed to stimulate questions and making discoveries in search for new understanding.

Finally, museum learning can be described as participatory. Effective learning takes place in the environment where all students learn from each other based on their individual abilities (Bruner, 1996). This type of learning happens through conversations, discussions, and other forms of exchanging ideas. Due to the aforementioned interaction with objects and freely-expressed common interests, visitors form communities of learners and museum can be viewed as the bridge between these communities. Thus, the museum setting is especially conducive to learning through participation and engagement in activities that are both educational and recreational. Roschelle (1995) further confirms that developing the ability to participate in a community-based culture is critical for knowledge acquisition. In summary, learning in and through museums, with its emphasis on freedom of choice, visitor engagement, active participation, and object orientation provides an innovative and promising solution to the challenges of the historically accepted traditional education practice.

2.7 Application to Current Study

Given the unique nature of museum learning and the characteristics of autistic children, the Contextual Model of Learning was used as a major theoretical construct to explore how the museum experience influences learning of a group of children with autism. Children of all abilities learn more from active engagement and inquiry-based instruction than from just listening to a lecture in the regular classroom. However, children with autism often have difficulty responding to the demands of standard education curricula, including the need for creative and logical use of ideas, the stress of engaging in emotional interactions with peers and instructors, and the rigorous requirements to participate in classroom activity for prolonged periods of time. Therefore, it is necessary to develop alternative educational solutions in order to provide quality learning experiences tailored to the needs of autistic students.

Museums have the ability to develop vital qualities in children with autism, such as creativity, aesthetic appreciation, spirituality, ordering, or making sense. In museums learning happens through craft making, conversation, storytelling, and other forms of engagement. Such an informal learning environment makes it possible for children to learn easily and pleasantly. This way, visiting families can address not only the most common emotional and communicative deficits associated with autism but also meet all the other unique educational needs of autistic children. They can fully take advantage of educational and cultural experiences museums offer in a comfortable setting that is conducive to multisensory, engaging, and self-paced learning. The museum learning environment can help children with autism to thrive both socially and intellectually, as well as to live productive lives all the way into adulthood.

2.8 Summary

This chapter contained a review of the existing literature relevant to the topic of the current study. The chapter highlighted some of the key points of previously conducted research and positioned the Contextual Learning Model as the theoretical framework for the study. Discussions of major characteristics of autism relevant to learning process, the cultural experiences of autistic children, history of the accessibility movement in cultural institutions, the issues of diversity and inclusiveness, and the nature of museum learning contributed to a better understanding of the study's foundation. This chapter determined that while there existed a number of studies focusing on the medical side of autism, including causes, symptoms, learning impairments, and various treatments, not enough research had been done to explore the role of cultural and recreational opportunities in helping autistic children cope with the challenges of this developmental disorder. The review of the literature presented in this chapter provided justification for the current study by articulating the need for additional research on learning and socialization of autistic children in cultural settings.

CHAPTER 3

METHODOLOGY

3.1 Introduction

This study employed a mixed methods design that helps to develop a better understanding of the complexity of the museum experiences for children with Autism Spectrum Disorder. The mixed methods approach to gathering, reporting, and interpreting data entailed converging quantitative and qualitative data to obtain valuable evidence from a variety of sources and consider the phenomenon under investigation from multiple angles and perspectives. This research aimed to describe the factors and processes that influence the learning and socialization of children with autism in a museum environment.

This chapter discusses the mixed methods approach, the research design, data collection methods, study participants' profile, recruitment procedures, development of materials, and data collection procedures, as well as the pilot study conducted to test the data collection instruments.

3.2 Mixed Methods Approach

There are three major approaches to research design and data collection: qualitative, quantitative, and mixed methods. The choice of a particular approach is determined by the nature of the research problem and, to a lesser extent, by the

researcher's personal preferences. Naturally, the distinctions between the three approaches are not as rigid as they may seem, so John Creswell (2014) suggests they can be viewed as different ends of the research spectrum rather than completely separate research methods. Gorman and Clayton (2005) elaborate on the fundamental differences between the qualitative and quantitative approaches by examining the basic assumptions behind them. Quantitative methodology is rooted in the objective reality of social facts while qualitative methodology stems from the socio-constructivist view of reality (Gorman & Clayton, 2005).

Mixed methods approach combines qualitative and quantitative methods to provide a better understanding of the research question than either qualitative or quantitative data alone. Creswell (2011) points out that combining two types of data collection techniques in the mixed methods design can provide powerful information about the topic at hand. The mixed methods approach is used to investigate problems that deal with understanding the relationship among variables and exploring the topic in further detail (Creswell, 2014). This design emphasizes both the outcomes in quantitative research and the process in qualitative research. It also provides the possibility of triangulation, or the use of multiple sources of data to validate the findings of the study. The use of the triangulation technique allows the researcher to identify a phenomenon more accurately by approaching it from different angles.

For a number of years, the mixed methods approach has been recognized as appropriate for museum studies. Madden (1985) claims that trying to control for the many variables of a museum setting takes away from the true understanding of the learning that occurs in the museum. In addition, Smith (1990) argues that the qualitative

component of the mixed methods design lends itself well to the museum setting because it emphasizes the uniqueness of the setting itself rather than trying to control it in order to generalize the findings to a larger population.

3.3. Research Design

This study was grounded in a rich description of the research site, the study subjects, and the complexities of their behaviors exhibited through their actions and interactions with peers, museum educators, and art itself. Since one data source was insufficient to answer the research question of the study, the mixed methods approach was chosen in order to develop a more complete and in-depth understanding of the impact of a museum experience on autistic children. The use of qualitative methods enabled the researcher to collect data from many perspectives over time (Miles & Huberman, 1994). The use of numerical data enabled the researcher to measure psychological characteristics and changes in the social behavior of the study participants.

The current understanding of visitors with special needs and the nature of their learning and social interactions in leisure settings such as museums is not yet well-established. To contribute to the scholarship on this phenomenon, this study explored how museum experience influences learning and behaviors of children affected by Autism Spectrum Disorder though the lens of the Contextual Model of Learning (Falk & Dierking, 1992, 2000). This theoretical framework provided a lens through which to examine the unique learning and socialization needs of special populations in the personal, sociocultural, and physical context of a museum.

The Columbia Museum of Art (CMA) was chosen as the research site for this study. As a flagship cultural institution in South Carolina, CMA has made a consistent effort to increase the accessibility of its collections and services (Columbia Museum of Art, n.d.). In addition, education is viewed as an integral part of the CMA mission and strategic vision. The CMA was opened to the public in 1950 in Columbia, South Carolina. During the 1950s-1960s, the CMA grew substantially and became a premier cultural institution featuring collections in art, natural history, and science. During the 1970s-1980s, the museum saw a significant increase in acquisitions of European, American, Asian, and modern and contemporary art. The CMA's collection numbers over 7,000 objects housed in 20,000 square feet of gallery space. The current building is suitable for the needs of diverse audiences, with its well-designed workspaces, art studios, a large auditorium, a museum shop, and numerous event spaces (Columbia Museum of Art, n.d.). During the summer and fall of 2014, the researcher developed a partnership with the CMA administration and met with the Education Department staff numerous times to discuss collaboration related to this research study. Those efforts helped secure the CMA commitment to the project in the context of its Art and Autism access program.

The CMA access program consisted of six museum visits during April and May 2015. The program structure that included a combination of guided gallery tours and hands-on art-making activities helped the researcher to gather diverse data to answer the main research of the study: How does the museum experience influence learning and behaviors of children diagnosed with Autism Spectrum Disorder?

This mixed methods research employed several data collection instruments to address the stated research question including the pre- and post-visit parent surveys, the

standardized Social Responsiveness Scale, pre-gallery and post-gallery tour task evaluations, parent interviews, and onsite behavioral observations. The instruments were chosen to measure the museum impact on a group of high-functioning autistic children who were given an intervention in the form of six museum visits under the umbrella of the Art and Autism access program.

3.4 Art and Autism Access Program

In response to the American Alliance of Museums call for diversity and inclusion, the CMA developed the Art and Autism access program to meet the educational needs of a group of special needs children diagnosed with autism. The program was a perfect fit for the CMA mission and vision as a museum that strives to reach diverse communities and create inclusive learning environments. The program grew out of the belief by the museum educators that the museum experience could be used as a vehicle to enhance learning and social skills of children with developmental disorders. It was also driven by the intent to advocate for accessible and inclusive practices in the institution itself, the community, and across the field.

In order to prepare themselves to work with this particular audience, the staff of the Education Department received extensive training from behavior specialists in the South Carolina Autism Society, as well as certified applied behavior analysts and therapists in the Autism Academy of South Carolina. The training workshops included discussions on teaching strategies for high-functioning autistic children, understanding sensory needs, and addressing challenging behaviors in children with autism. This knowledge and experience was crucial for designing and implementing the Art and Autism program. A typical program session consisted of a guided gallery tour followed

by a hands-on art-making activity. During the program, museum educators introduced a variety of art concepts. The children could then put those concepts to practice through hands-on exercises, texture bags, and other means. In all, they could explore what they learned by creating their own art in the museum art studio.

In the Fall 2014, the researcher approached the CMA Director of Education regarding the possibility of collaboration for this study. After a series of meetings, a range of topics were identified to form the core of the six-week program scheduled for Spring 2015. The specific duration of the program was dictated by the feasibility concerns and the convenience of the spring offerings for prospective participating families. Each of the six weekly visits focused on a particular topic and included a 45-minute guided gallery tour, a 10-minute break, and an art-making studio component.

Additionally, social story was another essential part of the experience that aimed to help the participating children better cope with the novelty of the museum environment. Social Story has been defined by Gray and Garand (1993) as a written or visual guide describing various social interactions, situations, behaviors, skills, or concepts in a particular style and format. The purpose of social story is to help individuals with autism reduce the anxiety and stress associated with a new environment. Through the use of visuals and written text, the social story created by the CMA staff prepared the participants for the visits by describing the environment with relevant social cues to facilitate the understanding of the museum rules and expectations. In particular, the social story began with the general description of the building, including its layout and physical address. Then, it briefly described the museum collections and gave the children a sense of the nature and the order of the activities they were to participate in. Lastly, the social

story included a section that addressed the museum behavioral guidelines to help reduce the likelihood of confusion or unpredictable behaviors.

Six lesson plans were designed so as to provide a rich learning experience for the program participants and introduce them to some of the themes commonly taught in a typical art education classroom. Another purpose of these tailored lesson plans was to use art and hands-on activities to engage the children in expressing concepts, thoughts, and feelings and thereby address the most prominent communicative deficits of autism.

Week One theme was Still Life. The lesson, combining the gallery tour and an art-making activity, aimed to introduce the study participants to the concept of still life. They were to identify elements of still life in the artworks they interacted with within the museum collection and name familiar components in the artworks. They also began to recognize how still life could be found around them in everyday life. Finally, the participants reinforced the knowledge obtained through the gallery tour instruction by creating their own still life artwork in the course of the subsequent art-making activity in the CMA art studio.

Week Two theme was Animal Art Texture Collage. The lesson introduced the study participants to animal artworks within the CMA galleries and the various media used to create the artworks. The second goal of the lesson was to discuss the concepts of dimension and shape, focusing on the difference between three-dimensional and two-dimensional objects. During the gallery tour, the museum instructor distributed texture bags prompting the participants to use their sense of touch to explore the paintings in addition to the typical museum experience using only sight. The participants further

explored the concept of texture as they created their own collage during the art-making activity. The lesson addressed the deficit in the communicative function of the study participants as they were asked to verbally identify organisms within the works of art, such as plants, animals, and habitats, and discuss or support their ideas using their observation skills.

Week Three theme was Warm and Cool Colors. The lesson intended to introduce the study participants to the concept of warm and cool colors. The participants were expected to identify cool and warm colors in the artworks they encountered during the gallery tour, as well as to sort and group artworks based on this concept. In addition, the participants were taught to identify feelings associated with certain colors and their personal preference for warm or cool colors, thus addressing some of the emotional deficits characteristic of children living with autism. Then, they applied the newly-acquired knowledge to creating their own works of art during the art-making activity.

Week Four theme was Lovely Landscapes. The lesson intended to introduce the participants to the concept of landscapes through the examination of three works of art by Charles Courtney Curran. The participants were expected to recognize elements of a landscape within the works of art, as well as to identify the foreground, the middle-ground, and the background in each of the paintings visited during the gallery tour. The museum instructor emphasized the difference between a landscape and a cityscape. The final goal of the lesson was to teach the participants to identify how landscapes could be found around them in everyday life. During the art-making activity, the participants were instructed to draw a landscape of their choice using watercolor pencils. The museum

educator guided them to apply the concepts of the foreground, the middle-ground, and the background learned during the gallery tour.

Week Five theme was Patterns. The lesson intended to teach the study participants about the concept of pattern: what it is, how to discover patterns in art, as well as how to recreate or mimic a pattern. The lesson further addressed how patterns in contemporary art could add a strong element of interest to a painting or drawing. Finally, the participants became familiar with the effect of repetition and rhythm in an artwork and were asked to use the art-making activity time to recreate such an effect in their own art by tracing their hand on paper three-to-five times with a black marker or crayon. The participants then created a different pattern to fill in the background of their paper.

Week Six theme was Monotype Portraits. The lesson intended to introduce the study participants to the monotype printmaking process involving experimentation with line and texture. Specifically, the lesson aimed to develop an understanding of this process and the skillset necessary to create one's own set of prints. The museum educator instructed the participants how to create a set of prints and print out a monotype portrait using the printing press.

3.5 Study Participants

To establish anonymity and protect confidentiality of the study participants, only general information is provided in this section. The study subjects were a group of ten children with clinically diagnosed Autism Spectrum Disorder, aged 8-15 years old. Eighty percent of the study participants were between the ages 8 and 11.The children in the group included nine boys and one girl. In terms of their racial make-up, seven

participants were white, two were African American, and one was biracial. Geographically, all the participants were located in the Midlands area of South Carolina. They came from various classroom settings. Four children participated in inclusive classes. Burke & Sutherland (2004) define the inclusive classroom as a learning space where each student is integrated in the general education curriculum as much as possible. Two children participated in self-contained classes while four participants received education in a mix of both inclusive and self-contained classes.

To control the variability within the group, predefined inclusion and exclusion criteria were used to select the study subjects, along with their parents. The inclusion criteria were: officially diagnosed Autism Spectrum Disorder, aged between 8-15, functional language ability, hearing and visual acuity within normal limits, no additional clinical diagnosis, and availability to attend museum workshops on predetermined dates. The exclusion criteria were: severe vision and hearing impairments and severe behavior problems. The inclusion and exclusion criteria were determined in consultation with faculty in the Department of Psychology and the College of Education at the University of South Carolina. Eligibility for the study was determined through initial parental screening addressing participant selection criteria. The parents of the selected study participants were required to participate in all six museum visits. The small number of the participants was due to the feasibility concerns and data collection considerations.

3.6 Recruitment Procedures

Recruitment of the participants took place through several different avenues. First, an Art and Autism museum program flyer was created and distributed through a number of autism advocacy organizations, such as the South Carolina Autism Society (SCAS),

the Autism Academy of South Carolina (AASC), and Family Connection - South Carolina. The researcher contacted the Information and Referrals Coordinator of the South Carolina Autism Society regarding advertising the program through the organization's social media channels, including its listserv and the Facebook account. As a result, the program flyer was posted on the SCAS Facebook page in February and March 2015, as well as distributed to the autism community through the society's listserv. The promotional flyer was also published in the March 2015 issue of the SCAS newsletter. Additionally, the flyer was on display at the main office of the Autism Academy of South Carolina during the months of February and March 2015 and was distributed to the participants of the "Light It Up Blue" event on April 2, 2015. Through the collaboration with Family Connection - South Carolina, program flyers were distributed to the attendees of its Annual Conference on March 6, 2015, along with a Facebook page posting.

Another main participant recruitment effort was related to the communication with the Special Education Coordinators in three school districts in the Columbia area, including Richland District One, Richland District Two, and School District Five of Lexington and Richland Counties. In order to distribute the program flyer, the researcher obtained the official approvals from the Office of Accountability, Assessment, Research and Evaluation in District One, the Office of Accountability and Evaluation in District Two, and the Office of Public Information in School District Five of Lexington and Richland Counties. The flyer was also distributed through the Special Needs Coordinator in Palmetto Pediatric and Adolescent Clinic, Team Therapy Clinic, as well as through the University of South Carolina Speech & Hearing Research Center. Moreover, the program

flyer was shared with members of the local autism community through the South Carolina Department of Education's Office of Special Education Services. Finally, recruitment of the participants also took place at the South Carolina Assistive Technology Expo 2015 in Columbia, SC.

3.7 Data Collection Methods

To address the research questions of the study, this research employed several data collection instruments, including survey, standard scale, behavioral observation, task evaluation, and semi-structured interview. The survey is a popular social scientific research method for collecting data from people. These data may be about people's vital facts, current attitudes, opinions, beliefs, motivations, and behavior (Kerlinger, 1973). Standard scales are generally used to assess the baseline level of autistic children's behaviors and monitor the subjects' progress over time. The observation technique is useful for evaluating behaviors, states, physical characteristics, and permanent products of behavior (Salvia & Ysseldyke, 1998). There are two ways to conducting observation: qualitative and quantitative. Salvia and Ysseldyke (1998) point out that qualitative observation often precedes quantitative observation. However, this study employed the quantitative technique alone to measure behaviors that were deemed particularly important. The interview was the final data collection technique because of its ability to provide in-depth information related to the participating children's experiences. Specifically, the purpose of the interviews was to capture how the participating parents felt about the museum access program, as well as to discover the complexity of the participants' experience with the program (Patton, 2002). A more detailed description of each method follows.

Parent survey

Parent pre-program and post-program surveys (see Appendix F & Appendix G) were designed by the researcher and administered before the start and at the end of the Columbia Museum of Art access project. The surveys consisted of both open-ended and close-ended questions. The purpose of the parent pre-program survey was to investigate family motivations, needs, and expectations for visiting the museum. The pre-program survey also included a question about the children's major interests in order to make sure that they would get the most out of the museum access program. Finally, the pre-program survey featured a question about the children's previous museum experience. The answers allowed the researcher to obtain a better understanding of the participants' backgrounds before the start of the museum access program.

At the completion of the project, the parents were surveyed again to determine how they viewed the effect the museum experience had on their child. More specifically, the post-program survey intended to collect information about the perceived impact of the museum program on the cognitive and social aspects of the autistic children's behavior. In addition, Likert-scaled questions were used to find out the parents' level of satisfaction with the project as well as their assessment of the overall experience their child had at the museum. The parents were also asked to indicate how often their child exhibited certain social behaviors, such as following directions, sharing objects, and taking turns in conversation. Likert scales are typically used to evaluate behaviors, perceptions, or phenomena of interest on a continuum (Leedy & Ormrod 2010).

The post-program survey also asked the parents to reflect on their expectations of the program and describe how well or poorly those expectations had been met. The

researcher also intended to discover the parents' opinions about the children's behavior change, as well as increase or decrease in the level of the children's interest in art that might have resulted from the CMA access program. Another question dealt with what the parents liked most about the museum program, along with the inquiry about how the program might have changed their attitudes toward visiting museums in general.

Social Responsiveness Scale (SRS)

The parents' perspective of the impact was also investigated by means of the Social Responsiveness Scale (SRS), a 65-item quantitative instrument covering the various dimensions of interpersonal behavior, communication, and repetitive behavior often exhibited by children with Autism Spectrum Disorder. The scale is designed for completion by parents and teachers who can consistently observe a child's social interactions in naturalistic social contexts. The choice of this data gathering instrument was made in consultation with several faculty in the Department of Psychology who have expertise in Autism Spectrum Disorder research. Constantino & Gruber (2012) observe that the SRS is an efficient tool to quantify subtle differences in degree of impairment. Thus, the scale was chosen as a data-gathering technique to measure the behavior changes of the participating children over time in response to an intervention.

This standardized scale provides a clear picture of a child's impairments in five areas of behavior, including Social Awareness, Social Cognition, Social Communication, Motivation, and Restricted Interests and Repetitive Behavior. The SRS focuses on specific and observable elements of social behavior. The scale only refers to the behavior itself and avoids any judgment. For the purposes of this study, the School-Age Form (ages 4 to 18) was selected as it best encompassed the age range of the study participants.

Each form came with a single Profile Sheet to facilitate scoring for all the rated individuals. The SRS contains four scale points ranging from 1 (not true) to 4 (almost always true) on the basis of the frequency of occurrence of the observed behaviors. It was administered to the parents before the first and after the last museum visit. The parents were instructed to rate their children's behaviors based on observations of their interactions with the museum instructor and the peers in the naturalistic setting of the museum environment. Overall, the purpose of using the SRS was to define the baseline level of the participants' social interaction and communication behaviors, as well as to assess the change in these behaviors after a series of museum visits.

Behavioral observation

Behavioral observation can be used to complement other forms of data collection (Creswell, 2011). In addition, behavioral observations are recognized as an effective form of assessment for interaction and communication skills (Spears, Tollefson, & Simpson, 2001). Observation was employed in this study to enhance anecdotal evidence obtained from parent reporting and ratings of standardized scales. A behavioral observation sheet (see Appendix H) was developed by the researcher in consultation with faculty members from the University of South Carolina Psychology Department and Special Education Department, as well as the Autism Academy board-certified behavior analyst. Since the purpose of the observation was to assess a specific behavior, the following observable indicators were included in the behavioral observation sheet: asking questions, answering questions, and making requests for self.

