

Running head: FIRE SAFETY EDUCATION FOR YOUNG ADULTS WITH AUTISM.

What are the Fire Safety Educational Needs for Young Adults with Autism Spectrum  
Disorders?

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CERTIFICATION STATEMENT

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used language, ideas expressions and writings of another.

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Abstract

The Mundelein Fire Department (MFD) could not offer fire safety educational programs for schools, homes or residential occupancies housing young adults with Autism Spectrum Disorders. Without a full-time Public Education Division, the MFD had to find appropriate materials and processes to use as recommendations for fire service educators, parents and caretakers to educate and reeducate young adults with Autism Spectrum Disorders in fire safety. Through this research, the MFD was able to identify educational resources and procedures to meet these needs in order to provide a successful learning experience for the fastest growing segment of the special needs population, Autism Spectrum Disorders (ASD). Several research questions were asked to gather information on this topic: 1) What are the characteristics of young adults with autism? 2) How do the characteristics of young adults with autism affect the cognitive learning of fire safety practices? 3) What is the best methodology to educate autistic young adults in fire safety? 4) Have any fire safety educational programs been developed for young autistic adults and their families? 5) What are the best practices for fire safety preparation in residential facilities for these autistic individuals? For the purpose of this study the terms “young adult” are defined as those individuals between the ages of 16 and 24 years of age. At the conclusion of this study, the MFD was able to distribute resources and procedures to families with autistic individuals to educate and continually refresh their family members in fire safety.

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## Introduction

Most individuals in American society have received some sort of fire safety education, whether in school, from television or through general society norms. Even with some sort of foundation knowledge, when a smoke alarm or fire alarm sounds, the question can be posed why do these individuals experience a brief sensation of fear, panic, and confusion? Generally, the sensations pass and the individual are able to fall back on their foundation of knowledge and take appropriate actions of either notification, evacuation or problem solving. These actions can be carried out when the individual is out of their normal surrounding; for example people visiting a movie theater will subconsciously locate the nearest exit or in a hotel will locate the exits for escape in an emergency. This all becomes second nature for adults who have been exposed to fire safety education and are able use the appropriate skill for the emergency.

This research will focus on the above scenarios, but consider those individuals who are unable to understand fire safety education or unable to use the skills learned due to a challenge such as autism. The Columbia Encyclopedia, *Sixth Edition*, defines autism as a developmental disability resulting from neurological disorder that affects the formal function of the brain (2008). An autistic individual put into an emergency situation even with fire safety education may not act appropriately due to fear from the alarm noise, the necessity to be moved from their considered place of safety, and a total panic because of an unanticipated situation. An even more concerning issue identified through surveys, this author found the number of fire departments conducting fire safety education for grade school aged autistic children is minimal and as the autistic individual reached adulthood the programs became nonexistent. These two major factors must be addressed because of the serious safety concern of parents, caregivers and individuals

with autism. High profile fatalities have already been documented in Kentucky in 1998, Missouri in 2007, and finally in Oregon in 2008.

Due to budget constraints, the MFD has a very limited public education program and is limited in meeting the demands of our community. Moreover, the MFD special needs community is neglected in order to meet the needs of a larger population of individuals without special needs. Without appropriate recommendations of educational materials and education processes to be used in the classroom or for in-home learning, our young special needs population is not prepared for adult life. In an emergency situation, an individual without fire safety education could face a life-threatening dilemma. The potential dangers to an autistic person without fire safety education are tremendous. Normally because supervisors, parents, or caregivers are present to provide directions, the dangers are slightly reduced. For a young adult autistic individual, who may have to be self-reliant or potentially reliant on a roommate with or without the same disorder there is no reduction in the life-threat of fire.

The purpose of this research is to develop fire safety educational recommendations that meet the needs of the young autistic adult. Descriptive research will be used analyze this problem for the development of recommendations. The research questions asked included:

- 1) What are the characteristics of the young adult with autism?
- 2) How do the characteristics of the young adult with autism affect the cognitive learning of fire safety practices?
- 3) What is the best methodology to educate young autistic individuals in fire safety?

- 4) Have any fire safety educational programs been developed for the young autistic adults and their families?
- 5) What are the best practices for fire safety preparation in facilities housing young autistic adults?

### Background and Significance

The MFD approach to public safety education is as progressive as can be in an environment of budget constraints. Due to constraints of staffing and budgets, the MFD is only able to address the needs of the younger school populations thus leaving older students to remember the fire safety education provided earlier in their education. In the case of special needs children, specifically autistic children, only very basic foundation materials are issued to the teachers and facilitators to deliver to the students and no follow up evaluation is completed. The provided information, may or may not be age appropriate due to the cognitive level of the autistic student and with no follow-up on these students, the success levels are undetermined. This problem continues to escalate because each consecutive grade level prepares a student for the next level of education. When the autistic student reaches high school, an unprepared segment of society has to be prepared and self-reliant to appropriately handle an emergency in their home or later in a college dorm or group living setting. Banco (2010) stated the following:

“Colleges and universities across the nation are increasingly offering programs to help prepare incoming student who have learning disabilities. Since 2001, the number of such programs has increased tenfold, from 22 to more than 250 today. Further she continues on to offer that despite the increasing number of programs, advocates, and others say most students with learning disabilities still go to college ill-prepared.”

