A review of airport accessibility programs for individuals diagnosed with autism spectrum disorders: Recommendations for the development of a program at Portland International Airport

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Children diagnosed with an autism spectrum disorder (ASD) need additional support when using air travel as a mode of transportation. Airports across the United States have developed programs that address some of the behavioral, cognitive, and emotional difficulties that children with an ASD may exhibit when engaging in the airport process and while seated on the airplane. Through participation in these programs, children with an ASD may be more prepared to use air travel, and families with a child with an ASD may be able to use air travel for family vacations, to visit friends and family, and for other long distance traveling. The current project was designed to review available literature on airport assistance programs as well as the types of common difficulties likely to be encountered by a child with ASD who is attempting air travel. Specific air travel support programs were also presented and compared to identify commonalities and areas of strength. Finally, recommendations specific to Portland International Airport (PDX) were proposed. It is recommended that PDX, located in Portland, Oregon develop a program to address the needs of children with ASD and their families. This program should include three core components, including a simulation experience, a storybook, and trainings for airport personnel. Implementation of an air travel support at PDX is a necessary step in fostering independence for children with ASDs by increase accessibility in a community setting.

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A REVIEW OF AIRPORT ACCESSIBILITY PROGRAMS FOR INDIVIDUALS DIAGNOSED WITH AUTISM SPECTRUM DISORDERS: RECOMMENDATIONS FOR THE DEVELOPMENT OF A PROGRAM AT PORTLAND INTERNATIONAL AIRPORT

A THESIS

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Abstract

Children diagnosed with an autism spectrum disorder (ASD) need additional support when using air travel as a mode of transportation. Airports across the United States have developed programs that address some of the behavioral, cognitive, and emotional difficulties that children with an ASD may exhibit when engaging in the airport process and while seated on the airplane. Through participation in these programs, children with an ASD may be more prepared to use air travel, and families with a child with an ASD may be able to use air travel for family vacations, to visit friends and family, and for other long distance traveling. The current project was designed to review available literature on airport assistance programs as well as the types of common difficulties likely to be encountered by a child with ASD who is attempting air travel. Specific air travel support programs were also presented and compared to identify commonalities and areas of strength. Finally, recommendations specific to Portland International Airport (PDX) were proposed. It is recommended that PDX, located in Portland, Oregon develop a program to address the needs of children with ASD and their families. This program should include three core components, including a simulation experience, a storybook, and trainings for airport personnel. Implementation of an air travel support at PDX is a necessary step in fostering independence for children with ASDs by increase accessibility in a community setting.

Keywords: Autism, Air Travel, Airport Accessibility Programs
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Introduction

The number of children in the United States diagnosed with an Autism Spectrum Disorder (ASD) has significantly increased during the last few decades. In 2008, the Centers for Disease Control and Prevention recorded the prevalence of ASDs among 8-year-old children living within the 14 Autism and Developmental Disabilities Monitoring (ADDM) sites. ADDM sites serve as an active surveillance network for monitoring the prevalence of ASD diagnoses. Overall, the results estimated that one in 88 children were diagnosed with an ASD, suggesting an increase of 23% when the 2008 data were compared to the 2006 data, and an increase of 78% when compared to data collected in 2002 (Centers for Disease Control, 2012). Though the prevalence rates from the 14 ADDM sites may not generalize to a nationally representative sample, these epidemiological findings suggest that there are a large amount of children who are affected by ASDs. In the state of Oregon, the estimated prevalence rate of children diagnosed with an ASD is 12 in 1,000, which is the second highest rate among the 52 states within the United States (Zarembo, 2011).

ASDs are groups of disorders that impact the functioning of the affected children throughout their lifespan. Children with ASDs are often impacted by the disorder on many levels, including interpersonal relationships, education, employment, and daily activities. The influence of the disorder on the child’s family is considerable, and additional support and assistance are necessary to improve outcomes for the child and family.

In current U.S. society, air travel is a common event for most Americans. However, traveling by airplane may be extremely difficult for a child with an ASD because of the child’s deficits in social, communication, and behavioral functioning that are necessary to manage the unique aspects of an airport and airplane (Lerner-Baron, 2007). Air travel can create substantial
anxiety for parents of a child with an ASD because of unknowns in how their child will react in a novel, sensory-stimulating environment. The increased stress on families due to the behavioral difficulties associated with ASD often prevents families from traveling and engaging in everyday activities (Burrows, Adams, & Spiers, 2008). Most parents avoid air travel as a mode of transportation because of the possibility that their child will not be able to make it through the security checkpoint or will have a meltdown while on board the aircraft.

Parents of children with autism have expressed a need for additional assistance when traveling by air, but there is minimal research on the best methods to help children with ASDs and their families utilize air travel. Some research has examined useful techniques for helping children in other public environments with high stimulation such as amusement parks, museums, classroom settings, and when traveling by bus. Most literature suggests a specialized training to help the child with an ASD function appropriately in the environment is the best solution. In order for children with ASDs and their families to enjoy the benefits of air travel, there must be additional support for children with the challenging environment of an airport and airplane.

The current project reviews information available regarding established programs at airports in the United States that provide specialized assistance to children and families with ASDs. This project will examine the components of each of the established airport programs including history, philosophy, pre-event process, family preparations, training of airport personnel, clinician involvement, simulation experience, data collection, and dissemination of the program. Airport support programs for children with ASDs are a burgeoning area of interest. All established airport programs for which information was available by January 2013 were included in this review. However, given the significant rate of new programs being developed and the national interest in this topic, more programs have come into existence since this review
was conducted. The project will also examine Portland International Airport’s current approach when the families of a child with an ASD request assistance for their future air travel. Finally, this project will provide recommendations for a support program for children with ASDs at Portland International Airport.

The following literature review begins with a discussion of the diagnostic features of autism spectrum disorders as this information is essential for understanding the difficulties that may be faced by children with ASDs when attempting air travel. Next, I will examine the components of proceeding through an airport and ultimately traveling by aircraft. This section will discuss the process any passenger must complete in order to successfully utilize air travel. Following this section, I will describe the specific difficulties that a child with an ASD may be expected to exhibit when traveling by air. Specific cognitive, emotional, and behavioral components of ASD will be discussed in the context of the airport process. Finally, a brief description of the resources that are available for children with disabilities and their families at all airports in the United States will be provided.

**Literature Review**

**Features of Autism Spectrum Disorders**

Autism spectrum disorders (ASDs) are neurodevelopmental conditions that present with a pervasive impairment in the development of an individual (Johnson & Myers, 2007). The symptoms of the disorder generally manifest prior to age 3. Three disorders on the ASD spectrum are defined in the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision* (DSM-IV-TR; American Psychiatric Association, 2000) and these disorders are conceptualized along a continuum with respect to the presence and level of impairment of the symptoms: Autistic Disorder, Asperger’s Disorder, and Pervasive
Developmental Disorder- Not Otherwise Specified (American Psychiatric Association, 2000; Johnson & Myers, 2007). Children with ASDs present with clinical features that can be categorized into three domains, including impairment in social interactions, impairment in communication, and restricted repetitive and stereotyped patterns of behavior, interests, and activities.

Children with ASDs demonstrate deficits in social interactions through a lack of social skills that result in difficulty connecting with others (American Psychiatric Association, 2000). The DSM-IV-TR (American Psychiatric Association, 2000) describes four ways in which impairment in social interactions can manifest. First, children with ASDs may exhibit impairments in the use of nonverbal behaviors such as eye contact, facial expressions, body postures, or gestures to regulate social interactions. Second, children with ASDs often struggle to establish developmentally appropriate relationships with peers. Third, deficits in joint attention are common, as shown through difficulties with sharing enjoyment in an activity or object of interest with others. Joint attention is the coordination of attention between two individuals and a stimulus in the environment (Taylor & Hoch, 2008). For example, children use nonverbal behaviors such as showing, bringing, or pointing out an object to display a desire to engage another’s attention. Fourth, children with ASDs may display impairment in sharing the emotional state of another person and consequently have difficulty with social reciprocity.

The second core feature of ASDs is described by the DSM-IV-TR (American Psychiatric Association, 2000) as different verbal and nonverbal elements that impact the ability of an individual to communicate effectively. Impairment in communication can be exhibited by a delay, or absence of, the development of spoken language in conjunction with a lack of an attempt to compensate through alternative methods. For example, if a child with an ASD has the
ability to speak, impairment in communication may be demonstrated through an inability to initiate or sustain a conversation. Another characteristic of the speech of children with ASDs is a stereotyped and repetitive use of language or idiosyncratic language. This type of speech is qualitatively different than the speech of a typically developing child as there can be both an immediate and delayed repetition of words or phrases. Communication difficulties of children with ASDs are also displayed by a lack of spontaneous make-believe play or imitation of play that is developmentally appropriate. Overall, receptive language may be as impaired as expressive language and may be observed through difficulties understanding simple questions or directions. When a child has the ability to communicate with speech, conversations may be literal and concrete because expressing emotion, imagination, and abstract concepts can be challenging.

The third domain of impairment for children with ASDs is marked by restricted, repetitive, and stereotyped patterns of behavior, interests, and activities (American Psychiatric Association, 2000). Specifically, children with ASDs may demonstrate a preoccupation with one or more restrictive patterns of interests that is considered abnormal either in the intensity or the focus for the child. A child with an ASD may also exhibit an inflexible adherence to specific, nonfunctional routines or rituals, and may have difficulty transitioning between tasks or activities. Similarly, behaviors and mannerisms that are repetitive and nonfunctional are also a common feature of ASDs and can exhibited by a child with an ASD through handclapping, finger movements, rocking, or twirling (Johnson & Myers, 2007). Children with ASDs may form attachments to parts of objects that are persistent and excludes the object as a whole.

Additional common features with children with an ASD are intellectual disability and self-injurious behavior; however, these are not required for a diagnosis of ASD. Research results
indicated a wide range from 25% to 50% of comorbidity of cognitive impairment with ASDs (Johnson & Myers, 2007). Display of cognitive impairment varies significantly among individuals with an ASD, but nonverbal abilities are generally more developed than verbal abilities (American Psychiatric Association, 2000). A large disproportion in skills may also be present in which some areas are severely delayed and other areas are considerably advanced. For example, some children have unique skills, such as a young boy or girl being able to calculate dates far into the future. Self-injurious behaviors are defined as any behavior in which the child inflicts harm upon him or herself, such as head banging, biting own body parts, or pulling one’s hair. The severity of self-injurious behavior can be as minor as slapping one’s wrist gently to as severe as hitting one’s head hard enough to result in bruising or fracture. Researchers have speculated on the reasons for individuals engaging in self-injurious behavior, and these hypotheses include both biological and social environment influences. However, no overarching explanation has been established (Durand & Crimmins, 1988; Edward, 1977)

As discussed in the previous paragraphs, the spectrum of disorders as established by the DSM-IV-TR varies in the presence and severity of the presenting symptoms. Individuals with Asperger’s Disorder do not exhibit early cognitive or language impairment (American Psychiatric Association, 2000) as compared to children with Autistic Disorder. However, impairment in social interactions and restricted, repetitive, and stereotyped interests can be present in Asperger’s Disorder. In general, Asperger’s Disorder is considered to be less severe than Autistic Disorder. Pervasive Developmental Disorder, Not Otherwise Specified (PDD-NOS) is characterized by either a delay or pervasive impairment in the development of reciprocal social interactions with either verbal or nonverbal communication difficulties or the presence of
stereotyped behavior, interests, and activities. In addition, children older than 3 years who exhibit impairment in the three core areas may qualify for a diagnosis of PDD-NOS.

