A Dissertation

entitled

Reducing Verbal and Physical Aggression in Elementary Students with Autism Spectrum Disorder using the Aggression Replacement Training Program

by

Emily L. Hayman

Submitted to the Graduate Faculty as partial fulfillment of the requirements for the Doctor of Philosophy Degree in Curriculum and Instruction: Special Education

Dr. Edward J. Cancio, Committee Chair

Dr. Laurie A. Dinnebeil, Committee Member

Dr. William F. McInerney, Committee Member

Mr. Ronald Davis, Committee Member

Dr. Patricia R. Komuniecki, Dean
College of Graduate Studies

The University of Toledo
December, 2014
An Abstract of

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Elementary students with Autism Spectrum Disorder (ASD) often exhibit aggressive behavior, causing disruption of the classroom-learning environment. Disruptive students are at risk of being removed from the classroom and being excluded from valuable class time. Remediating and reducing aggression in students with ASD requires intervention strategies to address social, communication, and anger management skills. The study examined the effectiveness of the Aggression Replacement Training (ART) (Glick & Gibbs, 2011) in reducing verbal and physical aggression for nine students with ASD. ART teaches students to use effective communication and anger management techniques to prevent conflicts, maintain self-control, and manage stressful situations in an appropriate manner. ART is a 10-week program, and was implemented with three groups of students with ASD using a multiple baseline across groups study design. The study used visual inspection of data to determine if the ART program decreases levels of aggression in students with ASD. The purpose of the study was to decrease frequency of verbal and physical aggression and increase prosocial skills. Results of the study found ART to be an effective intervention for reducing verbal and physical aggression in
elementary students with Autism. All participants also demonstrated acquisition and increased use of social skills.
Acknowledgements

My parents adopted me when I was 6 weeks old, and have given me a beautiful and fulfilling life. From my father, I learned to be strong, to work hard, and to never place limits on what I am capable of. From my mother, I learned to be compassionate and kind to others, to use my teaching talents to change lives, and to take pride in everything I do. From both, I learned the value of unconditional love, the importance of philanthropy, and the power contained within myself to make a difference in the world. Thank you, Mom, Dad, and Ben for giving me a life full of opportunities and happiness, and most importantly, for giving me a family when I didn’t have one of my own.

As I made the transition into graduate school, I was far away from home in New York. Dr. Marion Boss took me under her wing, and became my teacher, mentor, and friend. Dr. Boss taught me to write at a scholarly level, to teach children with autism, and to overcome my own personal obstacles. She also gave me my first “F”, which served as a subtle reminder that I should never settle for mediocrity.

The continuous support of my doctoral committee has been an integral part of my learning process. Each member of my committee has given me opportunities to have hands-on involvement in grant writing and research, and the skills I have acquired as a result have contributed to my success. Thank you Dr. McInerney, Dr. Dinnebeil, and Professor Davis for believing in my potential. Thank you to my committee chair, Dr. Cancio, for your patience, guidance, and support as I carved my path to completing my PhD.
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Chapter 1

Introduction

Aggressive and disruptive behavior most often results in disciplinary action, including temporary and permanent removal from the classroom or school. Punishment and exclusion have been found to be ineffective in changing aggressive behavior of students, yet remain the most common strategies used to address problem behaviors (Achilles, Mclaughlin, & Croninger, 2007). Students with behavioral problems are particularly prone to being removed from the classroom and school (Osher, Bear, Sprague, & Doyle, 2010) due to a lack of effective behavior interventions implemented in schools. As a result, students are excluded from the curriculum and teachers are burdened with continuous classroom disruptions. When appropriate intervention strategies are used to remediate aggressive behavior, students learn effective communication and self-management skills and the frequency of behaviors leading to classroom removal decreases.

Elementary students with Autism Spectrum Disorder (ASD) often exhibit aggressive behavior, causing disruption to the learning environment of the classroom. The behavioral characteristics of students with ASD are often linked to verbal and physical aggression (White, Kreiser, Pugliese, & Scarpa, 2012). Disruption from engaging in repetitive behaviors and routines (Kanne & Mazurek, 2011) can cause students with ASD to react with hostility and aggression. Deficits in functional language skills (Matson, Sipes, Fodstad, & Fitzgerald, 2011) and emotional regulation skills (Scarpa & Reyes, 2011) are also associated with ASD and may lead to aggressive behavior. Behavioral disruptions often result in punishment or removal from the school.
or classroom, rather than intervention. As a result, students exhibiting aggressive behavior are more likely to miss valuable class time. Students with ASD, who exhibit behavioral problems and aggression in elementary school, are at an increased risk for having severe behavioral problems later in life, and are more likely to fail academically or drop out of school (Buckley, 2009). Aggressive students tend to associate with aggressive peers, increasing the risk of subsequent antisocial behavior and violence (Dishion, Dodge, & Landsford, 2006). Implementing intervention as early as possible in the elementary school years decreases risk factors for more serious forms of aggression and remediates social skills and anger management skills.

Aggression Replacement Training (ART) was originally developed by Arnold Goldstein and Barry Glick in 1987. ART was first revised in 1998 (Goldstein, Glick, & Gibbs, 1998), and most recently revised in 2011 (Glick & Gibbs, 2011). ART is a prosocial skills program for remediation of aggressive behavior in youth. ART is a 10-week curriculum, and is comprised of three components: social skills training, anger control training, and moral reasoning development. ART has been successful in improving social skills and behavior problems in aggressive youth (Gundersen & Svartdal, 2006), and has been shown to help adolescents learn to generalize the skills learned in training to a community setting (Glick & Gibbs, 2011).

Although the ART program is used in schools, no current research has examined the effectiveness of the program for elementary students with ASD within the public school setting. The majority of research has focused on incarceration settings (Goldstein & Glick, 1994; Nugent, Bruley, & Allen, 1999) and community based programs (Reddy & Goldstein, 2001) serving juvenile delinquents. Few studies have focused on the use of
ART as a preventative measure in reducing patterns of verbally and physically aggressive behavior before more serious patterns of juvenile delinquency occur. If shown to be effective, ART may be an appropriate intervention for aggressive elementary students with ASD.

**Purpose of the Study**

Aggressive behavior causes a major disruption in the dynamics of teaching and learning in the classroom environment. Aggression occurs in many forms, and can be verbal or physical. Aggressive students often misperceive other people’s social cues (Hollin, 2003) and develop faulty perceptions of social situations. Most acts of aggression occur because the student struggles with both internal and external social and emotional issues (Amendola & Oliver, 2003). Internal issues are deeply rooted in the student’s thinking processes, and can result from being abused, witnessing aggression on a regular basis, or by being bullied. Internal conflicts build a foundation for the student to respond inappropriately to external issues, such as reacting impulsively with authority figures, hitting peers, or seeking attention inappropriately.

**Significance of the Study**

Studies examining symptoms of ASD tend to attribute symptoms to a deficit in Theory of Mind (ToM) (Steele, Joseph, & Tager-Flusberg, 2003). Studies suggest young children with ASD are unable to develop a ToM, resulting in awkward social behavior, inability to connect emotionally with others, and difficulty understanding and using symbolic language. Symptoms of ASD can be emotionally and physically overwhelming, and often lead to frustration, anger, and verbal or physical aggression.

 Teachers not specifically trained in educating students with special needs may lack skills or patience to effectively manage inappropriate behaviors. Teachers may be
unable to identify disruptive behaviors as symptoms of the student’s disability, and blame the child for misbehaving intentionally. Disruptive students with ASD are often removed from the classroom or suspended from school, leading to decreased presence in the classroom, academic difficulties, and inadequate behavioral remediation (Ashburner, Ziviani, & Rogers, 2008).

The study examined the effectiveness of ART as an appropriate intervention in decreasing aggression in elementary students with ASD in a public school setting. Teachers in public schools are not typically trained to prevent or remediate aggression. Teachers, administrators, curriculum coordinators, and parents of students with ASD may benefit from the results of this study by learning to implement effective alternatives to disciplinary removals or punishment. When implemented successfully, students can acquire prosocial skills, anger reduction techniques, and self-management skills. Aggressive behaviors may be decreased or prevented, allowing students to spend more productive time in the classroom.

The most important beneficiaries of this study are aggressive elementary students with ASD. ART provides students with communication and self-management tools to replace faulty thinking processes with rational thinking and assists students in managing stressful situations in a positive manner. Students may learn to exhibit less verbal and physical aggression, and increase their use of prosocial skills.

**Research Questions**

The following research questions were addressed:

1. Does the ART program reduce instances of physical aggression of elementary students with ASD?
2. Does the ART program reduce instances of verbal aggression of elementary students with ASD?

3. To what extent will prosocial skills increase, as measured by the Behavior Assessment System for Children-Teacher Rating Scale (BASC-2-TRS) (Reynolds & Kamphaus, 2004) from pre to posttest measures?

4. To what extent will prosocial skills increase as measured by the Social Skills Rating System Social Skills Questionnaire Teacher Form (SSRS-T) (Gresham & Elliot, 1990) on pre to posttest measures?

The research hypothesis of the study was: Will systematic use of the ART program reduce instances of physical and verbal aggression, and increase prosocial skills among elementary students with ASD, as measured by the BASC and SSRS.
Chapter II

Literature Review

Introduction

Students with ASD exhibiting aggression in the school setting are often removed from the classroom or school. Recent legislation has mandated the implementation of research-based interventions to create safe learning environments for students and provide appropriate placement for students with disabilities. Understanding causes of aggression in students with ASD is a critical component in selecting appropriate interventions to remediate maladaptive thought processes and behaviors.

Legislation

In response to disciplinary issues in special education, federal legislation has been passed to ensure fair treatment of students with behavioral problems. The reauthorization of the Individuals with Disabilities Education Act (IDEA) in 2004 expanded legal responsibilities and guidelines for providing appropriate education for students with disabilities. IDEA (2004) establishes enhanced procedures for disciplining students with disabilities, developing an appropriate Individualized Education Program (IEP) for the student, and providing legal rights for students who face disciplinary action.

Manifestation Determination

Students with ASD, who exhibit aggressive behavior, are often removed from the classroom when severity of aggression disrupts the learning environment and compromises the safety of teachers or classmates. Excessive removals from the classroom negatively impact the academic and behavioral progress of students with ASD. In 1994, a court decided, “removal from the child’s educational setting for more than 10
days is considered a change of placement” (Parents of Student v. Puyallup SD 3, 1994). The courts view expulsion, suspension, removal from the classroom, or placement in an alternate classroom extending beyond 45 days as a change of placement. Parents of Student v. Puyallup SD 3, (1994) established the need for legislation to regulate excessive classroom removals resulting from behavioral problems. IDEA (2004) now requires IEP teams to convene if a student is suspended for more than 10 consecutive days, or 10 cumulative non-consecutive days (IDEA, 34 C.F.R. 300.530, 2004).

In 1988, a California school attempted to expel two students with EBD for violence and disorderly conduct (Honig v. Doe, 1988). The infractions were found to be a direct result of the students’ disabilities, and the court determined the disciplinary decision to expel the students was a violation of a Free and Appropriate Public Education (FAPE). Honig v. Doe (1988) laid a foundation for the Manifestation Determination. According to IDEA, if a student is removed from a normal setting for more than 10 days for disciplinary reasons, a Manifestation Determination must be filed “no later than 10 days after the disciplinary action” (IDEA, 34 C.F.R. 300.530, 2004). IEP teams must review all student files, including the IEP, to determine if student conduct is related to a disability, if the IEP has been implemented correctly, or if the IEP is appropriate for students’ present levels of functioning. If removal from the regular setting exceeds 10 days, students must continue to receive special education services as required by the IEP [(IDEA, 34 C.F.R. 300.101(9)].

If an IEP team determines student behavior to be a manifestation of a disability or result of inappropriate design or implementation of the IEP, a remediation plan must be developed. According to IDEA (2004), IEP teams must conduct a Functional Behavior
Assessment (FBA) or revise a prior Behavioral Intervention Plan (BIP). BIP’s identify problem behaviors, assist IEP teams in determining appropriate intervention strategies to return the child to former placement, or decide if a change in placement would benefit the child (IDEA, 2004). If a change in placement is determined to be the best option for a student, modifications outlining the benefits and services of the new setting must be made in an IEP.

Students with disabilities may not be expelled from school if a violation is determined to be a manifestation of a disability. In cases of aggressive behavior, the school must conduct a manifestation determination meeting to decide if the student’s aggression was driven by intent to cause harm to others or school property, or if the aggression was a direct result of symptoms of the student’s disability. If the behavior is found to be unrelated to the child’s disability, the student may be disciplined in the same manner as non-disabled peers, including “long term suspension or expulsion” (IDEA, 34 C.F.R. 300.350, 2004). The Manifestation Determination process is intended to protect the rights of students with disabilities. In accordance with the No Child Left Behind Act of 2001 (NCLB), all students are entitled to a safe school environment, and the Manifestation Determination process prevents aggressive or unsafe behaviors from affecting the learning environment and safety of peers. The Manifestation Determination process also provides opportunities to adjust a student’s IEP to incorporate remedial or preventative services to reduce aggressive behaviors.

A Manifestation Determination meeting is conducted to determine appropriate placement based on the student’s behavior. The three main factors to be determined during the meeting are:
a. The child’s IEP and placement were appropriate;

b. The child’s disability did not impair ability to understand the impact and consequences of the behavior resulting in discipline; and

c. The child’s disability did not impair ability to control the behavior subject to disciplinary action (Mead, 1998).

If the student’s behavior is determined to meet the above criteria, the student will be disciplined or receive a change in placement according to school protocol.

One of the major changes in the reauthorization of IDEA in 2004 was an increase in the scope of the school district’s authority in determining whether “unique circumstances” [(IDEA, 34 C.F.R. 300.530 (i) (3), 2004)] warrant a change in a student’s educational placement. If a student with a disability violates a code of student conduct, even if the violation is determined to be a manifestation of the students disability, the school district may decide to change the student’s placement [(IDEA, 20 U.S.C. 1415 (k)(1)(A)(2004)] in unique circumstances. Authority was extended to allow family and professionals who are most familiar with the causes and effects of a student’s behavior to make decisions regarding placement when safety is a vital concern.