These three behavior characteristics represent socialization and communication, the two domains where autistic children often experience deficits (Oswald & Ollendick,

1989). In fact, research (Prizant, 1996) indicates that autistic children fail to develop vocal speech or do so at a slower pace than their non-autistic peers. The observation method is especially efficient for collecting information about individuals who have difficulty verbalizing their ideas, such as children autism. In all, behavioral observations allow the researcher to record first-hand information about the actual behaviors systematically and with as much detail and objectivity as possible, instead of focusing on just attitudes or perceptions (Leedy & Ormrod, 2010).

Behavioral observations were conducted during the gallery tour of each museum visit. The gallery tour each week lasted about forty-five minutes. In order to increase the accuracy of the observations, the study participants were divided into two groups of five. The following social and communication behaviors were tallied: asking questions, answering questions, and making requests for self. Three graduate students were recruited to conduct the observations. One graduate student was from the USC Psychology Department, while the other two were from the USC School of Library and Information Science. All observers received formal training from the researcher and were provided a copy of the observation sheet. Each graduate student was required to review the observation sheet to become familiar with the behaviors to be tallied. When a question was raised about how to record a particular behavior, the researcher and the graduate students discussed it until all agreed on the consistency of the recording procedure. Observations were scheduled during the gallery tours to capture the maximum number of interaction opportunities. The gallery tour represented the most interactive portion of the museum visits since participant engagement was facilitated by the museum educator with the use of the Visual Thinking Strategies. The observers were instructed

not to interact with the study participants and not to interfere with the museum program. Participant behaviors were recorded by two observers, while each observer focused on a single group of five study participants. The third observer served as a back-up in case one of the primary observers was unavailable for any of the six weeks.

Task evaluation

A task evaluation sheet was designed by the museum educators in collaboration with the researcher to assess the study participants' cognitive activity and their comprehension of art-related topics introduced to them during each of the six museum visits. This particular data collection technique was included in the study based on the recommendations of several leading museum scholars. One of the suggestions was to conduct a learning assessment for each participant by creating a set of questions related to the concepts covered during each museum session. The learning assessment would complement and enhance the social assessment achieved through the parent surveys, behavioral observations, and the Social Responsiveness Scale.

Assessment via task evaluation was done by quantitatively measuring the accuracy of completion of a theme-based task called "measurable". The task evaluation instrument was implemented each week before and after the gallery tour of each museum visit. The CMA staff assisted with the implementation of the task evaluation portion of the access program. At the beginning of each CMA visit, the staff received task evaluation sheets tailored to the specific theme of the week. Each staff member was responsible for recording the task completion accuracy for a single participant. At the conclusion of the gallery tour, the same staff member measured the tasks performed by the same participant.

Thus, the measurable for Week One theme, Still Life, consisted of assembling a still life puzzle before and immediately following the gallery tour. The participants were to complete the puzzle modeling the reproduction of a painting shown to them in the art studio. During this activity, the museum staff measured the accuracy of the completed task expressed in terms of the number of correctly and incorrectly placed puzzle pieces.

Week Two measurable, addressing the theme of Animal Art Texture Collage, consisted of using pre-cut shapes to put together an animal of the participants' choice. The participants were instructed to use multiple shapes to represent the diverse body parts of the chosen animal. The second part of the task evaluation activity involved identification of an art object as either 2-D or 3-D. The participants performed the task before and immediately following the gallery tour. Similar to Week One, the museum staff measured the accuracy of the task expressed as the number of correctly and incorrectly placed shapes representing five parts of an animal body (head, neck, body, legs, and tale).

Reflecting the theme of Warm and Cool Colors, Week Three measurable involved sorting out laminated color cards into two groups divided by either warm or cool colors. The museum staff measured the accuracy of the task for each participant before and immediately following the gallery tour that featured content related to the concept of warm and cool colors. During the second part of the task evaluation, the CMA staff showed each participant six pictures of Dale Chihuly's seaforms. The participants were asked to group the seaforms belonging either to the warm color or the cool color category. The museum staff recorded the accuracy of this task as well.

To evaluate the comprehension of the concepts related to Landscapes, the theme of Week Four, that week's measurable had the participants point out the foreground, the middle-ground, and the background in a landscape painting demonstrated to them by the CMA staff. For each participant, the museum staff recorded the accuracy of the task completed twice: before and immediately following the gallery tour. The second part of the task evaluation activity involved identifying landscape paintings among several different types of artwork. The museum staff measured the accuracy of the task completion for each participant as well.

Week Five introduced the study participants to the concept of patterns in art. Therefore, Week Five measurable entailed using laminated shapes to create a pattern from as many pieces as possible. The CMA staff measured the accuracy of the task completion for each participant before and after the gallery tour. For the second portion of the task evaluation activity, the participants were asked to identify patterns among six different works of art demonstrated to them. The museum staff measured the accuracy of completion for each participant as well.

Week Six theme was Monotype Portraits. Since it was the final week of the program, the assessment component targeted the participants' comprehension of all the concepts introduced to them during the six-week program period. The study participants received Ziploc bags with fifteen images of different types of art they had previously learned: Still Life, Landscapes, Animals, Patterns, and Portraits. The participants were asked to sort out the images and place them into appropriate genres on five separate sheets labeled by category: Still Life, Landscapes, Animals, Patterns, and Portraits. The

CMA staff measured the accuracy of the task completion for each participant before and after the gallery tour.

Parent interview

The final data collection method used in this study was the semi-structured parent interview. The researcher decided to use this method to enhance the quantitative results collected through the parent surveys and ratings of the Social Responsiveness Scale. The primary purpose of the semi-structured interviews was to clarify ambiguous answers and seek follow-up information. The semi-structured interview format was chosen because it allowed the researcher to follow a set of formal interview questions with individually tailored questions to better understand parent reasoning. Mertler and Charles (2011) point out that the semi-structured interview format is ideal for gathering truly qualitative data where consistency is not a concern. Therefore, the researcher makes the decision whether or not to use probing questions based on the need to stimulate the conversation and thus further enrich the data collected through quantitative means (Mertler & Charles, 2011).

The rationale for using this qualitative technique in sequence with quantitative methods was to explain and verify the general picture of the impact the museum experience had on the study participants. This mixed methods design captured the best of both the quantitative and the qualitative data and made the central argument of the study more persuasive. The semi-structured interview also provided an additional opportunity for the participating parents to describe detailed personal information relevant to their child and his/her experience with the museum access program.

Ten parent interviews were audiotaped and later transcribed by a professional transcriptionist. Eight interview questions (see Appendix I) were asked to assess the parents' perceptions of how the children's learning and social behaviors had changed over time as a result of participating in the CMA access program.

3.8 Pilot Study

In January 2015, a two-week pilot study was conducted at the Columbia Museum of Art to investigate the feasibility of the proposed mixed methods research design that combined quantitative and qualitative techniques. Therefore, the pilot study intended to test the data collection instruments and refine the overall design. The pilot study involved six autistic children aged 5 to 15. The subjects were recruited with the help of the Autism Academy of South Carolina. The pilot study subjects visited the museum twice accompanied by parents and in some cases by therapists. The first visit focused on the Landscapes theme, while the theme for the second visit was Warm and Cool colors. To test the clarity of the survey questions, the parents were asked to fill out the parent pre-visit survey form before the first pilot visit. At the beginning of the pilot study, the parents were also instructed to fill out the Social Responsiveness Scale form to determine the ease with which they could record their responses and the time it took them to complete the form.

The pilot study also intended to test the behavioral observation sheet which in its original version featured fifteen behavior indicators grouped into three broad categories: Learning, Social Interaction, and Communication. During the two-week pilot program, two graduate student observers tallied instances of the behavior of interest to the researcher and recorded additional comments in the "Observer Comments" area of the

observation sheet. The pilot testing revealed problems with the current design of the observation sheet and the need to reduce the number of observable behaviors and thus increase the observation accuracy. Based on the outcomes of the pilot study, the researcher redesigned the behavioral observation sheet to limit the number of observable behaviors to three, namely Asking Questions, Answering Questions, and Making Requests for Self. These behaviors were deemed relevant to the research question of the study. They were selected because they best reflected the cognitive and communicative activity of the autistic children participating in the museum access program.

After the second visit, the parents were asked to fill out the post-visit survey form that included a combination of open-ended and closed questions. The researcher aimed to test the logistics of the survey as well as the survey form itself. In addition, the parents were asked to complete the post-visit Social Responsiveness Scale. Little change was observed between the pre- and post-visit Scale scores due to the short duration and the limited impact of the pilot on the study subjects.

Finally, task evaluation was the last data collection instrument to be tested in the pilot study. The CMA staff measured the accuracy and completion time of topic-specific tasks performed by the study participants before and after the gallery tour during each of the two museum visits. Interference from the parents and/or therapists undermined the validity of the data collected via task evaluation. Based on the pilot testing, appropriate modifications were made to the data collection procedures and instruments in preparation for the formal study. Besides the above-mentioned changes to the behavioral observation sheet, an important modification was made to the task evaluation process. After a conversation with the museum instructor, the researcher decided to conduct the task

evaluation procedure one-on-one with each study participant. Although this modification required greater involvement of the CMA staff and graduate student assistants, it allowed the researcher to streamline task evaluation and enhance the quality of the data collected through this method in the formal study.

3.9 Summary

This chapter discussed the choice of the methodology for the current study. To answer the main research question of the study: How does the museum experience influence learning and behaviors of children diagnosed with Autism Spectrum Disorder?, the researcher employed the mixed methods design. Data were collected through a combination of quantitative and qualitative methods, including the parent pre-program and post-program survey, the standardized Social Responsiveness Scale, the behavioral observation of the study participants in the naturalistic museum setting, topic-specific task evaluation called "the measurable," and the follow-up semi-structured parent interview. The wide variety of techniques allowed the researcher to collect data directly from the study participants (through behavioral observations and task evaluations) and indirectly from their parents (through the surveys, parent ratings of the Social Responsiveness Scale, and responses to the follow-up interview questions).

Using the mixed methods approach, the researcher was able to collect rich data to both quantify and at the same time better understand the impact of non-traditional learning environments, such as museums, on learning and socialization of autistic children. Due to the presence of the interpretive aspect, the validity criteria used in empirical research alone were not sufficient for the current research. Therefore, data triangulation was an important consideration when choosing a methodological approach

to this study because of the complex nature of its central phenomenon. Glesne (2015) points out the fact that by increasing the number of data-gathering methods, the investigator can arrive at more multidimensional findings. Throughout the current study, the researcher aimed not only to find quantifiable evidence of the effect the museum environment had on knowledge acquisition and communication of children with Autism Spectrum Disorder but also to investigate parent perspectives on the museum setting as an alternative learning environment for children with special needs. By collecting and analyzing data gathered from multiple sources, the researcher was able to view the phenomenon of the study from more than one angle and thus increase the study trustworthiness by eliminating or reducing the number of potential discrepancies in the interpretation of the findings.

CHAPTER 4

DATA ANALYSIS RESULTS

4.1 Introduction

This chapter presents the data collection procedures, data analysis strategies, and the findings of the data analysis activities. The results of the data analysis are provided in light of the research questions of the study that investigated the impact of the museum experience on learning and social behaviors of autistic children. The museum experience was understood in this study as a series of visits to the Columbia Museum of Art, with each visit consisting of a topic-specific gallery tour followed by an art-making activity. For the purposes of this study, learning was understood as knowledge about art concepts acquired in a free-choice, inquiry-based unconventional setting, which is the museum. Further, social behaviors were understood as instances of communication and interaction autistic children engaged in involving both their peers and museum educators.

This chapter is composed of four sections: data collection procedures, data analysis procedures, quantitative results, and qualitative results. The first section describes the data gathering process, including pre-program and post-program survey logistics, pre-program and post-program administration of the Social Responsiveness Scale, on-site behavioral observation protocol, on-site task evaluation, and the semi-structured parent interview. The second section focuses on how the collected data were analyzed, including open-ended and closed survey questions, calculating the quantitative

score on the five categories of the Social Responsiveness Scale, calculating the tally of the behaviors included in the behavioral observation sheet, measuring the accuracy of on-site tasks completed by the study participants, and establishing common themes that emerged during the ten semi-structured parent interviews. The third and fourth sections present the results of the data analysis, reporting both the quantitative and the qualitative findings as part of the mixed methods merged analysis.

4.2 Data Collection Procedures

The purpose of gathering data in this mixed methods study was to address its research problem and to develop an answer to its main research question and four sub-questions. The mixed methods design enabled the researcher to use persuasive qualitative data gathering procedures and rigorous quantitative procedures at the same time. The researcher purposefully selected the Columbia Museum of Art (CMA) as the research site for this study. The choice of the research site was made after a careful consideration of the study target population as well as the feasibility of implementing the project within the timeframe established by the researcher. As the leading cultural institution in the region, CMA is committed to the principles of diversity and inclusion in its programs and activities. The museum is well-known for its experienced and well-trained Education Department staff, as well as for its diverse programming for underserved and special needs populations. Finally, given the social and communication impairments typical for autism, the art museum was an appropriate environment for a study involving autistic children because of the power art has to foster emotional engagement and healthy self-expression without the need to verbalize one's feelings (Baldino, 2012).

The researcher used multiple recruitment avenues, including two autism advocacy organizations and three local school districts, to identify potential study participants—families with high-functioning autistic children interested in art. Families who expressed interest in participating in the study were asked to fill in a screening form. As a result, the researcher selected ten families who met the inclusion and exclusion criteria of the study. Prior to the beginning of the formal study in the spring 2015, the researcher met with each family in person to provide the participants with a detailed description of the project, distribute written Parent Consent Forms and then collect the signed forms, discuss the museum access program schedule to make sure it worked for both the parents and the children, and secure each family's commitment for the entire duration of the six-week program that was designed to take place in April-May 2015.

Although all the families committed to participate, the researcher respected their right to withdraw from the study at any point and clearly articulated this right in the Parent Consent Form. The Consent Form and the Parent Permission Form created under the principle of respect, the principle of beneficence, and the principle of justice were acknowledged by the University of South Carolina Intuitional Review Board (IRB). The study received the official IRB approval by the University of South Carolina Office of the Vice President for Research.

At the start of the formal study, the researcher fully understood the underlying complexity of interweaving the quantitative and the qualitative data under the umbrella of a single research study. Therefore, the researcher exercised careful planning to collect quantitative data drawn from the parent responses to the closed questions in the pre-program and post-program surveys, behavioral observations, standardized assessment in

the form of the Social Responsiveness Scale, and on-site task evaluations. Qualitative data came from the parent responses to the open-ended questions in the pre-program and post-program surveys and from the semi-structured interviews conducted individually with the parents.

All the interviewees were contacted in advance of the actual interviews. The interviews allowed the researcher to explore the parents' perspectives on the impact of the museum program. Based on the answers from the post-program survey, the researcher prepared a set of pre-established questions. These questions served as a guide for the interviews. The researcher remained open to re-forming and adding to those questions, as well as incorporating impromptu probes as needed throughout the interview sessions.

All the data gathering procedures were administered in a standard way throughout the six-week CMA access program. The researcher assumed a supportive role during each visit, instructing the graduate student observers, taking care of the logistics issues, and assisting the CMA staff when needed without interrupting the flow of activities.

4.3. Data Analysis Procedures

Data analysis and interpretation in this mixed methods research consisted of analyzing separately the quantitative data and the qualitative data. The researcher made the decision about how to organize, represent, and interpret the data and results.

Regarding the quantitative data collected from the closed questions in the parent surveys, the standardized scale, task evaluations, and behavioral observations, the researcher assigned numeric values to each response and tally on the observation sheets, recorded them in the Statistical Program for the Social Sciences (SPSS), generated

descriptive statistics including the mean and standard deviation, and calculated t-scores for statistically significant difference between the pre-program and post-program scores on the Social Responsiveness Scale. The next step was to move from descriptive analysis to more in-depth inferential analysis. Finally, appropriate visual forms, such as tables, bar charts, and line graphs, were selected to represent the quantitative findings accompanied by the researcher's interpretation of the meaning of the results.

Regarding the qualitative data collected from the open-ended survey questions and ten parent interviews, the researcher decided to employ thematic analysis to identify themes and patterns in the data. The survey responses were organized for initial review, and the interview audio files were transcribed for further analysis. The researcher proceeded to examine the transcripts to determine the common trends and themes from the perspective of the participating parents. Next, memos were made to develop preliminary understanding of the information. Meaningful data chunks were identified, retrieved, and isolated for analysis. This process was important for forming codes or categories of information that emerged during the analysis. To develop the codes, the researcher divided the transcripts into smaller units based on different questions, assigned a label to each unit, and constructed a draft code for classifying the answers. Using the hand-coding technique, the researcher recorded code words and themes on the margins of the printed transcript pages. Organizing the responses by themes made it possible for the researcher to see the relationship among them. The researcher continued to group the emerging themes to reflect larger perspectives and achieve a deeper understanding of the phenomenon under the investigation. To present the qualitative results, the researcher

built connections among the themes, addressed the evidence for the themes, and explained how the findings answered the research questions of the study.

In order to secure the quality of the data and ensure the trustworthiness of the interpretations, several validity procedures were utilized. The data triangulation approach helped to ascertain that the researcher's interpretation of the findings accurately reflected the impact of the museum experience on the cognitive activity and social behavior of the study participants. Examining evidence from several strands of data enabled the researcher to build a more coherent justification for the themes that became apparent based on the convergence of the sources.

Another validity strategy used in the study was the use of a rich thick description to convey as many details as possible. In order to better depict the context for the interpretation, the researcher made a special effort to provide an extensive description of the setting, the components of the museum access program, and the data gathering methods. Emphasizing the details throughout the description made the results more realistic and credible, thus enhancing the validity of the findings.

4.4 Quantitative Survey Results

This section presents the analysis of the quantitative data collected from the closed questions of the parent pre-program and post-program surveys.

Pre-program Survey Item 6 asked about museum visitation within the twelve-month period prior to the start of the CMA access program. Given the participants' interest in art, it did not come as a surprise that all of the families had visited a museum at least once during that period of time. Parent responses are summarized in Figure 4.1.

Most families had been to a museum one-to-three times, as this response was chosen by six parents. Three parents indicated that their children had been to a museum four-to-six times within the previous year, and one family emerged as the most frequent museum-goers with ten or more museum outings in the twelve months preceding the study.

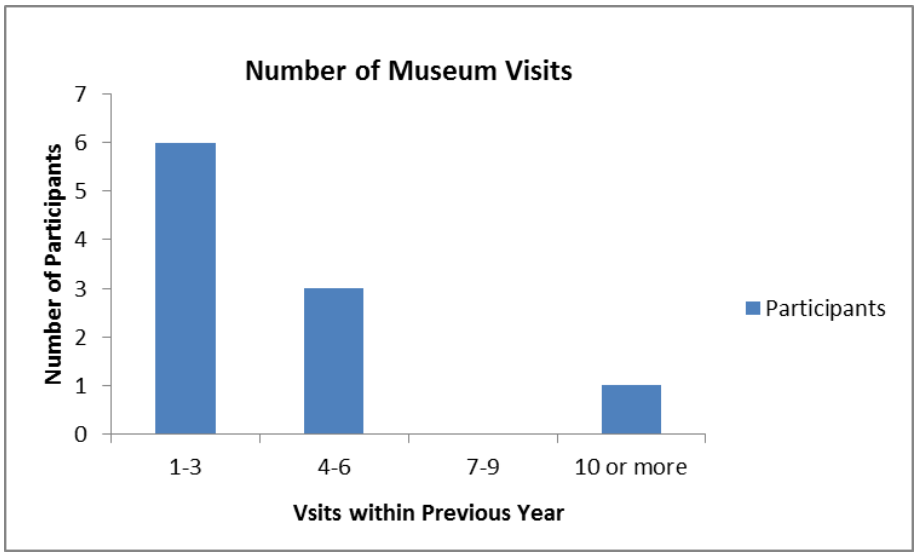

Figure 4.1 Number of Museum Visits within Previous Year

Pre-program Survey Item 7 asked about family motivations for visiting museums. Based on the literature review and numerous conversations with the CMA educators, the researcher created a list of characteristics typically associated with the museum experience that ranged from being pleasantly occupied, expanding the child's horizons and challenging his or her abilities to having a change from daily routine. The parents were asked to rate their responses to the question "What are your and your child's motivations for visiting museums?" on a 5-point Likert scale, ranging from 1 (not important) to 5 (very important). Table 4.1 summarizes the parents' responses to the motivation question. The numbers in Table 4.1 indicate how many parents selected each

response. The column containing the "Not Important" option is not presented in Table 4.1 because no respondents chose this option.

Table 4.1 Family Motivations for Visiting Museum

Motivations n=10	Slightly Important	Moderately Important	Important	Very Important
To be pleasantly occupied	0	1	6	3
To enjoy ourselves	0	2	3	5
To be entertained	1	1	3	5
To use imagination	0	1	1	8
To spend time with family	0	2	3	5
To feel happy and satisfied	0	1	3	6
To socialize and build friendships	1	2	2	5
To discover new things	0	0	1	9
To connect with child's interests	0	0	2	8
To get a feeling of achievement	0	3	3	4
To challenge his/her abilities	0	2	2	6
To connect child with things they are learning at home/school	0	1	5	4
To have a change from daily routine	1	0	4	5
To expand child's horizons	0	0	1	9

The parents' responses to the motivation question revealed that there may be a variety of personal, social, and educational needs families seek to satisfy by visiting museums. The most significant motivations mentioned by the parents were to discover new things and expand the child's horizons. Nine respondents rated these two reasons as very important while one respondent rated them as important. The next group of reasons rated by the majority of the respondents as very important was to use imagination and connect with the child's interests, which indicated a perception of the museum visit as a family-bonding experience. Eight out of ten survey respondents noted that those two reasons were very important to them. Additionally, the respondents thought that such

motivations as feeling happy and satisfied and challenging the child's abilities were important as well, the fact reflected in six parents' responses.