The preceding section was a general review of the diagnostic features of autism spectrum disorders. This review is important to provide a general understanding of the common symptoms and difficulties encountered by children with ASDs and to increase the understanding of how these developmental delays impact a child’s ability to function in their environment. One such manifestation of how ASD symptoms impact functionality is apparent in a child’s ability to utilize transportation services. A child’s ability to utilize transportation is likely to be severely impacted by their social, communication, and restricted, repetitive patterns of behavior. The following section will review the general process of air travel and how a child with an ASD may confront difficulties in this environment.

**Traveling by Airplane**

In 2009, traveling by airplane in the United States of America was considered the second most popular form of transportation for leisure travelers (MMGY Global and U.S. Travel Association, n.d.). Common reasons for leisure travel included visiting relatives, friends, zoos, museums, amusement parks, beaches, and national parks. Families that were traveling with children made up 30% of leisure travelers. During the 2009 year, family travelers took an average of 4.5 trips.

As noted, this study focuses specifically on air travel through Portland International Airport (PDX) in Portland, Oregon. Thus, it is important to review details of PDX air travel. In 2011, PDX served over 13 million travelers (Port of Portland, 2013). Among these travelers, 59% of the trips were for leisure activities, including visiting friends and relatives and for vacations (K. Murray, personal communication, November 19, 2012). As demonstrated by these
statistics, traveling by airplane has become a popular method of transportation that provides access to a range of opportunities that are not feasible, for a variety of reasons, by other modes of transportation.

**Requirements for traveling by airplane.** Traveling can be a very stressful and difficult experience. When traveling by airplane, there are factors that apply specifically to air travel, which place unique demands on individuals. In order to successfully travel by airplane, an individual must go through an established process, including checking-in to receive a boarding pass, proceeding through security, boarding an aircraft, managing the unique environment of an aircraft during flight, disembarking the aircraft, and then retrieving luggage. Not only does the individual need to abide by the defined process of traveling through an airport, but the individual must also manage the elements in the environment that may be overwhelming, such as lights, sounds, and people.

Some of the most influential factors that dictate how an individual travels are the guidelines that are enforced by the Federal Aviation Administration (FAA). The FAA is the national aviation authority in the United States that regulates all aspect of civil aviation (Federal Aviation Administration, 2012). Among the many duties of the FAA, this organization focuses on the safety of civilian travelers and works with airlines, airport personnel, and the Transportation Security Administration (TSA) to ensure that each airport follows a strict set of rules. FAA guidelines also insure that travelers comply with the requests of officials. For travelers who are focused on getting to their destination, many of the rules that are enforced by airport personnel may not be convenient to follow and make the travel experience more difficult and stressful.
In all airports, there are security checkpoints. At security, there are TSA officers that have been trained to provide the highest level of security and to treat all passengers with dignity and respect (Transportation Security Administration, 2013). At these checkpoints, travelers must wait in a line to have themselves and any of their items screened before being allowed in the boarding area. This process requires each traveler to exhibit patience, compliance with commands, and separation of personal items, including toys, for a short period of time. In addition, specific items are not permitted through security for safety reasons and must be discarded in order to proceed through security. For example, any liquid over 3oz must be discarded. If an individual has a special drink that is not available for purchase beyond the security checkpoint, this drink would need to be left behind and the individual would have to travel without it.

TSA is participating in a new type of security called Risk Based Security (Transportation Security Administration, 2013). With this process, TSA officials consider most travelers low risk and use behavioral observation and interviewing techniques to create a higher standard of security. Specifically, individuals under 12 and over 75 do not need to remove shoes. In addition, if a child is 12 and under, multiple people can walk through the metal detectors to allow minimal separation between the adult and child. While walking through the scanning machines, individuals must follow the directions of the TSA officers, maintain appropriate behavior, and communicate effectively with surrounding passengers and officers. After the security screening is complete, an individual must collect his or her belongings and proceed to the assigned gate.

In order to find the assigned gate, an individual must reference their boarding pass and follow signs throughout the airport. Upon reaching the gate, the traveler must wait until his or her assigned section is called over the loudspeakers to board the aircraft. Gate announcements
are loud to ensure that all passengers can hear them. These announcements also increase in frequency as the boarding time approaches. During this time, a traveler can purchase food and beverages from vendors within the secured side of the airport. However, it is important that any traveler remains aware of time and location so he or she does not miss the flight. When the assigned section is called over the loud speakers by the airline personnel, the individual must line up and wait his or her turn to board. If requested, passengers can board the aircraft prior to general boarding which allows for more time during the process and for additional assistance if needed. For some individuals, walking down the jetway can be overwhelming because of how the noise filters and reverberates in a metal tunnel structure.

Once on the aircraft, the passenger must find his or her assigned seat. In order for the aircraft to leave the ground, all passengers on board must be buckled with their personal items stowed away. The small space, loud air-conditioning, beeping noises, and the number of unique conditions that other passengers present with must be handled appropriately by the traveler. A traveler must interact with strangers, abide by the requests of airline personnel and the pilots, and handle unexpected situations. For children, remaining seated while the fasten seat belt sign is illuminated may be difficult. In addition, the restrooms on the aircraft are loud and small, and passengers must follow specific rules regarding the restrooms. For example, there can be no lines at the front of the aircraft and only first class passengers can use the restroom located in the first class area. One of the most difficult aspects of the in-flight experience is that once the door of the aircraft is closed and the aircraft is in the air, passengers are unable to get off the aircraft. If a passenger becomes upset, agitated, or uncomfortable during the flight, he or she must be able to manage the distress without violating FAA regulations.
When the flight arrives at its destination, passengers must disembark in an orderly manner, usually beginning with the front of the aircraft and proceeding toward the back. If the passenger needs additional time or assistance, he or she can wait to deboard until all other passengers have disembarked the plane. Often the destination airport is unfamiliar; therefore, passengers must look for signs and observe other passengers to find restrooms, baggage claim, and food places. Once a passenger leaves the secured area of the airport, he or she is not permitted to return.

Though each airport is structurally different and has different messages or music over the loud speakers, the general process of traveling through an airport and by plane is the same. Some variations that may occur during the travel process include flight delays, gate changes, lost baggage, busyness of the airport, changing personnel at each stage in the process, and the event of an emergency.

This review of general air travel experiences is an important element in understanding the complexity of the process of air travel as well as potential places where difficulties may arise for travelers. Specifically, children diagnosed with autism have developmental impairments that may result in a more difficult airport experience. The next section links together the air travel experience with the specific symptoms of ASD to address the problems a child with autism may have when participating in air travel.

**Difficulties of air travel for children with autism spectrum disorders.** This section will review the cognitive, emotional, and behavioral components of autism spectrum disorders (ASDs) that may make air travel as a mode of transportation difficult for a child with an ASD. Very little research has been completed that identifies the specific components of air travel that are difficult for a child with an ASD. Therefore, the following section uses information from
parents’ reports and professionals’ clinical judgments to understand how the features of ASDs impact air travel. In addition, research in other areas of community involvement, such as schools, museums, and other modes of transportation, were reviewed and applied to traveling by airplane.

**Novel Environments.** Traveling by airplane is a unique mode of transportation in that the process of going through an airport and boarding an aircraft does not resemble any other mode of transportation. For example, riding in a personal motor vehicle is similar to the process of riding in a bus; therefore, learning the skills necessary to travel by car may be easily transferred when learning to ride the school bus. Conversely, walking into an airport for the first time can be extremely overwhelming for any individual because of the novelty of the environment. Recurrent air travelers can navigate their way through most airports without hesitation because their experiences traveling have taught them the steps required by the airport personnel, Transportation Security Officers, and airlines. A first time air traveler must learn as he or she proceeds through the airport by incorporating cues from other travelers, personnel, and the environment, and then adjusting his or her own behavior accordingly. For children diagnosed with autism spectrum disorders (ASDs), novel environments such as an airport can be very difficult to manage because of deficits in adaptive skills compared to the general population (Poon, 2011).

Some children with ASDs have difficulty with the cognitive flexibility needed for air travel. This difficulty with cognitive inflexibility may be displayed through intolerance to change and an impaired ability to adjust to disruptions in their schedule or environment (Kourkoulou, Leekam, & Findlay, 2012). When traveling by airplane, many elements of the experience are not in the control of the traveler, such as flight schedule changes, business of the
airport, and Federal Aviation Administration requirements. As a result, a traveler must use problem-solving skills to adjust to a rapidly changing environment. Unforeseen environmental changes that a person may encounter when traveling by airplane are proceeding through a different security line, a change of gate for the airplane departure, and the varying personnel assisting throughout the air travel process of the airport. Even individuals who are cognitively intact can find the unforeseen changes associated with air travel stressful.

Cognitive flexibility is a common weakness in children with ASDs which can create difficulties when interpreting social signals, understanding rules or guidelines established by another individual, prioritizing attention tasks, and responding flexibly to encountered problems (Yerys, Wolff, Moody, Pennington, & Hepburn, 2012). Children with ASDs may exhibit difficulties with higher-order decision-making abilities that impair their ability to cope with novel stimuli in their environment (Hewitt, 2011). One research study that examined executive ability of multitasking in adolescents, found that adolescents with an ASD exhibited more difficulty completing tasks, violated more rules that were established for completing the tasks, and followed the order of the list of tasks more rigidly than adolescents who were not diagnosed with an ASD (Rajendran et al., 2011). The results found by Rajendran and colleagues emphasized the difficulties that individuals with ASDs may have when managing multiple variables in the environment, which can impair the ability of children to succeed in a novel environment like an airport.

When engaging in an environment for the first time, individuals must use information processing skills, such as observing, organizing, and planning, in order to successfully perform. Travelers must utilize executive functioning skills (i.e., higher order problem-solving and planning skills) to prioritize their attention to the onset of novel stimuli. A child with autism
may have difficulties with over-selectivity of stimuli in the environment at the expense of equally significant elements in his or her surroundings (Reynolds & Reed, 2011). In an airport environment, a child may have difficulties proceeding through the security checkpoint due to the presence of other travelers, Transportation Security Officers’ requests, and the visual and auditory stimuli from the machinery used for security screening. Research suggests that performance on tasks that require shifting attention or focus between stimuli is lower for individuals with ASDs when compared with neurotypical individuals (Goldstein, Johnson, & Minshew, 2001). Goldstein and colleagues speculated that diminished cognitive flexibility may be due to problems with arousal, orienting, filtering, and gazing. Therefore, when a child with an ASD is in an environment like an airport that requires focusing on a specific stimulus and performing a task in the presence of distracting stimuli, the child’s performance may be impaired. Due to impaired cognitive flexibility and difficulty adapting through observation, exploration, and planning, children with ASDs are likely to be challenged in a novel environment (Mackinlay, Charman, & Karmiloff-Smith, 2006).