Alternate Educational Settings

Students can be removed from regular placement for “up to 45 days, regardless of disability, if the offense is serious and involves drugs, weapons, or serious bodily injury of others” (IDEA, 34 C.F.R. 300. 530 (i)(3)(2004)]. If students with disabilities violate a student code of conduct, a change in placement can be made for up to 45 days, for each incident (IDEA, 34 C.F.R. 300.530(2004)]. Students who violate a student code of conduct are still entitled to FAPE and special education services in an alternative setting.
[(IDEA 34 C.F.R. 33.121 (d)(2)(ii), (2004)], and parents have the same rights to be involved in legal processes involving any changes in placement. The “Stay Put” provision of IDEA provide students who exhibit aggressive or antisocial behavior with rights to FAPE, and states that students may only be moved to alternative settings if the behavior is likely to cause harm to the self or others (IDEA, “Stay Put provision” as codified in 20 U.S.C. §1415(j)). The student cannot be moved to an alternative setting because the behavior is an inconvenience to manage. If the behavior does not pose a serious safety risk, teachers must receive training or guidance in managing the student’s behavior. NCLB sets forth guidelines for schools to provide appropriate training, prevention programs, intervention strategies, and crisis management programs to minimize behavior incidents and school removals (NCLB, 2001, Section 1114 (b)(1)(iii).

**Theories of Aggression**

**Instinct Theory.** According to Sigmund Freud (1920), pent up physical aggression must be released periodically in order to maintain a calm demeanor. Freud’s Instinct Theory of Aggression suggests the release of negative aggressive energy can take place in the form of functional and appropriate activities such as exercising or writing. Aggression is a natural human instinct, and can accumulate in any individual, regardless of outside stimuli (Feschbach, 1971).

Individuals who have difficulty finding ways to release frustration through productive and positive stress-relieving activities are more likely to have aggressive outbursts when a threshold has been surpassed. Children with ASD have unique sensory needs, and often require sensory stimulation or sensory desensitization. Sensory stimulation includes physical activities such as jumping on a trampoline, swinging, or
stretching. Sensory desensitization includes environmental adjustments, such as using noise cancelling headphones to alleviate auditory intensity of unpleasant sounds, or moving to a room with natural lighting to ease tension on the eyes. Many children with ASD have limited communication skills, and are unable to express the need for sensory intervention during uncomfortable or stressful situations. As a result, frustration builds, and aggression is often the child’s only means of communication (Kanne & Mazurek, 2011).

**Drive Theory.** The Drive Theory (Dollard, Doob, Miller, Mowrer, & Sears, 1939) suggests aggression is the result of frustration overload in response to challenges in meeting goals related to the most basic human needs, such as food, water, sleep, sex, love, and recognition. When difficulty in communicating the need for meeting goals arises, or needs are not sufficiently met, frustration builds, and aggression is more likely to be released (Dollard, et al., 1939).

Children with ASD often have impaired expressive language skills, and have difficulty communicating basic emotional or physical needs. Children with ASD also lack social skills and coping mechanisms to prevent or manage frustrating or stressful situations (Kurtz, et al., 2012). Social and communication deficits linked to ASD often lead to frustration, anger, and aggressive outbursts.

**Social Learning Theory.** According to Albert Bandura (1973), aggression is a learned behavior with a social function. Aggression is learned by observing aggressive individuals, or by directly experiencing acts of aggression within an environment. Children are more likely to become aggressive by learning to imitate aggressive behavior observed from role models, such as parents, family, peers, and the media (Gentile,
Coyne, & Walsh, 2011). If aggressive behavior becomes a functional tool and results in
rewarding consequences, or the child sees others using aggression to achieve a desired
outcome, negative aggressive behavior patterns become reinforced (May, 2011).

Causes of Aggression

Genetic. A study conducted by Unever, Cullen, and Pratt (2003) found genetic
predispositions could influence characteristics leading to aggression, such as low self-
control and impulsivity. ASD is considered a biological disorder, and “genetics and
neurology are largely responsible for excessive behavior and poor self control” (Barkley,
2001). Although the cause of ASD remains unknown, genetic predispositions can be
exacerbated by environmental influences.

Physical aggression can be an inherited trait, and occurs as a result of social or
environmental triggers (Narusyte, Andershed, Neiderhiser, & Lichtenstein, 2007).
According to Brendgen, Girard, Dionne, and Boivin (2005), 50% of aggression is
influenced by genes. Physical aggression is easily passed from mother to child (Booij, et
al., 2010), especially in the presence of persistent stressful conditions (O’Neal, et al.,
2010). Mothers exposed to chronic stress are at risk of giving birth to children with
aggressive temperaments.

Impulsivity and anger are “genetically influenced aspects of the child’s behavior”
(Narusyte, et al., 2007, p. 129), and increase the risk of the child becoming aggressive.
Children who inherit temperamental difficulties tend to be more aggressive and have
difficulty coping with novel stressful stimuli (Sakimura, Dang, Ballard, & Hansen, 2008),
due to deficits in emotional regulation and self-control (Brendgen, Girard, Dionne, &
Boivin, 2005). Self-regulation and anger management strategies are effective in preventing and remediating impulsive and aggressive responses to unpleasant situations.

**Neurochemical.** Altered brain chemistry, particularly in ASD, causes impairments in neurotransmitters responsible for regulating physiological responses to stress. Brendgen, et al. (2005) found an increase in cortisol levels, from morning to afternoon or evening, is linked to physical aggression in 3-8 year olds. When a child is chronically neglected or exposed to a stressful environment, the child’s brain gradually becomes less capable of releasing cortisol. Decreased cortisol levels inhibit the physiological ability to cope with stress, and can lead to anxiety, irritability, and aggression. In addition, O’Neal, et al. (2010) discovered “meaningful associations between cortisol response and aggression among children at familial risk for antisocial behavior” (p. 290) Cortisol imbalances could be corrected with behavioral interventions (Brotman, et al., 2007) designed to help the child to cope with physiological symptoms of stress, anxiety, and anger.

Low serotonin levels also contribute to increased aggression (Booij, et al, 2010). Serotonin plays an important role in calming the central nervous system when stressful situations arise. If serotonin transmission is impaired, stressful stimuli have a greater impact on the speed and intensity of physiological responses, such as anxiety, frustration, and anger.

**Parenting styles.** According to Carey (1998), “certain temperament traits are particularly likely to induce a poor fit and interactional stress with the values and expectations of caregivers” (p. 5). Parents who are unfamiliar with the causes and functions of ASD-related behaviors may struggle with effectively managing aggressive
outbursts. Functions of the behavior must be determined, and consequences must be identified to modify a behavior. Excusing a child’s negative behaviors as uncontrollable symptoms of ASD reinforces the behavior.

Aggression is often learned and reinforced by children receiving excessive punishment. Parental use of corporal punishment, such as spanking, has been found to increase the risks of a child becoming aggressive (Taylor, Manganello, Lee, & Rice, 2010). “Coercive family systems” (Farmer, Farmer, Estell, & Hutchins, 2007, p. 199) are characterized by parents who fail to model positive and appropriate behaviors. Children in coercive environments learn negative and inappropriate behaviors, and are then punished. If parents fail to model appropriate desired behaviors, the child will continue to misbehave and receive punishment, but will not know what kind of behavior is expected. Farmer et al. (2007) found instances of aggression were less common in children whose parents modeled appropriate behavior and implemented positive reinforcement within the home.

Inconsistent parenting strategies and parental conflict also increase risks of childhood aggression (Narusyte, et al., 2007). Spousal disagreements in discipline cause the child to be unsure of what type of behavior is expected, and inconsistent positive or negative reinforcement can cause confusion or delays in learning appropriate behavior. External stressors such as financial difficulties or family trauma can also increase “parental hostility” (Williams, Conger, & Blozis, 2007, p. 1526), and contributes to inconsistencies in parenting. Parents of children with ASD have been found to be significantly more angry and depressed than parents of typically developing children.
(Benson & Karloff, 2009), often leading to parental modeling of angry and aggressive behaviors.

**Media.** Modern media exposes children to poor role models, and aggressive behavior is often portrayed as being glamorous, acceptable, and effective. Barkley (1997) emphasizes the need to consider the manner in which socialization influences the development and organization of executive functions. Children with ASD tend to develop an understanding of rules and behaviors based on literal interpretations of interactions within the immediate environment. Children with ASD may not understand aggression observed on television or in video games is simulated, and may attempt to replicate modeled aggressive behavior in actual social settings (Ganz, Earles-Vollrath, & Cook, 2011).

**Socioeconomic status.** Low socioeconomic status is a common risk factor in aggression because of the various stressors associated with low-income families (Vanderberg, 2009). Parental supervision is often limited in families with low SES because homes are often headed by single parents. Decreased parent supervision results in fewer opportunities to teach positive behavior and deter negative behavior. Single parents often experience stress, leading to coercive parenting or failure to model positive behavior. In one study, researchers found parental monitoring increased self-control and had direct effects on measures of delinquency (Unnever, Cullen, & Pratt, 2003).

**Demographics.** Urban environments are linked to increased risk factors for aggression. Children in urban settings are more likely to witness crimes, aggression, and dysfunctional behavior. Urban environments commonly lack resources to prevent and remediate aggression, such as after school programs or parent education organizations.
Schools in economically stressed urban neighborhoods may lack funding to provide adequate teacher training, sufficient faculty-to-student ratios (Eckert, 2013), and educational materials for students with ASD.

**School structure and disciplinary procedures.** Instances of aggression are more common in schools failing to implement consistent rules, expectations, and discipline (Kauffman & Landrum, 2013). Children with ASD rely on implementing rules and routines to establish patterns of behavior. The risk of developing aggressive or antisocial behavior increases in inconsistent environments, because children with ASD have difficulty making sense of social expectations and consequences unless rules and reasoning are attached to specific behaviors. Students with ASD may engage in “reactive aggression” when routines and repetitive behaviors are interrupted unexpectedly or inappropriately (Kanne & Mazurek, 2011).

Ineffective disciplinary practices such as public reprimands and punishment also contribute to aggression (Farmer, et al., 2007). Students with ASD have difficulty creating a schema for appropriate behavior and rules unless clear guidelines and expectations are set. Punishment is especially ineffective for students who struggle with understanding social cues, because reprimanding bad behavior fails to address appropriate replacement behaviors. As a result, punishment leads to confusion, frustration, and elevated levels of aggression. Decreasing maladaptive behaviors and increasing positive target behaviors (Reid, Trout, & Schwartz, 2005) is a more effective approach for students with ASD, because positive routines and social skills lead to decreased aggression, better conflict management, and fewer removals from the classroom.
**Educational labeling.** Cohen (1977) suggests that school personnel communicate certain values to their constituents by actions and words associated with labels, such as identification, treatment, and placement. Teachers tend to expect and excuse certain behaviors from a child labeled with ASD, and may excuse inappropriate behaviors or fail to develop remedial behavioral interventions. Becker (1963) suggests when a child becomes aware of being labeled, the child will begin to “fill the role” of the negative characteristics, limitations, and expectations of the label.

Special education labels “tend to foster stereotypes and have a negative impact on the individual being labeled” (Cornett-Ruiz & Hendricks, 1993, p. 349). Students with ASD are at a higher risk of being bullied due to lack of peer acceptance associated with labeling. Students with ASD often lack adequate social skills in response to bullying, and may respond with verbal or physical aggression.

Edwin Lemert’s (1951) classic labeling theory explains how labeling leads to aggression or deviance. Lemert’s theory defines deviance as “the initial deviant act or characteristic” (Lemert, 1951). Symptoms of ASD, such as impulsivity, hyperactivity, lack of communication skills, and inattentiveness may be perceived as deviant acts. Lemert describes the social reaction to deviant acts as “the response of other people to the primary deviance” (Lemert, 1951). Primary deviance occurs when negative stigmas are associated with ASD, or when ASD-related aggression is excused rather than addressed. Lemert describes secondary deviance as “the response of the deviant to the social reaction” (Lemert, 1951). When a child with ASD becomes aware of the label, the child often fulfills expectations (Kauffman & Landrum, 2013) associated with the label.
Autism Spectrum Disorder (ASD)

**Characteristics.** Autism Spectrum Disorder (ASD) is a pervasive developmental disorder characterized by language, emotional and social-cognitive deficits (Harwood & Farrar, 2006). Children with ASD often lack communication and social skills to interact appropriately with others. Most children with ASD prefer to be alone, do not attempt to communicate with others, have difficulty interpreting and using emotions and non-verbal cues, and have difficulty understanding and applying social rules.

Children with ASD have difficulty learning communication skills, and expressive language is often limited to requesting desired objects or activities. Abstract verbal concepts, such as talking about the past or present, explaining emotions, conveying complex needs, or detecting sarcastic or metaphoric language are also challenging for children with ASD. Matson, et al., (2011) found many aggressive behaviors are used to gain access to desired items or situations, or to escape unpleasant sensory stimuli. Students with ASD may engage in disruptive or aggressive behavior because of the inability to effectively communicate with others (Matson, 2007).

According to Barkley (1997), symptoms of ASD can combine to form risk factors for deviant behavior, including “greater risks for low achievement, poor school performance, retention in grade level, increase in school suspensions/expulsions, poor peer and family relations, anxiety and depression, aggression, conduct problems, and early substance experimentation or abuse”. Behavioral characteristics of ASD have also been found to be directly related to verbal and physical aggression (White, et al., 2012). Emotional regulation is difficult for students with ASD, due to lack of coping mechanisms, anger management skills, or social skills. Lack of emotional regulation
often results in aggression in students with ASD (Scarpa & Reyes, 2011), especially in unpleasant social situations causing anxiety and anger (Bronsard, Botbol, & Tordjman, 2010).

Inability to focus on tasks is a symptom of ASD often resulting in disruptive or aggressive behavior and failure to complete tasks. In a recent study, “situations of failure” were found to cause behavior problems in students with ASD (Touhami, Ouriaghli, Manoudi, & Asri, 2011). Hyperactivity due to insufficient sensory input also leads to inability to focus on tasks. In a 20-year follow-up study of childhood hyperactivity, Dalteg and Levander (1998) found subjects hyperactive throughout childhood were more likely to engage in criminal behavior and had a worse prognosis than typically developing peers. Timimi and Taylor (2004) suggest characteristics of ASD related to inattentiveness and hyperactivity can result in the child being “more prone to conduct problems, educational, and occupational failure” (p. 9). Hyperactivity may cause delays in development, and “severe hyperactivity is a strong predictor of psychosocial adjustment” (Taylor et al., 1996, p. 9).