The parents' responses demonstrated that the two least important motivations for visiting were to socialize and build friendships as well as to get a feeling of achievement as a result of the museum experience (see Table 4.1). The choice of these two factors as the least important motivations can be explained by the spontaneity of a museum visit as an experience and the fact that it typically takes a considerable amount of time to build friendships. Moreover, while a museum visit normally provides plenty of interaction with the content of the collections, opportunities to engage in hands-on activities and thus develop a feeling of achievement may be limited due to the time a family gets to spend at the museum at any given point, the logistics of the visit itself, or other external factors beyond the visitor's control.

Post-program Survey Items 1 and 3 asked about the parent perceptions of the museum experience and their overall satisfaction with the museum access program, respectively. Parent responses to Item 1 revealed that 50% of the respondents rated the museum experience as "very positive" while the other 50% rated it as "positive" for their children. As evidenced by Figure 4.2, none of the parents used the response options on the other end of the range, including the "slightly positive" and "negative" answers. The results of Survey Item 3 summarized in Figure 4.3 demonstrate that the majority of the parents were very satisfied with the CMA access program, since 70% of the parents chose "very satisfied" as their response and 30% marked "satisfied." None of the respondents rated their level of satisfaction in lesser terms, such as "somewhat satisfied" or "not satisfied." These ratings are indicative of the success of the access program in the

parents' eyes and the perceived positive impact of the museum experience on the participating children both as a social and educational activity.

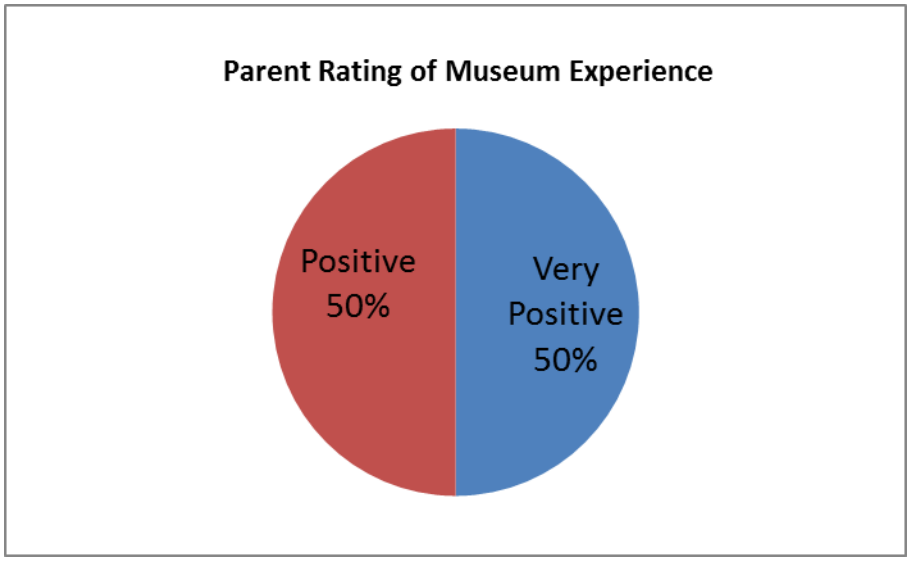

Figure 4.2 Parent Ratings of Museum Experience

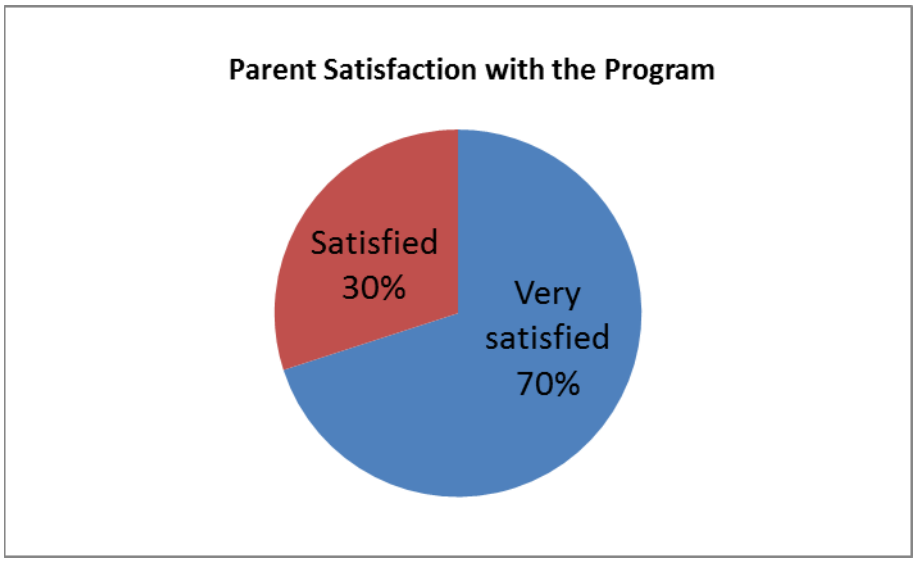

Figure 4.3 Parent Satisfaction with Museum Program

Post-program Survey Item 4 asked about the parents' views on the changes in their child's behavior that they believed could have been related to the participation in the CMA access program. Responses to Survey Item 4 proved to be critical for investigating the influence of the museum as an alternative learning environment on cognitive and social development of autistic children. Since the parents were present during the six museum visits and observed their children's socialization and learning in the museum, parental feedback was important in the context of the study.

The data in Figure 4.4 show that six out of ten parents fully agreed that their children's behavior had changed because of the participation in the museum program, while only two parents disagreed. Two survey respondents were not sure whether their children's behavior changed and noted that a longer intervention would be needed for the children's behavior to change.

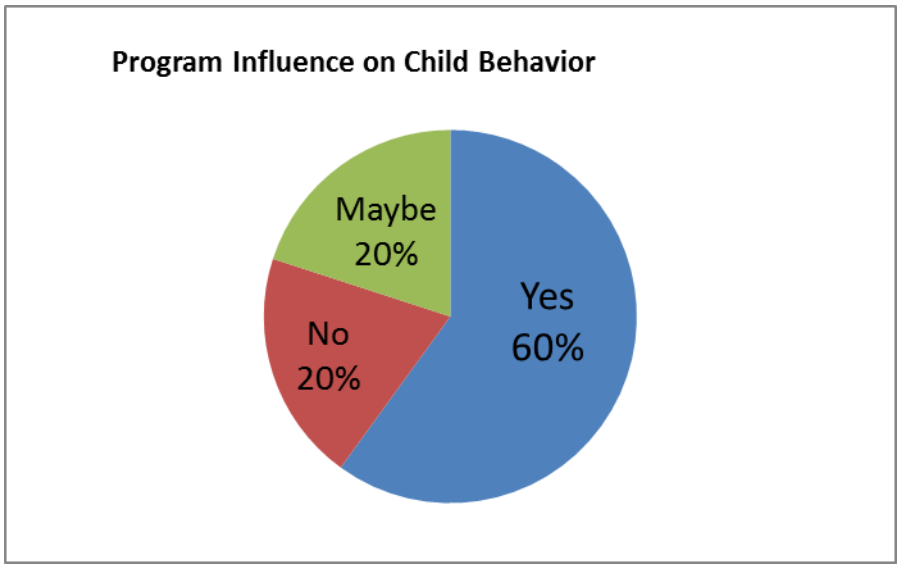

Figure 4.4 Program Influence on Child Behavior

Post-program Survey Item 7 asked the parents whether or not the museum experience influenced the way their child interacted with art. The majority of the respondents recognized such impact. Specifically, 90% of the parents mentioned that the museum program had affected their child's interaction with art, and only one parent was not sure (see Figure 4.5).

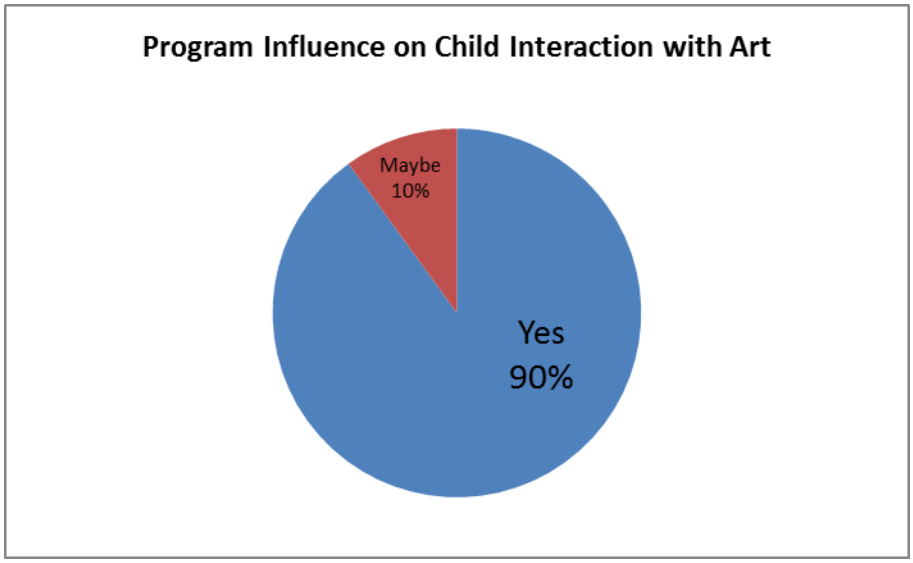

Figure 4.5 Program Influence on Child Interaction with Art

Post-program Survey Item 8 asked the parents whether or not the museum experience influenced the way their child interacted with others. In their responses, seven parents acknowledged the influence, two parents stated that there was no influence on their child's interaction with others, and one respondent picked "not sure" as the answer noting that their child's interaction with others depended on the environment, the topic, and the level of interest in the subject of the communication (see Figure 4.6).

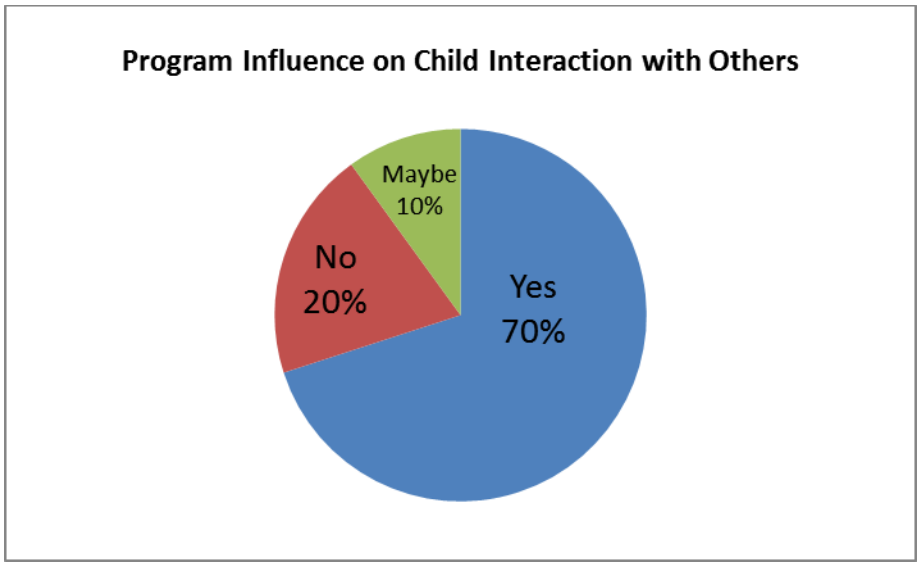

Figure 4.6 Program Influence on Child Interaction with Others

Post-program Survey Item 5 asked about particular social behaviors of the participating children during the six museum visits. Data were collected through a measure that involved the parents' rating of the behavior on a 5-point Likert scale ranging from 1 (never exhibited) to 5 (always exhibited). Table 4.2 presents data summarizing the parents' perspective of the frequency of social behaviors of their children during the program. Among the most frequently exhibited behaviors, the parents identified participation in group activities, following directions, and making requests for self. According to the results from Table 4.2, nine parents marked "often exhibited" and "always exhibited" for the participation in group activities, while eight parents marked "often exhibited" and "always exhibited" for the instances of following directions and making requests for self. Also noteworthy was the fact that seven out of ten parents marked sharing objects and toys as a behavior they frequently saw their child exhibit. This can be interpreted as a positive sign of the museum program impact on the social awareness of the participating children.

The less frequently exhibited behavior categories, from the parents' perspective, included taking turns in conversation and paying attention to the museum instructor. Fifty percent of the parents rated taking turns in conversation as an "occasionally exhibited" category while 40% rated paying attention to museum instructor as "occasionally exhibited" and another 40% rated it as "often exhibited."

Table 4.2 Frequency of Social Behaviors during Museum Visits

Social Behavior n = 10	Never Exhibit	Rarely Exhibit	Occasionally Exhibit	Often Exhibit	Always Exhibit
Asking and answering questions	0	1	3	4	2
Paying attention to museum instructor	0	0	4	4	2
Following directions	0	0	2	7	1
Making requests for him/herself	0	0	2	5	3
Sharing objects and toys	0	1	2	7	0
Taking turns in conversation	0	0	5	3	2
Participating in group activities	0	0	1	7	2

Post-program Survey Item 6 asked about the benefits derived by the children from participating in the museum access program. Data were collected through a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Table 4.3 illustrates how many parents selected each response on the Likert scale. The most notable program benefits identified by the surveyed parents were providing joy and motivating to learn new skills, followed by providing a sense of accomplishment. Regarding the benefit of providing a sense of accomplishment, the parents rated this option higher than the similar response option to the motivation question on the pre-program survey. In other words, before the program the parents did not consider getting a feeling of achievement as one of

the top motivations for visiting museums, whereas after the program they acknowledged that it was on of the major benefits.

On the other hand, more than half of the surveyed parents did not see reducing self-stimulatory behaviors as one of the benefits of their child's participation in the museum access program. In addition, four parents did not agree that the museum program played a role in improving their child's gross and fine motor skills.

Table 4.3 Parent Perspective of Museum Program Benefits

Program Benefits n = 10	Strongly disagree	Disagree	Somewhat agree	Agree	Strongly agree
Provided a sense of accomplishment	0	0	1	2	7
Provided joy	0	0	0	3	7
Increased choice and control	0	0	3	6	1
Taught how to interact with peers	0	0	5	2	3
Provided a way to comfortably meet others	0	0	3	3	4
Enhanced self-control	0	1	3	4	2
Reduced self-stimulatory behaviors	1	2	3	4	2
Improved gross and fine motor skills	1	0	3	4	2
Motivated to learn the skills	0	0	0	7	3
Increased social and communication skills	0	2	1	3	4

4.5 Social Responsiveness Scale Results

The Social Responsiveness Scale (SRS) was used as a standardized instrument to objectively measure the baseline level of the study participants' behaviors associated with autism at the beginning of the museum access program. To identify any changes in those behaviors, the scale was administered again at the completion of the program. The parent report version of the SRS was used. The instructions on the completion procedures and the time to fill out the form were given to the parents before they rated the scale.

The analysis of the parent ratings of the SRS entailed the use of the Scoring Worksheet to calculate the SRS raw scores. The design of the Scoring Worksheet enabled the researcher to easily obtain raw scores on five categories, including Social Awareness (Awr), Social Cognition (Cog), Social Communication (Com), Motivation (Mot), and Restricted Interests and Repetitive Behavior (RRB). Then, the researcher used the raw scores for the five categories to calculate the total raw score for each rated child. Based on the *SRS-2 Manual* (Constantino & Gruber, 2012), the scores from four categories, such as Social Awareness, Social Cognition, Social Communication, and Motivation, are bound together as the score for the Social Communication and Interaction (SCI) domain. The next step entailed transferring the raw scores for each child from the Scoring Worksheet onto the Profile Sheet which provides *t*-score results. Finally, the researcher determined *t*-scores by finding the corresponding *t*-score for each raw score in the "SRS-2 Total Score Results" section of the Profile Sheet. The researcher followed the same procedure to determine the *t*-scores for both the pre-program and the post-program Social Responsiveness Scale.

Examination of the difference between the pre-program and post-program scores allowed the researcher to identify the impact of the museum access program on the autistic children's behaviors in the SCI and RRB domains. To determine the statistical significance of the museum program impact, the researcher performed a paired samples *t*-test using the SPSS software. Data obtained from the *t*-test are presented below.

First, the researcher ran a paired samples test for the pre-program and post-program SRS scores for the four categories bound under the Social Communication and Interaction (SCI) domain, specifically covering Social Awareness, Social Cognition,

Social Communication, and Motivation. The mean pre-program SCI score for the group of ten participating children was 73.2, while the mean post-program SCI score for the same participants was 63.4, which indicates a 9.8-point reduction (95% CI: 3.85 to 15.75) of the average SCI score for the study participants (see Table 4.4 and Table 4.5).

It should be noted that since the purpose of the SRS is to identify the presence and severity of social impairments within the autism spectrum, a reduction in the mean post-program scores can be interpreted as a sign of the positive impact of the cultural intervention. Further, the paired samples *t*-test for SCI yielded a *p*-value of .005 (*p*-value < .05), which implies a statistically significant difference between the pre-program and the post-program SRS scores in the Social Communication and Interaction (SCI) domain (see Table 4.5).

Table 4.4 Descriptive Statistics for SCI

	SRS T-scores for SCI	Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-program SRS t-scores for SCI	73.2000	10	8.58681	2.71539
	Post-program SRS t-scores for SCI	63.4000	10	6.18601	1.95619

Table 4.5 Paired Samples T-test for SCI

		Paired Differences					
			95% CI				
	SRS T-scores for SCI	M (SD)	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1	Pre-program SRS t-scores SCI - Post-program SRS t-scores SCI	9.80 (8.31)	3.85	15.75	3.73	9	.005

Then, the researcher performed a paired samples *t*-test for the pre-program and post-program SRS scores for the Restricted Interests and Repetitive Behavior (RRB)

domain. The RRB domain includes stereotypical behaviors or highly restricted interests characteristic of autism, as defined by *the SRS-2 Manual* (Constantino & Gruber, 2012). Analysis of the descriptive statistics revealed a mean pre-program RRB score of 71.9 for the group of ten children, while the mean post-program RRB score for the same participants was 63.7 (see Table 4.6), which indicates a 8.2-point reduction (95% CI: 1.68 to 14.72) of the average RRB score for the study participants (see Table 4.7). The paired samples *t*-test for RRB yielded a *p*-value of .019. Although this *p*-value is higher that the *p*-value obtained from the paired samples *t*-test for Social Communication and Interaction (SCI) domain, it is still below the .05 threshold and thus indicates that the difference between the pre-program and the post-program RRB scores was statistically significant for the group of ten autistic children participating in the study.

Table 4.6 Descriptive Statistics for RRB

	SRS T-scores for RRB	Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-program SRS t-scores for RRB	71.9000	10	10.53513	3.33150
	Post-program SRS t-scores for RRB	63.7000	10	5.88878	1.86220

Table 4.7 Paired Samples T-test for RRB

		Paired Differences					
			95% CI				
	SRS T-scores for RRB	M (SD)	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1	Pre-program SRS t-scores RRB - Post-program SRS t-scores RRB	8.20 (9.11)	1.68	14.72	2.85	9	.019

To further determine the statistical significance of the difference between the pre-program and post-program scores, the researcher also examined the individual scores on

each of the four categories in the SCI domain. Regarding the Social Awareness (Awr) category, SPSS statistical analysis demonstrated a 4.1-point reduction (67.1 vs. 63.0) in the mean group score at the completion of the six-week museum access program (see Table 4.8). This reduction proved not to be statistically significant because the *p*-value yielded by the paired samples *t*-test for Social Awareness category was above the .05 threshold ($p = .153 > .05$, see Table 4.9).

This outcome was not surprising to the researcher. Social Awareness, understood as the ability to pick on social cues, represents one of the more difficult skills to develop for autistic children who may have trouble reading and following social cues and therefore naturally tend to shy away from social situations. As mentioned previously, the sensory aspects of reciprocal social behavior might be improved with the help of targeted, intense interventions and behavior therapies over an extended period of time.

By contrast, analysis of the mean pre-program and post-program scores for the Social Cognition (Cog) category revealed the difference of 8.4 points (72.0 vs. 63.6, see Table 4.8). This was a statistically significant difference proven through the paired samples *t*-test. The *p*-value of .003 is significantly lower than the .05 threshold used by the researcher in this study (see Table 4.9). The Social Cognition category represents the cognitive-interpretative aspects of reciprocal social behavior. The statistically significant difference between the pre-program and post-program mean group scores for the Social Cognition category indicate that the museum access program did have an impact on the study participants' cognitive processes in social interactions.

Regarding the Social Communication (Com) category, analysis of the mean difference between the pre-program and the post-program group scores revealed a reduction of 10.6 points, from 71.6 to 61.0 points (see Table 4.8). The paired samples *t*-test confirmed the statistical significance of this change expressed through $p = .007 < .05$ (see Table 4.9). This quantitative evidence of the museum program impact on the communication of the study participants played a key part in answering the research question of the study.