In a study of young adults diagnosed with ASD, a clear definition of the spectrum and abilities that correspond with the levels of the spectrum must be known. Davis and Schunick refer to ASD as invisible disabilities offering there are no identifiable physical characteristics to make the disability apparent (2002). Additionally, Debbaudt, Mesibov, and Taylor characterize autism as a culture, an analogy that emphasizes the very different ways an affected person can process information and understand things very much like people from different cultures view things (2009). This makes providing a program that will meet the needs of all autistic individuals very difficult to achieve. Individuals in the spectrum can vary from high functioning defined as an individual with normal learning capabilities, cognitive skills, who struggles with language, but with therapy can become verbally proficient. The opposite end of the spectrum from high functioning would be individuals with Pervasive Development Disorder (PDD). The Autism Spectrum Disorders defined PDD as severe deficits in many areas of development, including social interaction and communication or by the presence of repetitive, stereotyped behaviors (2005). One ASD diagnosis that is growing is Asperger's Syndrome that is a mild form of autism where individuals tend to isolate themselves socially and have some communication issues that vary in severity. Just identifying these three characteristics of ASD can define how difficult it is to develop an accurate curriculum.

There has been a significant amount of research surrounding how first responders can deal with autistic individuals during an emergency. Most of this research is as a result of terrible outcomes with first responders misdiagnosing the autistic individual as an intoxicated person or a person who is using drugs. Secondly, the amount of research on educating autistic individuals is just being started. Richard Russell, a classmate of this author, did a research paper on the development of a fire safety education for grade school level children. Russell's findings found

that curriculum might need modification, but the major modification was found to be in the teaching skills (2009). As the population of autistic individuals continues to grow and mature, the need to provide a self-reliant educational process to ensure the fire safety of this increasing population is immediate. The hope of this research is to assist the MFD to meet the United States Fire Administration (USFA) objective to respond to emergent issues (2005). The emergent issue facing the modern fire service is preventing harm through mitigating effects of fire on individuals diagnosed with autism and their families. This topic holds significant relevance to this author's personal growth as a fire service leader because as the parent of a young adult with autism, I want to serve as a change agent to providing fire safety education for all young adults that are on the ASD spectrum. The National Fire Academy's fourth year of the Executive Fire Officer Program (EFOP) referred to as Executive Leadership offers the major contributing years of a fire officer's service are those following a significant educational experience (2010). The topic of this ARP corresponded with a class objective of conducting a review of both personal and community challenges. The community serviced by the MFD has autistic housing and as this author is the parent of a high-functioning autistic young adult, there is a great concern for their long-term safety. A second objective from the class identified in a review was the concept of influence. Through the author's research of fire safety education processes and experiences with an autistic family member, it is believed the concept of influence can create a safer environment for young autistic adults. Lastly, through the class objectives to identify the types of power, this author believes through expert power a safer environment for the young autistic adult can be taught to avoid future tragedies from fire.

#### Literature Review

The literature review for this Applied Research Paper (APR) discovered a variety of information on autism generating a significant amount of data on the autism spectrum, signs and symptoms. When the topic of fire safety education for autistics was researched, the focus was educating young children with ASD. The topic of emergency education for autistic individuals was also researched, and found the main-focus was training emergency responders to effectively manage autistic individuals at emergency incidents. The main priority of this literature review is to determine what common practices and opinions are most effective to prepare a young adult with ASD before encountering a fire emergency. Once the successful practices are identified, it is imperative to apply those concepts and practices to educate the young adult how to manage themselves in a fire emergency. The successful practices and opinions will serve as material to answer the research questions of this ARP.

In order to identify the number of people in our community with a disability, the United States Census Bureau statistics were evaluated by zip code. The statistics for the Village of Mundelein were found to be very basic without specific information. This author made the decision to evaluate the Lake County statistics where the Village of Mundelein is located. Lake County offered specific information on the population of individuals with disabilities. Lake County has a gross population of 645,160 of which 58,708 people were identified with one or disabilities. The census information identifies 145,020 as school enrollment age of 18 to 34 years of age. In that school age population, 3,667 have a mental disability (ASD is included in the number) and 31% are enrolled in a college or graduate program. The 2007 U.S. Census shows an increase of 8% with a calculated increase an estimated 8% in 2010.

Defining the characteristics of an autistic individual is critical in understanding the types of education methodologies that will be successful. The ASD can be difficult to define, because

the Spectrum consistently broadening. Debbaudt, Mesibov and Taylor define autism as a neuro-developmental disability that starts early in life while the brain is developing that involves differences and difficulties in several areas: social interaction, communication, the presence of narrow, repetitive behaviors and difficulty adjusting to change (2009). Additionally, a wide range of intellectual abilities can be found in ASD individuals with IQ's ranging from below 25 to above 150. Davis and Schunick refer to ASD as invisible disabilities meaning there are no identifying physical characteristics (2002). Davis and Schunick (2002) further explain their definition:

“The absence of visual clues increase likelihood that associated behaviors such as hypersensitivity to sounds and lights, failure to speak or make eye contact, and high pain tolerance will be identified incorrectly as unlawful behaviors or behaviors stemming from drug abuse or mental illness.”