**Sensory Processing.** Processing sensory information is a skill in which individuals engage on a daily basis. The environment consists of auditory, visual, tactile, olfactory, and oral stimuli to which an individual’s sensory system responds in a specific way in order to manage his or her environment successfully. According to Hilton (2011), 69% to 100% of children with autism spectrum disorders (ASDs) have atypical patterns of processing sensory information from their environment. Research suggests that children with ASDs have a tendency to respond to stimuli in an overresponsive, underresponsive, or sensory-seeking manner. Most children who have difficulties processing sensory input exhibit disruptive behaviors, such as self-stimulation or avoidance in response to unwelcome stimuli (Schaff, Toth-Cohen, Johnson, Outten, &
Benevides, 2011). Research has found a high correlation between sensory processing problems and maladaptive behaviors in stimulating environments (Brock et al., 2012; Lane, Young, Baker, & Angley, 2010; Schaff et al., 2011). As a result, abnormal sensory responses can lead to significant impairment in a child’s ability to function in his or her environment and can limit a child’s participation in play, social interactions, self-care, and learning activities (Schaff et al., 2011).

As noted previously, airports are extremely sensory stimulating environments and are full of auditory, visual, and tactile stimuli. Some of the stimuli in the airports are unique to the airport setting, such as the engines of an aircraft, and the novelty of sensory stimuli present in that setting. Thus, the unfamiliar environment may increase the child’s challenging behaviors (Schaff et al., 2011). When a child is over stimulated by his or her environment, the behavioral response may resemble a child tantruming or being noncompliant. Typically, airport personnel and Transportation Security Officers cannot tell by looking at the physical appearance of the child that the child is exhibiting disruptive behaviors due to sensory processing problems. In addition, disruptive behavior exhibited by older children and young adolescents can be more difficult for adults to accept and respond appropriately to than the same disruptive behavior exhibited by a toddler because of the developmental expectations that are placed on a child with regards to appropriate behavior in a public setting. Again, there are no visual cues that signal to an observer that a child is struggling with a neurodevelopmental disability that makes waiting in a line or walking through an x-ray scanner extremely difficult. According to Kern et al. (2006), data support a decrease in auditory and visual sensory sensitivity as children with ASDs increase in age. Therefore, as a child increases in age, he or she may be able to process a stimulating
environment like an airport more effectively. However, the severity of sensory processing deficits will vary for any given individual.

There are two instances in the airport process that are likely to create the most difficulty for a child with an ASD due to sensory stimulation. These instances include proceeding through the security checkpoint and boarding the aircraft. The security checkpoint requires a traveler to wait in a line, be in close proximity to other travelers, separate from personal items, and walk through a security-scanning machine. Waiting for one’s turn can be very difficult for a child with an ASD because of the impaired ability to control his or her responses to external and internal stimuli. Inhibitory control is the ability of an individual to process information in order to efficiently attain a goal, and is necessary for interacting effectively with the environment (Christ, Holt, White, & Green, 2007). With impairments in executive functioning and sensory processing, children with ASDs may engage in unusual behaviors in response to airport stimuli. Examples of these behaviors include rocking or spinning excessively, covering the ears to minimize the auditory input, or not responding to one’s name (Schaff et al., 2011). If a child responds in a maladaptive way while proceeding through security, it may be difficult for the Transportation Security Officers to do their job. Some children wear noise-minimizing headphones when outside of the house to help diminish the auditory sensitivity and allow them to manage their environment appropriately. However, when the child goes through the x-ray machine, the headphones must be removed for a brief period of time. During these few minutes, the child may have extreme difficulty filtering the auditory stimuli in the environment and have trouble functioning appropriately. For children over the age of 12, their shoes must be removed when walking through the x-ray machines. If a child has difficulties with tactile stimulation, walking without shoes can be very uncomfortable due to the hyperresponsiveness of the
somatosensory system. If a child responds in an aggressive manner due to atypical sensory processing while at the security checkpoint, being permitted beyond security may not be allowed due to Federal Aviation Administration rules. If a child becomes overwhelmed by sensory stimuli and attempts to manage their internal and external feelings through avoidance, such as bolting away from the security checkpoint area, Transportation Security Administration adherence may be violated and the safety of the child in an unknown environment may be a concern.

The boarding gate area is also another setting with high sensory input. Announcements are frequent and the congestion of people is generally higher. Once the plane begins boarding, walking down the jetway to board the aircraft or the vibrations while on board an aircraft may be difficult for a child with vestibular system issues. A child’s ability to navigate and respond to the environment in an appropriate manner is dependent on an accurate representation of his or her own body representation in space (Hilton, 2011). With disruption in this system, a child’s awareness of his or her body relative to other people or objects may be impaired. On an aircraft, there is very little personal space for each passenger, and difficulties in managing one’s own vestibular system can result in noncompliance with the requests of inflight crewmembers. Auditory stimulation on an aircraft can be higher than what an individual encounters on a daily basis due to the engines of the plane, the air circulation system, announcements over the loud speakers, the seatbelt indicators, and the noise created by other passengers in close proximity.

Overall, the process of flying can be very overwhelming for children with problems processing sensory information. The maladaptive behavioral responses that children engage in in an attempt to manage the over or under stimulation from their environment will cause disruption when a family is attempting to travel by airplane. Many parents will not travel by
airplane with their children out of fear that their child will not be able to proceed through the airport without an extremely high level of distress.

**Communication.** Communication between people can be verbal or nonverbal. Effective communication is necessary when navigating the environment, engaging in social interactions, and monitoring one’s own internal responses to the environment. Individuals engage in verbal exchanges to share information; express an emotional, physical, or cognitive state; and to seek assistance for a specific need. Nonverbal communication can involve observation in order to learn or to react to changes in the environment, the use of gestures, and reading behavioral cues of others in social situations. Children with autism spectrum disorders (ASDs) who have impaired communication abilities may exhibit difficulties with initiating and maintaining conversation, establishing peer relationships, following commands, and developing self-awareness (Muller, Schuler, & Yates, 2008).

Children with ASDs have more difficulties with communication in a community setting than in their home or in well-known environments (Poon, 2011). An airport is an example of a community setting where children with ASDs may have difficulty because of a lack of accommodation, communication, and minimal awareness regarding the specific needs of the child. When traveling through an airport, a traveler must follow the rules established by the Federal Aviation Administration and the requests of airport personnel and Transportation Security Officers. If a traveler does not abide by the rules, he or she may not be permitted to travel by air. Children with autism have difficulties with both receptive and expressive language (Maljaars, Noens, Scholte, & Van Berckelaer-Onnes, 2012). If a child is more verbal, the level of expressive language skills may be misleading to others regarding the child’s level of receptive language skills. If a child has limited language skills, a Transportation Security Officer’s or
airline personnel’s attempt to communicate with the child may be unsuccessful. A child may appear to be ignoring a request to stay seated on the aircraft, wait his or her turn to walk through the x-ray machine, or place his or her toy in the plastic bin to be scanned; however, the child’s lack of response to these requests may be a result of language impairments (Mackay, Knott, & Dunlop, 2007). Passenger noncompliance with airline personnel and Transportation Security Officers is a concern for the safety of all on board the aircraft. When a situation becomes a concern of safety, a common reaction for an individual who is attempting to control the situation is to use a harsh tone of voice and to minimize the physical distance with the person of intended communication. With an individual with autism, these techniques may not be useful or successful because of impaired receptive language skills and sensory processing difficulties. As a result, an inaccurate interpretation of the situation may be that the individual is exhibiting noncompliant behavior.

When a person is attempting to convey an internal state, such as thoughts or emotions, and the other person in the conversation does not accurately understand, it can be frustrating for both individuals involved. For a child with autism, it can be very difficult to express what he or she thinks or feels because of a lack of vocabulary and understanding of the elements of communication, such as eye-gaze, turn-taking, and tone of voice (Chiang, Soong, Lin, & Rogers, 2008). Some children who have minimal expressive language skills use communication devices, such as picture cards, signs, spelling boards, or electronic devices (Rudy & Porter, 2012) to express their thoughts. When going through security, a child must separate from the communication device for a brief period of time, which results in minimal to no ability to communicate receptively or expressively with the people around him or her. If a child is experiencing distress or needs assistance, he or she may not be able to effectively communicate
that need to the Transportation Security Officer or to parents. As a result, a child may exhibit challenging behaviors, such as property destruction, self-injurious behaviors, or odd-repetitive behaviors, to cope with the distress (Choen, Yoo, Goodwin, & Moskowitz, 2011). If the communication device is electronic, there may be difficulties during takeoff and landing when all electronic devices need to be turned off.

Impaired communication abilities can significantly impact a child’s ability to successfully participate in many community and recreational activities, such as traveling by airplane. Specially, language difficulties, deficiencies in social interaction skills, and emotion regulation problems, are likely to negatively impact a child’s ability to navigate an overwhelming and novel environment like an airport. Air travel maintains strict guidelines for those participating, and it can be nearly impossible for a child with an ASD to successfully participate without additional consideration and accommodations by airports, airline personnel, Transportation Security Officers, and other travelers.

**Current Resources Available in All Airports**

Children with ASDs are considered to have a disability under Federal regulations. As a result of the Individuals with Disabilities Act, children with ASDs may qualify for special accommodations. The following section reviews the current resources that all airports across the United States provide for travelers with disabilities. In 2011, the Transportation Security Administration (TSA), launched TSA Cares which is a program designed to assist travelers with disabilities and/or medical conditions. The program includes a toll free hotline that travelers can call to get answers about security screening policies and procedures prior to traveling. In addition, TSA Cares can help a passenger with a disability and/or medical condition coordinate additional assistance at their departure and arrival airports. TSA has created a Notification Card
that can be downloaded from the TSA website for passengers to use to notify TSA officers during the screening process of a disability or medical condition without needing to provide official medical documentation. TSA permits travelers who have a physical, cognitive, and psychological disability that makes it difficult to wait in lines to request a shorter security checkpoint line. If a separate line is not available, a passenger can request to move to the front of the screening with his or her travel companions.

Although some current resources exist for individuals with disabilities, they are minimal in nature and are unlikely to provide enough assistance to enable a child with an ASD to successfully travel. Thus, it is imperative that further steps are taken to address the needs of children with ASDs and their families who wish to travel.

**Current Aim of this Project**

The purpose of the current project is to understand the processes and procedures that will enable children with ASDs to participate in air travel. Specifically, this project aims to provide Portland International Airport (PDX) with recommendations for an airport air travel support program for children diagnosed with an autism spectrum disorder (ASD). Portland International Airport is in the process of developing programming to assist children with ASDs and their families prepare to travel by air. The current project will aid PDX in this goal by providing the research and clinical background necessary to achieve an effective airport support program.