In addition, analysis of the mean difference between the pre-program and the post-program group scores on the Social Motivation (Mot) category showed that the mean group score decreased from 71.0 to 61.7 points which indicates a 9.3-point reduction (see Table 4.8). $p = .013 < .05$ is an indication of the statistical significance of the change the parents perceived in their children's social motivation, understood as willingness to engage in social interactions, at the completion of the museum access program (see Table 4.9).

Table 4.8 Descriptive Statistics for Awr, Cog, Com, and Mot Categories

SRS T-scores for Four Categories		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-program SRS t-scores for Awr	67.1000	10	11.03983	3.49110
	Post-program SRS t-scores for Awr	63.0000	10	8.08290	2.55604
Pair 2	Pre-program SRS t-scores for Cog	72.0000	10	9.89949	3.13050
	Post-program SRS t-scores for Cog	63.6000	10	8.61781	2.72519
Pair 3	Pre-program SRS t-scores for Com	71.6000	10	9.21593	2.91433
	Post-program SRS t-scores for Com	61.0000	10	4.78423	1.51291
Pair 4	Pre-program SRS t-scores for Mot	71.0000	10	7.31817	2.31421
	Post-program SRS t-scores for Mot	61.7000	10	7.31893	2.31445

Table 4.9 Paired Samples T-test for Awr, Cog, Com, and Mot Categories

		Paired Differences					
			95% CI				
	SRS T-scores for Total	M (SD)	Lower	Upper	t	df	Sig.(2-tailed)
Pair 1	Pre-program SRS t-scores for Awr - Post-program SRS t-scores for Awr	4.10 (8.30)	-1.84	10.04	1.56	9	.153
Pair 2	Pre-program SRS t-scores for Cog - Post-program SRS t-scores for Cog	8.40 (6.77)	3.56	13.24	3.92	9	.003
Pair 3	Pre-program SRS t-scores for Com - Post-program SRS t-scores for Com	10.60 (9.64)	3.70	17.50	3.48	9	.007
Pair 4	Pre-program SRS t-scores for Mot - Post-program SRS t-scores for Mot	9.30 (9.52)	2.49	16.11	3.09	9	.013

In terms of the overall impact of the museum access program on the behaviors of the study participants across all five categories featured in the Social Responsiveness Scale, a 9.5-point reduction (95% CI: 3.9 to 15.1) in the mean group score was observed decreasing from the 73.7-point mean score on the pre-program SRS to the 64.2-point mean score on the post-program SRS (see Table 4.10 and Table 4.11).

The paired samples *t*-test yielded the two-tale significance of .004. Since the overall *p*-value = .004 < .05 (see Table 4.11), the researcher was able to conclude that the six-week museum access program did have a statistically significant impact on the study participants' behaviors rated by the Social Responsiveness Scale.

Table 4.10 Descriptive Statistics for SRS Total

	SRS T-scores for Total	Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-program SRS t-scores Total	73.7000	10	8.49902	2.68763
	Post-program SRS t-scores Total	64.2000	10	5.11642	1.61795

Table 4.11 Paired Samples T-test for SRS Total

		Paired Differences					
			95% CI				
	SRS T-scores for Total	M (SD)	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1	Pre-program SRS t-scores Total - Post-program SRS t-scores Total	9.50 (7.84)	3.90	15.10	3.83	9	.004

Given the relatively small (n=10) sample of the study, in addition to the paired samples *t*-test, the researcher also chose to perform the Wilcoxon Signed-Rank Test to verify the statistical significance of the data yielded by the pre-program and post-program parent ratings of the Social Responsiveness Scale. The Wilcoxon test is a non-parametric statistical test that can be used as an alternative to the paired samples t-test when the sample size is not large enough to assume the normal distribution of the population (Sheskin, 2011). The results of the Wilcoxon test ($p = .012 < .05$) confirmed the findings of the paired samples *t*-test and pointed to a statistically significant impact of the museum access program on the autistic children who participated in the study.

4.6 Behavioral Observation Results

To further enhance understanding of the influence the museum experience had on learning and social behavior of the autistic children participating in the CMA access program, the researcher used direct observation as another data collection method. Observations focusing on such indicators of behavior as answering questions, making requests for self, and asking questions, were conducted during the gallery tour instruction session of each of the six museum visits. Data from the participants' behavioral observation sheets are presented and analyzed below.

As stated above, throughout the museum access program, the autistic children were encouraged to engage in various types of interactions with the museum instructor and fellow program participants. Each week, behaviors were tallied on the observation sheet in the areas of answering questions, making requests for self, and asking questions. Figure 4.7 demonstrates how the number of interactions in each area changed from Week One to Week Six. The numbers in the "answering questions" area were lower in the first two weeks and steadily increased in Weeks Four, Five, and Six. The highest number in this area was observed in Week Three when the children answered 150 questions due to the popularity of the theme, Warm/Cool Colors, which was well-received by the participating children.

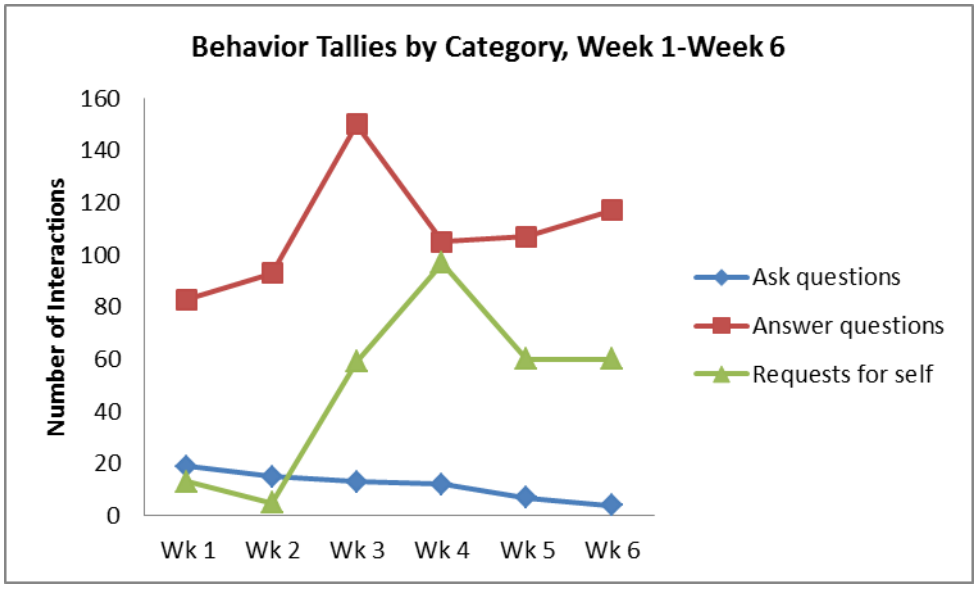

Figure 4.7 Behavior Observation Data by Category

The numbers related to the area of "requests for self" reflect a similar trend, an increase in the number of communications from Week One to Week Six. Since the theme of Week Four was Landscapes, another popular topic with the children, the highest

number of interactions in this area was observed. The category “asking questions” turned out to have the lowest number of interactions, with the number decreasing from Week One to Week Six (see Figure 4.7). This result was to be expected because social initiations make one of the core and more difficult-to-address behavioral deficits for children with ASD (Koegel, R., Bradshaw, Ashbaugh, & Koegel, L., 2014).

Figure 4.8 provides a more detailed representation of the data by week in the two areas where increases were observed: answering questions and requests for self.

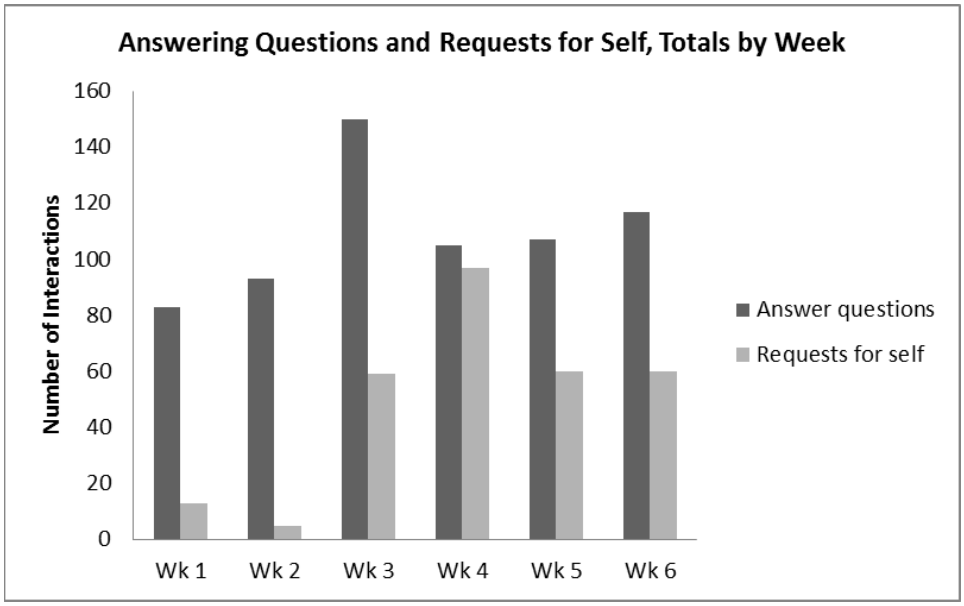

Figure 4.8 Totals of Answering Questions and Requests for Self by Week

Further, Figure 4.9 reflects the total number of interactions, from Week One through Week Six, observed from all the participating children as a group and across all three areas. Data from the observations were combined for all ten participants, resulting in a total number of asking questions, answering questions, and requests for self. Overall

group communication consistently increased and through the second half of the program stayed above the numbers of Week One and Week Two (see Figure 4.9).

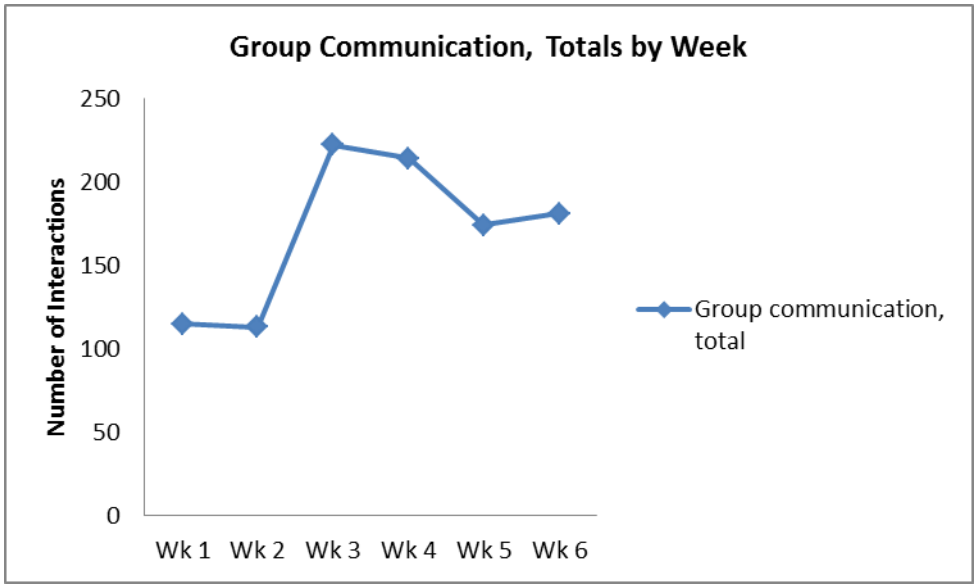

Figure 4.9 Totals of Group Communication, All Categories by Week

Lastly, the data in Figure 4.10 reflect percentage changes in behavior tallies in Week Six compared to Week One. As the data demonstrate, the CMA access program led to a 41% increase in the "answering questions" area and a 362% increase in the "making requests for self" area. On the whole, there was a 58% increase in the total instances of group communication covering all three areas in Week Six compared to Week One.

In general, the data collected through behavioral observations indicate a positive role that the museum as a learning and social environment played in helping the autistic children engage in the learning behavior and develop their sense of self, along with the confidence to voice their individual concerns and needs. This evidence obtained from behavioral observations was corroborated by other forms of data as well, including parent surveys, interviews, and ratings of the Social Responsiveness Scale.

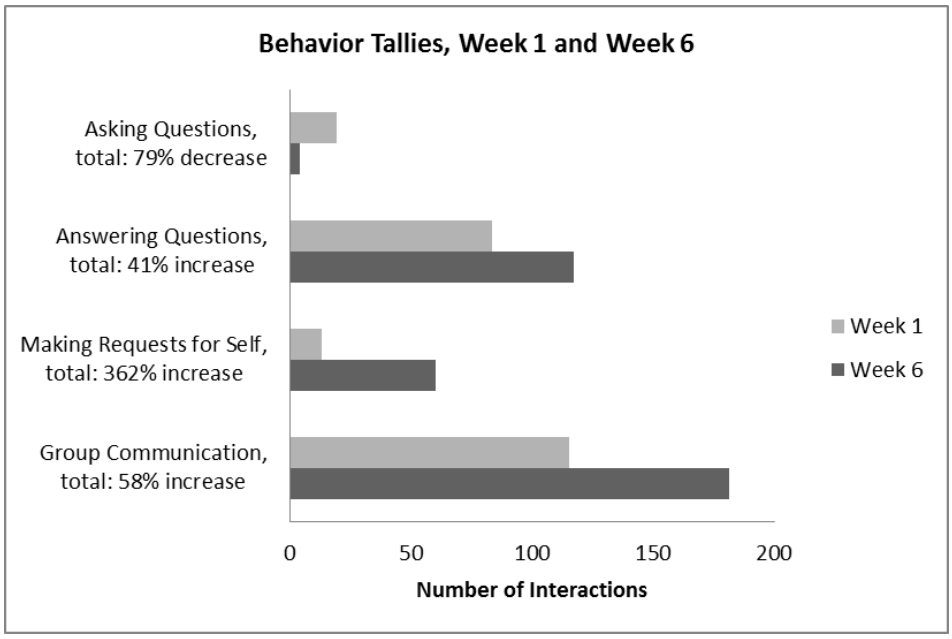

Figure 4.10 Percentage Change in Communication Behavior, Week 1 vs Week 6

4.7 Task Evaluation Results

Quantitative data about the participants' learning in the museum program were collected through the task evaluation method. Each week, the researcher aimed to examine art-related knowledge acquisition of the autistic children by measuring the baseline level of their familiarity with a certain art concept before the gallery instruction and then measuring their knowledge of the same concept immediately after the gallery instruction. To achieve this goal, the study subjects were instructed to complete a topic-specific task, also called measurable. Since each week in the program focused on a different art theme, a new evaluation task was implemented each week.

Using the data from the task evaluation sheets, the researcher calculated the number of correct responses by each student before the gallery instruction and compared those data with the number of correct responses the children gave after the gallery

instruction was completed. The researcher intended to address the changes in the total number of correct responses provided by the ten children as a group from the pre-gallery tour tasks to the post-gallery tour tasks. So, the sum of the correct responses was calculated for each task the children completed before and after the gallery tour of each museum visit (see Table 4.12).

Table 4.12 Percent Change in Measurables by Week

Weeks	Beginning Correct #	Ending Correct #	% Increase
Week 1	83	105	26.5%
Week 2	55	60	9.1%
Week 3	137	148	8.0%
Week 4	31	36	16.1%
Week 5	25	29	16.0%
Week 6	112	126	12.5%

As the data in Table 4.12 indicate, instruction during the six 45-minute guided gallery tours had a positive effect on learning of the ten children who participated in the CMA access program. After the gallery tour instruction, the children consistently demonstrated a higher level of knowledge of each of the six art concepts they were introduced to by the museum educator. The greatest percentage increase in the number of correct responses before and after the gallery tour happened in Week One when the children learned about Still Life. Following the gallery tour, as a group the children provided 26.5% more correct responses to the task presented to them by the CMA staff. Week Two saw a moderate 9.1% increase in the number of the correct responses the children provided to the task related to Animals and Shapes. This result can be explained by the fact that the children were quite familiar with the topic and made relatively few mistakes in the original task. A similar trend was observed in Week Three when the

children demonstrated a slight 8% increase in the number of the correct responses to the post-gallery task compared to the pre-gallery task.

Finally, analysis of the task evaluation data from Weeks Four, Five, and Six demonstrated that the participating children continued to provide higher numbers of the correct responses after the gallery tour instruction than they did before. The percentage increases in the correct responses to post-gallery tasks in Weeks Four, Five, and Six were 16.1%, 16%, and 12.5% respectively (see Table 4.12).

4.8 Qualitative Survey Results

This section presents the analysis of the qualitative data collected from one open-ended question in the pre-program parent survey and ten open-ended questions in the post-program parent survey. The qualitative data were analyzed thematically through developing codes and labels and then establishing common themes. Seven topics were captured and are presented in the order of: participant interests, parent expectations, parent satisfaction with the program, program influence on participant behavior, program influence on participant interaction with art and others, overall program impact on participants, and feedback on the CMA program sustainability.

Participant interests

Pre-program Survey Item 4 asked about the children's major interests. The purpose of this question was to familiarize the researcher with the range of the program participants' art-related and everyday interests in order to make sure that the nature and the content of the access program best fit their educational and social needs. Figure 4.11 summarizes the parents' responses to this question. While the parents predictably

provided a wide range of activities their children engaged in, the top interest mentioned by six parents was playing video games. It was closely followed by such interests as science, Lego, and—importantly for an art program—drawing. Four parents indicated that these three activities were among their children's favorites. Among the other categories of interests mentioned by the parents were animals (three responses), movies (two responses), and comic strips (one response). Many of the participants' interests, including drawing, animals, and shapes, were integrated into the access program content.

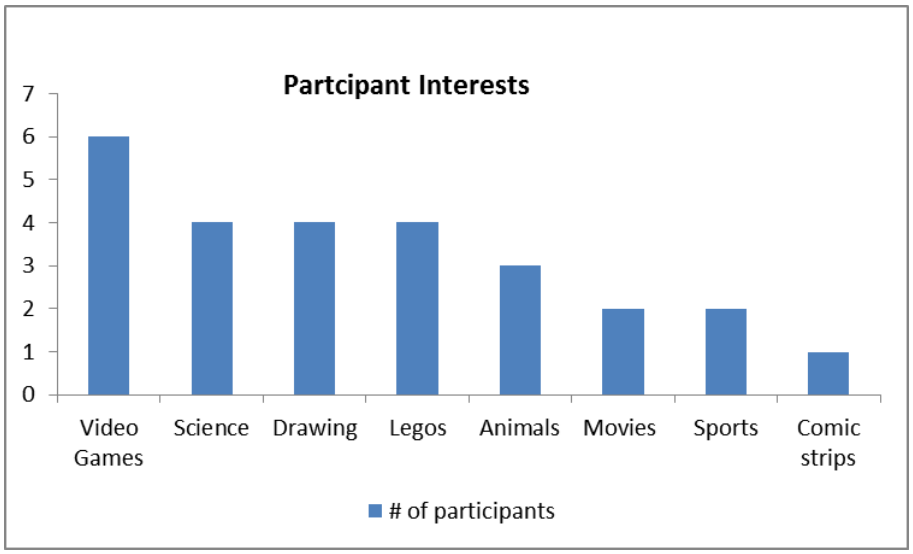

Figure 4.11 Participant Interests

The researcher shared this information with the CMA staff, and members of the Education Department provided additional opportunities for the study participants to engage in activities of interest to them during the recess period between the gallery tour and the hands-on part of each of the six museum visits. In particular, to reinforce the concepts learned throughout the museum access program, the CMA Education Gallery that served as a Break Room was decorated with additional animal artwork and several

Lego toys were made available for the participants to design various shapes and structures using the Lego bricks.

Parent expectations

Pre-program parent Survey Item 2 asked about the parents' expectations from the museum program. The data were collected before the start of the museum access program. All the parents' responses were carefully reviewed and the most frequently used words were identified. They were: fun, communication, and art. Then, the five most common expectations emerged, including having fun, learning about art, developing communication skills, expanding the child's horizons, and benefiting the autism community. Other expectations that were also mentioned in the answers included developing creativity, following directions, learning how to behave in a public setting, and improving fine motor skills.

Post-program Survey Item 2 asked whether the above-listed expectations had been met. All the respondents agreed that their pre-program expectations had been met. Nine out of ten respondents were able to provide rich qualitative data on why they thought the museum access program was successful in meeting their original expectations. One respondent's answers turned out to be excessively concise and somewhat ambiguous so that they needed to be clarified in the follow-up semi-structured interview.

Improving communication skills emerged as one of the major expectations of the CMA program. All seven parents who had listed communication development in their pre-program surveys acknowledged that their expectation had been fully met. One parent mentioned that the child was "interacting and socializing, which was extremely

rewarding for me." Another parent expressed a great deal of satisfaction with how her child progressed through the museum program from separating himself from other children at first to initiating a conversation with peers and even other parents beginning with the second museum visit. The child willingly shared his artwork and even talked to another parent about science and math. He also engaged in an argument with another participant about the meaning of a habitat.

When the child could not hear the question posed to him by the museum instructor, he calmly asked the instructor to repeat the question. This behavior, observed during the third museum visit, "was a huge step for [him] because he usually gets…agitated when he is unable to hear a question." During the final two weeks of the museum program, the same child continued to demonstrate positive communication behaviors. While touring the galleries, he waited for his turn to answer questions and did not attempt to talk over an adult during the museum instruction.