Mims (2008) concurred with the finding of Davis and Schunick and expanded on their data offering that most typical autistic individual behaviors stemmed from impaired social skills. These skills included involuntary behaviors such as repetitive movements, lack of eye contact, failure to respond, talking to oneself. Mims concluded lacking these skills made it difficult to function and communicate in socially acceptable ways.

The characteristics noted in a child with ASD are present in the adult and generally become more noticeable due to the expectation of self-reliance in adulthood. One of the more prevalent skills missing in the young adult autistic is the ability to identify a situation and subsequently put together a process that will either alleviate or remove the individual from the situation. Grandin defines this process as sequencing (2002). Grandin continues to offer from

her research that sequencing is very difficult skill for individuals with autism and that the autistic individual does not understand when a task is presented in a series of steps (2002). Not all the characteristics of autism are exhibited in every individual diagnosed on the spectrum. The severity of the characteristics can also vary making the development of an educational program challenging.

When an adult is involved in fire emergency specific actions can be anticipated: beginning with a building evacuation; potentially activation of an alarm; placing a 9-11 phone call. In the case of a young autistic adult, one of the first characteristics that affect cognitive learning described by Grandin is sequencing. Grandin describes people with autism as visual thinkers meaning all their thoughts are continual videotapes running in their imagination (2002). The findings of Grandin are supported in situations where an autistic individual's logic does not work or their ability to integrate different sources of information is more limited thus, misinterpretations can occur (Debbaudt, Mesibov and Taylor, 2009). In their research Debbaudt, Mesibov and Taylor further describe the inability of an autistic individual to organize their thought processes as:

“Autistic individuals have trouble conceptualizing, putting together information in complicated situations. They have trouble with context and figuring out how things are connected and what they mean. They look at one situation; they look at it concretely and do not always look at it in the context of trying to figure out what would be the different connections in that situation” (2009).

Sequencing and the ability to cognitively put a plan together in order to appropriately react to a situation is lost by the autistic individual. Simply stated by Moreno and O'Neal people with autism have problems with abstract and conceptual thinking (2011).

Most autistic individuals will have sensory issues that can have adverse reactions in response to situations. Russell (2009) defines sensory issues as a means by which the body processes information such as lights, sound smells, touch and taste to gain information about their surroundings and environment. Debbaudt, Mesibov and Taylor's research found that people with autism might have more difficulty when they are over-simulated by a sensory environment with sights and sounds that will distress causing them to become very anxious and even terrorized by the situation or noise (2009). Grandin supports this fact in her personal experiences as an autistic individual by offering that loud sounds would hurt her ears and that sounds would cause bad or inappropriate behavior (2002). The inappropriate behaviors can be brought on by anxiety and are more evident in a fear response that is found to be the last significant obstacle affecting an autistic individual's learning.

During an emergency situation, panic is a normal emotion from anyone involved. Panic compounded by having an individual's sensory abilities overwhelmed to a point where the ability to think cognitively through a situation is the last element that can affect an autistic individual's safety. Good (2011) found that in this state an individual with autism may not respond to direction because they do not understand what is being asked of them. In addition, they may not be able to process language or understand a directive when fearful.

In order to define what methodologies can be successful to educate an adult with autism, first the affects of autism and potential obstacles that need to be overcome must be considered.

The literature review findings suggest there are successful practices, but practices must be applied in the correct manner to be successful. Olejnik concluded that autistic individuals learn by experience and education, but do not possess the innate ability to detect danger (2004). Olejnik continued to offer that role-playing, scenarios, and detailed preparation are essential for autistic individuals to function well in the learning environment. It must be noted that not all individuals with autism will exhibit the same characteristics, which means the learning obstacles will be different. Debbaudt, Mesibov, and Taylor support this opinion and offer each individual will be different, each pattern will be different and the ability of the people to form intent and to control actions will differ from one autistic individual to another. Several options for success in education were identified to manage specific characteristics of autism. To maintain focus on the topic Grandin, offered to avoidance of a long series of verbal instructions because of the sequencing issues (2002). Grandin recommended maintaining directions with no more than three steps, which will allow the autistic individual to frame a picture in their mind (2002). Moreno and O'Neal support Grandin's offerings and add to avoid verbal overload the educator must be clear by using shorter sentences when the instructor perceives that the student is not fully understanding the main points or is not grasping the important information (2011). The communication ability of an educator is dependent on their resourcefulness, knowledge of autism, patience, and understanding (Debbaudt, Mesibov and Taylor, 2009).

Mechanisms to reduce sensory overload for autistic individuals can also reduce levels of panic and fear. Grandin's research recommends desensitizing the sound of a fire alarm using recording the alarm and increasing the volume slowly to improve sensory response and reduce panic and fear (2002). Russell (2009) supports research of Grandin by recommending monthly practice of an escape plan with use of a fire alarm, which can also decrease fear and anxiety of an

autistic individual. Debbaudt did caution that special considerations may need to be made in order for an individual to rest the sensory bombardment and drastic changes an emergency situation can create (2006).