There are a number of important steps that are necessary to design an effective program. The first goal of this project will be to review existing programs across the United States that are designed to assist individuals with autism and other developmental disorders to have a more successful experience when utilizing air travel. A second goal of the project will be to review Portland International Airport’s current practices for providing assistance for children needing
additional support when traveling. This step is important in order to understand how the implementation of a specialized program will be different from the established process at PDX airport. Third, specific recommendations for PDX will be developed using the information gathered about the specific needs of a child with an ASD, established program practices at other airports, and the needs of the stakeholders at PDX. Thus, this project is designed to provide the building blocks essential to the development of an ASD Air Travel Support Program at Portland International Airport.

**Methods of the Project: Identification of Stakeholders and Procedures**

**Stakeholders**

There are a number of stakeholders invested in the development of an ASD Air Travel Support Program. These stakeholders include the children themselves as well as their families, the administration for the airport (i.e., Port of Portland administration), airport personnel, and the airlines. Children diagnosed with an autism spectrum disorder (ASD) were considered the primary consumer and stakeholder of an airport air travel support program. The typical features of this neurodevelopmental disorder as defined by the *Diagnostic and Statistical Manual of Mental Disorder, Fourth Edition, Text Revision*, were used as a foundation for understanding the difficulties that children with ASDs may encounter with an airport setting and how it may impact their ability to travel by airplane. The families of children with ASDs were also considered as a stakeholder during the research and development of recommendations. Families are usually the primary support system for a child with autism as well as the most impacted unit for typical functioning. Families must alter their daily routine and long-term plans in order to meet the needs of their child with an ASD.
The Port of Portland is the administrative representative for the Portland International Airport (PDX) and is responsible for overseeing the development of programs. The Port of Portland was the primary investor in the development of an air travel program specifically for children with ASDs. Representatives of the Port of Portland were involved in the coordination of airport resources and establishment of contacts with other airport units, such as Transportation Security Administration and airlines. The PDX Customer Relations Manager and Customer Relations Supervisor were the two primary contacts for PDX throughout the development of the orientation program.

The Transportation Security Administration (TSA) was established to increase the nation’s transportation security and is a division of the Department of Homeland Security. The TSA was essential to involve in the development of a program for PDX because of TSA’s involvement with aviation at the federal level. Every passenger that travels by air, including children with autism, must go through the TSA screening process. A Customer Service Representative of TSA at PDX provided information on what the Transportation Security Officers need of travelers during the security screening. This representative communicated TSA concerns regarding aviation regulations being violated with a program that allows individuals through security, and how TSA can accommodate travelers with special needs.

Lastly, the airlines and airline representatives that work directly with passengers once they are beyond the security checkpoint were stakeholders in this project. Airlines are business organizations that provide the air services from one location to another. Each airline is its own company and airline administration coordinates with each airport regarding gate space and the schedule of flights. The resources among airline companies to support a program for children
with ASDs are variable. The primary airline stakeholder of the program at PDX was Alaska Airlines.

**Procedure**

Contact with the Port of Portland was established in May of 2012. At the first meeting in May, the Customer Relations Manager and Customer Relations Supervisor were present and discussed Portland International Airport’s (PDX’s) interests in a program for individuals with autism and a general timeline for implementation.

Over the next few months, contact was made with the developers of other existing airport programs, including Wings for Independence (Sacramento International Airport), Airport Autism Inclusion Program (Philadelphia International Airport), and Wings for Autism (Logan International Airport - Boston), to learn about the specific elements of each program and how the program was established. Specifically, information about the “Wings for Autism Program” was gathered at a “Wings for Autism” Workshop at Logan International Airport in Boston, Massachusetts in May 2012. Contact with the Airport Autism Inclusion Program creator and Wings for Independence creator was established through electronic mail and continued over the telephone. Information about the fourth autism program, The Autism Program (O’Hare and Midway International Airports - Chicago), was found on the program’s websites. Information from all available resources, such as personal communication, publications, news reports, and Internet blogs from parents, was used to conduct a thorough review of the established programs in airports across the United States. Examination of PDX’s current practices was conducted in August 2012 through observation of a mock travel experience of a local Portland family and their child with autism.
Contact with Portland International Airport was continued through meetings with representatives from the Port of Portland, Transportation Security Administration officers, and Alaska Airlines. A program proposal for PDX was developed and submitted to the Port of Portland in January of 2013.

**Review of Established Programs**

At the time this review was written in January 2013, we were aware of a total of four established programs in the United States that were designed to assist individuals with disabilities prepare to travel by aircraft. In order to travel by air, an individual must follow a specific process and abide by regulations that are designated by the Federal Aviation Administration (FAA). The process and rules of air travel are not encountered in a typical day; therefore, the novel environment faced when traveling can be difficult for an individual diagnosed with a developmental disability, such as autism.

In recent years, airports across the United States have developed accessibility programs to provide additional support for individuals in need of assistance. Some of the established programs are intended specifically for individuals diagnosed with Autism Spectrum Disorders, while other programs are for any individual with a mental or physical disability who may benefit from additional assistance. Three of the programs are designed to simulate an air travel experience and include an opportunity to board an aircraft that does not leave the gate. The other program is focused on helping an individual with a disability prepare for their air travel experience using a detailed pamphlet with photographs of each step of the airport process. Though the programs have similar goals, each program is unique in its structure and implementation. The characteristics of each program create distinct environments at each of the airports and offer different approaches to assist each individual who intends to travel by airplane.
A majority of the information used to review the five established programs was obtained through personal communication with each program’s creator. There is currently minimal published documentation regarding the organization, structure, and implementation of each program. Further, programs are discussed on different types of social media through online networks by a variety of individuals, including parents, advocates for individuals with autism, airport personnel, program creators, and online news reporters. These sources were reviewed for further details about the programs. Information reported by parents includes a review of their experiences participating with their child in one of the programs. In addition, advocacy agencies, such as Autism Speaks, provide information and resources to families about programs and services in the community that are designed to assist individuals of all ages. Online news networks have interviewed program creators, airport personnel, and parents regarding the three established simulation programs and have reported useful information about the structure of each program. Information regarding each of the programs can also be accessed through the corresponding airport’s website. The information on each program that was gathered through communication with the program, online resources, and published documents was organized by program according to history, philosophy, pre-event process, family preparations, training, clinician involvement, simulation experience, data collection, and marketing. Each of these areas is detailed further in the following sections.

Wings for Independence

**History of program.** Wings for Independence is a program designed to assist individuals with any disability and their families when traveling at Sacramento International Airport. The program was designed by Megan Minnema of Learning Solutions Kids, Inc. in January of 2012 (M. Minnema, personal communication, July 9, 2012). Ms. Minnema has
earned a Masters Degree in Teaching and Applied Behavioral Analysis, and has experience working with children with special needs in both school and home settings since 2003 ("Learning Solutions Kids, Inc.", n.d.). This program is sponsored by JetBlue Airlines at the Sacramento Airport and the first event took place in February 2012 (M. Minnema, personal communication, July 9, 2012). A flight simulation experience occurs approximately bimonthly at the Sacramento International Airport. As of July 2012, Wings for Independence had held three events (M. Minnema, personal communication, July 9, 2012).

**Philosophy of program.** Wings for Independence provides individuals with any mental or physical disabilities, including Autism Spectrum Disorders, the opportunity to practice flying without leaving the ground. Wings for Independence is a realistic simulation of a flight experience that includes the ticketing and checking-in process, security check point clearance, boarding process, in-flight expectations while in the cabin of an aircraft, and baggage collection (M. Minnema, personal communication, July 9, 2012). The program allows for individuals and families in the greater Sacramento area the opportunity to attend the program on multiple occasions in order to practice and repeat the steps necessary for air travel until they can be successful. Approximately half of the individuals and families have attended two out of the three events. The Wings for Independence program hopes to make traveling by airplane more accessible for families and children with Autism Spectrum Disorders.

**Pre-event process.** Megan Minnema acts as a liaison between the families participating in the program and the airport (M. Minnema, personal communication, July 9, 2012). In order to meet Federal Aviation Regulations, all individuals participating in the event must be cleared for security. Ms. Minnema gathers all of the participants’ information necessary for security, including name and date of birth, and provides a list of participants to JetBlue airlines. JetBlue
airline personnel prepare gate passes for the “passengers” prior to the event and ensure that all participants are allowed to proceed through security.

**Family preparations.** For each simulation event, participants are encouraged to pack luggage and prepare the household as if it were the day of actual travel. Part of the practice experience includes baggage check to give the child with autism a realistic flight simulation experience (M. Minnema, personal communication, July 9, 2012).

**Training of airport personnel.** In addition to the flight simulation experience, Megan Minnema developed a training program for Sacramento Airport personnel (M. Minnema, personal communication, July 9, 2012). Prior to the first event in February of 2012, Ms. Minnema led a training and information session with Sacramento Airport’s General Manager, Head of Customer Service, Head of Transportation Security Administration (TSA), and Head of JetBlue Airlines. She instructed them on possible behaviors that may occur, how to respond, and possible questions parents may ask. Each department head is responsible for training the personnel in their department who will be present during each event. Ms. Minnema is available at each event to assist airport personnel and TSA officers, but no formal training is conducted.

**Clinician involvement.** Megan Minnema and volunteer clinicians are present during the entire event to provide individuals and families assistance (M. Minnema, personal communication, July 9, 2012). The volunteer clinicians are professionally trained in behavioral therapy and have experience working with individuals with disabilities.

**Simulation experience.** Families arrive at the airport and proceed to a JetBlue check-in counter designated for the Wings for Independence participants only (M. Minnema, personal communication, July 9, 2012). The number of airport personnel at the counter is dependent on the number of families attending the event.
After checking their luggage and receiving their security pass, the participants proceed to the security check point (M. Minnema, personal communication, July 9, 2012). Transportation Security Administration (TSA) is notified prior to the event that individuals with communication and physical disabilities will be coming through security. There is no separation from other travelers while at the security checkpoint. When individuals and their families actually travel, there will be other passengers in line at the security checkpoint; thus, the Wings for Independence program emphasizes the importance of practicing in a realistic setting.

Once through security, participants are directed to the designated gate where a JetBlue plane is located (M. Minnema, personal communication, July 9, 2012). Announcements at the gate are similar to those that would be made during an actual boarding process, including instructions on when and where to line-up to board the aircraft. As participants are boarding the aircraft, they are instructed be seated. There are six volunteer flight attendants present while participants are on board the aircraft. The participants are on board the aircraft for approximately 40 minutes. During this time, the flight crew performs the routine announcements and turns on sounds and lights that would occur during an actual flight. After 40 minutes, the participants disembark the aircraft and go to baggage claim to collect their luggage. The participants’ luggage is transported by a Wings for Independence volunteer from the check-in counter to an area in baggage claim to provide the participants a complete flight simulation experience. No announcements are made over the airport loud speakers regarding the event.