Feeling more comfortable with peers was another expectation noted by the parents. One survey respondent commented that with a longer program in place, the participants would have formed deeper relationships with one another. In general, those program participants who did not interact in the beginning appeared to be quite social at the end. One of the participants, a teenage boy graduating from middle school, took three visits to feel comfortable in a group of younger children. His parent was pleased to acknowledge that the museum experience had triggered the boy "to speak freely about what he saw and learned" in front of a fairly large group of people. On several occasions, the subject-matter of the participants' interaction extended beyond art itself and included

a wider range of topics, such as video games, an interest shared by a couple of boys and the only female participant in the program.

Another major program expectation commonly expressed by the parents was related to learning about art. Seven out of ten parents mentioned in their responses that learning about art and developing a greater appreciation of art was one of the outcomes they expected their children to achieve in the course of the museum access program. The parents provided examples of learning, such as discussing and answering "questions about the art correctly more frequently than not," demonstrating the ability to determine the colors correctly, and developing an understanding that art "comes in a variety of forms, whether it comes from a pen, brush, clay, [or] marble." One parent commented that her son had "learned many lessons that he had not been exposed to before," while yet another stressed her child's growing ability to retain "a lot of the concepts taught in one hour, which is unusual for him."

Finally, several parents mentioned that reinforcing the children's appreciation of art was their expectation from the program. Explaining how this expectation had been met, the parents talked about the diversity of the CMA program content and collections. In the words of one respondent, "[the child] was amazed at… how many pieces of art they had in one place" and "he loved that each week he got to create a different type of art." Overall, the parents agreed that the museum program gave the children a wider perspective on the subject of art and helped them become better learners "because [they] knew the teacher wanted to see if [they were] paying attention and observing the artwork."

Apart from the learning expectations, a number of parents expressed hopes that the program would provide a fun experience for their children. This expectation was met as well, as the post-program survey results demonstrate. The program brought joy and happiness to the participants, evidenced by the parents' responses like "on several occasions [my son] wished the program was daily" and "he was sad that the Art and Autism project had ended." Two survey respondents linked the museum experience with developing a greater bond with their child, suggesting that they "had a lot of fun spending the time together and [the child] knows this was "his" time. He was proud of his projects and we enjoyed doing them together." Another parent echoed this sentiment by saying that her expectation of a good experience was fully met because "[my child] and I got to do the projects together."

The next category of parent expectations involved developing and improving the program participants' social behaviors. The post-program surveys provided ample evidence that this expectation was met, too. As one parent noted, throughout the program her son, who had previously had difficulty maintaining focus and composure in conversational situations, started to become "more flexible with his conversation, allowing peers to give their input during the gallery tours… He was patient with staff and peers even though on several occasions he was antsy to leave the gallery."

As the program progressed, social behavior improvement was further confirmed by the other parents as well, particularly regarding the aspect of following directions during the art-making activity. According to a parent account, during the first two weeks of the program the child refused to follow the guidelines or use any of the materials provided to the program participants by the CMA educators. During Week Two, the child

insisted on using a different set of supplies and materials than that provided to the rest of the group, and he took extended time to decide what he would like to draw.

By the middle of the program, the child's attitude started to change as he became willing to use the art materials and ask for assistance from the museum educators. This was the first time in the program that the child successfully completed the art-making activity in the classroom. The child was proud of his accomplishment and showed his drawing, a volcanic landscape, to everyone around. Toward the end of the project, the child readily worked on the assigned art projects without objecting to any of the guidelines provided by the museum educators and completed his projects on patterns and portraits within the expected time at the museum. According to the parent, it marked a noticeable increase in such behaviors as cooperation and following directions for the child who had previously refused to draw anything other than living beings.

Finally, improving fine motor skills was an expectation mentioned by one particular parent. In the post-program survey, the parent confirmed that the museum program had provided numerous opportunities to improve these skills through hands-on activities such as cutting, pasting, painting, drawing, and coloring.

Parent satisfaction with the program

Post-program parent Survey Item 3 asked for a qualitative explanation of the parent responses to the question about their level of satisfaction with the museum program. All of the parents marked either "satisfied" or "very satisfied" as their response. Two parents did not provide an explanation, although they did rate their level of satisfaction. Analysis of the other parents' explanations revealed that there were several

reasons for the overall parent satisfaction. First, five survey respondents mentioned that they were extremely satisfied because the museum program was fun. Second, three respondents said that the program was well-organized and its structure helped reinforce the knowledge of the art concepts learned through a combination of gallery tours and the subsequent art-making activities, thereby increasing the children's confidence in creating their own artwork.

Third, one respondent expressed his satisfaction with the access program because of its focus on children with Autism Spectrum Disorder, an often forgotten segment of the community. The parent wished the program could be expanded, both geographically and audience-wise, as he wrote that there needs to be greater awareness of autistic children and their talents. Fourth, another parent was satisfied because her child was able to make improvements in several aspects of social and learning behavior with which the child had struggled before.

Fifth, yet another parent stated that she was pleased with how much the museum program had helped to diversify her daughter's interests. Prior to the program, the only activity the girl was interested in was playing video games while avoiding any interaction with peers. Thus, the parent was happy to see that her daughter had "gained valuable social skills by talking and playing with the boys in the group."

Lastly, although not directly related to the purpose of the study, it should be noted that four survey respondents mentioned the quality of the museum instruction throughout the six-week program. The parents' comments ranged from "the instructor was fabulous"

to “the instructor went above and beyond the parents’ expectations of teaching” and “the instructor kept the children engaged and having fun.”

Program influence on participant behavior

Post-program Survey Item 4 asked for a qualitative explanation of the perceived changes in the children’s behaviors that the parents’ believed could have been due to the CMA access program. It was one of the central questions of the post-program parent survey as it was directly related to the main research question of the study. Sixty percent of the parents acknowledged changes in their children’s behaviors, whereas 20% said there were no changes and 20% were not sure. Three parents cited an increase in their child’s level of interest in art (or curiosity about art-related subjects) as the main behavior change. Two respondents mentioned that they observed growth in their child’s confidence in their ability to complete art projects and “do good work.” One of these parents went on to describe that her son had become “more social, confident and calmer in the past few weeks.” This confidence extended from art-making activities to the interaction with adults and peers because the child “became less intimidated when asked by instructor or by other children in social settings.”

The parents also noted changes in their child’s social behaviors, such as answering the questions more politely and in a less abrupt manner. One parent suggested that this change might have been due to the fact that the museum was a friendly learning environment for the program participants and the CMA educators interacted with the children in a non-threatening way.

Two of the survey respondents indicated that they were not sure whether the museum program had brought about any changes in their child's behavior mainly because a longer period of time was necessary to see behavior changes in such aspects as concentration or social skills. At the same time, one of these respondents described the rise in her son's confidence level (included in the confidence category above) but qualified her response by saying that she treated confidence as a character trait rather than a behavior. The other respondent, while stating that her son needed a longer time to see improvements in communication, acknowledged the fact that the child was now more open to participation in joint activities with both of his parents. It can be interpreted as an improvement in the child's social behavior within the family.

Program influence on participant interaction with art and others

Post-program Survey Items 7 and 8 asked for an explanation of the perceived program influence on the children's interaction with art and others, respectively.

Regarding the perceived change in the children's interaction with art, three parents noted that the program had taught their children to control their impulses to touch the museum artwork. As follows from the parents' responses, the children also learned that it takes time to create art and that one needs to concentrate on the task at hand to do it. Two parents noted that their child's perspective on art had broadened because of the content of the program and the authority of the museum educator who delivered instruction during the gallery tours. Two other changes in the children's interaction with art were noted as well, including taking ownership of the created artwork and a better understanding that art is meant to be shared with others. Both of these changes are important in terms of confidence and socialization of autistic children.

Post-program Survey Item 8 provided one of the more crucial sets of data for answering the research question of the study. Two parents stated that they did not notice any differences in their child's interaction with others, while eight parents acknowledged such changes and listed examples of the ways they thought the interaction had changed or had begun to change. The examples included enjoyment drawn from being with other people, increased interaction with family members, overcoming the natural shyness evidenced by the proclivity to make "the first move" and take action to meet new friends, along with developing a feeling of acceptance within a group by bonding with other children who are on the same level.

One parent particularly described the change in her son's interaction with others as "being comfortable with other people, especially those that may interact atypically" without becoming frustrated with their reactions. Another parent gave an example of how her daughter's socialization evolved throughout the program. The girl enjoyed playing with plastic and wooden blocks in the Education Gallery during the break time. While at the beginning of the program the girl was unwilling to share the blocks and took them to the corner of the room, at the end she found herself right in the middle of the four boys playing blocks. Finally, one parent remarked that her child's interaction with others depended on the topic and the environment.

Overall program impact on participants

Post-program Survey Item 9 asked about the overall effect the museum experience had on the participants. Analysis of the parents' responses revealed the following major themes: confidence-building, enjoyment of learning, the value of art-making activities for stimulating creativity, and knowledge retention. In particular, five

surveyed parents believed that the program had a positive effect on their child and helped to build his or her confidence in social situations. Four parents believed that the program provided an enjoyable and productive learning experience for their child, allowing him or her to acquire new knowledge of art. Three parents thought that the program developed their child's creativity by allowing him or her to recreate artworks that enhanced the concepts learned through the museum instruction sessions. Two parents indicated that the program broadened their child's mindset by allowing him or her to expand their understanding and appreciation of what art is and what it can be.

Specifically, the parents noted that the children appeared less frustrated or anxious, as well as more eager to learn new things. They showed their interest by raising a hand to answer questions and enjoying the creative process in the museum studio based on the knowledge they had learned through the gallery tours. The parents also listed increases in the focus level of their children as a positive effect of the museum program. As one parent testified, her child was able to stay on task and complete all the museum projects, while "he often does not complete projects" in other situations. Lastly, commenting about the effect of the CMA program, the parents claimed that it played a role in developing their children's artistic talents because the children tended to draw more frequently and became more observant of the elements of art in their surroundings.

Feedback on the CMA program sustainability

Post-program Survey Items 10-13 included a range of questions related to program sustainability and possible future improvements. Survey Item 10 asked what the parents liked most in the program. The most frequently mentioned answer was that they liked the fact that the program took place in an environment that encouraged learning and

created a comfortable atmosphere for all the participants. The second most popular answer was related to the helpfulness of the CMA staff who treated each child with respect. Specifically, the parents emphasized how pleased they were with the fact that the museum educators managed to engage each child equally and did not penalize the behaviors that were hard for the autistic children to control. The parents observed that the welcoming museum environment fostered the idea that there was no right or wrong answer. One parent summarized it best by saying that the program's success was due to the teachers' way to interact—kind and patient with every participant and also considerate of their individual learning styles.

The parents also appreciated the hands-on element of the access program, pointing out the fact that the art-making activities in the CMA studio helped the children to retain the knowledge by the "application of the concept learned in the gallery instruction session to the hands-on art project." In fact, the parents noted that the learning opportunity was valuable for them as well and stressed the importance of completing the projects together. In addition to developing a closer bond with their child, two of the parents also spoke favorably about such aspects of the access program as an opportunity to meet with other autistic families and "share experiences and stories" that help to deal with the challenges of autism.

Survey Item 11 was related to making improvements to the museum access program. Six parents answered that no improvements were necessary, while four parents provided constructive feedback ranging from a more flexible program schedule that would include weekend sessions; taking into account the participants' attention span by adjusting the gallery tour time in order to allow more time for hands-on art-making

activities; expanding the selection of topics to cover additional forms of art, including clay and sculpture; to expanding the project with different age brackets to make it suitable for children of all ages.

Survey Item 12 inquired about the parents' opinions regarding a possible return to the museum or visiting other museums after their participation in the CMA access program. All ten parents unanimously said yes, citing reasons such as small class size, skill of the instructor, and encouragement of parent participation. Moreover, as the parents stated, the CMA made the idea of a museum friendly to special needs children the reality and taught the children patience, open-mindedness, and appreciation of art.

Survey Item 13 asked if the parents would recommend the CMA access program to other parents of children with ASD and why. One hundred percent of the parents gave a positive answer to this question. Three out of seven parents did not provide an explanation. Those who did gave diverse reasons, but the major one was that the children had derived substantial benefits from the program. According to the parents' responses, the program was a step in the right direction in terms of helping the autistic children learn about art and interact socially with others in a safe environment. The parents saw improvements in how their children followed the guidelines and at the same time managed to participate in their own way.

The parents argued that a similar type of access program would be beneficial for other children with ASD because of the profound therapeutic effect it had on this group, encouraging the children to explore their creativity and teaching them a new perspective on art and history. The parents attributed the success of the program to the team of CMA

instructors who “allowed the children to share their thoughts and ideas and only unobtrusively redirected [them] when necessary.” As one parent put it, the CMA access program is great for the autism community because “who knows what [art] could wake up in the mind of a child with autism.”

4.9 Parent Interview Results

This section contains analysis of the data collected through semi-structured parent interviews following the last museum visit. The interviews were conducted to clarify the responses to pre-program and post-program surveys through direct communication with the parents and to deepen the researcher’s understanding of the main phenomenon of the study—the museum experience of ten autistic children who participated in this research. During the semi-structured interviews, the researcher asked each parent a pre-designed set of eight questions and then used prompts to elicit more elaborate explanations if necessary. The names of the interviewees and their children were kept anonymous to protect the identity of the study participants.

Thematic analysis of the interview transcripts revealed important constructs and patterns that were used to complement the data collected from pre-program and post-program parent surveys. To analyze the large amount of data gathered from the interviews, the researcher grouped the questions into four broad categories: museum experience, learning in the museum environment, program structure, and changes in communication behavior. The category of museum experience included Interview Questions 1 and 2. The learning in the museum environment category encompassed Interview Questions 3, 4, 5 and 8. The program structure category featured data from

Interview Question 6. Lastly, the changes in communication behavior category included data from Interview Question 7.

Museum experience

Several common themes emerged across the data collected from Interview Questions 1 and 2 that asked about the children's experiences at the museum. Regarding Interview Question 1, all of the interviewees mentioned that the CMA access program was a "positive experience," which signifies the uniformity of the parents' perceptions of the program. Eight out of ten parents also used the words "excitement" (or "enjoyment") to describe the museum experience for their child. In addition, eight parents used the words "looking forward to" to describe the children's attitude to the museum visits. At the same time, six out of ten parents noted that their child was "nervous" (or "anxious") at the start of the program but managed to overcome the initial shyness and became "more comfortable" (or "opened up") as the program progressed. An account from one of the parents summarized the transition of her child "from being a shy little boy and not answering questions to having self-confidence to answer even those questions that he normally would not be apt to answer."

Six parents pointed out the "excitement to learn about art" they saw in their child throughout the program, while four parents emphasized the fact that the program presented an entirely "new (or "different") experience." For example, one child not only was very interested in learning the content of each gallery tour but also "took the program very seriously." His parent spoke in great detail about how much he followed directions and was eager to watch over the younger children and set an example of good behavior for them. He acted as a role model for the group and was very vocal when he saw any

infraction of the established museum rules. His parent was pleased with his leadership and confidence growth.

Furthermore, four parents mentioned “enjoyment of hands-on activities” as the thing that defined the museum experience for them and their child. According to the parents, the art-making activities helped the children to better retain the knowledge learned through the gallery tours. Moreover, the hands-on activities played a part in calming down those children who tended to become restless and impatient during the gallery tours. In this regard, two parents observed progress with their children’s attention span as the children began to focus more and stay on task toward the second half of the museum program. One parent addressed the issue in more detail saying that “[the child] thoroughly enjoyed hands-on art-making project… The program has made him want to go to museums more and he had a little more confidence with his art. He even can finish his art projects at school now.”

Two out of ten parents described the museum experience in terms of helping diversify their child’s interests. One of these parents referred to the museum program as a way to “get [the child] away from video games,” while the other provided a vivid example of how the theme of Week Two, Animals and Shapes, inspired the child to draw and color a lizard which “was the first time [he] drew anything other than a person.” This episode was the highlight of the Week Two visit. Despite his obvious artistic talent, before the CMA program the child’s interests in art had been very narrow, limited to sketching comic book heroes or cartoon characters. As his parents put it, “the program showed [the child] that art can take many different forms besides the comic book characters he liked to draw.”

One parent described the museum experience as an opportunity to spend time together with the child, thus stressing the importance of the museum program as a family outing. It should be noted that this interviewee also mentioned the time before and after each museum visit as critical for the child's development. On the way to and from the museum, the child learned to become more observant and increased awareness of his surroundings, such as people, cars, and new buildings in downtown. Another parent described the museum experience for her son as "eye-opening" because of how quickly the child had to learn "to transition between topics, peers, the instructor, and other CMA staff." While in the beginning this child "did not want to mingle or socialize with other kids… he did not want to open up because it was a new experience for him, after the first visit he was excited about going back." Lastly, four interviewees mentioned the fact that the instructors were great and made the children feel at home as defining the museum experience for them.

The purpose of Interview Question 2 was to investigate whether the children had any previous knowledge about art and if that experience affected their learning throughout the museum program. The responses collected from the parents indicated that all of the participating children had had varying degrees of knowledge about art before the start of the CMA access program. According to the parents, the children acquired this knowledge through art classes at school, private art lessons, or previously visiting different types of museums with their families. However, the museum access program refreshed and furthered their art knowledge, thus helping the children to lessen their anxiety about the program and learn the most from each museum visit. A parent readily

admitted that “a tiny bit of prior knowledge kept [the child] from being so overwhelmed with a new experience.”

The museum program was built around the concept of a free-choice, not rigid learning environment so as to “let the children experience the art how they felt they needed.” One of the parents said that while the limited knowledge of art her child had acquired from school was helpful, the main factors that facilitated the child’s knowledge and retention of the art-related concepts she learned in the museum program were the people who worked with her, the teacher who encouraged her to try new things, and the hands-on art-making activity at the end of each visit. At the same time, another interviewee insisted that the previous knowledge about art did not make a lot of difference for her child. The child is an active and warm-hearted boy who generally welcomes any new experiences and social events. Therefore, he was open to the idea of participating in the museum access program and looked forward to visiting the museum during each of the six weeks the program was offered. The majority of the parents pointed out the fact that the children liked art by nature. They also recognized the calming effect of art on their child. When the children drew, they “became less worried about what’s going on around.”

Additionally, one of the parents elaborated on how the program structure itself contributed to enhancing the children’s background knowledge of art and the museum, thus helping with their integration into the museum program. For example, one of the children read the social story every time he and his parent went to the museum so that he acquired detailed knowledge about the place. He initiated a conversation with the

museum instructor about the total number of art pieces in the CMA collection. He assuredly stated that there were over 7,000 pieces and added: “I know. I read it.”

Learning in the museum environment

Several common themes emerged across the data collected from Interview Questions 3, 4, 5 and 8 that asked about the children’s learning in the museum environment. Regarding Question 3, five interviewees pointed out that experiencing the museum access program as a group motivated their child. Three parents mentioned that their child would have been bored and would not have stayed at the museum for as long as he or she had being a part of the group. Two parents used the word “competitiveness” to describe how the group setting affected their child’s willingness to learn.

In particular, the parents commented that the group setting motivated the children to become more engaged in the museum activities. One parent observed that experiencing the museum as a group made it more fun for her son, even though because of the language impairments “he gets more apprehensive when he is in a group and he would have done better one-on-one in terms of learning.” Nevertheless, the peer pressure the child felt from the group ignited his competitive spirit and made him want to participate in the program activities. Another parent expressed a similar opinion stating that her child was determined to be more engaged when he saw how the other children raised their hands and answered questions. That parent said that her child “does not socialize a lot anyway,” but seeing other children so active “made him go along with the program.”

A third parent echoed the feeling that experiencing the program together as a group motivated the children and impacted their interest because they saw their peers’

curiosity about the museum program. One parent emphasized this impact by saying that her child would be less apt to participate in the museum visits alone. However, in a group setting he was willing to socialize with the other children that he could relate to. In the words of this parent, the group environment was critical for the participants' socialization because "in a group, children have someone to compare themselves to."

The parents testified that even if their children typically had a tendency to withdraw from social situations, they were more inclined to stay engaged in the museum program if they saw other children involved and answering questions. As one parent said referring to his son's experience, "that tends to draw him." Yet, as the parent noted, his son would have mingled around more if there had been more teenagers in the group. Another parent described her child's experience in a positive light as well. The parent noted a positive dynamic in both the learning and social behaviors of the child who was willing to answer questions more frequently as a result of the group interaction. The parent said, "It might have not been the right answer but she would still give her opinion."

Analyzing the impact of the group on her child's museum experience, one parent offered a unique perspective on the cognitive aspect of the group interaction. The parent acknowledged that the group environment enhanced the child's learning by allowing him "to gather information from everyone else and then think about it, process it," and then contribute something new to the conversation. Regarding the child's participation in the discussions during the gallery tours, the parent concluded, "I don't think he would have been as open one-on-one as he was with the group."

The last point made by the parents regarding learning and socialization as part of the group was about a healthy amount of peer pressure the children felt from the other group members. This positive pressure made the children more eager to see "who would get the right answer first." Along the same lines, the parents mentioned that the children would have felt bored without the company and would not have enjoyed their time. By contrast, watching their peers participate in the museum activity inspired the children to do the same thing and become more engaged.

One child proved to be a different case. Because his autism symptoms are manifested in a very peculiar way, his parent claimed that he did not get as many benefits from being part of the group as the other children. According to the interviewee, the child prefers to interact with adults, especially in learning settings. Therefore, he would have learned more from participating with a group of adults. However, the overall parent perception of the group environment was that it facilitated learning and contributed to greater socialization of the autistic children during the six-week museum access program.