The literature review found very limited resources on programs actively being taught or developed for the young autistic adults. Most of the literature review offered solid suggestions for developing a program. Good (2011) had the following opinions of program development:

“The autistic individuals’ special learning disabilities cannot be addressed by traditional fire and life safety education programs. It is difficult for these individuals to generalize fire and life safety skills; the experts recommend that a combination of instructing, modeling, feedback, and reinforcement be used in the instructional approach.”

Mims (2008) offered the recommendation that receiving education does not always equal competence and confidence. Mims recommends that a fire educator must foster relationships with parents and support groups to provide safety information and pre-incident planning.

In developing curriculum for fire safety education, Russell (2009) found that the use of photographs and words on cards to illustrate fire drills, alarms and exits achieved a level of success in children. Martin and Mims echoed Russell’s findings and offered additional successes could only be accomplished through continuous training, practice, and education (2009). Good’s research added that two-thirds of the surveyed families with autistic family members concluded that visual aids and pictures were the most effective means of teaching fire safety; another one-third preferred videos (2011).

In an effort to reduce anxiety and fear when conducting the training Good (2011) recommended delivery of the program in small increments and repeated frequently in order to be

effective. Good's recommendation for frequency was at a minimum once a month in order to reduce anxiety. With anxiety reduced Russell found that the use of visual aids for an autistic individual is better to enable them to understand what they are not supposed to do and what they are expected to do (2009).

Even with reduced anxiety, an autistic young adult can become overwhelmed with the lights, sirens and frantic activity at an actual incident. Martin and Mims found numerous cases where autistic adults, who were rescued from a fire died after running back into the building to find a place of safety (2009). Russell identified that a plan where everyone involved with an autistic individual gets out of a burning building and that is essential (2009). Russell added that once outside, create a self-help network of neighbors, relatives and friends where the autistic individual can be placed in an environment where they have time to de-stress. Debbaudt (2005) proposed that offering an emergency contact handout model identifying specific information on the autistic person would help. A sample of this form is enclosed in this APR as Appendix E. Good (2011) offers fire and life safety educators must team up with local experts to ensure the messages delivered are consistent, appropriate, and complementary. Good concludes stating that while this approach requires more effort than most public education programs, it also presents the greatest potential for reducing death and injury rates among the members of a high-risk group (2011).

### Procedures

Research for the ARP began at the National Fire Academy (NFA) during the author's Executive Leadership class in March of 2011. The descriptive research method was used to determine what fire safety education programs were available to young adults with ASD. Due to

the increasing population of individuals with ASD and the requirement for adults to either be self-reliant in a college setting, at home or group living arrangement, the topic of fire safety education is a critical piece of personal safety education.

The first research question to identify the characteristics of the young adult with autism was found by researching the term autism at the NFA Learning Resource Center in Maryland. The search of this database found articles were focused on responder safety in dealing with autistics or fire education topics specific to autistic children. In most circumstances, autistic education for school age children is not appropriate for adults because young adults are assumed to be self-reliant, either at home, in a dorm, or group living arrangements. By being self-reliant, the availability of a caretaker or even a supervisor of a floor is limited and the individuals must rely of their own abilities. A search secondary search came from the World-Wide Web using Google and Yahoo search engines. This topic was narrowed to fire education of adults with autism. The use of a more specific topic found several recent case studies noting autistics that lost their lives in structural fires. The review of these case studies made it evident how adults with ASD lose their lives in structural fires and has a direct relationship to the characteristics of an individual with autism. During a time of fear and panic, the ASD individuals may retreat to a known place of safety and not be able to function to save themselves. The one consistency found is the reaction is not predictable

Research questions two and three required the use of descriptive research to define how ASD affects cognitive learning abilities and what methodologies were successful teaching strategies for an adult with autism. The terms of autism and education were used to search the World Wide Web to find some consistencies in opinions for educating adults with autism. One researcher who provided great insight into autistics' learning abilities was Temple Grandin,

Ph.D. who is an assistant professor from Colorado State University, Fort Collins, Colorado. Ms. Grandin has conducted a significant amount of research into how autistics learn and what teaching techniques are most successful. This author believes much of Ms. Grandin's successes come from her experiences as a high-functioning autistic. A second source of research data came from the Michael H. Minger Foundation's president Gail Minger. The Minger family experienced a great loss when their son Michael was lost in an arson dormitory fire on the campus of Murray State University, Kentucky on September 18, 1998. In an effort to campaign for fire safety education for all disabilities, Mrs. Minger established a foundation and received a Homeland Security Fire Prevention and Safety Grant in 2009. Mrs. Minger identified a lack of information regarding how to accommodate the safety needs for the full spectrum of the special needs population particularly those with cognitive disabilities (2009).

The last two research questions evaluated fire service programs and how the fire service is preparing to serve an increasing and maturing autistic population with fire safety education. A survey tool was used for this research. Two surveys were constructed by this author to compare the concerns of the caretakers and parents of individuals with autism to how the fire service was educating. Lastly, as part of the surveys, an evaluation was conducted to see if the concerns of the caretakers and parents were being addressed by the fire service.