**Data collection and program evaluation.** There is no official collection of data on the Wings for Independence program at this time. Individuals and families who are involved in therapy that focuses on collecting data on daily activities are encouraged to record their experience of the airport simulation (M. Minnema, personal communication, July 9, 2012).
Wings for Independence is in the process of developing a system to collect data on the participants’ experience and the effectiveness of the program. The data collection process is anticipated to gather baseline data to know the children’s developmental difficulties prior to the experience, difficulties experienced during the event, and overall satisfaction of the families with the program. Data collection will also include information regarding the individual’s actual travel experience after participating in the program.

**Marketing and dissemination of information regarding the program.** Individuals and families learn about the program in two ways (M. Minnema, personal communication, July 9, 2012). Megan Minnema is associated with agencies in which half of the individuals who participate are receiving therapy. The other half of the participants have learned of the program through various community outreach organizations and blogs for parents of children diagnosed with autism. Once an individual has participated in the event, he or she is notified through a mailing list of the upcoming events.

**Airport Autism Inclusion Program**

**History of program.** The Airport Autism Inclusion Program is an established airport accessibility program at the Philadelphia International Airport. The Airport Autism Inclusion Program is one of many programs developed through a nonprofit organization, Autism Inclusion Resources, LLC., that assists families affected by autism with participation in community activities (Autism Inclusion Resources, 2012). The Airport Autism Inclusion Program was developed in 2011 by Wendy Ross, M.D., a developmental pediatrician, to provide families with children diagnosed with autism and other social or cognitive difficulties the opportunity to take the necessary steps in preparing for flight (Ross, 2011). Prior to the development of the autism accessibility program in Philadelphia, Dr. Ross was a member of a multidisciplinary team,
including an occupational therapist, speech and language therapist, and psychologist that worked to improve museum accessibility for children with autism. After a patient of Dr. Ross’s experienced extreme difficulty flying, she was inspired to increase the awareness of communication and behavioral difficulties of individuals with autism at airports and to create opportunities for individuals with autism to have a positive flying experience (Ross, 2011). The Airport Autism Inclusion program provides the opportunity for individuals who struggle in situations with novel sensory stimuli or who have a high demand for communication, to experience the air travel process in a step-by-step manner and progressively work toward an end goal of successful air travel (Autism Inclusion Resources, 2012; Ross, 2011).

**Philosophy of program.** The Airport Autism Inclusion Program was developed from a general model developed by Dr. Ross (2011) that can be applied to various community settings. The model is composed of five parts that involving preparation of the families and organizations, practical experiences in a controlled environment, facilitation of experiences in a community setting, integration of the experiences in the community setting with an individual’s learning and developmental of skills, and the generalization of skills to other settings and with other people (Ross, 2011). The model for inclusion was built on the foundation that individuals affected by autism have considerable difficulties in novel and social situations and the development of skills in the community setting will be more beneficial for the individual than learning only in the clinical setting. The inclusion programs target individuals from a young age to increase community participation with the intention of positively affecting the individual’s developmental trajectory (Autism Inclusion Resources, 2012).

**Pre-event process.** The Airport Autism Inclusion Program requires preparation by the families and the airport prior to each event. Clinically trained staff interview families that are
interested in participating in the program in order to gather information on the individual with autism’s specific needs and abilities. Preparation for each event includes completing background checks for each participant prior to the day of the event and printing a gate pass for each person who will be proceeding through the security checkpoint (Ross, 2011).

**Family preparations.** Each family is provided a booklet, *Airport Social Stories*, created by Carol Gray, the creator of Social Stories™ (Ross, 2011). The Social Story™ edition *Airport Social Stories* uses pictures taken at Philadelphia International Airport that are paired with stories to form a method of communication and skill building for individuals preparing for air travel (Gray, n.d.). There are three stories in *Airport Social Stories* that convey key concepts of practicing, waiting, and preparing for flight.

**Training of airport personnel.** A training with airport, airline, and Transportation Security Administration personnel was incorporated in the preparation stage to prepare the Philadelphia International Airport for the spectrum of communication, sensory, and behavioral abilities of individuals that would be participating in the program and traveling in the future (W. Ross, personal communication, June 8, 2012). A full day of training was held prior to the initial Airport Autism Inclusion Program event that was structured in 30-minute sessions per group to provide the opportunity for all interested personnel to receive the training. The content of the training focused on bringing awareness to the common characteristics of autism and providing personnel with strategies to facilitate positive and successful interactions with passengers with autism and their families (Autism Inclusion Resources, 2012; W. Ross, personal communication, June 8, 2012).

**Clinician involvement.** Clinicians are present during each simulation experience at Philadelphia Airport. Each family participating in the Airport Autism Inclusion Program is
assigned a clinician to provide support for the individual with autism and family if needed (W. Ross, personal communication, June 8, 2012). The clinicians have experience working with individuals with autism and are familiar with the individuals and families that they are assisting during the simulation experience (W. Ross, personal communication, June 8, 2012). Clinicians are encouraged to participate in the program to learn how to work with individuals in a community setting, rather than a controlled clinical setting where it may be more difficult for some individuals to naturally generalize skills (Autism Inclusion Resources, 2012).

Simulation experience. The second phase of the Airport Autism Inclusion Program is the mock flight where families and personnel engage in all activities that would occur during an actual air travel experience, except for the wheels of the aircraft leaving the ground (Ross, 2011). This experience is an opportunity for a community experience without a financial commitment or time constraint. Airport, TSA, and airline volunteers of Philadelphia International Airport are present on the day of the event to create a realistic check-in process, security check, and onboard experience (W. Ross, personal communication, June 8, 2012). At check-in, families drop their luggage off at the counter and are given a gate pass for each person. Volunteer personnel take the families’ luggage to an area in baggage claim where it will be picked up by the family after the onboard experience.

The next step is for families to proceed through security. The Philadelphia International Airport security requires that for every three unticketed passengers, as the participants in the program are defined, one high security clearance individual must be present to escort the individuals to the gate area (Ross, 2011).

Once through security, families proceed to the designated gate to wait to board the aircraft (Ross, 2011). Families continue their simulation experience by boarding the aircraft for
approximately 1 hour. During this time, inflight crew members perform the take off and landing protocol, including activating the lights and sounds that would typically occur during a flight. Families are served a snack and given the opportunity to use the restroom and to walk about aircraft. After the flight experience, families disembark the aircraft and proceed to baggage claim to collect their luggage.

**Data collection.** The goal of the program is to give an individual with autism the best preparation and learning experience that will ultimately assist him or her when traveling by airplane (W. Ross, personal communication, June 8, 2012). The program is built with the intention of best practice, which involves adjusting various aspects of the program based on outcome data (Autism Inclusion Resources, 2012). The clinicians are responsible for collecting data on training, preparation process and material, and each practice experience. Dr. Wendy Ross and colleagues are intending to use the data to measure the efficacy of the program and to guide the future operations of the program (W. Ross, personal communication, June 8, 2012). In addition, the data will assist other airports in replicating the Airport Autism Inclusion Program by informing others of the essential aspects of the program and how to implement the program effectively (W. Ross, personal communication, June 8, 2012).

**Marketing and dissemination of information regarding the program.** Information about the program at Philadelphia International Airport can be found on the PHL website as well as the Autism Inclusion Resources LLC website. The Autism Inclusion Resources LLC website describes the program, reports families’ experiences with the program, and provides contact information for future participation. The Autism Inclusion Resources LLC organization is not exclusive to helping families travel by air, but provides additional services to assist individuals with autism in community events. Through the organization’s involvement in other areas of the
community, information about the Autism Airport Program has been disseminated and this has facilitated participation. Currently, the Autism Airport Program is not being implemented at any other airport. Dr. Ross’s involvement in the development of this program at other airports is necessary (W. Ross, personnel communication, June 8, 2012) for this program to be adopted.

**Wings for Autism**

**History of program.** Wings for Autism (WFA) is a program developed for individuals with Autism Spectrum Disorders and their families that was designed to provide them the opportunity to explore the airport and practice traveling through Logan International Airport in Boston, Massachusetts (“Boston Logan,” 2012). Jennifer Robtoy, M.Ed., Director of Autism Support Services at The Charles River Center, and Brad Martin, Deputy Director of Aviation Customer Service of Massachusetts Port Authority, co-created Wings for Autism in 2011 (J. Robtoy, personal communication, May 18, 2012). Ms. Robtoy has prior experience as a Developmental Specialist for Early Intervention for children diagnosed with Autism and is currently working with families and children with Autism through The Charles River Center located in Needham, Massachusetts (“Boston Logan,” 2012). The Charles River Center is a non-profit advocacy and social service agency that provides community based programs for children and adults with intellectual and developmental disabilities (“The Charles River Center,” n.d.). Ms. Robtoy was inspired to create WFA after a family she was working with through The Charles River Center experienced an unsuccessful attempt to travel with their son who is diagnosed with Autism (J. Robtoy, personal communication, May 18, 2012). Ms. Robtoy contacted Mr. Martin who has experience overseeing various customer service activities to discuss the options Logan International Airport provides for individuals needing additional
services, thus forming the foundation of WFA (B. Martin, personal communication, May 18, 2012).

WFA was designed as a full-day event for families to be exposed to the entire airport process without a financial commitment or time constraints at Logan Airport (J. Robtoy, personal communication, May 18, 2012). The first event was held in the Spring of 2011 and included approximately 75 children diagnosed with Autism Spectrum Disorder and various members of their family (J. Robtoy, personal communication, May 18, 2012). A total of 200 people attended the first event which required one JetBlue aircraft. The second event was held in Fall 2011 and included approximately 110 children diagnosed with Autism Spectrum Disorders and various members of their family. The increase in the number of participants to a total of 425 people required two JetBlue aircrafts. The third event was held in the Spring of 2012 and included 175 children diagnosed with Autism Spectrum Disorders and various members of their family. The growth of WFA participants to 500 people were adequately accommodated by JetBlue and United Airline aircrafts.

**Philosophy of program.** Wings for Autism (WFA) was developed to provide a realistic simulation of the air travel process, including elements of waiting, noise, and crowds (Agudelo, 2011). WFA’s full-day event opens areas of the airport for participants to become familiar with various aspects of traveling by airplane, such as security, boarding protocol, and the aircraft itself (J. Robtoy, personal communication, May 18, 2012). The creators and supporters of WFA intended for the program to decrease parents’ anxiety regarding the unknown behavioral responses of their children with autism placed in an unfamiliar setting. Jennifer Robtoy, co-creator of WFA, acknowledged that some parents may learn that traveling with their child by airplane may require additional preparation, while others may discover that their child has
minimal problems with the process (J. Robtoy, personal communication, May 18, 2012). One of the mothers who participated with her child during all three WFA events explained that her son exhibited difficulties proceeding through the process at different stages during each of the three events, initially walking down the jetway, then buckling the seatbelt on the aircraft, and finally going through security (S. Little, personal communication, May 19, 2012). These difficult incidents suggested that her son would need additional preparation prior to actual travel.

The creators of WFA intend to assist other airports across the United States with hosting WFA events (J. Robtoy, personal communication, May 18, 2012). The WFA program is visibly and easily recognized by an airplane and puzzle piece symbol logo that can be worn by a child with autism as a sticker to indicate the need for additional assistance to airport officials nationwide.