**Theory of Mind.** Theory of Mind (ToM) involves a set of skills required in forming genuine and reciprocal relationships with others, and is based on one’s ability to understand the thoughts of others differ from one’s own. ToM is not a measurable characteristic of the brain, because humans are unable to objectively know the minds of others and can only make inferences about thoughts or needs of others. Inferences are based on subjective interpretations of symbolic gestures and personal values.

ToM was first used to investigate causes of ASD by Baron-Cohen, Leslie, and Frith (1985), who suggested “children with ASD do not employ a theory of mind, and
have particular difficulties with tasks requiring the child to understand another person’s beliefs” (p. 43). ToM is responsible for the specialized learning of abstract concepts such as belief, desire, and pretend (Leslie, Friedman, & German, 2004). Children with ASD are very literal, and have difficulty understanding sarcasm, metaphors, and complex emotions. Developmental delays in ToM create challenges in communication and social interaction.

A large-scale longitudinal study by Steele, Joseph, and Tager-Flusberg (2003) examined ToM and language abilities in 57 children with ASD. Participants completed a series of tests measuring simple, intermediate, and advanced ToM skills. The tests false belief, understanding of others’ emotional states, understanding of non-literal language, and various other skills related to ToM. One year later, participants were given the same tests, and results indicated an increase in ToM capabilities in two thirds of the participants (Steele, Joseph, & Tager-Flusberg, 2003). The study showed a very strong link between vocabulary acquisition over the period of one year and ability to perform on ToM tasks. The results suggest ToM abilities are present in children with ASD, and may develop more rapidly as the child learns to verbalize more complex concepts and ideas.

The development of ToM relies strongly on the ability to use and understand abstract verbal, emotional, and social concepts. The ability to interpret subtle aspects of communication is needed to understand the purpose and value of verbal and nonverbal social exchanges. Symptoms of ASD indicating a deficit in ToM include inability to make eye contact, difficulty decoding facial expressions, and lack of interest in communicating or interacting with others. Deficits in ToM can affect a child’s ability to
develop empathy, understand social rules, and communicate effectively with others, and can result in aggressive responses to novel or stressful social situations.

Research Based Interventions for Remediating Aggression

Several research-based interventions have been found to be effective in remediating aggression in elementary students. Successful interventions include components addressing the social, emotional, and behavioral aspects of aggression (Dawson, 2003; Forthum, McCombie, & Freado, 2006). Students must be taught to replace dysfunctional behaviors and communication skills with appropriate prosocial skills. Stress management and anger management are also key factors in teaching students with ASD to self-manage behavior in stressful social situations and sensory environments.

Cognitive Behavior Modification. Cognitive Behavior Modification (CBM) is the foundation of most research-based interventions for addressing maladaptive behavior and aggression. CBM implements techniques to replace inappropriate behavior and thought processes with realistic and effective alternatives (Hayes, Villatte, Levin, & Hildebrandt, 2011). Interventions for aggression and anger reduction are based on the premises of CBM. According to Meichenbaum (1980), students are able to self-monitor behavior and emotions by learning to identify triggers and administer appropriate social skills or coping mechanisms.

Intervention programs based on CBM have been found to be beneficial for modifying behavior in students with autism (Quinn, Swaggart, & Myles, 1994). The major research-based interventions for aggression and anger management utilize similar
sequences of CBM components. Quinn et al. (1994) outline a sequence for using CBM for students with autism as follows:

- **Model:** The teacher verbalizes aloud what he is doing while demonstrating the strategy steps of a task.
- **Put-through:** Following modeling, the teacher puts the student through the process, providing prompts if necessary. This procedure is performed on a daily basis until the student completes the task with minimal prompting. The teacher collects data and monitors the process until the student is able to master the task at the pre-established criteria.
- **Self-recording:** After following a signal or visual representation of a step, the student places a chip on a board, places a mark on a self-monitoring sheet, or otherwise records the occurrence of the target behavior.
- **Self-rewarding:** After the picture sequence or after the self-monitoring has been completed, the student “self-rewards” from a menu of preferred reinforcers.

**Second Step Violence Prevention Program.** The Second Step Violence Prevention Program is a classroom-based intervention for students in grades K-8 who struggle with aggression and socio-emotional deficits. Second Step uses discussion, modeling, coaching, and practice (Moore & Beland, 1992) to reduce aggressive behaviors and help students develop prosocial skills. Second Step focuses on six themes, including empathy and communication; bullying prevention; emotion management; action steps for problem solving; decision making and goal setting; and substance abuse prevention (Second Step Program Implementation Guide, 2008).
Second Step is influenced by aspects of the social learning theory (Bandura, 1986), and focuses on the link between empathy and peer acceptance. The Second Step Program Implementation Guide (2008) suggests “early adolescence is a good time to scaffold” (p. 2), as adolescence is a time of emotional, social, and behavioral transitioning. Scaffolding is a learning strategy, and begins by building foundational skills and adds more advanced skills, over time, as the student progresses.

Students who exhibit aggression often have difficulty with academics (Caprara, Barbaranelli, Pastorelli, Bandura & Zimbardo, 2000) as a result of disruptive behavior interfering with learning opportunities. Second Step is effective in addressing the correlation between peer rejection and poor academic performance in aggressive students (Petit, Clawson, Dodge, & Bates, 1996). The program is a classroom-based intervention, and provides social and communicative tools to help student’s function more positively with the teacher and peers in the classroom environment.

Children with ASD have difficulty with social interactions, and are often rejected by peers. A lack of empathy and appropriate social skills required in handling rejection often results in aggressive responses. The empathy module in the Second Step curriculum teaches students to view social situations from the perspective of others, and helps students to develop emotional competency and ToM. Children who are empathetic are more capable of interacting positively with others in difficult situations, and are more likely to be accepted by peers (Fabes, et al., 1994).

Effective communication, impulse control, and anger management are skills required in positive conflict resolution. Second Step emphasizes the importance of teaching fundamental social skills as a preventative measure in decreasing the frequency
of unpleasant social situations responsible for escalating a student’s emotions to the point of anger and aggression. Skills taught within the Second Step curriculum help restructure the thought processes involved in coping with internal and external conflicts by replacing negative and dysfunctional thoughts and reactions with logical and appropriate alternatives.

Second Step teaches students to implement emotional regulation and anger management strategies to decrease impulsive and aggressive responses to unpleasant situations. Skills are then remediated through teaching a positive behavior sequence. Students learn to identify anger triggers and cues, use anger management strategies to suppress impulsive urges, choose an appropriate prosocial skill for the situation, and approach the situation empathetically and appropriately.

Second Step has been used in rural and urban settings (Grossman et al., 1997) to remediate aggressive behaviors in students. Research studies examining the Second Step program have mainly examined the effectiveness of the intervention in elementary students, and have generally reported a decrease in physically aggressive behavior and increase in prosocial behavior in the school (Grossman et al., 1997). None of the studies conducted have specifically mentioned the presence of ASD in any elementary school participants, so it is unknown how the intervention influenced any relationships between ASD and aggression.

Studies examining the implementation of Second Step to remediate aggression have shown success in reducing aggressive behavior and increasing the use of prosocial skills (McMahon, Washburn, Felix, Yakin, & Childrey, 2000). Second Step implementation and effectiveness has only been examined in the school environment, but
many of the studies acknowledge home and community factors (McMahon, et al., 2000) such as poverty, dysfunctional family environments, and lack of positive role models in contributing to aggression.

**Life Space Crisis Intervention.** Life Space Crisis Intervention (LSCI) is a psychoeducational conflict management program designed for educators of students who exhibit disruptive behaviors. LSCI was developed in 1996 by Nicolas Long and Frank Fecser for the purpose of creating positive, trusting, and productive relationships between teachers and students using crises as a tool for social and emotional growth. LSCI teaches educators to use six stages and six “reclaiming interventions” (Long & Fecser, 1996) to prevent escalation of disruptive behaviors into conflicts by restructuring common negative thought processes, discouraging perpetuation of conflicts, and embracing opportunities for reflection of behavior patterns. LSCI helps teachers understand several of the common underlying characteristics of aggression, such as outbursts, lack of social skills, and deficits in self-management skills. Understanding causes and characteristics of aggression allows teachers to develop conflict management strategies embedded with knowledge of student behavior, trust, and patience.

Although research supporting implementation of LSCI is limited, existing studies have found a decrease in disruptive behavior patterns in aggressive students who participated in LSCI (Grskovic & Goetze, 2005), as well as decreased occurrences of crisis situations. Factors contributing to successful outcomes of LSCI include increased levels of respect between students and teachers, development of effective coping and communication skills, and elevated feelings of “self-efficacy” (Dawson, 2003) when
dealing with crises. Secondary benefits of LSCI include higher attendance rates, increase in partial mainstreaming, and decreased suspensions (Dawson, 2003).

Teachers who used LSCI have reported drastic improvements in relationships with students. Forthum, McCombie, and Freado (2006) examined teacher responses to LSCI training, reporting “strongly held beliefs about the causes of disruptive behaviors were challenged and replaced by beliefs that all students are students of promise” (p. 99). LSCI provides teachers with skills to replace coercive and punitive reactions to student behavior with approaches cultivating “trust, honesty, empathy, patience, tolerance, and responsibility” (Forthum, et al., 2006, p. 101).

LSCI is based on the concept of the “conflict cycle” (Long, 1995), a predictable perpetuation of irrational beliefs in response to a stressful event. A conflict cycle begins with an event a child perceives as stressful or unpleasant. Irrational thoughts and anxieties begin to develop, usually resulting inappropriate behavioral responses. Adult and peer reactions to a child’s inappropriate responses determine how a child will react if the stressful event occurs again. The cycle can either be broken by the intervention strategies used in LSCI, or escalate into a repetitive series of crises as a result of negative adult or peer reactions to the child’s behavior. The conflict cycle is a common problem among students with ASD because social, communication, and emotional skill deficits are more prevalent. The strategies used in LSCI prepare teachers to deal with unplanned crises and unpredictable behaviors in a calm and positive manner.

**Aggression Replacement Training**

**Theoretical assumptions.** Aggression Replacement Training (ART) uses a multimodal approach to address the deep psychological, emotional, and behavioral issues
related to aggression. ART is based on the theoretical assumption of aggression being learned through practice, reinforcement, and development of dysfunctional thought processes. ART addresses aggression on a cognitive level to restructure self-defeating thought processes and reinforce positive behavior patterns. The social skills portion of ART is designed to replace negative behavior patterns with alternative positive behaviors by restructuring irrational thoughts and feelings (Gundersen, Finne, & Olsen, 2006) related to stressful situations.

The anger control portion of the ART curriculum addresses the physiological aspects (Gundersen, et al., 2006) of aggression by teaching students to identify personal cues and triggers of anger. Anger control allows students to recognize initial physical characteristics of anger, such as muscle tension, shortness of breath, or clenched teeth. Students are often unaware of anger symptoms, and may act impulsively when lacking emotional regulation skills. Anger control training teaches a series of anger identification techniques and coping mechanisms to help students identify symptoms of anger and implement calming strategies to reduce anger.

**Focus on remediating inefficient social skills.** Skillstreaming techniques (Glick & Goldstein, 1987; McGinnis & Goldstein, 1984) are integrated into ART to replace negative and aggressive social behaviors with equally effective and appropriate social skills. Many students with ASD do not know how to appropriately establish friendships, and bully or intimidate others in an attempt to seek approval. Skillstreaming is composed of detailed steps and strategies designed to teach social skills necessary in forming positive and respectful relationships. Repeated and consistent practice of Skillstreaming
techniques allows students to discover the values and rewards of communicating needs and emotions through positive communication.

Although Skillstreaming is now a part of the Aggression Replacement Training curriculum, it was originally developed as a psychoeducational behavioral approach (McGinnis & Goldstein, 1984) to address problem behaviors in elementary students with behavior disorders. Skillstreaming uses a nine-step process to identify, select, role-play, and analyze social skills (McGinnis & Goldstein, 1984). The ART curriculum contains 10 Skillstreaming skills, and scaffolds skills into weekly lessons by increasing levels of student participation and reflection of skill use in role-play scenarios.

Skillstreaming remediates aggressive behavior by modeling and reinforcing prosocial skills. Students learn to modify thoughts and responses during difficult situations by observing and practicing positive social behaviors. Aggression and negative behaviors are replaced with positive communication and social skills by practicing appropriate replacement behaviors in role-play situations. Skillstreaming increases opportunities for learning behavior through interacting in the environment (Dodge, 1993), and allows students with ASD to generalize the use of prosocial skills.

Social skills can be challenging for students with ASD, and must be taught by breaking complex skills into small sets of instructions. Skillstreaming uses a task analysis design to scaffold new behaviors, and each skill is divided into small, manageable steps. Students gradually learn to replace impulsive aggressive reactions with thoughtful and appropriate responses by practicing and applying Skillstreaming skills until automaticity occurs.
Anger Control Training. The anger control component of ART defines anger as a natural and manageable human process rather than an isolated reaction to a stimulus. Many students with ASD act inappropriately when faced with unpleasant social situations or sensory stimuli, and aggression is usually a student’s first impulse. The Anger Control Training portion of ART teaches anger management strategies to equip students with coping mechanisms, effective communication skills, and a sense of self-efficacy when dealing with frustrating situations.

Anger triggers are manifested uniquely in each individual as a result of situations perceived as stressful, annoying, or infuriating. Triggers result in physical symptoms of anger, and often lead to aggression. Anger Control Training teaches students to identify triggers and cues to understand personal patterns of anger. Once patterns have been identified, students are encouraged to use personal reminders to accept the anger as a controllable emotion. Reminders are comforting statements or mantras the student uses to prevent impulsive acts of aggression. Reminders are then paired with anger reduction techniques, such as deep breathing, counting backwards, or pleasant imagery. Once the sequence has been practiced through role-play or applied in actual situations, the student is asked to evaluate personal anger control sequences. The Anger Control Training sequence helps students communicate and react appropriately and effectively when a stressful or unpleasant situation occurs (Goldstein & Glick, 2011).