### Limitations

This research project met with several limitations. The first limitation noted was a lack of written material on this subject from the fire service. Most information from the fire service profession either dealt with topics of treatment or care of autistic individuals or how the emergency responder can protect themselves in dealing with autistic individuals during an

emergency. A minimal amount of literature referencing fire safety education for children with autism was found.

A second limitation identified was how an adult with autism was supervised in their living arrangements. The research topic as specified was to identify fire safety education for young adults with autism, meaning the individual is self-reliant or possibly living with a roommate with the same disability. If caretakers or parents are entered into the study, a new element had to be researched regarding caretaker and parent actions during a fire emergency. The element of caretakers and parents would add an additional educational topic that this author did not research. The focus of this research emphasizes the need for self-reliance of the autistic individual.

Two survey tools were developed by this author to determine the fire safety education for young, adult autistic individuals. The first tool surveyed the concerns of caretakers and parents with regard to safety for their young autistic adult. The results are contained in the ARP as Appendix A and Appendix B. The second survey tool evaluated the capabilities of the local fire department's public education division to educate young adults with ASD. These results are contained in the ARP as Appendix C and Appendix D. Using survey tools always offers limitations in complete understanding of the questions, incomplete answers or questions that unintentionally are missed. One significant limitation found by this author was after conducting research on an autistic's behavior after evacuation found the individual might retreat into the building to a known place of safety identified by the individual. This response was not offered in Family Survey to answer question number three. If this author were to re-survey this question would be reworded to include the autistic's reactions after evacuation. Findings from the survey

tools were found to be beneficial due to the amount of information received and had a purpose in this ARP.

### Definition of Terms

Pervasive Development Disorder: Any of the several disorders, such as autism and Asperger's Syndrome, characterized by severe deficits in many areas of development, including social interaction and communication, or by the presence of repetitive, stereotyped behaviors. Such disorders are usually evident in the first years of life and are often associated with some degree of mental retardation.

Asperger's syndrome: is an autism spectrum disorder that is characterized by significant difficulties in social interaction, along with restricted and repetitive patterns of behavior and interests. It differs from other ASD by its relative preservation of linguistic and cognitive development.

### Results

The main purpose of this ARP is to find successful fire safety programs and methodologies for the education of young adults with ASD. The research conducted hoped to answer five research questions posed by this author. In an effort to get a well-rounded opinion on the survey this author used two survey tools, the first surveying fire service's ability to educate young adults with ASD; the second survey evaluated the concerns of parents and caretakers in regarding to the safety of their young adults with ASD. The survey directed toward the families and caretakers was posted through several autism support groups and informational groups including Autism Speaks and Autism Now. A total of twenty families and caretakers responded to the survey. As part of the Family Survey, respondents were asked to identify the

age group of their autistic member. Of the families, recorded 62.5% had family members that were between the ages of fifteen and seventeen, 25% were eighteen to twenty years of age, zero percent were twenty-one to twenty-four and finally 12.5% were over the age of twenty-four.

The second question of the Family Survey revealed what was the major safety concern for their autistic adult entering into limited or non-supervised living arrangements. The Family Survey revealed:

- 25% of the families had concerns for their individual safety during fire and smoke emergencies;
- 37.5% had concerns for safety during weather related storm;
- 25% had concern for safety in school violence;
- 25% had concerns for safety during in-home violence;
- 37.5% concerns for safety during a medical emergency involving their individual;
- No concern was found in-home emergencies such as poisonings or using the 9-11 emergency phone system.

The Family Survey identified what the potential reaction of autistic individual might be during a fire emergency. The reactions identified were 37.5% of the individuals would panic 25% would show fear to the level at which action could not be taken, 25% would take appropriate actions, and lastly 50% would evacuate the home. Unfortunately, identified in the research, but a limitation in the survey regarding evacuation, there is no reference made to whether the individual would stay out of the structure.

The reason for conducting the two surveys was to compare and contrast the results of the Family Survey with the Fire Service Survey. The survey had some interesting results. The Family Survey posted that 75% of their autistic adults had received fire safety education, but the educational range of age of the individual receiving the training became questionable. Most of the families stated 62.5% of their family members received fire safety either in their home or in grade school, 50% in middle school or junior high school, 25% in high school and zero percent in college or residential living situation. One notable finding is that 25% of the autistic young adults never received fire safety education. These results compared fairly even with the educational levels that fire departments are conducting fire safety education. The fire departments completing the survey found 94% conduct educational programs in grade schools, 57% conduct junior high or middle school programs, 50% conduct educational program in high schools, and 20.2% conduct education programs for colleges. Ironically, only 13% of the fire departments are prepared to educate young, adults with autism. The fire departments prepared to educate young, adult autistics use a variety of programs: 9% use a specialized curriculum, 3.4% use specialized video presentations, and 6.8% use the academic facilitators to deliver the fire department's standard programs.

Several alarming statistics regarding preparation to education young, adults with autism came from the Fire Service Survey. Two major statistics causing concern were 86.4% of the Public Education programs did not offer specialized programs for autistic adults and 94.7% of the public safety educators were not prepared to teach young adults with autism.