Pre-event process. Prior to the scheduled Wings for Autism (WFA) event, interested families contact Jennifer Robtoy via The Charles River Center to register free of charge (Agudelo, 2011). All participants must provide their full legal name and their date of birth in order to receive a gate pass to proceed beyond security (J. Robtoy, personal communication, May 18, 2012). Ms. Robtoy organizes all of the participants’ information and reports to Brad Martin, Deputy Director Aviation Customer Service and co-creator of WFA. Mr. Martin is the correspondent between Ms. Robtoy and Logan Airport. Mr. Martin gives the contact information of each participant to JetBlue Airline officials who print gate passes prior to the day of the event in order to increase organization and efficiency on the day of the event. Due to the large number of participants at each WFA event, it is necessary for the boarding passes and security screen of participants to be completed prior to the event.
A minimum of two meetings are held prior to the event to encourage communication between The Charles River Center, Logan Airport officials, JetBlue Airline representatives, and Transportation Security Administration (TSA) officials (J. Robtoy, personal communication, May 18, 2012). The meetings ensure there will be an appropriate number of airport staff, airline officials, and TSA officials present on the day of the event. The meetings also include preparations for a reception that is held after the completion of the simulation experience. The reception includes beverages, snacks, and souvenirs, such as WFA t-shirts and stickers, as well as the opportunity for the participants to interact with pilots and supporting crewmembers.

**Family preparations.** Approximately 1 month prior to each Wings for Autism (WFA) event, a detailed packet of information is mailed to each family that will be participating in the upcoming event (J. Robtoy, personal communication, May 18, 2012). The packet outlines information regarding the location, time, and the general progression of the day’s events. The first three WFA events were held in the International Terminal of Logan Airport on a Saturday morning. The international terminal was chosen because of the minimal passenger traffic and departing aircrafts in the terminal on Saturdays. As the number of WFA participants increased in the second and third event, participants were assigned a color group, which indicated their designated time to check-in and start the simulation experience. During the third event, there were three color groups with each start time staggered at 1-hour intervals (B. Martin, personal communication, May 19, 2013). Dividing the participants into separate start times permits three aircraft boarding simulations while minimizing the duration of the event. Also included in the participant’s packet is a list of items that are approved and not approved to travel through security to increase the efficiency on the day of the event. A picture story book is given to each family to help the child with autism prepare for the WFA event and increase the predictability of
what will occur when traveling through an airport (Goring, 2012). During the weeks prior to the WFA event, Ms. Robtoy is in contact with many of the families in order to answer questions, communicate changes, and to register additional participants (J. Robtoy, personal communication, May 18, 2012). Special requests by families for wheelchairs, assistance with other disabilities, a child’s allergies, and a child’s specific fears are prearranged by Ms. Robtoy and Mr. Martin to provide the necessary support for each child’s air travel rehearsal experience (J. Robtoy, personal communication, May 18, 2012).

**Training of airport personnel.** The Wings for Autism (WFA) program incorporates a training component for the Transportation Security Administration (TSA) officers and volunteer airline personnel involved on the day of the scheduled event. Approximately 30 minutes prior to the start of each event, all personnel gather for 10 to 15 minutes of training led by Jennifer Robtoy. Ms. Robtoy focuses on the visible and nonvisible behavioral characteristics of a child diagnosed with autism and the spectrum of abilities of the children that are participating in the event. Ms. Robtoy emphasizes the importance of asking the parent or guardian of the child with autism about the best ways to communicate with the child. In addition, Ms. Robtoy informs the volunteers of the various devices that may be worn or used by a child with autism, such as noise cancelling headphones, communication devices, and *LoJack* tracking devices, to increase the awareness of the difficulties that may be encountered while participants proceed through security. The training focuses on educating personnel of the common behavioral characteristics of children with autism to increase awareness about Autism Spectrum Disorders to the airport community (Goring, 2012; J. Robtoy, personal communication, May 18, 2012)

**Clinician involvement.** As a key supporter of Wings for Autism (WFA), The Charles River Center provides between two and four volunteer behavioral aides to assist with the WFA
event (J. Robtoy, personal communication, May 18, 2012). These volunteer clinicians have experience working with children with autism in a therapeutic setting and are familiar with the philosophy of WFA. At each event, the clinicians wear a designated WFA t-shirt and nametags so parents, TSA officers, and airport personnel can identify them if additional assistance is needed (J. Robtoy, personal communication, May 18, 2012).

**Simulation experience.** Wings for Autism (WFA) is a full-day event for the Logan Airport personnel, Transportation Security Administration (TSA) officers, and volunteer airline crew. The day begins by parents parking in the designated WFA parking area specified in the packet provided to families in the weeks prior to the event (J. Robtoy, personal communication, May 18, 2012). Families proceed to the international terminal of Logan Airport where the WFA volunteers are prepared for their arrival (Agudelo, 2011). There are signs and volunteer airport personnel with WFA stickers directing the participants to the appropriate check-in counter. As families arrive, they are encouraged to line up at the ticket counter with their child to practice the process of waiting in a line, a key component of actual travel. At the ticket counter, each participant receives a gate pass that allows him or her to proceed through security and board the aircraft. All participants have been screened by security personnel prior to the day of the event to ensure all participants are allowed to enter a secured area of the airport (J. Robtoy, personal communication, May 18, 2012). Therefore, all gate passes are printed prior to the arrival of WFA participants and organized by name in filing boxes to promote efficiency. If families bring a suitcase to the event, they must take it with them through security. There is no luggage check process at the WFA event.

As participants receive a gate pass, they proceed to the security check-point that is designated for WFA participants only. The TSA security check is completed according to
Federal Aviation Administration standards, including a body scan of each participant and an x-ray of any material belongings of participants. During the third event, approximately twelve to fifteen TSA officers were present. TSA allows pictures to be taken through the screening process at Logan Airport (J. Robtoy, personal communication, May 18, 2012). Taking pictures of the security process is encouraged by WFA to provide an opportunity for the individuals with autism to reference the security check experience in hopes of future travel.

After participants complete the security screening, they are told to follow the signs to their assigned gate for the simulation flight experience. There are WFA signs and volunteer airline personnel in the surrounding areas to help parents navigate the airport. Concessions remain open during the WFA event and typical Logan Airport announcements are made on the overhead speakers. Upon reaching the assigned gate, families remain in the gate waiting area until it is time to board. The boarding experience is similar to an actual boarding process, including announcements made by the volunteer airline crew, standing in line to board the aircraft, and walking down the jet way. While on the aircraft, families are allowed to choose their preferred seat, with the exception of the emergency rows. The procedure on the aircraft mirrors the actual process with elements, such as safety talks, seat belt signs, noises, and lights. WFA only boards 1/3 of the aircraft at any one time because of the possible difficulties the children with autism may have while boarding the aircraft and the slow pace of the practice experience. Each group of participants remains on the aircraft for 15-20 minutes. As one group deboards the aircraft, the next group is prepared to board for their practice experience. All aircrafts used for the WFA event must be available for approximately 6 hours. One hour is needed to position the aircraft at the designated WFA event gate where the aircraft will remain for approximately 4 hours, and then 1 hour is required to clean and position the aircraft for its next commitment.
Airline personnel, including in-flight crew and pilots, wear their full uniforms during the WFA event. At the third WFA event, eight volunteer pilots were present for the two aircrafts. In total, twenty-five to thirty airline personnel were present at the third WFA event and dispersed as needed to the check-in counter, boarding area, and on the aircraft.

As participants complete the flight simulation experience, they may proceed to the WFA reception area located within the secured area of the international terminal. The reception includes refreshments, cake, cookies, and WFA stickers and t-shirts for the children. After airport personnel, TSA officers, and volunteer airline crew complete their duties, they are encouraged to join the families at the reception.

**Data collection.** There is no method of evaluation of Wings for Autism (WFA) events at this time. The Charles River Center has gathered feedback from parents who have participated in the first three WFA events. Many families have reported that the event allowed them to discover whether their child with autism could travel by airplane prior to booking a flight and hotel for an actual vacation (Goring, 2012; J. Robtoy, personal communication, May 18, 2012). Parents have expressed concerns regarding the return flight, layovers, and the unknown of what may happen when the doors of the aircraft are closed and the aircraft is in flight (J. Robtoy, personal communication, May 18, 2012).

**Marketing and dissemination of information regarding the program.** The number of participants in Wings for Autism (WFA) at Logan International Airport has grown at each simulation event. Information regarding each event has been communicated through Logan Airport, The Charles River Center, parents, and the media. Logan International Airport’s website includes a link designated to WFA and provides the contact information for The Charles River Center (“Massport,” 2013). As one of the main supporters of WFA, The Charles River
Center informs families that seek services through the center of this opportunity at Logan Airport. One of the most prominent forms of communication regarding past and future WFA events is through blogs written by parents of children with autism who have participated in a WFA event and Autism websites, such as Autism Speaks. In addition, the local media was present at all three of the WFA events, resulting in online and televised reports.

The popularity of the three WFA events at Logan International Airport has resulted in WFA events being scheduled at airports across the United States, including Burbank Bob Hope Airport and New York John F. Kennedy International Airport (Irwin, 2013). Ms. Robtoy and The Charles River Center have continued to maintain ownership in the expansion of the WFA events at other airports. Ms. Robtoy has worked closely with the airport personnel and TSA at other airports to ensure that all the WFA events are conducted in a similar manner as the original program at Logan International Airport. The dissemination of the WFA model to other airports is initiated following permission from Ms. Robtoy and The Charles River Center and is completed with the hopes of creating a nationally acclaimed program that can be identified through the WFA symbol.

**The Autism Program Airport Accessibility Kits**

**History of the program.** The Autism Program of Illinois (TAP) is a network of resources for children with autism spectrum disorders and their families (“The Autism Program,” 2011). This program was developed in 2003 by The Hope Institute for Children and Families. TAP partners with community agencies in order to offer programs and services that are founded in best practice standards and current research. To assist individuals in navigating the community, TAP began the Accessibility Initiative. One of the accessibility programs developed by TAP is the Airport Accessibility Kits. TAP partnered with the Chicago Department of
Aviation, The Hope Institute for Children and Families, and the Have Dreams program to create the Airport Accessibility Kit. The goal of the Airport Accessibility Kit is to provide tools and assistance to prepare the individual with an ASD for air travel.

The Airport Accessibility Kits are a Social Guide that describes the airport process in a book format using pictures that are paired with words and phrases (“The Autism Program,” 2011). There are three kits that are designed for individuals of varying levels of cognitive ability. Level 1 includes the most basic pictures of the airport process that are paired with short phrases. Level 3 is the most advanced kit and includes detailed pictures and a written explanation of what is involved at each stage of air travel. All three kits review the three main parts of air travel, including Checking In, Security, and After Security.

**Philosophy of the program.** The philosophy of the Accessibility Initiative is to help individuals utilize community resources and become involved in community activities (“The Autism Program,” 2011). The goal of the Airport Accessibility Kit is to make traveling by airplane more accessible and enjoyable for individuals with ASDs and their families. The kits are intended to provide preparatory resources for air travel. The kits are designed to inform the individual about what to expect in the airport setting and to increase the individual’s independence in the community.