Interview Question 4 intended to investigate parent perceptions of the difference between learning in the museum environment and learning in the traditional classroom. Analysis of the parents' responses revealed a number of common themes. First, all the parents characterized the museum as a better learning setting than the traditional classroom, considering the wide variety of needs and unique circumstances of children with Autism Spectrum Disorder. Second, the majority of the parents described museum learning as different from the classroom learning. Third, the parents pointed out the free-choice and relaxed nature of museum learning compared to classroom learning. And fourth, the parents alluded to fact that the museum environment offered more

opportunities for the children to express their opinions in a non-threatening and welcoming surrounding.

To give specific examples of why they thought the museum environment was better than the classroom environment, the parents cited reasons such as a smaller class size and a relaxed atmosphere where the children could roll on the floor, lie down, or pace around if they felt the needed to do so. They did not feel the pressure to behave in a certain way; they "could do what they needed to relax themselves and still be present and still be involved… and still learn." The CMA environment allowed the children "to do the little things that made them calm down, so that they were still able to function."

This was why one of the parents thought the museum facilitated learning more than the school. Her son "enjoyed learning without being forced to conform." Another reason mentioned by the parents was that in the museum there was a "visual component added, with the ability to get up and move…it's a much better learning environment for [children with autism]." Another parent emphasized the contrast with the classroom in more detail by saying that the museum allowed the children to learn and it was "a much better learning environment than sitting at a table with a book or a piece of paper and looking at the blackboard."

The interviewees provided a variety of reasons to describe in what ways the museum learning was different from classroom learning. For example, one parent said that in the museum the children could interact with the art more closely by being able to see the art in person, while in the school classroom they could only "see the picture or watch a video about it." Additionally, the museum provided a richer learning experience

for the autistic children because it “has a lot of history for each piece of artwork.” The parents were pleased that in the museum learning took place without the pressure from teachers to meet the expectations of the structured classroom. One parent thought that this freedom gave the children more space “to be their wiggly selves.” The parent described the museum access program as therapeutic because it enriched the children and allowed them to flourish while obtaining new knowledge about art. Also, the autistic children “were all interacting in the museum and lying on the floor. They can’t do this in the regular classroom.”

The free-choice and relaxed nature of museum learning was mentioned by a number of the parents as well. As the father of a fifteen-year-old participant admitted, he was glad to see the museum as a non-structured learning environment because his son “gets bored when he is always in a structured environment.” The mother of a nine-year-old participant had a similar view as she noted that in the museum “the kids had more opportunity.” The parent felt that “in the regular classroom, [children with special needs] are left out a lot of times and not really purposefully but just because there are so many more kids in the classroom and only… one teacher... Whereas at the museum, [there were] several people that were walking around with a group and… talking to the kids and interacting with the kids and making them feel at ease and making them feel like their answers were important.” The same parent implied that learning in the museum setting was beneficial for the intellectual development of the children because “the teachers really dug deep at the museum to get answers out of the kids. I mean, just question after question… get them to think. And I'm not saying that a regular classroom teacher doesn't do that, but I don’t think they do it to the degree that the museum workers did.”

Another parent also noted that the museum environment relaxed the children and allowed them the freedom of self-expression because their "opinion was greatly appreciated. No one got upset. No one tried to out-speak each other." The parent noted that in the regular classroom, "children with those special diagnoses kind of tend to linger in the back… They don't get to give their opinion…they do get overlooked and they really want to express themselves and either the teacher or the students don't have time or patience to allow them to do that… and they withdraw to themselves" for fear of being wrong. On the other hand, "with this experience there was no right or wrong answer… So, the patience and the time that the [CMA] staff had, was great."

Interview Question 5 asked the parents about evidence of learning in their children that might have been related to the museum access program. Seven out of ten parents provided concrete examples of what they perceived as evidence of learning. According to the interviewees, the children became more cognizant of the elements of art in their everyday lives. The children began to see patterns in clothing items while shopping with their parents, landscapes in images they saw, as well as warm and cool colors. More importantly, they started to discuss what they observed.

According to the parents, it was not a fast process, but they were pleased to see it "filtering into [the children's] everyday language and routine." One parent shared how participation in the program made her son realize that all the warm colors were together in the rainbow and so were all the cool colors. The boy then included that knowledge into a weather report he had to prepare for a Cub Scout assignment. Another parent recalled that her child was proud of the artwork he had created in the CMA art program. He was eager to show his paintings to any relatives or friends who visited the family and "tell

them all about [his art].” In addition, another parent mentioned that her son had learned to pay more attention to art-related topics brought up by others and even began to critically analyze the accuracy of such information. For instance, when the parent misrepresented the order of the topics in the museum program while talking to the child’s grandmother, the boy joined the conversation and corrected his mother. Another evidence of art-related learning came from the same child. During the Week Four visit, he learned that watercolor pencils were an excellent tool for creating landscape art and later insisted on taking watercolor pencils to the beach to use them on a family vacation trip.

Another program participant who had previously been fixated on sketching cartoon characters on plain white paper started to include various backgrounds in his sketches and improved his sense of perspective upon learning about the foreground, the middle ground, and the background through the museum program. Several interviewees included in their responses the children’s insightful comments about art. One parent was quite surprised to hear her daughter’s revelation about the presence of “still life” in her Subway sandwich.

Yet another child recognized the foreground and the background in the overcast sky during a thunderstorm on the way back from the museum. When the child saw a rainbow, he said to his mother, “Those are almost like the warm colors-cool colors type scenario.” The museum program had a profound impact on this child. At the end of the sixth visit, he said, “Well, I want to take art next year” when trying to choose electives for sixth grade. This was how his parent summed up the impact: “he’s looking forward to art. He’s really wanting to do it. I think when he sits in his room and just starts to draw, it

just kind of relaxes him, allows him to kind of free think without someone [controlling him]. He gets to do whatever he wants. It's like his mind, his imagination just takes over."

Interview Question 8, the last question in the learning category, intended to find out the parents' perspectives on what the children had learned from the museum access program. The majority of the parents affirmed that the children had learned the actual art concepts and techniques taught in each or the six museum visits and also increased their ability to generalize those concepts to their natural environment. One parent admitted that her son had gained more understanding of what art was and furthered his knowledge in each of the six areas of art the program covered. To confirm her point, the parent stated, "I've seen more of an increase in talking about it and noticing things… that he hasn't previously noticed."

Another parent appreciated the fact that the program gave her son "an opportunity to learn about different artists and techniques they used and then got to practice them in the studio." The same child also learned to be more confident about creating his own art. The social aspect of the program was also mentioned by the parents as crucial for broadening the children's awareness of the world and the people around them. The mother of an eight-year-old participant described this journey for her son, "He learned that he can connect with people no matter where he goes, no matter how much of a social challenge it is." Another parent pointed out in her interview response that through participating in the six-week museum program her son had learned life skills, such as patience, transition, conversation, knowing when to be expressive to other people, and using the proper tone of voice. Lastly, another notable insight came from the father of a fifteen-year-old participant who observed that his son had learned that art knows no

boundaries and no restrictions. It is individual as it means different things to different people. In this sense, art is liberating because “art is what you make it to be. Art is what you say it is.” That was the greatest lesson the children took away from the program.

Program structure

Question 6 of the parent interviews focused on the program structure as it asked about the parents’ opinions regarding the most beneficial aspect of the museum access program. The parents nearly spoke in unison in response to this question. Eight out of ten parents identified hands-on art-making activities as the portion of the program that gave the most impact to the autistic children. One parent mentioned the social time in the beginning and the “way the [CMA staff] conducted gallery tours” as the most impactful because it “got [her child] comfortable and then it showed him that you can learn things in a fun and safe environment.” The tenth parent re-stated that being in a group was the most beneficial for her son in terms of helping him to release his inhibitions and gain confidence to create his own artwork.

Similar themes, confidence and independence, emerged through the analysis of the other parents’ accounts of the hands-on experiences in the CMA art studio. One child in particular benefitted from the hands-on sessions because “he was doing it on his own. He loves doing things on his own where he doesn’t have to sit there and listen to somebody tell him what to do.” According to another parent, the art-making activities improved her son’s time management skills as he had “completed his projects within that period of time, but yet he had the choice to go and choose how to do it.” The mother of a teenage participant mentioned that her son enjoyed the activity time “and also talking about the history of the paintings.”

In addition to art-making, one parent noted that the program benefited his child by expanding the range of his interests in art to include not only sketches but also sculpture and monotype printmaking. Another parent pointed out that the hands-on portion served to reinforce the theoretical knowledge learned in the gallery tours because the child "got to create what she had learned about while she was doing the tours. And…that really… puts all the points together that she's been learning throughout the whole tour… when she can go and create one of her own." To reiterate the benefits of the museum access program, a parent stated that what benefited her child the most was "that flexible conversation that they had from the time [the museum instructor] came in and was talking about the weekend…[So,] from the time he went in, it was just a very comfortable environment where he can… express hisself [sic]."

Changes in communication behavior

Question 7 of the parent interviews focused on the perceived changes in the children's communication behaviors that the parents attributed to the museum access program. Several interviewees mentioned that the program helped make their child more calm and focused when working on schoolwork. One parent claimed that after the program, her son seemed less argumentative when given a task. The parent stated that now "[the child] would actually sit down and get started… and do his work without too much of… his usual excuses." Another parent noticed that her child had become more "conscious as to what he is willing to put on paper" when creating his art. Also, as one parent observed about her daughter, after the museum program "she'll talk to people more… not just the family members, but, you know, people out in public… She'll just say, "hey." And, you know, be more open to just strangers that she doesn't know."

However, on the whole, analysis of the parent responses revealed limited evidence of change in the children's communication behaviors that the parents could directly attribute to the six-week CMA art program. Impairment in the general communication is one of the major challenges autistic children face, and it is usually treated through intense, individually designed, specialized therapy over an extended period of time. As one of the parents explained about the lack of change in her son's communication, "it's not something you'll see overnight. You know, it's a gradual [process] but I think that every little milestone with this program…definitely helps [children on the autism spectrum]."

Another parent noted regarding the change in her son, "Everyone who saw him commented about how much more social he is and how much calmer he is. But I can't really pinpoint what exactly made him that way." One of the reasons the parents did not see much change in communication was because several children in the group already possessed the basic communication skills they had acquired at school or from participation in other extracurricular activities, as the parents stated in their responses.

In addition, because of the feasibility considerations, the museum access program was offered for only six weeks. The following response from a parent reflects the general perception of the interviewees: "I don't think it would change [my child's communication] in that short of a period of time. But I am glad he went through the program. It's an experience he has never had before." However, as it became clear from the parents' responses, the children felt encouraged to talk. Although the change in their communication was limited, they demonstrated increase in self-esteem, confidence, and interest in the museum.

4.10 Summary

This chapter presented the analysis of data pertaining to a study of the museum experience impact on learning and social behaviors of children diagnosed with Autism Spectrum Disorder. The researcher utilized an analysis plan that covered both the quantitative and the qualitative types of data collected in the course of this study. In order to create a more complete picture of the autistic children's learning and socialization in the museum environment, data were analyzed from a variety of sources including parent pre-program and post-program surveys, the standardized Social Responsiveness Scale, behavioral observations, pre-gallery and post-gallery tour task evaluations, and semi-structured parent interviews.

Analysis of the survey data related to family motivations for visiting museums revealed that, from the parents' perspective, there were four main motivations, namely: to be pleasantly occupied, to enjoy themselves, to use imagination, and to expand their child's horizons. Regarding the CMA access program, the survey data showed that all ten parents perceived the museum experience as either positive or very positive for their children. Ninety percent of the parents acknowledged that the museum program influenced their children's interaction with art, and at the same time 70% noted the change in the children's interaction with others. The majority of the parents also agreed that the museum access program contributed to improving their children's social behaviors, especially in such aspects as following directions, participation in group activities, and willingness to share objects or toys.

These quantitative findings were supported by the qualitative data from semi-structured interviews the researcher conducted with the parents after the final museum

visit of the access program. Analysis of the interview responses revealed that the parents unanimously agreed that the program succeeded in building the children's confidence in their ability to do well in a group environment, appreciation of art, and understanding of how to handle themselves in social situations. Thus, the quantitative findings from the surveys and qualitative findings from the parent interviews were interconnected and together they helped address the research problem investigating the museum program impact on social behaviors of the autistic children.

Furthermore, data from behavioral observation tallies provided evidence of a positive change in communication and learning behaviors of the participating children. Specifically, the data demonstrated a 41% increase in the area of answering questions in Week Six compared to Week One, which was indicative of the children's growing willingness to engage in the learning process to a greater extent as the program unfolded. Additionally, the observation findings related to the area of requests for self revealed a nearly fourfold increase from Week One to Week Six, which demonstrated the children's heightened sense of self, along with the confidence to voice their individual concerns and needs. These data collected directly from study subjects proved a distinct impact of the museum access program on the autistic children.

The positive results from direct observations were statistically affirmed by the findings from the Social Responsiveness Scale. The results of the paired samples *t*-test comparing the pre-program and post-program parent ratings of the Scale items revealed that the impact of the museum program on the behaviors of the participating children in both the Social Communication and Interaction and Restricted Interests and Repetitive Behavior domains was statistically significant ($p = .004 < .05$). In particular, the highest

impact was in the area of Social Cognition (p = .003) understood as the ability to correctly interpret and act on social cues.

Finally, analysis of the data collected from the pre-gallery and post-gallery tasks completed by the children revealed that the accuracy of task completion increased each week following the gallery instruction by the CMA educator. The pre-gallery and post-gallery task evaluation results provided further evidence to corroborate the findings from the parent interviews that the museum program allowed the children to master their knowledge of art-related concepts and brought an immense motivation to learn new things that the children were going to carry on and apply to future interactions with art or other extracurricular activities.

In summary, analysis of data from a combination of quantitative and qualitative sources reaffirmed the findings that pointed toward a positive influence of the museum experience on learning and behaviors of the autistic children.

CHAPTER 5

DISCUSSION AND CONCLUSIONS

5.1 Introduction

In today's fast-paced information universe where learning can happen anywhere any time, museums have evolved from object-based stewards of cultural heritage into dynamic and participatory institutions of learning. In light of this paradigmatic shift and the need to reimagine the role and functions of the museum in contemporary society, more museums are integrating the principles of diversity and inclusion into their programs. Museums adjust their strategic priorities in favor of opening their doors and their practices to all service communities, including populations with special needs.

The purpose of this study was to better understand how the museum experience can benefit children with autism by addressing the following research question: How does the museum experience influence learning and behaviors of children diagnosed with Autism Spectrum Disorder? The first two research sub-questions examined the experience of a group of high-functioning autistic children in an art museum through the lens of the Contextual Learning model. The other two sub-questions addressed the family needs and motivations for visiting museums, along with changes in the children's content knowledge acquisition.

This chapter presents an in-depth discussion of the study findings and explains how the research question and the sub-questions were answered. It also contains

reflections on the meaning of the data obtained in the course of this research. Finally, it discusses the limitations of the study and considers its implications for practice, along with recommendations for future research.

5.2 Discussion of Findings

The study's first research sub-question focused on the uniqueness of the museum experiences lived by autistic children while in an art museum. This experience was investigated in the context of the six-week access program implemented at the Columbia Museum of Art in April-May 2015. Quantitative and qualitative data were generated from parent surveys, a standardized scale, behavioral observations, on-site task evaluations, and follow-up parent interviews. Using a combination of such diverse data sources allowed the researcher to create a rich description of the museum experience for the autistic children selected for participation in the study.

Analysis of the data proved that the museum access program provided a positive and exciting experience for the children, which led to increases in their knowledge and appreciation of art, as well as their confidence level in situations requiring social interactions. Empirical data provided ample evidence that the children thrived in the museum environment due to its emphasis on engagement, inquiry-based, and free-choice learning that left the children sufficient space to express their individuality, and independent judgment of art. Specifically, the hands-on art-making activities contributed to developing the children's creativity and facilitated better retention of the art-related concepts they learned in the guided gallery tours. The positive impact of art-making activities on the children's learning was evidenced by the responses from the parent surveys and interviews.

Furthermore, the parents described the experience of learning in the museum as different from learning in the traditional classroom. Evidence from the interview responses indicated that the parents pinpointed such differences as a smaller class size and a more relaxed museum atmosphere that encouraged the autistic children to express themselves more freely due to the non-threatening nature of the museum learning. The parents alluded to the fact that in the museum learning was pressure-free because the children did not feel the burden to meet the expectations of a structured classroom. Besides, the inquiry-based learning environment enhanced by the interaction with authentic art objects proved to be more suitable for the autistic children.

These differences noted by the parents corresponded with the findings from the existing literature that point out the fact that autistic children tend to face significant challenges in the conventional classroom settings due to their reduced attention span and reluctance to engage in social interactions in front of large groups of people (Baldino, 2012; Greenspan & Wieder, 2006). At the same time, Baldino (2012) stressed the capacity of museums to facilitate learning for children with developmental disabilities through active and direct engagement with real objects, thus addressing both their intellectual and sensory needs.

A second research sub-question looked at the application of the Contextual Model of Learning (CML) to interpret the educational and social experience of autistic children in a museum. The study findings confirmed that the CML was a valid framework to examine the museum learning of the autistic children in the three specific contexts outline by the Model: personal, sociocultural, and physical. The study showed that these three contexts did play a role in shaping the museum experiences of the study participants.

Coming from different socio-economic backgrounds, they had different levels of education, different preferences in art, and varying motivations for visiting the museum, as was reflected in the parent survey responses. However, they were immensely influenced by the sociocultural context of the six-week museum program, particularly in the area of within group social mediation.

The influence of the group was very vividly stated by the majority of the parents in their interviews with the researcher. The parents noted that being part of the group motivated the children to stay actively engaged with the museum instruction and the subsequent hands-on activities. Seeing the participation of the other children in the group prompted the less outgoing participants to overcome their shyness and answer questions more frequently. Their interactions involved not only peers but also the museum educators, which created a substantial difference for the effectiveness of learning. Finally, the combination of experienced CMA instructors, the use of the Visual Thinking Strategy to teach, the orientation to the physical space that the participants received in the form of the social story, and the program itself formed the unique physical context of the museum experience for the autistic children.

The study's third research sub-question revolved around the needs and motivations of families affected by autism to visit the museum. The findings obtained from the parent pre-program survey revealed that although the parents mentioned a wide variety of motivations, the four main ones were: to be pleasantly occupied, to enjoy themselves, to get a feeling of achievement, and to expand the child's horizons. Although the parents represented families with special needs, it became evident that their purpose and agenda in visiting museums was no different from the interests pursued by all the

other museum visitors. Discovering this fact helped the researcher strengthen the argument for greater diversity and inclusion in contemporary museums and erasing the boundaries between special needs populations and typical museum learners.

The fourth research sub-question of the study inquired whether the museum experience held the potential to enhance learning in a particular cognitive domain, which in the case of this study was specifically identified as art. The study produced sufficient evidence to establish a positive influence on the participants' learning exhibited by the consistent increase in the accuracy of the tasks the children performed every week after the gallery instruction compared to the same tasks they had to complete before the instruction. For example, the children provided 26.5% more correct answers after they learned the art concepts from the museum instructor in Week 1, 16.1% more correct answers in Week 4, and 12.5% increase in Week 6. In addition, through the interviews parents shared their children's successful learning stories such as observations about warm and cool color in the rainbow, the presence of still life elements around them, and the ability to better describe their own artwork to relatives and friends. It follows that the qualitative results from the parent interviews were interrelated with the quantitative results drawn from the task evaluations because they both were indicative of the fact that the program helped to increase the children's knowledge of art and enhance their ability to retain that newly-acquired knowledge.

All four research sub-questions laid the groundwork for answering the overarching question of the study: How does the museum experience influence learning and behaviors of children diagnosed with Autism Spectrum Disorder? The researcher was able to determine that the museum experience had a profound and positive effect on the

study subjects in the areas of learning and socialization. The results from the quantitative data collected directly from the participating children through observation and task evaluations yielded convincing evidence that the children had increased their engagement in cognitive activities and improved their social behaviors. Also, these quantitative findings confirmed the parents' perception of the influence the program had on learning and confidence level of the children. The findings from the follow-up interviews showed that the parents unanimously agreed that the program succeeded in expanding the children's mind and enhancing their curiosity and interest in art, which should sustain their desire to learn in the future. One hundred percent of the parents expressed their satisfaction with the program and stated that they would like to continue to participate in museum educational programs. Lastly, all these findings were scaffolded by the scores from the Social Responsiveness Scale that was administered twice, before and after the museum program. The results of the paired sample *t*-test unequivocally demonstrated the overall statistical significance of the impact of the museum experience on the children's social behaviors, especially in the category of social cognition.

Interweaving data from multiple sources into one cohesive fabric turned out to be an efficient strategy for validating the study findings. Data triangulation enabled the researcher to visualize the impact of a special museum program on the cultural and intellectual development of a group of autistic children. The researcher convincingly demonstrated that a well-designed cultural event had a profound impact on a special needs audience. Such an impact was manifested on multiple levels, including personal satisfaction, increased socialization, cognitive engagement, and cultural enrichment.

These areas are recognized in the professional literature as vital for the overall well-being and development of autistic children (Coyne & Fullerton, 2004). However, the specific impact of a cultural intervention, defined as the museum experience, on this growing segment of the population had not been sufficiently studied and consequently was not fully understood before. Therefore, by providing a definitive answer to its main research question, the study contributed to narrowing the gap in the existing knowledge about the interplay between museums and autism and opening up new opportunities for a broader conversation about the issues of diversity, inclusiveness, and social justice in cultural institutions.