## Discussion

The research gathered found most fire safety education programs are missing the population of young individuals with ASD. The research questions were posed to solve or find possible solutions to this threat for the ASD population. The literature review when evaluated against the Family and Fire Service surveys conducted by this author, found that the educational needs of the ASD individuals and their families or caregivers were not being met. Due to an 8% increase in individuals with ASD that are of the age of 18-34, a significant portion of the population can suffer the deadly effects of fire. Moreover, Olejnik found that autistic adults who are being mainstreamed into independent living are seven times more likely to have contact with emergency responders as a member of the general public (2004). When comparing the movement of the growing ASD population entering into society, to the fire service's abilities to prepare ASD individuals for self-reliance during an emergency less than adequate.

The alarming facts from the survey conducted by this author show that 86.4% do not have programs for young adults with autism and 84.6% do not offer programs to ASD individuals in dorms or monitored housing. These statistics make a reader consider how the ASD individual receives emergency training. In reviewing the statistics from the surveys conducted by this author, most ASD individual either received education in grade school or in their home. Both education processes have effectiveness concerns. If the ASD individual is educated in their home, considerations have to be made for accuracy, consistency and effectiveness of the teaching method. If the individual with ASD has to rely on their memory for fire safety education, consideration must be given to whether the information is accurate for a self-reliant individual during an emergency and can the information be accurately recounted and used by an ASD individual? Through the research conducted, neither scenario should be relied on for the safety of an individual with ASD.

Through the research of Temple Grandin, an insight to the ASD individual must be used in developing a program for individuals with ASD. Ms. Grandin who is a high-functioning ASD individual and an engineer is able to identify the learning process that must be entered into by creating a systematic process for each specific topic during an emergency. Additional emphasis needs to be put on taking any potential fearful experience or overwhelming processes out of the learning program. The ASD individual must be allowed to build a sequence on expectations of learning prior to be exposed to a simulated emergency. Grandin offers that the ASD individual must be allowed to master one sequence before moving to the next educational experience (2000). The Minger Foundation's research and development of programs is focusing on safety education for individuals with special needs. The Minger Foundation's educational programs identify three areas of concern: safety in the home, evacuation, and prevention (2009). The Minger Foundation programs use all special needs individuals as participants in their video programs. This offers learning experiences from peers with challenges to students with challenges. It was found that learning from peers would increase the learning experience significantly. Additionally, because these programs are offered on DVD or through internet-based programs, the individual can be review the information at will. Grandin does offer that for a successful sequence to be built, the informational reviews must be done on a scheduled basis, generally not to exceed a period of one month (2002).

Through the research for this ARP and the surveys conducted by this author, this ARP is very limiting to only the threat of fire. As the ASD, population continues to grow at a rate of 10% and individuals with ASD become mainstreamed into society additional threats begin to surface. The Family Survey conducted by this author found additional concerns for their individual with ASD. The survey revealed the threat of exposure to criminal violence outside

and inside of the home; threats from weather storms and lastly medical emergencies involving the individual with ASD were of great concern. In order to conduct effective research and to meet the requirements of the NFA for topic selection, the additional topic areas were not included in the ARP. However, as the ASD population increases in society these subject areas of prevention that will require attention very soon.

It is critical for the MFD to develop fire prevention criteria that meets the needs of the young, adult with ASD. In order to be an effective leader, rapidly developing trends must be identified before they become threats or are threatening to those in the community. Leadership that does not foresee potential threats are as destined for failure just as those who do not react to current threats. The only result for lack of action will be loss of life and property.

#### Recommendations

The problem statement that this research addressed was that the MFD does not have educational programs for families and young, adults with ASD. The purpose of this research is to develop recommendations for families and individuals with ASD in order to increase self-reliance during a fire emergency.

The research revealed that MFD public educators must understand that autism is a chronic, non-progressive developmental disorder that affects the learning processes of an individual with ASD. In order to effectively educate individuals with ASD, there must be a joint understanding of the educational curriculum between the fire service educator, the parent or caretaker and the officials of location housing the ASD individual. As part of the joint understanding, it is critical for the information to be consistent, accurate and reviewed on a regular basis. This format will allow the autistic to develop proper sequencing during an

emergency incident. It should also be noted that the major obstacles of fear, anxiety, and overwhelming amounts of information would become a hindrance to the educational process. Additionally, if the individual with ASD is exposed to any combination of these obstacles, frustration will become evident and the educational process must be stopped immediately to avoid a complete breakdown of the learning process. It is vital that if the public educator notes any sign of frustration, the process should be stopped and continued after a time delay.

In order to achieve success in a fire education program, the MFD public educator will be requested to use the methodologies identified from research in the ARP. The research found that a single topic will be chosen to begin the process, in an effort to reduce anxiety, fear, and to reduce the potential to overwhelm the ASD individual. The recommended topics to be addressed will follow the Minger Foundation's research of evacuation, home safety, and prevention. The recommended order of education should begin with evacuation, followed by prevention, concluding with home safety topics. This recommendation is made by evaluating the cognitive requirement of each topic and the specific cognitive level for the ASD individual.