Anger Control Training teaches students to use self-management strategies to prevent negative responses to stressful situations. Alberto and Troutman (2003) state, “learning occurs as a result of the consequences of behavior” (p. 18). Anger Control Training teaches students to identify when a stressful stimuli is present, practice calming
techniques to reduce the likelihood of an impulsive response, choose an alternative prosocial response, and evaluate the effectiveness of a more appropriate resolution to the conflict. Once the student develops a pattern of success using self-management techniques, the prosocial behavior becomes more natural, occurs more often, and eventually replaces the previous aggressive behavior.

**Hassle Logs.** Human behavior can be understood and predicted (Alberto & Troutman, 2003), and aggressive behavior can be modified when cause and effect of the behavior are understood. All behavior, whether inappropriate or not, serves a specific function in response to one’s environment. A Hassle Log is an exercise in the ART curriculum, and use Cognitive Behavior Modification strategies to identify environmental stimuli responsible for triggering aggressive behavior. Hassle Logs are collected throughout the ART intervention to identify and modify stimuli and behavioral responses.

Cognitive Behavior Modification discourages the use of punishment as a response to a student’s challenging behavior. Alberto and Troutman (2003) found punishment of functional behavior to be unfair to the child. Hassle Logs identify how aggressive behavior patterns may be reinforced by disciplinary consequences. If students find particular consequences as pleasurable, such as being sent to the principal’s office to avoid participating in class, students are more likely to continue the disruptive behavior in the future. Hassle Logs have been found to be effective in helping students identify reactions to behavioral consequences (Down, Willner, Watts, & Griffiths, 2012), and uncover motives of disruptive behavior.

Modifying inappropriate behavior requires introduction of alternative and acceptable replacement behaviors (Alberto & Troutman, 2003). ART encourages
teaching alternative prosocial skills when students act aggressively, rather than
administering a punishment or removing the student from the classroom without teaching
an appropriate skill to replace the aggressive behavior. Providing students with
appropriate alternatives to communicating and interacting with others helps students
discover the usefulness of the alternative behavior in serving the same function as the
behavior to be replaced. (Alberto & Troutman, 2003).

**Research evidence and suggestions for best practice.** ART has been successful
in improving social skills and behavior problems in aggressive youth (Gundersen &
Svartdal, 2006), and has been shown to help adolescents learn to generalize skills to a
community setting (Glick & Goldstein, 1987). ART is a viable option for youth with
ASD, and has been shown to help regulate impulsive behavior and increase self-control
in difficult social situations (Glick & Goldstein, 1987).

ART has been used in a variety of settings, including juvenile detention facilities
(Goldstein & Glick, 1994; Nugent et al., 1999), residential care settings, community
based programs, and schools (Reddy & Goldstein, 2001). Few studies have been
conducted regarding the effectiveness of the ART program in reducing aggression in
children. The majority of existing studies have focused on incarcerated (Glick &
Goldstein, 1987) males ranging from 12 to 18 years of age (McCauley, 2006). Studies
examining the effectiveness of ART in reducing aggression in older incarcerated males
have shown positive results (Glick & Goldstein, 1987).

Best practice suggestions for implementing the ART program include the use of a
trained facilitator to conduct a thorough completion of each segment of the 10-week
curriculum (Goldstein, Glick, & Gibbs, 1998). ART guidelines also recommend using
small groups of students of similar developmental levels. Small group size allows the facilitator to address each student’s unique social skill deficits and behavioral needs.
Chapter III

Research Methodology

Participants

Child participants. Nine participants were involved in the study. Participants were elementary students in grades K-6, and attended a school for children with Autism. For the purpose of the study, the school was assigned the fictitious name, “Autism Learning Center” (ALC), and is located in an urban community in Toledo, Ohio. All participants had a primary medical diagnosis of ASD. Participants were selected based on having more than two documented incidences of verbal or physical aggression per month. Participants in the study ranged from 7-10 years of age.

The academic performance of participants in the study was comparable to non-disabled peers. Participants had deficits in behavioral, social, and communication skills. Aggressive behaviors reported to be problematic included verbal and physical outbursts towards faculty during undesirable activities, such as screaming, hitting, scratching, biting, kicking, pushing, hair pulling, and throwing objects.

Selection of participants was also contingent upon the student having a signed parental consent forms for participation in the study. Participants were divided into three groups, and each group contained three participants. Similarly matched comparison groups were formed by the researcher based on academic levels and severity of aggression exhibited.

The nine participants in the study were males. Males are four times more likely to be diagnosed with Autism than females (Becker, 2012), and all students attending ALC at the time of the study were male. Participants were assigned fictitious names in the study
to maintain confidentiality. Table 1 provides an overview of child participant demographics.

Table 1

Child participant demographics

<table>
<thead>
<tr>
<th>Group</th>
<th>Name</th>
<th>Age</th>
<th>Gender</th>
<th>Race</th>
<th>Diagnosis</th>
<th>Grade Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jacob</td>
<td>9</td>
<td>Male</td>
<td>Caucasian</td>
<td>Autism</td>
<td>3rd</td>
</tr>
<tr>
<td></td>
<td>Nathan</td>
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<td>Male</td>
<td>Caucasian</td>
<td>Autism</td>
<td>4th</td>
</tr>
<tr>
<td></td>
<td>Eric</td>
<td>10</td>
<td>Male</td>
<td>African American</td>
<td>Autism</td>
<td>3rd</td>
</tr>
<tr>
<td>2</td>
<td>Michael</td>
<td>7</td>
<td>Male</td>
<td>Caucasian</td>
<td>Autism</td>
<td>1st</td>
</tr>
<tr>
<td></td>
<td>Steven</td>
<td>7</td>
<td>Male</td>
<td>Hispanic</td>
<td>Autism</td>
<td>1st</td>
</tr>
<tr>
<td></td>
<td>Brandon</td>
<td>8</td>
<td>Male</td>
<td>African American</td>
<td>Autism</td>
<td>1st</td>
</tr>
<tr>
<td>3</td>
<td>Timothy</td>
<td>10</td>
<td>Male</td>
<td>Caucasian</td>
<td>Autism</td>
<td>3rd</td>
</tr>
<tr>
<td></td>
<td>David</td>
<td>8</td>
<td>Male</td>
<td>Caucasian</td>
<td>Autism</td>
<td>2nd</td>
</tr>
<tr>
<td></td>
<td>Chris</td>
<td>9</td>
<td>Male</td>
<td>Caucasian</td>
<td>Autism</td>
<td>3rd</td>
</tr>
</tbody>
</table>

Adult participants. The primary researcher was a doctoral student in Special Education at an urban university in a midwest state. The primary researcher trained the observers and one-on-one instructors, and conducted all ART intervention sessions. The primary researcher had graduate level and professional experience in conducting research and implementing the ART program.

Two observers participated in the study. Observers were not informed of the goals of the intervention beyond the information disclosed in adult research subject consent forms (see Appendix A). Both observers were female colleagues of the researcher, and had prior experience working with students with ASD. The role of observers was to complete procedural fidelity and interobserver reliability checklists during intervention sessions, and record baseline and intervention phase data using the Aggression Data Collection Form.
Each subject had a one-on-one classroom instructor throughout the school year. The nine one-on-one instructors in the study completed the Behavior Assessment System for Children-Teacher Rating Scale (BASC-2-TRS) (Reynolds & Kamphaus, 2004) and Social Skills Rating System Social Skills Questionnaire Teacher Form (SSRS-T) (Gresham & Elliot, 1990) for assigned participants before and after intervention. The one-on-one instructors also completed daily Aggression Data Collection Forms. Instructors were not informed of the purpose of the study beyond the information provided on the adult subject consent forms (see Appendix A).

**Informed consent.** Target subjects were provided with a letter of consent prior to the beginning of the study to ensure understanding of the purpose, procedures, and requirements of participation in the study. Parents of target subjects were required to sign a letter of informed consent prior to the beginning of the study. Parents were able to withdraw the child at any time during the study. Consent forms provided parents with information describing the ART program, expectations for the child’s participation, expectations for parental consent and participation, and contact information to obtain additional information from the researcher regarding the study. Consent forms can be found in Appendix A.

**Setting**

**School.** The Autism Learning Center (ALC) is a research-based intensive early intervention program for students with ASD. The ALC is an inclusion-based elementary school in an urban community in Northwest Ohio. All students at ALC have a primary medical diagnosis of ASD, and receive individualized one-on-one instruction and embedded therapies throughout the day.
**Intervention setting.** The intervention took place in a conference room. The conference room was 25’ x 30’, rectangular, had a small row of windows, and minimal visual distractions. A large, rectangular table was used for seating. The researcher sat across from the participants, and all participants were directly facing the researcher. Intervention took place on Mondays and Wednesdays from 10:00-10:30 for Group 1, on Mondays and Wednesdays from 9:15-9:45 for Group 2, and Tuesdays and Thursdays from 10:00-10:30 for Group 3. During the intervention, three participants received direct instruction from the researcher, and two observers were seated at the opposite end of the room behind the students to minimize distractions.

**Materials**

Each participant was provided with a binder including worksheets, activity pages, Hassle Logs, and Skillstreaming social skills cards. Binders were used on a daily basis to collect and organize participant progress and data. Markers, dry erase boards, crayons, and colored paper were also used for various activities throughout the intervention.

**Dependent Variables**

**Physical aggression.** The first dependent variable measured was instances of physical aggression. Physical aggression may be aimed towards a person or object. Physical aggression is defined as “Exhibiting behaviors that have the potential to cause harm to another person or object” (ISBE, 2012). Examples of physical aggression include behaviors such as hitting, biting, pinching, hair-pulling, and throwing objects. Observed instances of physical aggression were documented on the Aggression Data Collection Form by each participant’s one-on-one instructor.
Verbal aggression. The second dependent variable measured was instances of verbal aggression. Verbal aggression is defined as “any language (verbal or nonverbal) directed at someone in a threatening or harmful manner, including obscene gestures and profanity” (ISBE, 2012). Examples of verbal aggression on the Aggression Data Collection Form include: profanity, obscene gestures, derogatory remarks, insults, threats of bodily harm, threats of property damage, and intimidation. Profanity includes cursing or knowingly using offensive words. Obscene gestures include socially unacceptable hand signals, such as sticking up one’s middle finger or implying sexual or threatening actions using symbolic gestures. Derogatory remarks are statements made to disrespect the culture, religion, sexuality, gender, or race of another. Insults are statements made to attack the appearance, personality, or characteristics of another. Threats are defined as statements threatening bodily harm upon others or property. Intimidation is an indirect threat to the family or friends or property of others. Behaviors qualifying as being verbally aggressive must be malicious, directed toward another person, or exhibit intent to harm others.

The Aggression Data Collection Form was used to document frequency of observed incidents of verbal and physical aggression during one-hour intervals at school using a tally within interval method. The five intervals used for the study were: 9:00 am-10:00 am, 10:00 am-11:00 am, 11:00 am-12:00 pm, 12:00 pm-1:00 pm, and 1:00 pm-2:00 pm. The form was developed by the researcher, and lists specific examples of verbal and physical aggression. Each behavior listed on the Aggression Data Collection Form was selected by the researcher based on operational definitions and examples of verbal and physical aggression outlined by the Illinois State Board of Education (ISBE), which
can be found in Table 2. Aggression Data Collection Forms were completed by one-on-one instructors, on a daily basis, beginning at the baseline phase. Total instances of aggression were tallied and collected on a daily basis. The Aggression Data Collection Form can be found in Appendix B.

Table 2

*Operational definitions of verbal and physical aggression*

<table>
<thead>
<tr>
<th>Physical Aggression Toward Person</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Exhibiting one of the following (or similar) behaviors that have the potential to cause harm to another person:</strong></td>
</tr>
<tr>
<td>a. Hitting – using a hand or arm with a closed or open fist to hit (make forceful physical contact) with another person.</td>
</tr>
<tr>
<td>b. Kicking – using the foot or leg to kick or hit another person.</td>
</tr>
<tr>
<td>c. Head-butting – using the head or face to hit (make forceful physical contact) with another person.</td>
</tr>
<tr>
<td>d. Scratching – using the nails of the feet or hands to break the skin of another person.</td>
</tr>
<tr>
<td>e. Pinching – using the fingers to squeeze another person’s skin hard enough to cause pain.</td>
</tr>
<tr>
<td>f. Biting – using the teeth or gums to make contact with another person’s body or clothing.</td>
</tr>
<tr>
<td>g. Pushing – using any part of the body to forcefully contact another person’s body.</td>
</tr>
<tr>
<td>h. Throwing objects – throwing an object that is not intended to be thrown that lands within two feet of another person.</td>
</tr>
<tr>
<td>i. Hair Pulling – using any part of the body to grip and pull on another person’s hair.</td>
</tr>
<tr>
<td>j. Spitting – any instance of saliva leaving the mouth of a student (excluding while the student is talking or yelling) with the saliva landing within one foot of a person and not directed at another object (i.e. if the student is holding an object between themselves and the other person).</td>
</tr>
</tbody>
</table>
Verbal Aggression

Any language (verbal or nonverbal) directed at someone in a threatening or harmful manner. This can include obscene gestures and profanity.

a. Profanity – cursing or knowingly using offensive words.

b. Obscene gestures – socially unacceptable hand signals, such as sticking up one’s middle finger or implying sexual or threatening actions using symbolic gestures.

d. Derogatory remarks – statements made to disrespect the culture, religion, sexuality, gender, or race of another.

e. Insults – statements made to attack the appearance, personality, or characteristics of another.

f. Threats – statements threatening bodily harm upon others or property.

g. Intimidation – indirect threat to the family or friends or property of others.

BASC-2-TRS measurement of prosocial skills. The third dependent variable measured was level of prosocial skill use as measured by the Behavior Assessment System for Children, Second Edition-Teacher Rating Scale (BASC-2-TRS) (Reynolds & Kamphaus, 2004). The BASC-2-TRS measures teachers’ perceptions of students’ observable behavior at school. The BASC-2-TRS contains 148 items categorized into 15 clinical and adaptive subscales to measure adaptive and problem behaviors, and is completed by teachers or qualified observers using a frequency scale as occurring: 1=Never, 2=Sometimes, 3=Often, 4=Almost Always. The BASC-2-TRS contains five composite scales, including: Externalizing Problems, Internalizing Problems, School Problems, Behavioral Symptoms Index, and Adaptive Skills. The Social Skills subscale contains eight items, and is contained within the Adaptive Skills composite scale.