**Pre-event process.** Unlike the three programs that were reviewed in the previous sections, this program does not have a simulation experience. Therefore, there is no information regarding a pre-event process.

**Family preparation.** The Airport Accessibility Kits are intended to be used by the individual with an ASD to prepare for the air travel experience. With children, these kits can be used prior to the family’s scheduled air travel to discuss with the child what to expect when in an
airport and on board an aircraft. The kits can also be brought to the airport on the actual day of travel to help the child pair the photographs from the kit to his or her actual experience in the airport.

**Training of airport personnel.** The Chicago Department of Aviation (CDA) began a training program called the Enhanced Awareness Initiative at Midway and O’Hare Airports (Chicago Department of Aviation, 2013). Through this program, the CDA is working with airport employees to increase awareness and knowledge regarding autism spectrum disorders and other disabilities. At the time of this review, there was no information on the frequency of the CDA trainings, who received the training, and details about information taught at the trainings. The employees that participated in the Enhanced Awareness program received purple airplane pins which are meant to signify to passengers that these personnel may be able to provide additional assistance. The purple airplane pins are also worn by travelers with an autism spectrum disorder or other disability as an identifying symbol for security personnel and airline personnel at Chicago’s airports to indicate that the individual may need additional assistance.

**Clinician Involvement.** The Autism Program of Illinois (TAP) teamed with three agencies, The Hope Institute for Children and Families, the Have Dreams program, and the Chicago Department of Aviation, when developing the Airport Accessibility Kits. The Hope Institute for Children and Families is a nonprofit organization that provides education, residential, and health assistance for children and young adults with autism spectrum disorders and other developmental disabilities (“The Hope Institute for Children and Families,” 2013). Have Dreams is an organization founded by parents, educators, and professionals to help children with autism spectrum disorders function independently in their environment (“Have
There was no single clinician involved in the creation of the TAP Airport Accessibility Kits.

**Simulation experience.** There is no simulation experience in this program.

**Data collection and program evaluation.** At the time of this review, there was no information regarding data collection or evaluation on the implementation and use of the Airport Accessibility Kits or the Enhanced Awareness training program.

**Marketing and dissemination of information regarding the program.** Information about The Autism Program (TAP) Airport Accessibility Kits can be found on the TAP website and Chicago airports’ websites. In addition, the partners involved in the development of the accessibility kits provide access to the kits on their websites. Each level of the kit can be printed from any computer at the user’s convenience. Though the kits were created using photographs taken at Chicago airports and the Chicago Department of Aviation (CDA) was a primary source of support, TAP encourages individuals to use the kits at other airports throughout the United States (“The Autism Program,” 2011).

**Review of Portland International Airport’s Current Practice**

On August 17, 2012, I observed the practice that Portland International Airport (PDX) currently conducts with travelers diagnosed with autism spectrum disorders (ASDs). Mrs. Susan Hangartner, Customer Relations Supervisor of Port of Portland, reported that families of a child with an ASD have contacted her within the last year about the support and accommodations PDX can provide for their child (personal communication, August 17, 2012). Currently, PDX does not have a formal support program or a uniform process for these families.

For the purpose of reporting PDX’s current process, the family that I observed will be referred to as the Burns Family and their 8-year-old boy diagnosed with autism will be referred
to as “Patrick” (Pseudonyms were used to protect the confidentiality of the family). Patrick had minimal verbal communication ability, difficulty following commands, and little to no eye-contact with his mother when she was talking to him. Mrs. Hangartner coordinated with the Burns family to allow them to explore the airport prior to their scheduled travel date. Mrs. Hangartner informed the Customer Service representative of the Transportation Security Administration at PDX that a family with a child with autism would be practicing to go through security on a specific date. No other arrangements were made prior to the arrival of the family.

When Patrick and his mother arrived at PDX to practice the airport process, there was little structure to the process, which resulted in additional wait time for Patrick and his mother. Airport personnel at the check-in counter needed to be informed of the situation prior to Patrick and his mother receiving their security passes. As part of Federal Aviation Administration regulations, Patrick’s mother needed to provide a form of identification at the ticket counter to receive her and Patrick’s security passes. After checking in, the Burns family proceeded to the security checkpoint.

Though security was aware that the Burns family would be going through the checkpoint, there was no x-ray scanner available for Patrick and his mother to proceed slowly through. Patrick appeared overwhelmed by the unfamiliar people surrounding him, the long line, and the sensory stimulating environment, as evidenced by his noncompliance with his mother’s requests, distressing verbal sounds, and inability to stand up out of his stroller and walk. The checkpoint was very busy with travelling passengers and Patrick’s mother had to quickly get Patrick through security by carrying him. Patrick was not able to observe other travelers go through the checkpoint or become familiar with his surroundings. Though the security officers were aware that Patrick was diagnosed with autism, they did not appear to know how to handle Patrick’s
behaviors or how to assist Patrick’s mother during this stressful situation, as evidenced by a lack of communication between the officers and Patrick’s mother.

Once through security, Patrick and his mother were able to walk through the airport and explore an empty gate waiting area. Here, Patrick was able to watch the airplanes take off and his mother was able to sit for a moment. During this experience, there was no aircraft available for Patrick and his mother to practice the boarding experience and become familiar with the environment of the aircraft.

Once the family’s exploration of the terminal was complete, the family left the airport. This was the entire process that PDX provided for the family. Further, this is the extent of the services that PDX currently has to accommodate children with ASDs and their families.

**Recommendations for an ASD Air Travel Support Program at PDX**

There is a need for Portland International Airport (PDX) to provide additional assistance for children with autism spectrum disorders (ASDs) and their families who wish to participate in air travel. PDX serves as the main airport for families traveling for leisure in the greater Portland area. Without a program in place at PDX, air travel accessibility for families with children diagnosed with ASDs is limited. With the high prevalence rate of children diagnosed with autism spectrum disorders in the state of Oregon, it is recommended that PDX establish a program that is designed to assist children and young adults with ASDs to have a successful air travel experience.

Based on the need for a program to be established at PDX, this author submitted a program proposal to Portland International Airport in January 2013. The program proposal stated the goal of an ASD Air Travel Support Program and addressed the necessary steps in order
to implement the program at PDX. This program proposal included multiple elements and recommendations based on the aforementioned review (see Appendix A for program proposal).

The ASD Air Travel Support Program for PDX was designed using the information gathered from the review of literature on how children with ASDs may have difficulties with the structured airport and flight process. An essential phase in the development of an ASD Air Travel Support Program was researching the established programs at airports across the United States to further my understanding of the need, function, and success of a specialized air travel program for children with ASDs. Similar to all of the established programs that were reviewed, the program for PDX was designed with the intention of providing children with opportunities to participate and enjoy the benefits of air travel. The ASD program for PDX is based on three core elements that PDX can implement within the constraints of Federal Aviation Administration regulations and Port of Portland’s resources. The three essential components of the program include a simulation experience, a PDX storybook, and a PDX personnel training. These three elements were chosen as they were deemed to be core components of an effective program. The following sections discuss the three core components of the ASD Air Travel Support Program for PDX and how each component may aid a child with an ASD during their air travel.

Component 1: Simulation Experience

The simulation experience is a practice air-travel experience for children with autism spectrum disorders (ASDs) and their families. The practice air-travel experience involves the most realistic environment and process possible to help prepare the child for future travel. This component is essential for mimicking the air travel experience, desensitizing children to the overstimulation of the airport experience, providing opportunity for gradual learning and alerting families to possible areas where a child might encounter difficulty. At PDX, children with ASDs
and their families would be given the opportunity to start at the designated check-in counter to receive a gate-pass. Participants would then proceed through the security checkpoint where Transportation Security Officers were expecting the families. Once through the checkpoint, participants would walk to the assigned gate where an aircraft and volunteer in-flight crew would be present. Participants would have the opportunity to board the aircraft and experience the sounds, seats, and various aspects of the aircraft without the wheels of the aircraft leaving the ground.

As discussed in a previous section, the airport is a novel environment with unusual auditory and visual stimuli, which makes it more difficult for a child with an ASD to engage and respond appropriately. Therefore, familiarity is key in the preparation process to help increase the child’s awareness of the airport environment and the sensory experiences they may have at the airport (National Center For Ease of Use of Community-Based Services, n.d.; Campazzi, n.d.). Research by Kourkoulou, Leekam, and Findlay (2012) suggests that children with ASDs have more difficulties with implicit learning (i.e., the acquisition of knowledge without intention or awareness) than neurotypical children. Children with ASDs showed slower visual searching skills in novel tasks and required more time to learn. When children with ASDs were repeatedly exposed to the same tasks, they were able to learn the task faster. These researchers hypothesized that children with ASDs have impairments in behavioral flexibility which allows one to adapt and respond quickly to new situations. Therefore, engaging in a novel environment, like an airport, is likely to be a difficult process that requires more time. The simulation experience practice component of an airport program for children with ASDs will provide the children with an opportunity to familiarize themselves with the different elements of traveling by airplane and build a stronger foundation of skills that will facilitate future successful air travel.
In addition, a practice setting will give parents the opportunity to see how their child is able to manage the demands of the air travel process and in what areas their child may need additional time, support, and preparation for success (Koegel, Matos-Freden, Lang, & Koegel, 2011).

Research has shown that children with ASDs have difficulty with stimulus generalization (Koegel & Schreibman, 2008). Stimulus generalization involves learning a specific skill in a structured environment, such as a therapy room, and then being able to implement that skill in another environment, such as school. Though teaching a child with an ASD how to wait in a line, place his or her belongs into a plastic bin, or buckle his or her seatbelt at home in a structured environment is important for the child’s learning process, the child may not be able to perform while at the airport in the presence of other passengers and airport personnel. Teaching children in the environments in which they are expected to perform specific behaviors may help them to be more successful when in that setting in the future (Williams, 2011).

Traveling is likely to create feelings of anxiety or distress for a child with an autism spectrum disorder (VanBergeijk, 2009). Traveling by airplane requires flexibility, and individuals with autism spectrum disorders tend to prefer routine and fear change. Without appropriate preparation, going through an airport and boarding an aircraft can be unpredictable and anxiety provoking for both the child with an ASD and the parents (Willis, 2009). A simulation experience will expose the child with an ASD to the environment and process of air travel, which will promote a sense of predictability (Williams, 2011). A structured and organized routine may help the child have a better understanding of what is going to happen next which will assist with transitions and prepare for over stimulating situations (Williams, 2011; Willis, 2009).
Component 2: Storybook

The second core component of a program designed to assist children with autism spectrum disorders (ASDs) is a storybook of the air travel process. Several of the programs reviewed included a storybook for participants as a part of the preparation process for air travel. A detailed storybook prepares the child for the experience her or she will have when going through the airport and on the aircraft. The storybook utilizes pictures of the airport, security checkpoint, gate area, and aircraft as a visual teaching tool. The pictures are arranged in sequential order from arrival at the airport to being on the aircraft. For Portland International Airport’s (PDX) program, it will be important to use photographs taken at PDX so it will match what the child will see during their air travel (Ivey, Heflin, & Alberto, 2004). The storybook should also include words and phrases that can be paired with the pictures and used by parents to discuss the plans to travel prior to the family’s actual travel. An air-travel storybook increases the predictability of an airport by making the environment and process more familiar.