Research to find available programs revealed only minimal information. The Minger Foundation is in the process of developing several programs for the special needs populations, including ASD. At the time of the research for this ARP, The Students with Disabilities Project was in the video production process of filming students with all types of disabilities to share fire share fire safety information for each demographic they represent. The actors in the videos are talking about the importance of fire sprinklers, working and testing smoke alarms, knowing two ways out of any structure, as well as other fire safety points. The Minger Foundation is now working to complete the instructional videos to support the student.

Research into what programs fire departments were using found most were using a civilian fire safety program. They did not take into account obstacles and cognitive learning abilities of any individuals with ASD that may take part in the program. Until further development of specialized programs, the MFD public educators will be encouraged to use the current MFD civilian programs and using a step process of educating each specific topic and employing a refresher program.

The research found the most effect practices for fire safety education was a foundation of consistency and repetition. Through research for this ARP, it was found for an individual with ASD to be successful in sequencing, consistent information is critical. The individual with ASD relies on sequencing to avoid fear and confusion that is experienced during an emergency. If the sequencing of a solution is unsound due to inaccurate information, the individual with ASD cannot react appropriately. If fear or anxiety is added to this situation, there is no way to anticipate how an individual with ASD will react. The only mechanism to allow for accurate sequencing is thorough, slow, repetitious education allowing the individual to build and reinforce their sequencing. Once the sequencing is learned, the topic should be reviewed no less than monthly. An appropriately trained parent, caretaker, or resident facilitator can do this reeducation. Topics for education should never be combined, for example, the topic of building evacuation should not be crossed with testing of smoke alarms. The public educator must complete one topic and it is encouraged that the individual with ASD competently exercise the skill before changing topics.

To be successful it is critical and highly recommended the public educator foster a relationship with the ASD individual prior to beginning the educational process. This relationship will build trust with the ASD individual and the MFD public educator. The most

important factor is the public educator will be able to read the emotions of the ASD individual. Being able to read the emotions of the ASD individual will allow the public educator to see when frustrations are building and develop mechanism to defuse the frustration, and then continue with the educational process. As with any relationship, when trust is developed and emotions identified, the educational success rates will increase due to a comfort level between the student and instructor. The MFD public educator will be encouraged to have a minimum of five meetings with the young adults with ASD and their family, prior to beginning the educational process. In addition, the MFD will not have unscheduled fire drills or educational sessions without meeting with teachers, caretakers and families.

It is the feeling of this author the problem statement has been answered but the research cannot be concluded. As the autism spectrum continues to broaden and research into autism continues, the fire service must continually evaluate their programs and the population seeking these programs. In order to provide a safe community and a foundation of safety knowledge for those who exit our community, the MFD must forecast the futures of individuals with autism. The MFD must stay aware of new programs and topics as they relate to the self-reliance of individuals with autism in our society. This author feels fortunate to have been asked by the Michael H. Minger Foundation as a technical advisory. This honor will assist keeping the MFD current and its area departments on the cutting edge of safety education for adults with autism spectrum disorders. Lastly, as a parent of a young adult with autism, the research and efforts of this ARP are submitted in the memory of Michael H. Minger and in honor of Gail Minger, the proud mother of a talented, high functioning college student on the autism spectrum, who was lost much too early in his young life.

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Appendix A

**Fire Safety Education for Young Adults with Autism – Family Survey**

1. What is the age of your young autistic adult?
  - 15-17 years of age
  - 18-20 years of age
  - 21-24 years of age
  - Older than 24 years of age
  
2. In relation to your young autistic adult, what is your greatest fear for their safety?
  - Fire and smoke emergency
  - Weather storm emergencies
  - School violence
  - Criminal violence, i.e. break-in or violent crimes
  - In home emergencies, i.e. poisonings
  - Medical emergencies involving your family member
  - Your family member's ability to access emergency services, i.e. "9-11"
  
3. What would be your young, autistic adult's reaction in a fire emergency involving their residence?
  - Hide
  - Panic
  - Fear
  - Take appropriate actions
  - Exit or Evacuation
  - Other actions not described
  
4. Has your young, autistic adult received any fire safety education?
  - Yes
  - No
  
5. If your young, autistic adult received fire safety education, what education level was the education presented?
  - Home educated
  - Grade School
  - Middle/ Jr. High School
  - High School
  - College
  - Never received any fire safety education