The BASC-2-TRS is also divided into seven content scales, including Anger Control, Bullying, Developmental Social Disorders, Emotional Self-Control, Executive
Functioning, Negative Emotionality, and Resiliency. The Anger Control content scale contains 11 items and the Emotional Self-Control content scale contains 6 items. The combined 25 items on the Social Skills subscale, Anger Control content scale, and Emotional Self-Control content scale were completed by each participant’s one-on-one instructor before and after the 10-week intervention period. Graphed scores of the Social Skills subscale were compared and analyzed using visual inspection.

**SSRS-T measurement of prosocial skills.** The fourth dependent variable measured was level of prosocial skill use as measured by the Social Skills Rating System Teacher Form (SSRS-T) (Gresham & Elliot, 1990). The SSRS-T is an assessment tool used to measure social skills exhibited by students in a classroom setting. The SSRS-T contains 57 items rated on a 3-point scale. Items are scored using a frequency scale (0=Never, 1=Sometimes, 2=Very Often) and an importance scale (0=Not Important, 1=Important, 2=Critical). The SSRS-T measures social skills (e.g., Responds appropriately to teasing by peers; Compromises in conflict situations by changing own ideas to reach agreement), problem behaviors (e.g., Fights with others; Acts impulsively), and academic performance.

The SSRS-T contains five subscales, including Cooperation, Assertion, Responsibility, Empathy, and Self-Control. The Social Skills and Problem Behaviors subscales contain a total of 48 questions, and was completed by each participant’s one-on-one instructor before and after the 10 week intervention period to determine of prosocial skills had been acquired or improved. Graphed scores of the Social Skills subscale were compared and analyzed using visual inspection.
Independent Variable

The independent variable of interest in the study was participation in the ART program (Goldstein, Glick, & Gibbs, 1998), administered twice per week in 30-minute sessions for 10 weeks. The dichotomous variable measured whether or not a student participated in the ART program. If a student was absent during an ART session, group data for the day was not collected in order to prevent misrepresentation of group means. ART sessions were still conducted if a group participant was absent, and individual participant data was still collected.

Aggression Replacement Training (ART) uses a multimodal approach to address the deep psychological, emotional, and behavioral issues related to aggression. ART is based on the theoretical assumption of aggression being learned through practice, reinforcement, and development of dysfunctional thought processes. ART addresses aggression on a cognitive level to restructure self-defeating thought processes and reinforce positive behavior patterns.

Experimental Design

The experimental design was a multiple baseline design across groups of subjects. Multiple baseline designs are effective in determining if a treatment variable causes changes in behavior without having to withdraw or reverse treatment (Gast, 2010). The multiple baseline across groups design was used in the study to determine if there was a functional relationship between participation in the Aggression Replacement Training Program and the dependent variables described above. The study used three groups of students, with 3 students per group. Students were placed in well-matched comparison groups based on similar behavioral needs and developmental levels. Availability within
participant schedules to participate in the intervention was also a factor in determining
group assignment.

Collecting data from multiple groups allows for study effects to be replicated.
Therefore, extraneous variables can be ruled out, showing the intervention is the only
cause of change in behavior. The unit of analysis used in the study was data collected for
each of the three groups of participants.

Procedures

Observer training. Prior to the beginning of the study, observers were trained to
record the frequency of target behaviors using the Aggression Data Collection Form.
Both observers were given a list of operationally defined examples of verbal and physical
aggression extracted from the Inappropriate Behavior List and Definitions (Illinois State

The researcher reviewed examples of each target behavior with the observers and
provided an overview of data recording procedures. The observers practiced recording
instances of verbal and physical aggression from video clips of similar peers prior to the
baseline phase to ensure a consistent understanding of operationally defined behaviors.
Each observer practiced recording instances of verbal and physical aggression for two,
one-hour direct observation sessions in the cafeteria, classroom, hallways, and
playground area. Observers completed Aggression Data Collection Forms during each
observation period. The observation period for both observers was between 11:00 am and
12:00 pm, which was during lunch and recess. This period was chosen based on being the
most convenient available time for observers to be present. Observation periods were
broken into six, 10-minute intervals. Using event recording within intervals allowed the
researcher to calculate interobserver agreement using the point-by-point method to ensure confidence observers were recording the same events. According to Ayers and Gast (2010), an interobserver agreement goal of at least 80% should be maintained before the baseline data collection phase begins. A point-by-point comparison was used to determine percent of interobserver agreement, and was calculated using the following formula:

\[
\frac{\text{Agreements}}{\text{Agreements} + \text{Disagreements}} \times 100
\]

For the proposed study, interobserver agreement for the Aggression Data Collection Forms had to reach 90% before baseline data collection began.

The researcher also trained the observers to complete treatment fidelity checklists for Social Skills Training and Anger Control Training sessions. The researcher reviewed the components of treatment fidelity checklists with both observers. The researcher conducted one mock session of Social Skills Training, and one mock session of Anger Control Training, and observers practiced completing treatment fidelity checklists during both sessions. An agreement of 94% had to be reached for each item on the checklists before intervention began, ensuring 23 of the 25 items on each checklist matched. The researcher would have continued to conduct mock sessions until observers reached an agreement of 94%.

Each procedural variable on the treatment fidelity checklists was compared and calculated using the following formula:

\[
\frac{\text{Agreements}}{\text{Agreements} + \text{Disagreements}} \times 100
\]
**Instructor training.** Instructors were given an overview of the Aggression Data Collection Form, along with operationally defined examples of verbal and physical aggression. Prior to the study, each participant’s one-on-one instructor was already required to document all instances of verbal and physical aggression on a daily basis. The only difference in documentation of aggression for the study was the use of the Aggression Data Collection Form to tally the frequency of each instance of aggression during specified time periods.

**Baseline.** The study was designed to be strong in establishing any cause-effect relationship between the dependent variable and independent variables because baseline data was collected on all 3 groups until a level of stability in aggression was apparent. Gast and Spriggs (2010) suggest level and trend stability in baseline conditions can be determined when an overlap in the last 3-5 data points can be identified using visual inspection. Baseline data was collected and measured separately from the treatment, allowing for extraneous variables to be more easily ruled out as having an effect on changes in levels of aggression.

Baseline data collection included direct observation by the researcher and the two observers, and documentation of instances of aggressive behaviors by each participant’s one-on-one instructor. The researcher began the experiment by collecting baseline data on all three groups. When stability was obtained with group one, intervention using the ART program began with group one, while baseline data collection continued for groups two and three. When aggressive behavior began to decrease with group one, intervention began with group two, while baseline data collection continued for group three. When
aggressive behavior with group two began to decrease, intervention began with group three.

**Intervention.** The ART intervention was administered to all participants in the study. Treatment sessions were administered in 30-minute sessions, twice per week, for 10 weeks. The first weekly session consisted of Anger Control Training lessons, and the second weekly session consisted of Skillstreaming lessons. The moral development portion of the ART program was not used in the study due to the young age and developmental abilities of subjects. All treatment sessions were administered by the researcher. The purpose of the intervention was to determine if participation in the ART program decreased the frequency of aggressive behavior. The outcome variables in the intervention were the effect of ART sessions on frequency of verbal and physical aggression as measured by the Aggression Data Collection Form, and any differences between pre and post test measures on the BASC-2-TRS and SSRS-T, which could have increased, decreased, or remained the same.

The Social Skills Training portion of the ART curriculum contains 10 Skillstreaming skills. Skillstreaming skills were scaffolded into weekly lessons by increasing the frequency of student participation and reflection of skill use in role-play scenarios. Students learned to modify thoughts and responses during difficult situations by observing and practicing positive social behaviors. Participants were taught to replace aggression and negative behaviors with positive communication and social skills by practicing appropriate replacement behaviors in role-play situations. Social Skills Training involved teaching one social skill per week for 10 weeks. The 10 social skills in the ART curriculum can be found in Table 3.
Table 3

**Skillstreaming Skills**

<table>
<thead>
<tr>
<th>Week 1: Making a complaint</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 2: Understanding the feelings of others</td>
</tr>
<tr>
<td>Week 3: Getting ready for a difficult conversation</td>
</tr>
<tr>
<td>Week 4: Dealing with someone else’s anger</td>
</tr>
<tr>
<td>Week 5: Helping others</td>
</tr>
<tr>
<td>Week 6: Keeping out of fights</td>
</tr>
<tr>
<td>Week 7: Dealing with an accusation</td>
</tr>
<tr>
<td>Week 8: Dealing with group pressure</td>
</tr>
<tr>
<td>Week 9: Expressing affection</td>
</tr>
<tr>
<td>Week 10: Responding to failure</td>
</tr>
</tbody>
</table>

Each Social Skills Training session involved modeling, role-playing, performance feedback, and transfer training for each Skillstreaming skill. Performance feedback involved group discussions, and was given during each role-playing session to provide participants with an immediate assessment of skill implementation and accuracy. Transfer training was conducted throughout the week through the use of Hassle Logs, which encouraged participants to reflect on effectiveness of decision making and social skill use in actual situations. Each skill was broken down into a sequence of steps for modeling and role-play. Table 4 shows an example of how the skill “Making a complaint” is broken down. Table 5 outlines the eight steps involved in each Social Skills Training Session.
Table 4

Making a complaint

<table>
<thead>
<tr>
<th>Skill Steps:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Decide what your complaint is.</td>
</tr>
<tr>
<td>2. Decide whom to complain to.</td>
</tr>
<tr>
<td>3. Tell that person your complaint.</td>
</tr>
<tr>
<td>4. Tell that person what you would like done about the problem.</td>
</tr>
<tr>
<td>5. Ask how he/she feels about what you’ve said.</td>
</tr>
</tbody>
</table>

Table 5

Social Skills training steps (Goldstein, Glick & Gibbs, 1998)

<table>
<thead>
<tr>
<th>Step 1: Define the skill</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 2: Model the skill</td>
</tr>
<tr>
<td>Step 3: Establish each group member’s need for the skill</td>
</tr>
<tr>
<td>Step 4: Select the first role-player and set up the role-play</td>
</tr>
<tr>
<td>Step 5: Conduct the role-play</td>
</tr>
<tr>
<td>Step 6: Conduct the discussion (performance feedback)</td>
</tr>
<tr>
<td>Step 7: Assign the homework (transfer training)</td>
</tr>
<tr>
<td>Step 8: Select the next role-player</td>
</tr>
</tbody>
</table>

The Anger Control Training portion of ART includes 10 sessions to help students develop anger control techniques and understand the physiological and emotional
components of anger. Anger Control Training teaches students to identify triggers and
cues to understand personal patterns of anger.

Anger patterns were identified for each participant. Participants created personal
reminder statements to encourage acceptance of anger as a controllable emotion.
Reminders are comforting statements or mantras used to maintain emotional control in
difficult situations in order to prevent aggressive reactions. Reminders were then paired
with anger reduction techniques, such as deep breathing, counting backwards, or pleasant
imagery. Once the sequence was practiced through role-play or applied in actual
situations, participants were asked to evaluate effectiveness of personal anger control
sequences. Detailed lesson plans used for the study can be found in Appendix C. An
overview of the weekly curriculum for Anger Control Training can be found in Table 6.

Table 6

<table>
<thead>
<tr>
<th>Anger Control Training sessions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1: ABC’s of Anger</td>
</tr>
<tr>
<td>Week 2: Hassle Log and Triggers</td>
</tr>
<tr>
<td>Week 3: Cues and Anger Reducers</td>
</tr>
<tr>
<td>Week 4: Reminders</td>
</tr>
<tr>
<td>Week 5: Thinking Ahead</td>
</tr>
<tr>
<td>Week 6: Self-Evaluation</td>
</tr>
<tr>
<td>Week 7: Angry Behavior Cycle</td>
</tr>
<tr>
<td>Week 8: Using a Social Skill and Rehearsal of Full Anger Control Chain</td>
</tr>
<tr>
<td>Week 9: Rehearsal of Full Anger Control Chain</td>
</tr>
<tr>
<td>Week 10: Overall Review and Rehearsal of Full Anger Control Chain</td>
</tr>
</tbody>
</table>
Treatment Fidelity

Treatment fidelity measures were used in the study to ascertain consistency and accuracy of intervention sessions for each group. The Social Skills Training Evaluation Checklist and Anger Control Training Session Evaluation Checklist (Glick & Gibbs, 2011) were used to document treatment fidelity. The checklists break down each major step of the training session into 25 components. Observers recorded the completion and quality level of both ART components. Checklists were completed every other week. Agreement of scores between observers was used to indicate any significant deviations in treatment among group intervention sessions. The minimum treatment fidelity observer agreement allowed for the study was 85% for each of the 25 components on both checklists. Treatment fidelity was calculated for each procedural variable using the following formula (Ayers & Gast, 2010):

\[
\frac{\text{Agreements}}{\text{Agreements + Disagreements}} \times 100
\]

Interobserver Agreement

Observers recorded instances of verbal and physical aggression for each participant using direct observation of a one-hour direct observation session each week. Group 1 was observed on Monday, Group 2 was observed on Tuesday, and Group 3 was observed on Thursday. Both observers recorded data for the three participants in each group during the observation period. The observation period for both observers was between 11:00 am and 12:00 pm, which was during lunch and recess. Observation periods were broken into six, 10-minute intervals. Observer data was compared to the One-on-One instructor data for each participant. Using event recording within intervals allowed the researcher to calculate interobserver agreement using the point-by-point
method to ensure confidence observers and one-on-one instructors were recording the same events. The observation period was selected based on being the most prevalent time for instances of aggression to occur, and was also the most convenient time during the day for observers to be present. Data from observers was compared using the point-by-point method to calculate interobserver agreement. The minimum interobserver agreement allowed for the study was 90% for each of the 17 items on the Aggression Data Collection Form. Interobserver agreement was calculated using the following formula:

\[
\frac{\text{Agreements}}{\text{Agreements} + \text{Disagreements}} \times 100
\]

Social validity

Social validity surveys were administered to student participants and instructors at the end of the study to determine perceptions of the effectiveness of the intervention. Surveys were designed to gather data on the overall satisfaction with the ART intervention in terms of ability to control anger more effectively, ability to communicate more effectively, positive changes in behavior, likelihood of applying skills in the future, and development of more positive relationships with others. Social validity surveys can be found in Appendix D.
Chapter IV

Results

Visual Analysis

The purpose of the study was to examine the effectiveness of the Aggression Replacement Training program in decreasing aggression in elementary students with ASD. Visual analysis was used in the study to determine if the ART program significantly reduced instances of aggression resulting in disciplinary documentation in elementary students with ASD. Visual analysis is the most commonly used method for examining data in multiple baseline designs.