Numerous sources have investigated the medical side of autism, including causes, major impairments caused by this developmental disorder, assessment instruments, treatment options, and prognosis for future trends (Beaumont & Sofronoff, 2008; Murdock, Cost, & Tieso, 2007; Koegel, R., Bradshaw, Ashbaugh, & Koegel, L., 2014; Gentry, Wallace, Kvarfordt, & Lynch, 2010) . Other studies have examined the outcomes of school-based interventions, that is, programs implemented in the educational setting (Arick et al., 2003; Fabrizio & Moors, 2003). This attention is not accidental given the accelerated growth and the spread of autism in recent years. In fact, the Centers for Disease Control and Prevention (CDC) has established that autism is one of the fastest-growing developmental disorders (CDC, 2014), making it an issue of national concern.

There is also an extensive body of literature exploring various benefits of learning through the museum environment for regular visitors (Griffin, 1999, 2004; Schauble, Leinhardt, & Martin, 1997), such as direct interaction between students and exhibits, more positive attitudes and motivation toward learning, and a change of pace from the

regular classroom routine. It was twenty years ago that scholars stressed such outcomes of museum learning as an expanded sense of aesthetic appreciation, the development of motivation and interest, the formation and refinement of critical standards, and the growth of personal identity (Schauble et al., 1996).

It is interesting to note that all these positives seem to be closely intertwined with the core deficits of autism. However, there has been a clear lack of in-depth research dealing specifically with how museums as cultural institutions can help the autism community. The few studies that do address this issue emphasize that understanding how autistic children and their families experience the museum can broaden the museums' ability to serve such audiences (Langa et al., 2013). The literature mentioned above informed the current study by providing a platform and outlining a need for deeper and more extensive research on the nature of learning and socialization of autistic children in cultural and recreational settings. Baldino (2012) enunciated this need by connecting three crucial issues: the pressure on modern museums to reaffirm their value and relevance to society, the increasing prevalence of autism, and the growing demand for inclusive education available to all categories of learners regardless of their physical or mental ability.

The need for more formalized research is especially apparent in light of the fact that in recent years a number of programs have been initiated to target visitors with special needs in museums across the country. For example, the Museum of Fine Arts in Boston, the Dallas Museum of Art, and the New York Metropolitan Museum of Art have offered sensory workshops, classes, customized tours, and other means to create a welcoming learning environment for families of autistic children. These experiences are

designed to facilitate the children's growth including their cognitive, social, emotional, and physical development.

These initiatives usually receive positive feedback from both the families and the museum staff. However, in order to firmly embed such good practices into mainstream museum work, scholars, practitioners, and the entire autism community must move beyond just anecdotal evidence. Using a systematic approach to data gathering, the researcher successfully measured the impact of a tailored museum program on children on the autism spectrum and demonstrated evidence of change in their learning and social behavior. Therefore, this study extended previous research and filled the gap in the existing museum literature and practice regarding the impact of cultural institutions on children with autism.

5.3 Implications for Practice

In terms of its concrete contributions, the findings of this research had several significant implications for the field. First, it resulted in establishing a sustainable access program with long-term benefits for the greater Midlands community. From a broader perspective, this research fulfilled the goal of finding out how cultural institutions can be transformed to ensure equity of access to human cultural heritage for all users, regardless of their physical or intellectual ability. Therefore, the knowledge gained from this study will be useful to other museums looking to enhance their special programs to increasingly diverse local communities.

The main outcome of the study was that it proved that exposure to cultural events enhances the quality of life of children with autism by providing opportunities to engage

with art, learn, and interact with peers in a non-threatening and welcoming environment. Specifically, the study produced evidence of change in the autistic children's content knowledge and social interaction skills. The aforementioned change was noted through an increase in understanding of the exhibit content, as well as enjoyment, socialization, and creativity during the gallery tours and the follow-up hands-on art-making activities the children completed together with their parents.

The intent behind this research was to stimulate dialogue between the autism community and the cultural sector about integrating the principles of social justice into current educational practices of cultural institutions to make the museum field more inclusive and relevant to all of its service communities. The study made the case that civic engagement is the vehicle museums can use to address pressing social concerns and needs. By doing so, this research carried with it a far-reaching implication for the future of museums. The study illustrated that by diversifying their audiences to include communities with special needs museums can not only benefit those communities but also erase negative perceptions of exclusion, increase attendance, and bring new meaning to a cultural experience.

In the current economic reality, engaging communities that have previously been marginalized is a challenging task for museums but, as the CMA access program demonstrated, it can be done through partnerships, effective leadership, and organizational commitment. It became obvious that reaching out to new and diverse audiences requires that museums do something bold, innovative, and different from what they have done before. However, the benefits are far greater than the risks and uncertainties. Access programs propel museums to become active, visible players in civic

life and trusted agents of change in society. Caring has always been an integral part of the museum's mission. Historically, museums have cared for collections and artifacts. Therefore, there should be nothing to prevent them from caring for their visitors and their entire communities.

By narrating the story of a successful access program, the researcher made a compelling argument that museums should fully immerse themselves in addressing important issues of inclusion and social unity. If museums fail to recognize this need and act accordingly, they run the risk of alienating audiences with special needs, a growing segment of the population. As Long (2013) observed, if there are no communities to visit, share their lives, and engage with a museum, there will be no future for the museum.

The study has significant practical implications for different organizations and individuals working with museums and autistic communities. First, it will be useful for museum educators interested in designing effective museum education programs for special needs children. Program staff in other museums may leverage similar assessment strategies and tools to better gauge the impact of their programming on the visitors they target. The implication for museum administrators is that the study provided insights into ways to set strategic priorities, provide efficient leadership, develop collaboration, allocate resources, and re-affirm the value of the museum in the eyes of its service communities and other vital stakeholders. Second, cultural heritage consultants will find the findings of this study helpful in supporting their recommendations to other cultural institutions on the ways to design better cultural, educational, and social experience for special needs community. Third, the study is important for various program staff in other types of cultural institutions besides museums, such as zoos, aquariums, or parks. The

example of the CMA access program demonstrates that any work for special needs populations is worthwhile; therefore, other cultural institutions should continue and expand their efforts in this area.

Fourth, this research has impact for education in general and particularly for special education teachers because students who can enhance their learning in alternative settings are likely to do better when they return to their classroom. Teachers who understand the value of the museum as an educational setting will be more motivated to bring their special needs students to cultural institutions and experience learning in those unconventional environments. Fifth, the study is valuable for researchers and scholars who focus on Autism Spectrum Disorder. The study findings have proved that cultural intervention, understood as the museum experience, is another effective way to address some of the key challenges of autism. Therefore, the study posits that participation in museum activities, and learning in cultural institutions in general, may be a great supplement to traditional therapies for autism. Sixth, software designers and creators of online learning tools for children with autism will also benefit from this study because it provides a vivid picture of how these children learn, interact, and grow as individuals in cultural and recreational settings. Therefore, educational and behavioral software developers will be able to integrate this knowledge and make their products better address the real needs of autistic children.

Lastly, the study had clear-cut benefits for the participating families, and it will benefit other families with autistic children as well, by demonstrating ways in which these children can be integrated into social and cultural mainstream and take advantage of the wide variety of opportunities available to them. In other words, the study has

implications for the entire autism community by showing that autistic children who experience cultural events do better both cognitively and socially.

5.4 Limitations of the Study

There are several limitations to the current study that need to be acknowledged. The first one pertains to its scope since only ten families were selected for participation in the CMA access program. Due to the limited demographics of the study, it is not possible to generalize the results to other types of cultural institutions or to other children with autism. Nevertheless, it was a meaningful experience between the researcher and the study participants. The second limitation is related to the length of the program. Due to the feasibility and timing concerns, the museum was not able to offer the program for longer than six weeks, which would have been desirable for this type of study. A longer intervention would have allowed the researcher to collect richer and more consistent data.

Additionally, the program schedule presented another limitation. Offering the program on weekends would have made it possible for more families to participate, thus increasing the number of the study subjects. The fourth limitation was the number of graduate student observers. Due to the feasibility limitations, each observer had to observe five children at a time. Increasing the number of observers could have ensured a better representation of each participant's behavior. However, data triangulation techniques employed in the study provided ample data to fully address the research problem of the study.

Lastly, the study focused on the museum access program as the principal independent variable to affect the learning and behaviors of the autistic children.

Although the parents were instructed to keep this consideration in mind when they provided responses, there were other intervening variables outside the museum setting such as art classes at school, private art lessons, language development therapy, as well as other social or family events, that could have affected the children's learning and behaviors during the museum program.

5.5 Future Research

The results of the current exploration suggest several directions for future research. In future studies, it may be interesting to investigate in other settings the impact of cultural experience on cognitive gains and behavior changes of children on the autism spectrum. Therefore, the first line of future research proposes studying special programming initiatives not only in art museums but also in other cultural institutions, including science and children's museums, as well as zoos and aquaria. The second future direction centers on a subsequent longitudinal study involving a larger number of subjects. The intent of this longitudinal study is to further test how the experience autistic children gain in cultural institutions improves their learning and social skills and changes their behaviors over time.

Thirdly, it may be valuable to pair autistic children with typical peers as more research is warranted to investigate the effect of peer interaction on autistic children's academic growth, social development, and cultural participation. Fourthly, this study underscored the need to design evaluation mechanisms to consistently assess and quantify the impact of the cultural experience on enhancing the overall quality of life of visitors with special needs. This can be achieved by applying and testing the assessment tools used for the current study in other programs. The overarching goal of the future

research agenda is to establish a model of cultural intervention that would enable special needs populations to fully benefit from a wide range of education and outreach opportunities offered by cultural institutions.

5.6 Conclusions

This study was rooted in the belief that cultural heritage institutions, such as art museums, have untapped potential to act as instruments for promoting the ideas of diversity, equality, and inclusion. It addressed the broad issues of civic development and accessibility of human culture to increasingly diverse communities served by contemporary museums.

The research aimed to raise awareness of the need for greater community and public engagement in social justice initiatives. Its overall intention was to challenge museums and other learning institutions to better connect to their service communities and address the nationally-recognized urge for expanding the range of educational, recreational, and cultural offerings for special needs communities. This research represented an effort to quantify the value of cultural institutions and promote the view of museums as safe environments for lifelong learning open to visitors of all abilities. In all, this study was a step toward grasping the capacity of cultural institutions to reach out to users who have long been marginalized.

The study showed that participation in cultural and recreational events is associated with stimulating curiosity, enhancing knowledge, as well as developing confidence and a sense of self, thereby suggesting that cultural intervention can assist autistic children in the core areas of autism. These areas include learning through

socialization, joining play opportunities, and participating in collaborative activities with peers and parents. The impact of the six-week CMA program was fully scaffolded by the study outcomes, vividly summarized by the participating parents. Their comments attested to the fact that the program succeeded in unleashing the children's creative power and talents that would have otherwise remained hidden behind the inhibitions of autism. The program dedicated to children on the spectrum played a key role in expanding their minds, opening them to different social and cultural opportunities, along with helping them to learn better. Overall, the unique cultural program at the Columbia Museum of Art benefited the children by reinforcing both their knowledge and their social experience.

In conclusion, this study demonstrated that museums as institutions of public learning can make a difference in the lives of families affected by autism. This research contributed to furthering a culture shift within the museum community toward greater access and inclusion. Above everything else, despite its focus on the museum experience of a group of autistic children, the main lesson of the study is that increasing accessibility for differently-abled people increases accessibility for all.

REFERENCES

Adams, M., Falk, J. H., & Dierking, L. D. (2003). Things change: Museums, learning, and research. In M. Xanthoudaki, L. Tickle, & V. Sekules (Eds.), *Researching visual arts education in museums and galleries* (pp. 15-32). Dordrecht, Netherlands: Kluwer Academic Press.

American Association of Museums Standing Professional Committee on Museum Education (1990). *Statement on professional standards for museum education*. Washington, DC: American Association of Museums.

American Association of Museums Committee on Education. (2002). *Excellence in practice: Museum education principles and standards*. Washington, DC: American Association of Museums.

American Alliance of Museums. (2013). *Museums on call: How museums are addressing health issues*. Retrieved from http://aam-us.org/docs/default-source/advocacy/museums- on-call.pdf?sfvrsn=8

American Alliance of Museums. (2014). *Diversity and inclusion policy*. Retrieved from http://www.aam-us.org/about-us/who-we-are/strategic-plan/diversity-and-inclusion-policy

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.

Americans with Disabilities Act of 1990, Pub. L. No. 101-336, § 2, 104 Stat. 328 (1991).

Arick, J. R., Young, H. E., Falco, R. A., Loos, L. M., Krug, D. A., Gense, M. H., &

Johnson, S. B. (2003). Designing an outcome study to monitor the progress of students with Autism Spectrum Disorders. *Focus on Autism & Other Developmental Disabilities, 18*(2), 74-86.

Baldino, S. (2012). Museums and autism: Creating an inclusive community for learning. In R. Sandell & E. Nightingale (Eds.), *Museum, equality, and social justice* (pp. 169-180). New York, NY: Routledge.

Beaumont, R., & Sofronoff, K. (2008). A multi-component social skills intervention for children with Asperger syndrome: The junior detective training program. *The Journal of Child Psychology and Psychiatry*, *49*(7), 743-753.

Bruner, J. (1996). *The culture of education*. Cambridge, MA: Harvard University Press.

Burke, K., & Sutherland, C. (2004). Attitudes toward inclusion: Knowledge vs. experience. *Education, 125* (2), 163-172.

Centers for Disease Control and Prevention. (2014). *Autism Spectrum Disorder (ASD): Data and statistics*. Retrieved from http://www.cdc.gov/ncbddd/autism/data.html

Chang, E. (2006). Interactive experiences and contextual learning in museums. *Studies in Art Education*, *47*(2), 170-186.

Civil Rights Act of 1964, Pub. L. No. 88-352, § 703, 78 Stat. 241 (1965).

Columbia Museum of Art. (n.d.). *About*. Retrieved from http://www.columbiamuseum.org/about

Columbia Museum of Art. (n.d.). *Accessibility*. Retrieved from http://www.columbiamuseum.org/visit/accessibility

Constantino, J. N., & Gruber, C. P. (2012). *Social responsiveness scale* (2nd ed.) (SRS-2) [Manual]. Torrance, CA: Western Psychological Services.

Coyne, P., & Fullerton, A. (2004). *Supporting individuals with autism spectrum disorder in recreation.* Urbana, IL: Sagamore Publishing.

Creswell, J. W. (2011). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (4th ed.). Boston, MA: Pearson Education, Inc.

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches*. (4th ed.). Los Angeles, CA: Sage Publications, Inc.

Dallas Museum of Art. (n.d.). *Autism access programs*. Retrieved from https://www.dma.org/programs/autism-awareness

Dattilo, J., & Schleien, S. (1994). Understanding leisure services for individuals with mental retardation. *Mental Retardation*, *32*(1), 53-59.

Discovery Museums. (n.d.). *Especially for Me!* Retrieved from http://discoverymuseums.org/EspeciallyForMe

Fabrizio, M. A., & Moors, A. L. (2003). Evaluating mastery: Measuring instructional outcomes for children with autism. *European Journal of Behavior Analysis*, *4*(1-2), 23-36.

Falk, J. H., & Dierking, L. D. (1992). *The museum experience*. Washington, DC: Whaleback Books.

Falk, J. H., & Dierking, L. D. (2000). *Learning from museums: Visitor experiences and the making of meaning*. New York, NY: AltaMira Press.

Falk, J. H. & Dierking, L. D. (2008). Enhancing visitor interaction and learning with mobile technologies. In L. Tallon & K. Walker (Eds.), *Digital technologies and the museum experience* (pp. 19-33). New York, NY: Altamira Press.

Falk, J. H., & Dierking, L. D. (2012). *Museum experience revisited*. Walnut Creek, CA:

Left Coast Press.

Falk, J. H., Donovan, E., & Woods, R. (2001). *Free-choice science education: How we learn science outside of school*. New York, NY: Teachers College Press.

Fine, A. (1991). *Therapeutic recreation for exceptional children*. Springfield, IL: Charles C. Thomas Publishers.

Florian, L. (1998) Inclusive practice: What, why and how?. In C. Tilstone, L. Florian, & R. Rose (Eds.), *Promoting inclusive practice* (pp. 13-26). New York, NY: Routledge.

Florian, L. (2008). Special or inclusive education: Future trends. *British Journal of Special Education, 35*(4), 202-208.

Gardner, H. (1991). *The unschooled mind: How children think and how schools should teach*. New York, NY: Basic Books.

Gentry, T., Wallace, J., Kvarfordt, C., & Lynch, K. B. (2010). Personal digital assistants as cognitive aids for high school students with autism: Results of a community-based trial. *Journal of Vocational Rehabilitation, 32*(2), 101-107.

Glesne, C. (2015). *Becoming qualitative researchers: An introduction* (5th ed.). New York: NY: Pearson.

Golden, T., & Walsh, L. (2013). Play for all at Chicago Children's Museum: A history and overview. *Curator, 56*(3), 337-347.

Gorman, G. E., & Clayton, P. R. (2005). *Qualitative research for the information professional: A practical handbook.* London, UK: Facet Publishing.

Graham, H. C. (2013). Museums and how to know about access. *New Formations: A Journal of Culture, Theory & Politics, 79*(4), 64-82.

Gray, C. A., & Garand, J. D. (1993). Social stories: Improving responses of students with

autism with accurate social information. *Focus on Autistic Behavior, 8*(1), 1-10.

Greenspan, S., & Wieder, S. (2006). *Engaging autism: Using the floortime approach to help children relate, communicate, and think.* Cambridge, MA: Da Capo Press.

Griffin, J. (1999). Finding evidence of learning in museum settings. In E. Scanlon, E. Whitelegg, & S. Yates (Eds.), *Communicating science: Contexts and channels* (pp. 110-119). London, UK: Routledge with the Open University.

Griffin, J. (2004). Research on students and museums: Looking more closely at the students in school groups. *Science Education, 88*(1): S59-S70.

Hooper-Greenhill, E. (1999). Museums and cultural diversity in contemporary Britain. In E. Hooper-Greenhill (Ed.), *The educational role of the museum* (2nd ed.) (pp. 288-294). New York, NY: Routledge.

Institute of Museum and Library Services, (2009). *Museums, libraries, and the 21st century skills*. Retrieved from http://www.imls.gov/assets/1/AssetManager/21stCenturySkills.pdf

International Council of Museums. (2007). *Museum definition*. Retrieved from http://icom.museum/the-vision/museum-definition/

Kanner, L. (1943). Autistic disturbances of affective contact. *Nervous Child, 2*, 217-250.

Kerlinger, F. N. (1973). *Foundations of behavioral research* (3rd ed.). New York, NY: Holt, Rinehart and Winston, Inc.

Kirk, J. (2001). Accessibility and new technology in the museum. In D. Bearman & J. Trant (Eds.), *Proceedings from Museums and the Web 2001 conference*. Seattle, WA. Retrieved from http://www.museumsandtheweb.com/mw2001/papers/kirk/kirk.html

Koegel, R. L., Bradshaw, J. L., Ashbaugh, K., & Koegel, L. K. (2014). Improving

question-asking initiations in young children with autism using pivotal response treatment. *Journal of Autism and Developmental Disorders, 44*(4), 816-827.

Langa, L., Monaco, P., Subramaniam, M., Jaeger, P., Shanahan, K., & Ziebarth, B. (2013). Improving the museum experiences of children with autism spectrum disorders and their families: An exploratory examination of their motivations and needs and using web-based resources to meet them. *Curator, 56*(3), 323-335.

Long, S. (2013). Practicing civic engagement: Making your museum into a community living room. *Journal of Museum Education, 38*(2), 141-153.

Madden, J. C. (1985). To realize our museum's full potential. *Journal of Museum Education, 10*(4), 3–5.

Mertler, C. A., & Charles, C. M. (2011). *Introduction to educational research* (7th ed.). Boston, MA: Pearson Education, Inc.

Metropolitan Museum of Art. (n.d.). *Discoveries*. Retrieved from http://www.metmuseum.org/events/programs/met-creates/visitors-disabilities/discoveries

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. Thousand Oaks, CA: Sage.

Murdock, L. C., Cost, H. C., & Tieso, C. (2007). Measurement of social communication skills of children with autism spectrum disorders during interactions with typical peers. *Focus on Autism and Other Developmental Disabilities, 22*(3), 160-172.

Museum Access Consortium. (n.d.). Access at NYC cultural institutions for people with autistic spectrum disorders. Retrieved from www.cityaccessny.org/blog

Museum of Contemporary Art Jacksonville. (n.d.). *Rainbow Artists program.* Retrieved from http://mocajacksonville.unf.edu/exhibitions/Florida-Blue/Rainbow-

Artists-Exhibition/

Museum of Fine Arts Boston. (n.d.) *Beyond the Spectrum*. Retrieved from http://www.mfa.org/programs/community-programs/beyond-the-spectrum

Museum of Fine Arts Boston. (n.d.). *MFA Artful Healing*. Retrieved from http://www.mfa.org/programs/community-programs/artful-healing

Office of Special Education Programs. (2007). *Twenty-five years of progress in educating children with disabilities through IDEA.* Washington, DC: U.S. Department of Education.

Oswald, D. P., & Ollendick, T. H. (1989). Role taking and social competence in autism and mental retardation. *Journal of Autism and Developmental Disorders, 19*, 119-127.