Appendix B

**Fire Safety Education for Young Adults with Autism – Family Survey Results**

1. What is the age of your young autistic adult?	
15-17 years of age	<b>62.5%</b>
18-20 years of age	<b>25.0%</b>
21-24 years of age	<b>0%</b>
Older than 24 years of age	<b>12.5%</b>
2. In relation to your young autistic adult, what is your greatest fear for their safety?	
Fire and smoke emergency	<b>28.0%</b>
Weather storm emergencies	<b>37.5%</b>
School violence	<b>25.0%</b>
Criminal violence, i.e. break-in or violent crimes	<b>25.0%</b>
In home emergencies, i.e. poisonings	<b>0.0%</b>
Medical emergencies involving your family member	<b>37.5%</b>
Your family member’s ability to access emergency services, i.e. “9-11”	<b>0.0%</b>
3. What would be your young, autistic adult’s reaction in a fire emergency involving their residence?	
Hide	<b>0.0%</b>
Panic	<b>37.5%</b>
Fear	<b>25.0%</b>
Take appropriate actions	<b>25.0%</b>
Exit or Evacuation	<b>37.5%</b>
Other actions not described	<b>0.0%</b>
4. Has your young, autistic adult received any fire safety education?	
Yes	<b>75.0%</b>
No	<b>25.0%</b>
5. If your young, autistic adult received fire safety education, what education level was the education presented?	
Home educated	<b>62.5%</b>
Grade School	<b>62.5%</b>
Middle/ Jr. High School	<b>50.0%</b>
High School	<b>25.0%</b>
College	<b>0.0%</b>
Never received any fire safety education	<b>25.0%</b>

Appendix C

**Fire Safety Education for Young Adults with Autism – Fire Service Survey**

1. Does your fire department have a full-time public educator?  
Yes  
No
  
2. Which of the following levels of education does your Public Education Division service?  
Home students  
Grade School students  
Jr. High / Middle School student  
High School students  
College students
  
3. Is your Public Education Division prepared to educate young autistic students?  
Yes  
No
  
4. How is your Public Education Division prepared to educate young autistic students?  
Specialized curriculums  
Specialized video presentations  
Programs presented to in-school facilitators  
No specialized programs are offered
  
5. Are the members of your Public Education Division prepared to educate young adults with autism?  
Yes  
No
  
6. Does your Public Education Division offer fire safety education to adults with autism who are in group housing, i.e. dorms or group monitored housing and if so what types of programs are offered?  
Yes  
No  
Evacuation education  
Fire extinguisher education  
9-11 Education  
Cooking safety education  
Medical emergency education  
Storm awareness education

## Appendix D

**Fire Safety Education for Young Adults with Autism – Fire Service Survey Results**

- |  |              |
|--|--------------|
| 1. Does your fire department have a full-time public educator?   |              |
| Yes  | <b>42.0%</b> |
| No   | <b>58.0%</b> |
| 2. Which of the following levels of education does your Public Education Division service?   |              |
| Home students  | <b>28.1%</b> |
| Grade School students  | <b>94.4%</b> |
| Jr. High / Middle School student   | <b>57.3%</b> |
| High School students   | <b>50.6%</b> |
| College students   | <b>20.2%</b> |
| 3. Is your Public Education Division prepared to educate young autistic students?  |              |
| Yes  | <b>13.0%</b> |
| No   | <b>87.0%</b> |
| 4. How is your Public Education Division prepared to educate young autistic students?  |              |
| Specialized curriculums  | <b>9.1%</b>  |
| Specialized video presentations  | <b>3.4%</b>  |
| Programs presented to in-school facilitators   | <b>6.8%</b>  |
| No specialized programs are offered  | <b>86.4%</b> |
| 5. Are the members of your Public Education Division prepared to educate young adults with autism?   |              |
| Yes  | <b>5.3%</b>  |
| No   | <b>94.7%</b> |
| 6. Does your Public Education Division offer fire safety education to adults with autism who are in group housing, i.e. dorms or group monitored housing and if so what types of programs are offered? |              |
| Yes  | <b>14.3%</b> |
| No   | <b>84.6%</b> |
| Evacuation education   | <b>13.2%</b> |
| Fire extinguisher education  | <b>3.3%</b>  |
| 9-11 Education   | <b>11.0%</b> |
| Cooking safety education   | <b>12.1%</b> |
| Medical emergency education  | <b>6.6%</b>  |
| Storm awareness education  | <b>7.7%</b>  |

Appendix E

**AUTISM CONTACT HANDOUT**

**Individual's Name:** \_\_\_\_\_

**Physical Description:**

Height: \_\_\_\_\_ Weight: \_\_\_\_\_ Hair Color: \_\_\_\_\_

Eye Color: \_\_\_\_\_ Identifying Scars: \_\_\_\_\_

**Individual's Communication Level:**

Verbal: \_\_\_\_\_ Non-Verbal \_\_\_\_\_ Sign Language: \_\_\_\_\_

Sign Board: \_\_\_\_\_ Picture Board: \_\_\_\_\_ Written Board: \_\_\_\_\_

**Identification Wear:** Jewelry: \_\_\_\_\_ Clothing Tags: \_\_\_\_\_ Printed Handout Card: \_\_\_\_\_

**Parent Name & Telephone Number(s):** \_\_\_\_\_

**Caregiver Name & Telephone Number(s):** \_\_\_\_\_

**Emergency Contact Name(s) & Numbers(s):** \_\_\_\_\_

**Sensory & Medical Conditions:** \_\_\_\_\_

**Atypical Behaviors or Characteristics that may draw attention:** \_\_\_\_\_

**Favorite Attractions or Locations where the individual may be found:** \_\_\_\_\_

**Likes and Dislikes – Approach De-escalation Techniques:** \_\_\_\_\_

**Blueprint of the Living Areas:** \_\_\_\_\_