Physical Aggression. The first research question of the study was “Does the ART program reduce instances of physical aggression among elementary students with ASD?” All three groups had stable baseline levels for physical aggression. Stable baselines were defined as containing at least 80% of the data points falling within a 20% range of the median level of all data-point values (Gast, 2010, p. 202). Baseline means for instances of physical aggression were higher in Group 1 (mean=61.8) and Group 2 (mean=57.0), in comparison to Group 3 (mean=9.4). Experimental effects were demonstrated for all three groups, and mean levels of physical aggression for all three groups steadily decreased.

The mean levels of physical aggression for the first five data points following the introduction of the ART intervention were 67.6 for Group 1, 58.6 for Group 2, and 10.2 for Group 3. The mean levels of physical aggression for the last five data points of the intervention decreased to 18.4 for Group 1, 8.8 for Group 2, and 1.4 for Group 3. Figure 1 provides a graphic representation of instances of physical aggression for all three groups.
Figure 1. Physical aggression across groups.

Figure 2 illustrates instances of physical aggression across participants for each group. All participants showed a decrease in levels of physical aggression from baseline to
intervention, as indicated by decelerating trend lines. In Group 3, Timothy only exhibited verbal aggression during the study.

**Figure 2.** Physical aggression across participants.
**Verbal Aggression.** The second research question of this study was “Does the ART program reduce instances of verbal aggression among elementary students with ASD?” All three groups had stable baseline levels for verbal aggression. Baseline means for instances of verbal aggression were higher in Group 1 (mean=40.4), compared to Group 2 (mean=12.0) and Group 3 (mean=13.8). Experimental effects were demonstrated for all three groups, and mean levels of verbal aggression for all three groups steadily decreased. Figure 3 provides a graphic representation of instances of verbal aggression for all three groups.

The mean levels of verbal aggression for the first five data points following the introduction of the ART intervention were 34.2 for Group 1, 14.6 for Group 2, and 14.0 for Group 3. The mean levels of verbal aggression for the last five data points of the intervention decreased to 0.2 for Group 1, 0.4 for Group 2, and 0.4 for Group 3.

Figure 4 illustrates instances of verbal aggression across participants for each group. All participants showed a decrease in levels of verbal aggression from baseline to intervention, as indicate by decelerating trend lines. In Group 2, Brandon and Steven only exhibited physical aggression.
Figure 3. Verbal aggression across groups.
Figure 4. Verbal aggression across participants.
Social Skills. The third research question of the study was “To what extent will prosocial skills increase as measured by the BASC-2-TRS?” BASC-2-TRS Progress Report T Score Profiles indicated an increase in social skills across all groups and across all participants.

Figure 5 shows a visual representation of relative changes in T scores across participants before and after the intervention. Six of the nine participants showed an improvement in T scores from pre-test to post-test. T scores for three of the nine participants remained the same. However, the three participants who did not have an increase in T scores had high initial scores, and were ranked as the top three of the entire group of participants.

Pre-test and Post-test BASC-2-TRS Social Skills Subscale T Scores

<table>
<thead>
<tr>
<th>Name</th>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jacob</td>
<td>34</td>
<td>43</td>
<td>47</td>
</tr>
<tr>
<td>Nathan</td>
<td>33</td>
<td>56</td>
<td>51</td>
</tr>
<tr>
<td>Eric</td>
<td>43</td>
<td>51</td>
<td>47</td>
</tr>
<tr>
<td>Michael</td>
<td>56</td>
<td>40</td>
<td>61</td>
</tr>
<tr>
<td>Steven</td>
<td>51</td>
<td>47</td>
<td>61</td>
</tr>
<tr>
<td>Brandon</td>
<td>40</td>
<td>61</td>
<td>47</td>
</tr>
<tr>
<td>Timothy</td>
<td>61</td>
<td>47</td>
<td>40</td>
</tr>
<tr>
<td>David</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chris</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 5. Group and individual changes in BASC-2-TRS Social Skills Subscale T scores.

Pre-test and post-test comparisons of of the Social Skill Subscale scores on the BASC-2-TRS were made with paired t-tests. A value of p < 0.05 was considered
statistically significant. Although differences in pre- and post-test scores were not significantly significant, all groups showed an increase in social skills. Group 1 showed the most progress in social skill acquisition. Although Groups 2 and 3 already had relatively higher scores on the Social Skills Subscale compared to Group 1, both groups showed increased social skill use and acquisition. Figure 6 reflects changes in the BASC-2-TRS Social Skills Subscale T scores across groups.

![Pre-test and Post-test BASC-2-TRS Social Skills Subscale T Scores](image)

*Figure 6. Group changes in BASC-2-TRS Social Skills Subscale T scores.*

The fourth research question of the study was “To what extent will prosocial skills increase as measured by the SSRS-T?” SSRS-T Progress Reports indicated an increase in social skills across all groups. Figure 7 shows a visual representation of relative changes in standard scores before and after the intervention. Group 1 had the lowest baseline scores for prosocial skills, and also showed the most significant increase in prosocial skill use and acquisition. Although Group 3 had higher average baseline
scores, Chris had the lowest baseline score of all nine participants, and also showed the greatest improvement in prosocial skills.

\[\text{Pre-test and Post-test SSRS Social Skills Subscale Standard Scores}\]

![Graph showing changes in SSRS-T Social Skills Subscale standard scores across groups.]

<table>
<thead>
<tr>
<th></th>
<th>Jacob</th>
<th>Nathan</th>
<th>Eric</th>
<th>Michael</th>
<th>Steven</th>
<th>Brandon</th>
<th>Timothy</th>
<th>David</th>
<th>Chris</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>78</td>
<td>82</td>
<td>83</td>
<td>118</td>
<td>109</td>
<td>93</td>
<td>101</td>
<td>104</td>
<td>77</td>
</tr>
<tr>
<td>Post-test</td>
<td>105</td>
<td>109</td>
<td>96</td>
<td>126</td>
<td>119</td>
<td>110</td>
<td>112</td>
<td>116</td>
<td>109</td>
</tr>
</tbody>
</table>

*Figure 7.* Group and individual changes in SSRS-T Social Skills Subscale standard scores.

Pre-test and post-test comparisons of the Social Skill Subscale scores on the SSRS-T were made with paired t-tests. A value of \(p < 0.05\) was considered statistically significant. Although differences in pre- and post-test scores were not significantly significant, pre-test and post-test comparisons of the Social Skill Subscale scores on the SSRS-T, indicated an increase in social skills for all three groups. Group 1 showed the most progress in social skill acquisition. Although Groups 2 and 3 already had relatively higher scores on the Social Skills Subscale compared to Group 1, both groups showed an increase in social skill use and acquisition. Figure 8 reflects changes in the SSRS-T Social Skills Subscale standard scores across groups.
Interobserver Agreement

Interobserver agreement data checks occurred every week during the study. Visual analysis of data took place during the study to ensure observer data was continuously reliable, and to allow for re-training to occur if the percentage of agreement between observers dropped below 90%. Data from both observers was analyzed using a point-by-point method to compare agreements in the event-recording data for each interval during the observation period for the 17 items on the Aggression Data Collection Forms. Interobserver agreement scores ranged from 91.1% - 100%. The mean interobserver agreement for the study was 94.2%.

Treatment Fidelity

Treatment fidelity data was collected from both observers, every other week, during the intervention. Data was analyzed for each of the 25 items on the Social

Figure 8. Group changes in SSRS-T Social Skills Subscale standard scores.
Skills Training Evaluation Checklist and the Anger Control Training Evaluation Checklist. Treatment fidelity for the study was 96.4%.

**Social Validity**

Social validity surveys were administered to participants and instructors after the intervention to determine overall satisfaction and perception of effectiveness of the intervention. Participants were all able to read the questions on the social validity surveys. All instructors and participants responded positively to each of the five items on the survey, and responded only in the “strongly agree” and “agree” categories. Overall, 89% of both participants and one-on-one instructors strongly agreed that the intervention helped with anger control and resulted in positive changes in behavior. Social validity data suggest the majority of participants benefited from the intervention. Tables 7 and 8 illustrate percentages of instructor and participant social validity survey results.

**Table 7**

*Percentage of one-on-one instructor responses on the Teacher Social Validity Survey*

<table>
<thead>
<tr>
<th>Survey Item:</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ART helped the student learn to control anger</td>
<td>89</td>
<td>11</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2. ART helped the student communicate needs more effectively</td>
<td>89</td>
<td>11</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3. ART resulted in positive changes in the student’s behavior</td>
<td>89</td>
<td>11</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4. The skills learned from ART will be helpful in the student’s future</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5. ART helped the student develop more positive relationships with others</td>
<td>67</td>
<td>33</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Table 8

Percentage of student responses on the Student Social Validity Survey

<table>
<thead>
<tr>
<th>Survey Item</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ART helped me learn to control my anger</td>
<td>89</td>
<td>11</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2. ART helped me communicate my needs more effectively</td>
<td>67</td>
<td>33</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3. ART resulted in positive changes in my behavior</td>
<td>89</td>
<td>11</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4. The skills I learned from ART will be helpful to me in the future</td>
<td>67</td>
<td>33</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5. ART helped me develop more positive relationships with others</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Chapter V

Discussion

General Findings

Previous research examining the effectiveness of the Aggression Replacement Training (ART) Program had focused on incarceration settings and community based programs serving juvenile delinquents. This study was the first to examine the effectiveness of the ART program in a public elementary school setting, and was also the first study to examine the effectiveness of the ART program for children with ASD.

The first research question of the study was to determine if ART was effective in reducing physical aggression among elementary students with Autism. Of the nine participants in the study, eight exhibited physical aggression. Participants in Group 3 had significantly lower levels of physical aggression compared to Groups 1 and 2; therefore effects of the intervention on Group 3 were not as drastic. The results indicated decreased levels in physical aggression for all three groups, as indicated by a decelerating trend.

Mean level change indicated improvement for all groups, as average means between baseline and intervention decreased across all groups. The average baseline mean for baseline for Group 1 was 61.8, which decreased to 53.4 at the end of the intervention. Group 2 had an average baseline mean of 57, which decreased to 33.5 by the end of the intervention. The average baseline mean for Group 3 was 9.4, which decreased to 6.2. The baseline average for Group 3 was significantly lower than Groups 2 and 3, which did not allow for as drastic of a change in average means in comparison with the other groups.
The second research question of the study was to determine if ART was effective in reducing verbal aggression among elementary students with Autism. Of the nine participants in the study, seven exhibited verbal aggression. Group 2 had two participants who did not exhibit verbal aggression. As a result, the group mean for Group 2 was only representative of the one participant who exhibited verbal aggression. The results indicated decreased levels in verbal aggression for all three groups, as indicated by decreasing trends.

Mean level change indicated improvement for all groups, as average means between baseline and intervention decreased across all groups. The average baseline mean for baseline for Group 1 was 40.4, which decreased to 11.1 at the end of the intervention. Group 2 had an average baseline mean of 12, which decreased to 2.9 by the end of the intervention. The average baseline mean for Group 3 was 13.8, which decreased to 5.6. Group 1 had the highest baseline mean, as well as the most significant decrease in verbal aggression. Groups 2 and 3 had lower levels of verbal aggression during baseline, and therefore did not exhibit as much of a drastic decrease from baseline to intervention.

The third research question of the study was to determine if ART was effective in increasing prosocial skills as measured by the BASC-2-TR. Results showed an increase in social skill use and acquisition for all three groups, as indicated by accelerating trends. T-scores were collected at baseline and after the intervention. Although comparisons of pre and posttest scores across groups indicated an increase in social skill use and acquisition for all three groups, three participants did not show any differences in pre test
and post test scores. Participants in Group 1 had the most significant increase in scores. In Group 2, Michael and Steven did not show any change in scores.

Mean level change indicated an improvement in all three groups. Of the three groups, Group 1 had the most significant mean level change. The average baseline mean for Group 1 was 37, and increased to 44 after the intervention. Group 2 had the least significant mean level change, with an average mean of 49 at baseline increasing to 51 after the intervention. Group 3 had similar results to Group 2, with an average mean of 46 at baseline increasing to 49 after the intervention.

The fourth research question of the study was to determine if ART was effective in increasing prosocial skills as measured by the SSRS-T. Results showed an increase in social skill use and acquisition for all three groups, as indicated by accelerating trends. Standard scores were collected at baseline and after intervention. All nine participants showed an increase in prosocial skills, as indicated by mean level changes. Group 1 had the lowest initial levels of social skills at baseline, and also showed the most significant level of improvement. The baseline mean for Group 1 was 81, and increased to 103 after the intervention. Group 2 had the highest initial levels of social skills at baseline, and showed the least amount of improvement due to mastery of the majority of social skills addressed in the SSRS-T measurement scales. The baseline mean for Group 2 was 107, and increased to 118 after the intervention. Group 3 had a baseline mean of 94, and increased to 112 after the intervention. In Group 3, Chris had the lowest baseline level of social skills use of all nine participants, and also showed the most drastic level of improvement after the intervention. In Group 2, Michael had the highest baseline level of
social skills of all nine participants, but showed the least improvement due to the high level of mastery of the skills measured by the SSRS-T.

The researcher chose to record data during all phases of the ART intervention. Therefore, changes in target behavior were not immediate because data was collected during the skill acquisition phase of the ART intervention, before participants became proficient in using skills. Visual inspection of trend direction indicate a high likelihood of continued and sustainable decreases in verbal and physical aggression, and increases in prosocial skill use if the intervention had continued past the 10-week period.

**Limitations of the Study**

The first limitation of the study was related to possible effects of medications and health conditions on participants’ behavior. The researcher had not considered gathering data on medications or health conditions for each participant. One participant in the study, Timothy, changed medications during the second week of intervention. Although Timothy’s aggression practically stopped altogether by the end of the intervention, his aggression levels fluctuated up and down quite a bit during the time his medication was changed. Therefore, it is difficult to determine if the intervention or a change in medication regimen was the direct cause of Timothy’s decrease in aggression.