Carol Gray developed Social Stories™ that are written short stories with illustrations to help individuals with ASDs understand social situations and learn important social cues (“The Gray Center,” n.d.). Social Stories™ focus on describing social situations in which an individual is expect to engage in a behavior. A storybook should be a component of PDX’s air travel program because of the success shown with Social Stories™ in other contexts. The use of stories has been shown to increase preparation for a novel event as shown through more participation in the event when using a social story than when not using a social story (Ivey et al., 2004). When preparing children with ASDs for an event with a story about the event, children are able to focus more on participating in the event and less on processing the new information. A storybook allows for a child to process one concept at a time and understand the appropriate behavioral
response needed in the situation at his or her own pace (Swaggart et al., 1995). Not only can the
storybook be used prior to participation in the simulation experience and actual travel
experience, but it can be also used to augment the child’s experience at the airport. A parent can
reference the storybook at each step in the airport process as his or her child proceeds from the
check-in counter, through security, and onto the aircraft.

Component 3: Training of Airport Personnel

The third core component of an air travel program for an airport involves trainings about
autism spectrums disorders (ASDs) and the difficulties that may present when a child with an
ASD travels by airplane. Airport trainings should involve all personnel that a child and family
may encounter during their travel experience, including airport personnel, Transportation
Security Administration (TSA) officers, and airline personnel. The trainings should include
information on what to expect when the child with an ASD participates in the program, best
ways for personnel to express their needs to children who may have behavioral or
communication difficulties, and important considerations when working with children with
ASDs. Without a specialized training, personnel may not be prepared to help a child with an
ASD and his or her family.

Many parents and professionals suggest that a family preparing to travel by airplane
contact the airport and airlines in advance to inform them about possible challenges that may
arise with their child with an ASD and their child’s communication ability (Campazzi, n.d.;
Sicile-Kira, 2009; Sullivan, 2010). In order to provide the necessary support for families, airline
personnel, TSA officers, and airport personnel need to know the basics of ASDs and strategies to
facilitate sensitive and successful interactions (Williams, 2011). There are behavior
characteristics of children with ASDs that may make security officers and surrounding
passengers anxious (Debbaudt, 2001). A child with an ASD may verbally perseverate and repeat a word or phrase that is on sign. At a security checkpoint, there are signs warning passengers against weapons. If a child begins to repeat an inappropriate phrase, such as “bomb”, the situation can easily escalate and be misinterpreted by security officers. By increasing awareness and knowledge with specialized trainings for personnel, the security officers and other personnel will be able to do their job effectively while also helping the child navigate a difficult environment.

Summary

Though the three recommended components of an ASD Air Travel Support Program at PDX stem from published literature, professionals’ recommendations, and parents’ report, participation in this program does not guarantee a successful air travel experience. The program provides the families with the opportunity to practice going through the airport process and onto an aircraft in order to better prepare their child for an actual trip in the future. By participating in this program, some parents may discover that their child does not have difficulties with the novel and sensory stimulating environment of an airport and that their child is ready to travel by airplane. Others may find that their child needs additional support to successfully proceed through the airport process. These families can use the program as an opportunity to teach their child how to process and adapt the unique airport environment. Some families may need to participate in the program multiple times to help their child successfully navigate the air travel experience. For all parents, participation in this program may decrease anxiety and fear regarding traveling by airplane with their child with autism. The program allows for parents to take their child step-by-step through the airport process without time constraints or a financial commitment. With the training component, airport personnel, Transportation Security Officers,
and airline personnel will be more ready to appropriately assist families with a child with an ASD.

This program requires an investment of time and resources from airport personnel, TSA personnel, and airline personnel. The next step is for the Portland International Airport (PDX) to establish connections with the Transportation Security Administration (TSA) of PDX and an airline that will provide the support and resources to successfully implement the ASD Air Travel Program. The Port of Portland will need to coordinate with TSA on days that the program will hold an event to prepare the officers for the participants to proceed through the security checkpoint. In addition, the Port of Portland will need to coordinate with airlines regarding aircraft availability. To create the PDX Storybook, pictures will need to be taken of all elements of the air travel experiences at PDX. These photos will need to be compiled into a single document using the publication guidelines of the Port of Portland. Furthermore, a training event needs to be scheduled prior to the first program event to prepare airport personnel, TSA officers, and airline personnel for working with participants of the program. After the program is implemented at PDX, adjustments will likely be made to better accommodate participants with the available resources at PDX.

**Conclusion**

The purpose of this project was to have a better understanding of the support a child diagnosed with an autism spectrum disorder (ASD) may need when traveling by airplane. The literature suggests that language development, communication and sensory processing problems associated with ASDs are likely to make air travel very difficult for both the child with an ASD and the family who is accompanying them. The airport is an auditory and visually stimulating environment that requires passengers to engage in a specific process. Children with ASDs need
additional assistance that is tailored to their areas of cognitive, behavioral, and emotional impairment.

The programs that have been implemented by other airports in the United States vary in the amount and type of support that is provided to children with ASD and their families. A common feature of the programs is a simulation experience that gives children and families the opportunity to practice traveling through an airport and boarding an aircraft to decrease the novelty of the environment. Other features include clinician involvement during the simulation experience, training for airport personnel, and an airport social story. The developers of these established programs must consider the Federal Aviation Administration guidelines, Transportation Security Administration (TSA) regulations, and the available resources at the respective airports.

Using the information gathered from the literature about the difficulties a child with an ASD may have when flying, as well as from the established air travel support programs in the United States, recommendations for the development of an air travel support program at Portland International Airport were produced. There are three core components that will assist in preparing a child with ASD for air travel including a simulation experience, storybook, and trainings for airport and TSA personnel. By implementing an air travel program specifically for children with ASDs, PDX will give local families with a child with an ASD the opportunity to include flying as a mode of transportation.

It is important to address the needs of individuals with all disabilities in public settings. Programs specifically for individuals with ASDs are a focus in many organizations because of the availability of public funding and notoriety of the disorders. The movement to implement autism air travel programs in airports across the nation is one way communities can provide
support for individuals and families. PDX is following this wave and is among the first third of airports in the United States to take the steps to offer additional assistance to children with an ASD and their families. However, ASD is just one of many disabilities. Realistically, programs are needed to serve a larger population, including children with medical complications, attention-deficit/hyperactivity disorder, and multiple disabilities. Air travel is a part of the lifestyle and fabric of American society and families caring for individuals with a disability need to be given the opportunity to utilize the benefits of traveling by airplane rather than forced to avoid this mode of transportation in favor of less demanding forms of travel. University-community projects of this nature can help to provide the research foundation and institutional support that local agencies need in order to implement positive social changes to improve the lives of individuals with disabilities.
AIRPORT ACCESSIBILITY PROGRAMS

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Goal: The goal of the program at Portland International Airport (PDX) is to simulate an air-travel experience for individuals with various disabilities and their families so that they are able to achieve success with air-travel in the future. Individuals should experience as realistic a process as possible (without the aircraft leaving the ground) to promote their ability to engage in air-travel on their own when they are ready. Research indicates that exposure and practice of an activity assists in the learning process. At PDX, individuals will be given the opportunity to practice the necessary tasks required when traveling by airplane without the financial investment or time pressure that will be present on the actual day of travel. Participants in the program will start at the designated check-in counter to receive a gate-pass, proceed through the security checkpoint, and continue to the assigned gate where an aircraft and volunteer in-flight crew are present. Participants will have the opportunity to board the aircraft and experience the sounds, seats, and various aspects of the aircraft without the wheels leaving the ground. In order to successfully provide this service for travelers, it is important to provide airport personnel, TSA officers, and airline crew the necessary training to assist individuals during the program and on the actual day of travel.

Phase 1: Exposure to the air-travel process using photographs taken at PDX.
- Using pictures taken at PDX of a typical travel experience, a storybook will be created that outlines the various elements a passenger will encounter when traveling by airplane. This step-by-step outline will include checking in for a flight, security checkpoint, and boarding the aircraft. The complete storybook will be offered to individuals prior to the day of participation in the program as a visual aide and method of preparation for flight.
- Using photos taken by the Port of Portland, Kimberly Skillicorn (graduate student at Pacific University) will compose the storybook for PDX. She will use established research on visual aides with individuals with autism and other disabilities and the input from individuals on the project to guide her creation of a PDX personalized story.

Phase 2: Introduction to the population being served through an Autism Spectrum Disorders/Disabilities awareness presentation at a monthly airline and concession meeting.
- Increasing the awareness of Autism Spectrums Disorder and common features of individuals diagnosed with Autism and other developmental disorders will enable airport personnel, TSA officers, and airline personnel to assist individuals and families in the appropriate way. There are large spectrums of behavioral, sensory, and communication capabilities of individuals diagnosed with Autism that can result in difficulties for all personnel at PDX airport.

Phase 3: Brief training for TSA officers, airline personnel, and airport personnel.
Ms. Skillicorn will assist in the organization of 2-3 training classes in the PDX Conference Center that will provide a variety of airport personnel, including airlines, Huntleigh, concession personnel, and TSA, the opportunity to gain valuable information. At a quarterly luncheon in 2013, Ms. Skillicorn as well as any other relevant individuals will speak about the development of the program at PDX, the effect the program will have on families hoping to travel, and the importance of increasing awareness about the spectrum of difficulties that may arise when assisting an individual with a developmental disability.

The training will include information on what to expect when individuals with disabilities participate in the program, best ways for personnel to express their needs to individuals who may have behavioral or communication difficulties, and important considerations when working with an individual with a developmental disability.

Phase 4: Marketing for the program

Informing organizations in the greater Portland area that provide services to individuals with Autism and other disabilities about the program established at PDX will give individuals and families the opportunity to contact PDX when additional services are needed for air travel.

Expected Launch Date: June/July 2013

Based on the research provided by Karin Murray (Research Analyst for PDX), travel is slowest on Tuesday and Saturday afternoon/evenings. The day and time of each event should be chosen with the intention to minimize interference of other passengers’ travel.

Three to four children and their families will participate in each simulation event at PDX. The initial event may involve one or two children and their families, and then following events will expand the number of participants to no more than four children and their families per event. This number of individuals was chosen based on the current availability of security check-point resources so as not to interfere with PDX daily operations. It is anticipated that there will be four events per year hosted by PDX.

Additional Considerations:

- Questionnaire for families to complete regarding the effectiveness of the program and to aide in PDX’s improvement of the program.
- Collecting information on each participant’s communication and physical abilities prior to the program event will assist in providing the best services for each individual.
- Non-commercial video of PDX to be used as an additional visual aide, and likely put on YouTube. The Port of Portland to provide video.

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