Prizant, B. M. (1996). Brief report: Communication, language, social, and emotional development. *Journal of Autism and Developmental Disorders, 26*, 173-179.

Rapp, W. (2005). Inquiry-based environments for the inclusion of students with exceptional learning needs. *Remedial and Special Education, 25*(5), 297-310.

Rehabilitation Act of 1973, Pub. L. No. 93-112, § 504, 87 Stat. 355 (1974).

Roschelle, J. (1995). Learning in interactive environments: Prior knowledge and new experience. In J. H. Falk & L. D. Dierking (Eds.), *Public institutions for personal learning: Establishing a research agenda* (pp. 37-51). Washington, DC: American Association of Museums.

Salvia, J., & Ysseldyke, J. E. (1998). *Assessment* (7th ed.). Boston, MA: Houghton Mifflin.

Schauble, L., Beane, D. B., Coates, G. D., Martin, L. M. W., & Sterling, P. V. (1996). Outside the classroom walls: Learning in informal environments. In L. Schauble & R.

Glaser (Eds.), *Innovations in learning: New environments for education* (pp. 5-24). Mahwah, NJ: Erlbaum.

Schauble, L., Leinhardt, G., & Martin, L. (1997). A framework for organizing a cumulative research agenda in informal learning contexts. *The Journal of Museum Education, 22*(2/3), 3–8.

Schwartz, M. (2006). *Riches, rivals and radicals: 100 years of museums in America*. Washington, DC: American Association of Museums.

Shepherd, H. (2009). Inclusion and museums: Developing inclusive practice. *British Journal of Special Education, 36*(3), 140-146.

Sheskin, D. J. (2011). *Handbook of parametric and nonparametric statistical procedures* (5th ed.). London, UK: Chapman & Hall/CRC.

Smith, J. K. (1990). Methods of measuring learning. In B. Serrell (Ed.), *What research says about learning in science museums* (Vol. 1, pp. 16–18). Washington, DC: Association of Science–Technology Centers.

Smithsonian Institution. (n.d.). *Accessibility program*. Retrieved from http://www.si.edu/Accessibility

Spears, R., Tollefson, N., & Simpson, R. (2001). Usefulness of different types of assessment data in diagnosing and planning for a student with high-functioning autism. *Behavioral Disorders*, *26*, 227-242.

Stoddard, S. (2014). *2014 Disability statistics annual report*. Durham, NH: University of New Hampshire.

Story, M. F., Mueller, J. L., & Mace, R. L. (1998). *The universal design file: Designing for people of all ages and abilities*. Raleigh, NC: NC State University, Center for

Universal Design.

Stringer, K. (2014). *Programming for people with special needs: A guide for museums and historic sites*. New York, NY: Rowman & Littlefield.

Tam, K. Y., Nassivera, J. W., Rousseau, M. K., & Vreeland, P. (2000). More than just a field trip: Using the museum as a resources for inclusive secondary science classrooms. *Teaching Exceptional Children, 33*(1), 70-78.

United Nations General Assembly. (1948). *The Universal Declaration of Human Rights*. Retrieved from http://www.un.org/Overview/rights.html

APPENDIX A

USC INSTITUTIONAL REVIEW BOARD APPROVAL

UNIVERSITY OF
SOUTH CAROLINA

OFFICE OF RESEARCH COMPLIANCE

INSTITUTIONAL REVIEW BOARD FOR HUMAN RESEARCH
APPROVAL LETTER for EXEMPT REVIEW

This is to certify that the research proposal: **Pro00038494**
Entitled: *Equity of Access to Cultural Heritage: The Influence of the Museum Experience on Learning in Children with Autism Spectrum Disorders (ASD)*
Submitted by:

Principal Investigator:	Liya Deng
College:	College of Mass Communications & Information Science
Department:	Library & Information Sciences
Address:	1501 Greene Street, Davis College Columbia, SC 29208

was reviewed in accordance with 45 CFR 46.101(b)(**2**), the referenced study received an exemption from Human Research Subject Regulations on **10/30/2014.** No further action or Institutional Review Board (IRB) oversight is required, as long as the project remains the same. However, the Principal Investigator must inform the Office of Research Compliance of any changes in procedures involving human subjects. Changes to the current research protocol could result in a reclassification of the study and further review by the IRB.

Because this project was determined to be exempt from further IRB oversight, consent document(s), if applicable, are not stamped with an expiration date.

Research related records should be retained for a minimum of three (3) years after termination of the study.

The Office of Research Compliance is an administrative office that supports the University of South Carolina Institutional Review Board (USC IRB). If you have questions, contact Arlene McWhorter at arlenem@sc.edu or (803) 777-7095.

Sincerely,

Lisa M. Johnson
IRB Manager

UNIVERSITY OF
SOUTH CAROLINA

OFFICE OF RESEARCH COMPLIANCE

INSTITUTIONAL REVIEW BOARD FOR HUMAN RESEARCH
EXEMPT AMENDMENT APPROVAL LETTER

This is to certify that the revision(s) to research protocol: **Ame1_Pro00038494**

Entitled: *Equity of Access to Cultural Heritage: The Influence of the Museum Experience on Learning in Children with Autism Spectrum Disorders (ASD)*

Requested on **2/17/2015** by:

Principal Investigator:	Liya Deng
College:	Mass Communications & Information Science
Department:	Library & Information Sciences
Address:	1501 Greene Street, Davis College Columbia, SC 29208

was reviewed and approved by the University of South Carolina Institutional Review Board (USC IRB) on **2/17/2015**. The requested revision(s) do not change the current Exempt status; therefore, further IRB oversight is not required unless additional changes are requested. Because changes could result in a reclassification of the study, you must inform the IRB of any changes in procedures involving humans.

Note: All research related records, including Informed Consent document(s), if applicable, are to be retained for at least three (3) years after termination of the study.

The Office of Research Compliance is an administrative office that supports the USC Institutional Review Board. If you have questions, contact Arlene McWhorter at arlenem@sc.edu or (803) 777-7095.

Sincerely,

Lisa M. Johnson
IRB Manager

APPENDIX B

INVITATION TO PARTICIPATE IN A RESEARCH STUDY

UNIVERSITY OF
SOUTH CAROLINA

School of Library and
Information Science

Invitation to Participate in a Research Study

February 20, 2015

Dear Families,

My name is Liya Deng. I am a doctoral candidate and Cultural Heritage Informatics Leadership Fellow in the School of Library and Information Science at the University of South Carolina. I am conducting a research study as part of the requirements of my doctoral degree in Library and Information Science, and I would like to invite you to participate.

My research project is about how the museum experience influences learning and behaviors in children diagnosed with Autism Spectrum Disorder (ASD). The purpose of my study is to demonstrate that museums can provide a positive learning and cultural experience for children with ASD and can enhance their learning, independence, and social communication skills.

You will be asked to complete a brief initial screening form that will determine your eligibility to participate in this research project. It will take you approximately 3-5 minutes to complete the screening form. After reviewing the form, I will contact you if you are eligible to participate in the project.

If you are selected to be study subjects, you and your child will be invited to participate in a series of six FREE visits to the Columbia Museum of Art (CMA) during the time between April 13 and May 20, 2015. The six-week Art and Autism program is designed by museum experienced educators to tailor to the needs of autistic children. You and your child will visit the CMA in a group of eight families with high-functioning autistic children. Each visit will last approximately two hours and consist of a guided gallery tour and a hands-on art-making activity in the museum art studio. Each visit will have a different theme, such as animals, warm and cool colors, shapes, still life, landscape, etc. to create diverse and entertaining experiences for the children.

The exact times and dates of the visits will be determined at a later point, based on the museum staff and participant availability. To accommodate your child's needs, a designated quiet room will be available at the Museum so that the children can have a down time if necessary.

Before the first museum visit, you will be asked to complete a scale to evaluate the level of your child's social interaction and communication skills. This scale should take you about 15-20 minutes to complete. After the last museum visit, you will be asked to rate the same scale to help determine the improvement in your child's social interaction and communication behaviors.

Before the first museum visit, you will be asked to fill in a brief pre-program survey that will address your motivations and expectations for visiting the museum. After the last museum visit, you will be asked to fill in a post-program survey. The survey will also ask you what you think about the overall influence of the museum experience on your child.

During each of the six museum visits, your child's behavior will be observed and video recorded as he/she interacts with art, the museum instructors, and peers. The museum instructors will keep the children engaged by asking them questions to ensure proper understanding of the content throughout the visits.

I assure you that your child's participation in this project will remain confidential. The survey results, observation notes, video files, and other information I may obtain will only be used by me to complete my doctoral dissertation. Results of the study may be published or presented at professional meetings, but your and your child's identity will not be disclosed. There are no foreseen physical or emotional risks from participating in this study.

Your participation in this study is completely voluntary. There will be no additional costs to you if you decide to participate. Your child will benefit from exposure to art and unique hands-on learning environment provided by the museum. Your participation in this research may help CMA build a sustainable access program with long-term benefits for visitors with special needs in the greater Midlands community.

I will be happy to answer any questions or concerns you may have about this study at any point. You may contact me at (478) 538-3265 or by email at dengl@email.sc.edu. You may also contact my faculty advisor, Dr. Samantha K. Hastings of the University of South Carolina School of Library and Information Science, at shasting@mailbox.sc.edu.

Thank you for your consideration.

With kind regards,

Liya Deng M.Ed, MLIS
Doctoral Candidate
School of Library and Information Science
University of South Carolina
1501 Greene Street
Columbia, SC 29208

APPENDIX C

INITIAL SCREENING FORM

Please take 5-10 minutes to complete this screening questionnaire which will determine your eligibility to participate in a research study that investigates the impact of the museum experience on children with autism. Please answer each question by checking "yes" or "no" or writing your responses in the blank spaces below. If you are uncertain about some questions, please provide your answers on the basis of what you think. After reviewing the screening form, I may contact you again if you are eligible to participate.

1. How old is your child? _____

2. Has your child officially been diagnosed with Autism Spectrum Disorder?

   Yes _____ No_____

3. If you answer "Yes" to Question 2, is your child at the high-functioning end of the autism spectrum?

   Yes _____ No_____

4. When was your child diagnosed with the Autism Spectrum Disorder?
   _____

5. Does your child have any additional diagnosed psychiatric or mental health problems (Attention Deficit Hyperactivity Disorder, intellectual disability, anxiety, depression, etc.)?

   Yes _____ No_____

   If "Yes," please explain:

6. Does your child verbalize his/her needs and wants?

   Yes _____ No_____

7. Does your child have severe hearing impairments that would prevent him or her from participating in the museum visits?

Yes _____ No_____

8. Does your child have severe vision impairments that would prevent him or her from participating in the museum visits?

   Yes _____ No_____

9. Does your child have behavioral challenges such as aggression, self-injury, or running away?

   Yes _____ No_____

   If "Yes," please describe these behaviors.

10. Is your child home-schooled?

    Yes _____ No_____

11. Does your child participate at his/her grade-level academically?

    Yes _____ No_____

    If "No," please explain:

12. Can your child stay on task for a 15-30 minute period?

    Yes _____ No_____

13. Does your child participate in any extracurricular activities?

    Yes _____ No_____

14. Does your child like art or any art-related activities?

    Yes _____ No_____

15. Will you and your child be able to participate in six museum visits on either of these days and times during April 13 — May 20, 2015?

    Mondays, 4:00pm – 5:30pm _____ Wednesdays, 4:00pm – 5:30pm _____

Unable to participate on either days/times _____

16. If you are able to participate, can you commit to attending all six museum sessions?

    Yes _____ No_____

    Contact information:

    Your Name: _____

    Your Child's Name: _____

    Your Child's Gender: Male _____ Female _____

    Best way to reach you:

    By phone: _____ or by email: _____

Thank you for your cooperation!

APPENDIX D

CONSENT FORM

UNIVERSITY OF
SOUTH CAROLINA

School of Library and
Information Science

CONSENT FORM

Equity of Access to Cultural Heritage: The Influence of Museum Experience on Learning in Children with Autism Spectrum Disorders

Liya Deng

You and your child are invited to participate in a study on the influence of the museum experience on learning and behaviors of children diagnosed with Autism Spectrum Disorders. My name is Liya Deng and I am a PhD student and Cultural Heritage Fellow at The University of South Carolina (USC), Department of School of Library and Information Science. This study is part of the requirements of my degree. This form explains what you and your child will be asked to do if you decide to participate in this study.

The goal of this study is to better understand the value of the museum experience for children with special needs. I expect to have sixteen participants in the study. If you allow your child to participate, you will be asked to take part in six visits to the Columbia Museum of Art (CMA) in spring 2015. Each visit will last approximately two hours and consist of a guided gallery tour and a hands-on art-making activity in the museum art studio. During the museum visits, your child's behavior will be observed and video recorded as he/she interacts with art, the museum instructors, and peers. Both observation notes and video recordings will be securely stored in a locked location.

You will be asked to complete a scale to evaluate the level of your child's social interaction and communication skills in the beginning of the museum program. You will complete the scale again to determine the improvement after the last museum visit. The scale should take approximately 15-20 minutes to complete. In addition, you will be asked to fill in a brief survey that will address your motivations and expectations for visiting the museum. The survey will also ask you what you think about the influence of the museum experience on your child after the last visit takes place. The survey should take approximately 15-20 minutes to complete.

There are no foreseen risks associated with participating in this study. You and your child will benefit from exposure to the cultural heritage provided by the museum. Your child's

participation may also help better understand the effectiveness of the museum as a learning and educational institution for children with special needs.

Participation in this study is voluntary. You are free not to participate or to withdraw at any time without any penalty. Any information that is obtained in connection with this study and that can be identified with you and your child will remain confidential and will be disclosed only with your permission. Your responses will not be linked to your child's name or your name in any written or verbal report of this research project. There will be no costs to you for participating in this study, other than for any parking or gas expenses you may have.

This research study has been reviewed and approved by the University of South Carolina Institutional Review Board (IRB). If you have any questions about your rights in this research study, you may contact Thomas Coggins, Director of the Office of Research Compliance, at tcoggins@mailbox.sc.edu or (803) 777-7095.

If you have any questions regarding this study, please contact Liya Deng at (478) 538-3265 or by email at dengl@email.sc.edu. You may also contact my Faculty Advisor, Dr. Samantha K. Hastings of the USC School of Library and Information Science, at shasting@mailbox.sc.edu.

You may keep a copy of this consent form. You are making a decision about allowing your child to participate in this study. Your signature below indicates that you have read this consent form, agree to voluntarily participate in this study, and allow your child to participate as well.

_____
Printed Name of Your Child

_____ _____
Signature of Parent(s) or Legal Guardian Date

_____ _____
Signature of Investigator Date

APPENDIX E

PARENT PERMISSION FORM

I have read information contained in the Invitation to Participate in a Research Study about my child's participation in the visit to the Columbia Museum of Art (CMA) on Wednesdays during April 15 to May 20, 2015. I understand what the visit will entail and what my child will be asked to do if he/she wants to participate, and

_____ YES – I give permission for my child to participate in the CMA visit.

—OR—

_____ NO– I do not give permission for my child to participate in the CMA visit.

Your Child's Name: _____ Age: _____

Parent/Guardian Signature: _____ Date: _____

APPENDIX F

PRE-PROGRAM PARENT SURVEY

Please take a few minutes to fill out this brief survey and share your thoughts and perceptions about your child's upcoming experience in the museum. The survey should take about 10 minutes to complete. We appreciate your willingness to participate and value your feedback.

Survey Date:_____

Your Name: _____

Name of Child: _____

1. How did you hear about the Arts and Autism project?

2. What are your three main expectations from the Arts and Autism project?

   1.

   2.

   3.

3. Do you have any concerns before the start of the project?

   Yes_____ No_____

   If yes, please describe these concerns.

4. What are your child's major interests?

5. Has your child been to a museum before?

Yes_____ No_____

If yes, was the experience positive?

Yes_____ No_____

Please explain your answer.

6. If you answered "Yes" to Question 5, please indicate how many times in the past year your child has visited a museum.

   A. 1-3 B. 4-6 C. 7-9 D. 10+

7. What are your and your child's motivations for visiting museums? Please rate all the items on a scale of 1 to 5 where 1 is "Not Important," and 5 is "Very Important." Circle one number for each item.

Motivations	Not Important	Slightly Important	Moderately Important	Important	Very Important
To be pleasantly occupied	1	2	3	4	5
To enjoy ourselves	1	2	3	4	5
To be entertained	1	2	3	4	5
To use imagination	1	2	3	4	5
To spend time with family	1	2	3	4	5
To feel happy and satisfied	1	2	3	4	5
To socialize and build friendships	1	2	3	4	5
To discover new things	1	2	3	4	5
To connect with child's interests	1	2	3	4	5
To get a feeling of achievement	1	2	3	4	5
To challenge his/her abilities	1	2	3	4	5
To connect child with things they are learning at home/school	1	2	3	4	5
To have a change from daily routine	1	2	3	4	5
To expand child's horizons	1	2	3	4	5

Other reasons:_____

Demographics:

1. How old is your child? _____

2. What is your child's gender? Male_____ Female_____

3. What classroom setting does your child participate in? (Circle one)
   A. Inclusive
   B. Self-contained
   C. A mix of both inclusive and self-contained classes
   D. Home schooled

APPENDIX G

POST-PROGRAM PARENT SURVEY

Please take a few minutes to fill out this brief survey and share your thoughts and perceptions about your child's recent experience in the museum. The survey should take about 15-20 minutes to complete. We appreciate your willingness to participate and value your feedback.

Survey Date: _____

Your Name: _____

Name of Child: _____

1. How would you rate your child's overall experience in the museum after all of the six visits? Please circle one.

   Negative Slightly positive Somewhat positive Positive Very positive

2. Before the Arts and Autism project began, you described three expectations of the project. Can you briefly state whether any of these expectations have been met?

   1.

   2.

   3.

3. How would you rate the level of your overall satisfaction with the project? Please circle one.

   Not satisfied Slightly satisfied Somewhat satisfied Satisfied Very satisfied

Please explain your answer.

4. Have you observed any changes in your child's behavior which you believe are because of the Arts and Autism program?

   Yes _____ No _____

   Please explain your answer.

5. On a scale of 1 to 5, with 1 being is "Never Exhibited" and 5 being "Often Exhibited," please indicate how often your child exhibited the following social behaviors while visiting the museum, during the gallery tours and/or hands-on activities:

Social Behaviors	Never exhibited	Rarely exhibited	Occasionally exhibited	Often exhibited	Always exhibited
Asking and answering questions	1	2	3	4	5
Paying attention to the museum instructor	1	2	3	4	5
Following directions	1	2	3	4	5
Making requests for him/herself	1	2	3	4	5
Sharing objects and toys	1	2	3	4	5
Taking turns in conversation	1	2	3	4	5
Participating in group activities	1	2	3	4	5

6. On a scale of 1 to 5, with 1 being "Strongly Disagree" and 5 being "Strongly Agree," please rate your level of agreement with the statement: The museum experience has benefited my child in the following areas:

	Strongly disagree	Disagree	Somewhat agree	Agree	Strongly agree
Provide a sense of accomplishment	1	2	3	4	5
Provide joy	1	2	3	4	5
Increase choice and control	1	2	3	4	5
Taught how to interact with peers	1	2	3	4	5
Provide a way to comfortably meet others	1	2	3	4	5
Enhanced self-control	1	2	3	4	5
Reduced self-stimulatory behaviors	1	2	3	4	5
Improved gross and fine motor skills	1	2	3	4	5
Motivated to learn the skills	1	2	3	4	5
Increased social & communication skills	1	2	3	4	5

7. Do you think the museum experience influenced the way your child interacts with art/objects?

   Yes _____ No _____

   Please explain your answer.

8. Do you think the museum experience influenced the way your child interacts with others?

   Yes _____ No _____

   Please explain your answer.

9. What do you think about the effect the museum experience had on your child?

10. What did you like most about the Arts and Autism program?

11. Is there anything you would recommend to change about the Arts and Autism program?

12. Would you return to the museum or consider visiting other museums after you and your child have participated in the Arts and Autism program?

    Yes _____ No _____

    Please explain your answer.

13. Would you recommend this program to other parents of children with ASD?

    Yes _____ No _____

    Please explain your answer.

APPENDIX H

BEHAVIORAL OBSERVATION SHEET

Date: _____ Observer: _____ Location: _____

Beginning Time: _____ Ending Time: _____

Guided Gallery Tour				
Student Name	Ask questions (frequency)	Answer questions (frequency)	Make requests for self (frequency)	Observer notes

Record other observations/comments in the space below.

APPENDIX I

PARENT INTERVIEW QUESTIONS

1. How would you describe the experience your child had during the CMA art program?
2. Did your child have previous knowledge of or experience with art? Do you think that experience influenced his/her learning as he/she participated in the CMA program?
3. Do you think being together as a group motivated your child to learn or increased their interest? Also, do you think his/her museum experience would have been different if he/she had to visit the museum alone?
4. After the CMA program, what do you think about the museum as a learning environment compared to the traditional classroom?
5. Have you seen any evidence of learning in your child that may be related to the CMA art program? For example, have you noticed that your child has talked more about art/drawing during or after the program?
6. Which of the activities that your child participated in benefited him/her the most? Why do you think that activity gave him/her the most benefits?
7. After the six-week period, have you noticed any changes in your child's communication or behavior that may be due to the CMA art program? Does he/she show increased interest in other academic subjects and/or extracurricular activities?
8. What did your child learn from the CMA art program? What did you like best about the program?