Another limitation of the study was the percentage of non-overlapping data. For example, Groups 1 and 2 had higher percentages of non-overlapping data for instances of aggression compared to Group 3. The percentage of non-overlapping data for Groups 1 and 2 was 82.5%, compared to 33.3% for Group 3. The ART intervention appeared to have a stronger impact on Groups 1 and 2 because both groups had higher baseline levels of aggression than Group 3, thus having much more room for improvement. Group 3 had
lower initial levels of aggression and fewer opportunities to show drastic decreases in instances of aggression, but still showed decreased levels of aggression and increased acquisition and use of social skills.

Students were assigned to similarly matched comparison groups to the best ability possible, however student schedules influenced group assignment. Some of the older students attended social skills groups before lunch, and had to be grouped together in order to be able to participate in the intervention. As a result, one limitation is that group assignment could have effected study results.

Data was variable during the initial part of the treatment phase, especially for Group 1. Participants in Group 1 had the most drastic and frequent instances of aggression, and seemed to need more time to adjust to procedures of the treatment. Participants in Group 1 also had the most difficulty implementing newly learned social skills and anger reduction techniques at first due to having stronger patterns of aggressive behavior that had previously been embedded prior to the intervention. Variability decreased across all groups during the last 2-3 weeks of the intervention as participants became more familiar with procedures, expectations, and generalizability of newly acquired skills.

Maintenance data was not collected for this study, therefore long-term effects and sustainability of skills is unknown. Also, if the intervention had been extended by several weeks, participants would have had even more opportunities to acquire, practice, generalize, and refine skill use. Extension of the intervention could have resulted in more sustainable and significant decreases in variability.
Finally, due to age and developmental levels of participants, the moral reasoning component of the ART program was excluded. As a result, the study was limited in exploring all possible effects of the ART intervention. Including the moral reasoning component may have been beneficial for some of the older participants, but would not have been beneficial for all participants. Future researchers should consider incorporating all of the components of the ART curriculum into studies involving students in higher developmental age ranges.

**Implications for Practice**

An important outcome of the study found students with ASD responded particularly well to learning rule and routine based strategies to reduce anger. One of the strengths of the ART program is the structured lessons. Aside from the first week, each weekly session begins with a review of the previous week and leads into a discussion of how students applied skills throughout the past week. Each lesson then teaches new skills in a routine-based systematic manner, and concludes with an assignment to practice newly learned skills. After the third week of the intervention, the participants in the study became familiar with the routines and patterns of the lessons, and were able to focus and participate more effectively. Therefore, it is important to ensure the intervention is administered in the exact order outlined in the ART curriculum.

Previous studies have indicated the importance of teaching social skills in ways that allow students to practice, generalize, apply, and reinforce the value of social skills (Cook, Gresham, Kern, et al, 2008; Patterson, Jolivette, Crosby, 2006). Another implication for practice is to understand the nature of how children with autism may generalize and apply skills and rules. Hassle Logs and homework assignments were given
high priority in the study in order to increase generalization of skills. Participants were given a structured way to practice newly learned social skills throughout the week by recalling, using, and assessing skills during actual conflict situations. As a result, students were able to replace previous impulsive and angry responses with appropriate social skills and coping strategies. Each successful application of a skill or strategy resulting in a positive response provided reinforcement and generalization, thus increasing the likelihood the participant would continue to use the skill again in the future.

The study found some of the students consciously practiced breathing or calming techniques to reduce their anger when confronted with stressful stimuli, however in two instances, the calming techniques were not appropriate responses to the particular situations. In the first situation, one of the participants was confronted with a bully on the playground during recess. The bully was unreasonable when the participant asked to be left alone, and the participant should have walked away from the situation and told an adult. Instead, the participant felt angry, was able to identify the need to calm down, and stayed near the bully while practicing deep breathing techniques.

In the second situation, a participant was experiencing sensory overload due to higher than usual noise levels in the cafeteria. The participant had normally asked for “sensory breaks” if the environment became too overwhelming. Instead, the participant attempted to use a combination of calming techniques and verbal reminders to regulate the frustration he was experiencing. When the calming techniques and verbal reminders failed have a calming effect, the participant had a meltdown. The participant was experiencing physiological symptoms of sensory overload, and should have asked for a break. The two instances discussed above are examples of how literal children with
Autism can be when attempting to generalize rules and skills. It is important for teachers and researchers to explain personal safety and sensory discomfort as being exceptions to rules.

Each participant in the study was considered to be high-functioning, and had at least average verbal communication skills and cognitive functioning. Participation in the ART program requires the ability to communicate, follow directions, and engage in dialogue about abstract concepts such as short-term and long-term consequences. The participants in the study needed thorough explanations of every skill, and sometimes needed extra practice during role-play sessions to appropriately apply the skill. A recommendation for future practice is to place a strong emphasis on maintaining structure of role-play scenarios according to the guidelines outlined in the ART curriculum.

An additional recommendation is to have enough adults available to participate in role-play demonstrations for participants to better understand what is expected during role-playing. For the first two role-play scenarios during the study, the researcher did not have other adults available for role-playing demonstrations for new social skills. As a result, participants seemed confused because they did not have a template or visual representation of how to participate in role-playing. The researcher found adult volunteers to assist in demonstrating role-play scenarios for the remainder of the intervention, and participants quickly learned how to participate in role-playing.

**Suggestions for Future Research Directions**

Future research examining the effectiveness of the ART program in reducing aggression in students with Autism should examine the effectiveness of the moral development component of the intervention. Due to the age of the participants in this
study, the moral development component was too advanced, and was omitted. Future research involving older participants would be beneficial, and may indicate a more significant impact of using the entire ART curriculum, as opposed to using only the anger reduction and social skills portions.

Future research should also explore opportunities to modify the ART curriculum for students who are non-verbal. The existing curriculum relies strongly on the ability for participants to engage in expressive and receptive verbal conversations. If the ART curriculum could be modified, future research could explore the effectiveness of teaching the same content to students with limited verbal skills to determine if ART can be used for a greater portion of students on the Autism spectrum.

The overall results of the study suggest ART is an effective intervention for reducing verbal and physical aggression in elementary students with ASD who have higher level cognitive and verbal skills. Participants demonstrated acquisition and increased use of social skills. Autism is a diverse diagnosis, and more research needs to be conducted to determine if ART is effective with other populations of children who may fall on different levels of the Autism Spectrum.
References


Individuals with Disabilities Education Act (IDEA), as amended in 2004, PL 108-446, 20 USC 1400 et seq.


Parents of Student W. v. Puyallup School District No. 3, 31 F. 3d 1489 (9th Cir. 1994).


*European Psychiatry, 26*, 362.

involvement: Reassessing Gottfredson and Hirschi’s general theory. *Justice 


effect of autism spectrum disorder characteristics on hostility in young adults. 

Williams, S., Conger, K., & Blozis, S. (2007). The development of interpersonal 
aggression during adolescence: The importance of parents, siblings, and family 
Appendix A

Consent Forms:

Parental Consent Form
Adult Research Subject Informed Consent Form
Child Assent Form
Reducing verbal and physical aggression in elementary students with Autism using the Aggression Replacement Training Program

Purpose: Your child is invited to participate in the research project entitled: Reducing verbal and physical aggression in elementary students with Autism using the Aggression Replacement Training Program. The purpose of this study is to determine if the Aggression Replacement Training program will help students with autism decrease levels of aggression and destructive negative thought processes that lead to aggression.

Description of Procedures: This research will take place at the School for Autistically Impaired Learners (SAIL), and will take one year to complete. Research subjects will participate in activities such as role-playing and structured activities that teach social skills, positive thinking patterns, and anger reduction techniques. Research subject participation will take about 60 minutes per week, for a period of 12-15 weeks.

After your child has completed participation, the research team will debrief you about the data, theory and research area under study and answer any questions you may have about the research. Parents will be asked to fill out a questionnaire regarding the child’s social skills.

Potential Risks: The risks involved in this study are more than minimal, and intervention will most likely not negatively affect the student. However, as with any psychological intervention, there is a very small chance of emotional or psychological risks. These risks may include: emotional outbursts, aggressive outbursts, or an increased awareness of one’s anger. All risks will be mitigated by the use and availability of highly trained professional staff including counselors, therapists, and psychologists. It is most probable that participants will benefit from the treatment, but in the case they do not benefit, they will be no worse off than they would have been if the treatment had not been administered.

Potential Benefits: Direct potential benefits to research participants include: reduced levels of aggression and improved social relationships with others. Participants may also potentially benefit more from academics due to increased time spent in the classroom. Stress levels will potentially be reduced once the participant learns to use coping mechanisms to identify stressors and control anger. Participants may also develop an increased sense of self-esteem and have more meaningful and positive relationships with peers, staff, and family. Potential educational benefits include increased exposure to academic material as a result of decreased disciplinary removals from the classroom. Educational benefits may also include improving skills related to learning, such as asking the teacher for help with difficult academic material, participating effectively with others in group learning activities, and participating more actively in the classroom environment.

Confidentiality: The researchers will make every effort to prevent anyone who is not on the research team from knowing that you provided this information, or what that information is. The consent forms with signatures will be kept separate from responses, which will not include names and which will be presented to others only when combined with other responses. Although we will make every effort to protect your confidentiality, there is a low risk that this might be breached.
Voluntary Participation: Your refusal to allow your child to participate in this study will involve no penalty or loss of benefits to which you are otherwise entitled and will not affect your relationship with The University of Toledo or your child’s education at SAIL. In addition, you may discontinue participation at any time without any penalty or loss of benefits.

Contact Information: Before you decide to accept this invitation to take part in this study, you may ask any questions that you might have. If you have any questions at any time before, during or after your participation you should contact a member of the research team. If you have questions beyond those answered by the research team or your rights as a research subject or research-related injuries, please feel free to contact the Chairperson of the SBE Institutional Review Board.

Before you sign this form, please ask any questions on any aspect of this study that is unclear to you. You may take as much time as necessary to think it over.

SIGNATURE SECTION – Please read carefully

You are making a decision whether or not to allow your child to participate in this research study. Your signature indicates that you have read the information provided above, you have had all your questions answered, and you have decided to allow your child to take part in this research.

The date you sign this document to enroll in this study, that is, today's date must fall between the dates indicated at the bottom of the page.

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<td>Name of Person Obtaining Consent</td>
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Purpose: You are invited to participate in the research project entitled, *Reducing verbal and physical aggression in elementary students with Autism using the Aggression Replacement Training Program*. The purpose of this study is to determine if using the Aggression Replacement Training program helps students with autism to decrease levels of aggression and restructure negative thought processes that lead to aggression. The overall purpose of the study is to decrease the frequency of verbal and physical aggression in students with emotional behavioral disorders.

Description of Procedures: This research study will take place at the School for Autistically Impaired Learners (SAIL), and will last for approximately one year. You will be asked to complete a questionnaire regarding your students’ social skills. Your participation in filling out the questionnaire will take about 20-30 minutes. After you have completed your participation, the research team will debrief you about the data, theory and research area under study and answer any questions you may have about the research.

Potential Risks: There are minimal risks to participation in this study, including loss of confidentiality and you have the right to stop participation at any point. The researchers will protect your confidentiality to the greatest extent possible, by keeping data in a secure location.

Potential Benefits: The only direct benefit to you if you participate in this research may be that you will learn about how Aggression Replacement Training program can help reduce aggression in children with autism, and may learn more about aggression. Others may benefit by learning about the results of this research.

Confidentiality: The researchers will make every effort to prevent anyone who is not on the research team from knowing that you provided this information, or what that information is. The consent forms with signatures will be kept separate from responses, which will not include names and which will be presented to others only when combined with other responses. Although we will make every effort to protect your confidentiality, there is a low risk that this might be breached.

Voluntary Participation: Your refusal to participate in this study will involve no penalty or loss of benefits to which you are otherwise entitled and will not affect your relationship with The University of Toledo or any of your classes, or your employment at SAIL. In addition, you may discontinue participation at any time without any penalty or loss of benefits.

Contact Information: Before you decide to accept this invitation to take part in this study, you may ask any questions that you might have. If you have any questions at any time before, during or after your participation or experience any physical or psychological distress as a result of this research, you should contact a member of the research team.

If you have questions beyond those answered by the research team or your rights as a research subject or research-related injuries, the Chairperson of the SBE Institutional Review Board may be contacted through the Office of Research on the main campus.

Before you sign this form, please ask any questions on any aspect of this study that is unclear to you. You may take as much time as necessary to think it over.
SIGNATURE SECTION – Please read carefully

You are making a decision whether or not to participate in this research study. Your signature indicates that you have read the information provided above, you have had all your questions answered, and you have decided to take part in this research.

The date you sign this document to enroll in this study, that is, today's date must fall between the dates indicated at the bottom of the page.

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CHILD RESEARCH SUBJECT ASSENT FORM

Reducing verbal and physical aggression in elementary students with Autism using the Aggression Replacement Training Program

- You are being asked to be in a study to help understand people better.
- You should ask any questions you have before making up your mind. You can think about it and discuss it with your family or friends before you decide.
- It is okay to say “No” if you don’t want to be in the study. If you say “Yes” you can change your mind and then quit the study at any time without getting in trouble.

We are doing a research study about aggression in students with Autism. A research study is a way to learn more about people. If you decide that you want to be part of this study, you will be asked to participate in sessions that will teach you ways to help you reduce your aggression. Sessions will be 30 minutes each, and there will be 3 sessions every week for 10 weeks.

There are some role-playing activities involved in this study where you will be asked to act out certain social situations. You will be asked to talk about your anger and emotions, which may make you feel uncomfortable. You will also be asked to fill out a survey that will help the researchers learn about your social skills. There will be weekly homework assignments for you to work on at home or in your community that involve trying new skills with people.

Not everyone who takes part in this study will benefit. A benefit means that something good happens to you. We think these benefits might include a decrease in your feelings of anger and aggressive acts. You may find it easier to interact and communicate with others. You may be able to participate in class better due to better relationships with the teacher and your peers.

When we are finished with this study we will write a report about what was learned. This report will not include your name or say that you were in the study.

If you have any questions about the study, you can ask the researcher. You can call the investigators listed at the top of this page if you have a question later.

If you decide to be in this study, please print and sign your name below.

I, _____________________________________, want to be in this research study.

(Print your name here)

Sign your Name: _____________________ Date: ___________________
Appendix B

Data Collection Forms:

Aggression Data Collection Form
## Aggression Data Collection Form

<table>
<thead>
<tr>
<th>Participant Name:</th>
<th>Observer Name:</th>
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### Physical aggression:
- hitting
- kicking
- head butting
- scratching
- pinching
- biting
- pushing
- throwing objects
- hair pulling
- spitting

### Verbal aggression
- profanity
- obscene gestures
- derogatory remarks
- insults
- threaten bodily harm
- threaten harm to property
- intimidation
Appendix C

Lesson Plans:

Aggression Replacement Training Lesson Plans
### Aggression Replacement Training Lesson Plans

#### Week 1: Introduction

**Lesson Objectives:**

1. Motivate students to participate in the ART program
2. Explain what the ART program is and how it is intended to help the students
3. Establish rules and procedures
4. Give initial assessments of the A-B-C’s of aggressive behavior:
   - A=What led up to it?
   - B=What did you do?
   - C=What were the consequences?
5. Introduce Skillstreaming skills
6. Review goals, procedures, and A-B-C’s

**Materials Needed:**

1. A-B-C worksheets (attached)
2. Training procedures handouts (attached)
3. Choose an appropriate Skillstreaming skill (1-56) and provide each student with a copy of the handout for that skill
4. Steps for Skillstreaming lessons (attached)

**Procedures:**

Have students sit around a table or pull desks into a circle or semi-circle

1. Explain the goals of ART
2. Explain rules for participation and the training procedures
3. Give initial assessments of the A-B-C’s of aggressive behavior
4. Have students review their A-B-C’s and compare/contrast with others in the group
5. Review goals, procedures, and A-B-C’s
6. Introduce a relevant Skillstreaming skill and role-play the skill
What Are Your A-B-C’s of Anger?

A= What triggered the problem? What led up to it?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

B= What did you do in response to A?

________________________________________________________________________
________________________________________________________________________

C= What were the consequences for you and for the other person?

________________________________________________________________________
________________________________________________________________________
### Week 2: Triggers

#### Lesson Objectives:
1. Review the first session
2. Introduce Hassle Logs
3. Discuss anger triggers and help trainees identify things that make them angry
4. Role-play triggers
5. Introduce relevant Skillstreaming skills
6. Review the Hassle Log and Triggers

#### Materials Needed:
1. Hassle log
2. Choose an appropriate Skillstreaming skill (1-56) and provide each student with a copy of the handout for that skill

#### Procedures:

Have students sit around a table or pull desks into a circle or semi-circle

1. Explain the goals of ART
2. Review the A-B-C’s of aggressive behavior
3. Introduce the hassle log:
   a) It provides an accurate picture of conflicts that occur during the week
   b) It helps trainees learn about what makes them angry and how they handle these situations (so they can work to change behaviors that cause them trouble and leave them from feeling bad about themselves)
4. Discuss triggers (ABC’s)
   a) External triggers are things done by one person that make another person angry and can be verbal or nonverbal
   b) Internal triggers are things we say to ourselves that are distorted self-statements
5. Role-play and give feedback on trainees’ use of triggers by using situations from the students’ hassle logs
6. Review the hassle logs and triggers
7. Introduce a relevant Skillstreaming skill and role-play the skill
### Week 3: Cues and Anger  Reducers 1, 2, and 3

**Lesson Objectives:**
1. Review the second session
2. Discuss how to know when you are angry (cues)
3. Discuss what to do when you know you are angry:
   - Anger reducer 1: deep breathing
   - Anger reducer 2: backward counting
   - Anger reducer 3: pleasant imagery
4. Role-play triggers+cues+anger reducers
5. Introduce a relevant Skillstreaming skill
6. Review the Hassle Log; triggers; cues; and anger reducers 1, 2, and 3

**Materials Needed:**
1. Hassle log
2. Choose an appropriate Skillstreaming skill (1-56) and provide each student with a copy of the handout for that skill
3. “What are my warning signs?” worksheet (attached)

**Procedures:**
Have students sit around a table or pull desks into a circle or semi-circle
   1. Review the A-B-C’s of aggressive behavior
      1. Discuss how to know when you are angry (cues)
      2. Explain that in order to control your anger, you need to KNOW that you are angry
      3. Complete worksheet: “My warning signs”
   4. Draw pictures of what anger looks and feels like
   5. Anger reducer 1: Deep breathing (reduces muscle tension and alleviate stress). Trainer models, trainees role-play
   6. Anger reducer 2: Backward counting (increases personal power in high-pressure situations and gives you time to think about the best response). Count backward silently at an even pace. Trainer models, trainees role-play.
   7. Anger reducer 3: Pleasant imagery (reduce tension by imagining being in a peaceful scene)
   8. Introduce a new Skillstreaming skill and role-play the skill

Homework: Have trainees try to use the 3 anger reducers in the coming week in situations when they notice they are getting angry. Use Hassle Logs for each situation and have them note which anger reducers they used.
Name___________________

My Warning Signs

I can feel my anger when:

1.____________________________________________________________
   _____________________________________________________________

2.____________________________________________________________
   _____________________________________________________________

3.____________________________________________________________
   _____________________________________________________________
## Week 4: Reminders

### Lesson Objectives:
1. Review the third session
2. Introduce reminders
3. Model using reminders
4. Role-play triggers+cues+anger reducer(s)
5. Review reminders
6. Introduce Skillstreaming skill

### Materials Needed:
1. Hassle log
2. Choose an appropriate Skillstreaming skill (1-56) and provide each student with a copy of the handout for that skill
3. Skillstreaming homework report (attached)
4. “My reminders” worksheet (attached)
5. Reminders key sheet for trainer (attached)

### Procedures:
1. Have students sit around a table or pull desks into a circle or semi-circle
2. Reminders are instructional statements used to help increase success in pressure situations. Have students think of some in a group using the “My reminders” worksheet
3. Discuss further reminders using the trainer key sheet
4. Role-play reminders for certain situations using the trainer key sheet as a guide
5. Review hassle logs
6. Introduce a relevant Skillstreaming skill and role-play
Name:___________________

**My Reminders**

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### Week 5: Self-evaluation

**Lesson Objectives:**
1. Review the fourth session
2. Introduce self-evaluation (self-rewarding/self-coaching)
3. Role-play triggers+cues+anger reducers+reminders+self-evaluation
4. Review self-evaluation
5. Introduce Skillstreaming skill

**Materials Needed:**
1. Hassle log
2. Choose an appropriate Skillstreaming skill (1-56) and provide each student with a copy of the handout for that skill
3. Reward worksheet (attached)

**Procedures:**
1. Have students sit around a table or pull desks into a circle or semi-circle
2. Self-evaluation allows students to judge for themselves how well they have handled a conflict, reward themselves for handing it well, and help themselves find out how they could have handled better.
3. Use reward worksheet and hassle logs to practice
4. Role play the sequence up to rewards using hassle logs:
   a. Identify cues of anger
   b. Use any or all of the anger reducers
   c. Use reminders
   d. Evaluate performance, either rewarding or coaching themselves
5. Introduce a relevant Skillstreaming skill and role-play the skill
<table>
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<th>Reward Statements:</th>
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### Week 6: Thinking Ahead

#### Lesson Objectives:
1. Review the fifth session
2. Introduce thinking ahead
3. Role-play “if…then” thinking ahead
4. Review thinking ahead
5. Introduce Skillstreaming skill

#### Materials Needed:
1. Hassle log
2. Choose an appropriate Skillstreaming skill (1-56) and provide each student with a copy of the handout for that skill
3. Social consequences worksheet (attached)
Name:________________________________

Directions: List some examples of social consequences below. Put stars next to the examples that would be the worst for you.

1._________________________________________
   __________________________________________

2._________________________________________
   __________________________________________

3._________________________________________
   __________________________________________

4._________________________________________
   __________________________________________
<table>
<thead>
<tr>
<th>Week 7: Angry Behavior Cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lesson Objectives:</strong></td>
</tr>
<tr>
<td>1. Review the sixth session</td>
</tr>
<tr>
<td>2. Introduce the Angry Behavior Cycle</td>
</tr>
<tr>
<td>3. Role-play “if…then” Angry Behavior Cycle</td>
</tr>
<tr>
<td>4. Review Angry Behavior Cycle</td>
</tr>
<tr>
<td>5. Introduce Skillstreaming skill</td>
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</table>

<table>
<thead>
<tr>
<th><strong>Materials Needed:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Hassle log</td>
</tr>
<tr>
<td>2. Choose an appropriate Skillstreaming skill (1-56) and provide each student with a copy of the handout for that skill</td>
</tr>
<tr>
<td>3. “My Agreement” worksheet (attached)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Procedures:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Have students sit around a table or pull desks into a circle or semi-circle</td>
</tr>
<tr>
<td>2. The Angry Behavior Cycle is what trainees do to make other people angry with them.</td>
</tr>
<tr>
<td>3. Give personal examples of things the trainer does that are likely to make others angry (calling someone a name, making fun of someone’s appearance, etc)</td>
</tr>
<tr>
<td>4. Complete “My Angry Behavior Cycle” worksheet (attached)</td>
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<tr>
<td>5. Take turns telling each other about angry behavior examples and see how others would react to each example</td>
</tr>
<tr>
<td>6. Trainer will get an agreement from each trainee to try to change each of the problematic behaviors they selected. The thinking ahead procedure is an excellent way to create this contract (eg: “if I call him a name, he will get angry with me, and I will lose a friend”). Complete “My Agreement” worksheet (attached)</td>
</tr>
<tr>
<td>7. Role play the chain thus far: triggers+cues+anger reducers+self evaluation, and conduct role plays from hassle logs as usual</td>
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<tr>
<td>8. Review Angry Behavior Cycle</td>
</tr>
<tr>
<td>9. Introduce and role-play a new relevant Skillstreaming skill</td>
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<tr>
<td><strong>Lesson Objectives:</strong></td>
</tr>
<tr>
<td>--------------------------------</td>
</tr>
<tr>
<td>1. Review the seventh session</td>
</tr>
<tr>
<td>2. Introduce Rehearsal of Full Sequence</td>
</tr>
<tr>
<td>3. Role-play all of the anger control techniques and some of the skills from Skillstreaming sessions (this will occur for the next 2 weeks)</td>
</tr>
<tr>
<td>4. Review Rehearsal of Full Sequence</td>
</tr>
<tr>
<td>5. Introduce Skillstreaming skill</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Materials Needed:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Hassle logs</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Procedures:</strong></th>
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</thead>
<tbody>
<tr>
<td>1. Have students sit around a table or pull desks into a circle or semi-circle</td>
</tr>
<tr>
<td>2. The next 2 weeks are devoted to practicing and rehearsing the entire sequence: triggers+cues+anger reducers+reminders+Skillstreaming skill+self evaluation</td>
</tr>
<tr>
<td>3. Use role-plays from situations in the trainees’ hassle logs to guide role play and give feedback on how well the steps were put together</td>
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</tbody>
</table>
### Week 9: Rehearsal of Full Sequence

#### Lesson Objectives:
1. Review the completed hassle logs from entire duration of training
2. Reinforce trainee’s new ways of handling conflict situations
3. Role-play all of the anger control techniques and some of the skills from Skillstreaming sessions
4. Review Rehearsal of Full Sequence
5. Introduce Skillstreaming skill

#### Materials Needed:
1. Hassle logs

#### Procedures:
1. Have students sit around a table or pull desks into a circle or semi-circle
2. This week will be devoted to practicing and rehearsing the entire sequence: triggers+cues+anger reducers+reminders+Skillstreaming skill+self evaluation
3. Use role-plays from situations in the trainees’ hassle logs to guide role play and give feedback on how well the steps were put together
<table>
<thead>
<tr>
<th><strong>Week 10: Overall Review</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lesson Objectives:</strong></td>
</tr>
<tr>
<td>1. Review the completed hassle logs from entire duration of training</td>
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<tr>
<td>2. Reinforce trainee’s new ways of handling conflict situations</td>
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<tr>
<td>3. Role-play all of the anger control techniques and some of the skills from Skillstreaming sessions</td>
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<tr>
<td>4. Review Rehearsal of Full Sequence</td>
</tr>
<tr>
<td>5. Introduce Skillstreaming skill</td>
</tr>
<tr>
<td>6. Recap anger control techniques</td>
</tr>
<tr>
<td><strong>Materials Needed:</strong></td>
</tr>
<tr>
<td>1. Hassle logs</td>
</tr>
<tr>
<td><strong>Procedures:</strong></td>
</tr>
<tr>
<td>1. Have students sit around a table or pull desks into a circle or semi-circle</td>
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<tr>
<td>2. This week will be devoted to practicing and rehearsing the entire sequence: triggers+cues+anger reducers+reminders+Skillstreaming skill+self evaluation</td>
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<tr>
<td>3. Use role-plays from situations in the trainees’ hassle logs to guide role play and give feedback on how well the steps were put together</td>
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<tr>
<td>5. Reinforce and encourage continuation of all that has been learned and practiced</td>
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<tr>
<td>6. Hand out certificate of completion (attached)</td>
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Appendix D

Social Validity Surveys:

Student Survey

Teacher Survey
# Student Social Validity Survey for Aggression Replacement Training

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ART helped me learn to control my anger</td>
<td></td>
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<td></td>
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<tr>
<td>2. ART helped me communicate my needs more effectively</td>
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<tr>
<td>3. ART resulted in positive changes in my behavior</td>
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<td>4. The skills I learned from ART will be helpful to me in the future</td>
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<tr>
<td>5. ART helped me develop more positive relationships with others</td>
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</tbody>
</table>

Comments:
# Teacher Social Validity Survey for Aggression Replacement Training

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ART helped the student learn to control anger</td>
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<tr>
<td>2. ART helped the student communicate needs more effectively</td>
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<td>3. ART resulted in positive changes in the student’s behavior</td>
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<td>4. The skills learned from ART will be helpful in the student’s future</td>
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<td>5. ART helped the student develop more positive relationships with others</td>
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Comments: