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The Relationship Between Adverse Childhood Experiences and Social Communication: A Survey Study

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The Relationship Between Adverse Childhood Experiences and Social

Communication: A Survey Study

By

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The Relationship Between Adverse Childhood Experiences and Social Communication:

A Survey Study

Chey Maree Robertson

This thesis has been examined and approved by the following members of the student's

committee.

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Abstract

Speech-language pathologists work with individuals who have experienced various levels of adversity. The title of this thesis is The Relationship between Adverse Childhood Experiences (ACEs) and Social Communication: A Survey study. The researcher, Chey Robertson, from the communication sciences and disorders program investigated the relationship between ACEs and social communication such as social cognition, social interaction, and pragmatics. ACEs includes physical, emotional, and sexual abuse, physical and emotional neglect. ACEs also includes household dysfunction such as a household member with mental illness, witnessing domestic violence, incarceration of a household member, household member who abuses drugs or alcohol, and separation of parents. The aim of this study is to focus on the association between ACEs and social communication as it is important for SLPs, other health professionals, and educators to consider all the factors that might influence an individual's ability or inability to communicate effectively. A survey was used to collect information about participants' ACEs and social communication.

A survey was disbursed to college students at a Midwest university from October 2018 to January 2019. The survey included an ACE and social communication questionnaire. An analysis of the data focused on a correlation between the total ACE score and social communication (social cognition, social interaction, and pragmatics). T-tests were also run to compare significant ACE scores and social communication with less significant ACE scores and social communication. Furthermore, t-tests were run to compare each ACE with social communication. The results of the study partially support the hypothesis

as a weak relationship was found between the total number of ACEs individuals were exposed to and social communication. Additionally, a significant difference was found when comparing individuals who had experienced ACEs (specifically physical abuse, sexual abuse, emotional neglect, and/or a household member with a mental illness, such as depression, or suicidal ideation) and their social communication (social cognition, social interaction, and pragmatics) difficulties.

difference. The difficult times made me stronger, giving me the endurance to reach my goals. I am truly grateful for those who have taken every step with me reassuring me along the way. Thank you.

Table of Contents

Chapter 1

Introduction

The field of speech-language pathology allows professionals to provide

therapeutic tasks to children and adults with various diseases and disorders in medical,

clinical, and educational settings that impair communication. Speech-language

pathologists (SLPs) provide care to students with cerebral palsy (CP), autism spectrum

disorder (ASD), fetal alcohol spectrum disorder (FASD), Down Syndrome,

developmental delays, social communication impairment, and a history of trauma, to

name a few. While there is no clear way to administer treatment, as each patient is

different, SLPs may be unaware of individual's experiences specifically related to trauma

or adversity.

Life is influenced by many experiences, both positive and negative. Positive

experiences might include winning a 1st place ribbon in track for the first time, jumping

out of a plane at 15,000 feet in the air, building a campfire for the first time, or jamming

to songs with the radio turned all the way up while driving to Missouri on a road trip.

Negative experience might include your dad abandoning the family without explanation

for seven years, having a category five hurricane tear through your city destroying

everything you own, and recurring abuse at the hands of your mother's boyfriend.

The latter experiences, known as adverse childhood experiences (ACEs) can

impact neurobiological and communication resulting in emotional dysregulation (Center

for Substance Abuse Treatment, 2014 & Westby, 2018). Lack of knowledge regarding

issues related to adversity prevents individuals from getting appropriate treatment and

exposes them to re-traumatization. Furthermore, experiencing ACEs may result in higher risk of cancer, heart disease, hepatitis and high-risk behaviors such as smoking, engagement in unsafe sexual activity, reduced physical activity, and eventually death related to factors listed above (Felitti et al., 1998). This research will focus on the relationship between ACEs and social communication.

Adverse Childhood Experiences (ACEs)

ACEs can influence future victimization, violence, perpetration, health, and more ("About Adverse Childhood Experiences," n.d.) and they are considered to be a public health issue. ACEs are "traumatic events that can have negative lasting effects on health and well-being," specifically, experiences that include abuse, neglect, mental illness, bullying, community violence (Boullier & Blair, p. 1, 2018). "Health professionals found that early trauma, especially recurring trauma leads to toxic stress which extends the activation of the stress response system" (Beeks, 2018). Fight or flight is a typical response to stress; however, when the body is in constant fight or flight mode the, "body responds by activating the sympathetic nervous system" which results in pupil dilation, increased heart rate, and activation of the hypothalamic-pituitary-adrenal (HPA) axis (Boullier & Blair, p. 2, 2018).

The HPA prepares the cardiac and skeletal muscles to escape from posed danger (Boullier & Blair, 2018). When the HPA axis is triggered, glucose is produced and used immediately by the cardiac and skeletal muscles. This causes the sympathetic system and the HPA axis to over activate. Overactivation of these systems reduces the protective aspect that helps with recovery after a traumatic event is over which can "lead to

dysregulation of the pathways and have long term consequences on the way the neurological, endocrine, and immune systems function" (Boullier & Blair, p. 4, 2018).

Dysregulation of the neurological system can cause behavioral difficulties, concentration difficulties, poor executive function skills, memory, and learning deficits. Dysregulation of the endocrine system can cause an increase in cortisol production which leads to an irregular sleep cycle and an irregular metabolism. Dysregulation of the immune system can cause inflammation and increased infection risks. Overall, an individual who experiences ACEs, is "likely to have learning and behavioral issues" (Palusci, p. 2, 2013).

Furthermore, when the HPA axis is overactivated, neurotransmitter production can become altered. For instance, neurotransmitters such as cortisol, norepinephrine, and dopamine, are disrupted causing increased stress responses. Disruption of these neurotransmitters negatively influences neural growth and can cause death of critical cells ("Center for Substance Abuse Treatment", 2014). Disruptions include elevated cortisol, norepinephrine, and dopamine levels which can inhibit brain structures from functioning properly and the prefrontal cortex may not mature.

The prefrontal cortex is pertinent for executive functioning including, "planning complex cognitive behavior, personality expression, decision making, and moderating social behavior" ("Prefrontal Cortex", 2018). Additionally, Heim et al. (2008) conducted a study about trends in stress and depression that occur early in life and found women who experience adversity such as emotional abuse has decreased oxytocin levels in their cerebrospinal fluid. Oxytocin is necessary for anxiety and stress management, social

support, and trust. This indicates that the lower the oxytocin levels then the higher the anxiety levels can be which may influence the child ability to cope with the stress of adversity.

When children experience recurring adversity, stress becomes traumatic, and during developmental stages, can cause children to have underdeveloped coping mechanisms. While one incident of toxic stress can be damaging, continuous trauma greatly increases impairment and reduces ability. An individual's response to continuous traumatic stress can become uncontrollable and cause maladaptive and destructive behaviors. Traumatic stress is the "physical and emotional response of a child to events that threaten the life or physical integrity of the child or of someone critically important to the child" (Palusci, p. 3 2013).

Neurobiological Development

Maltreatment during childhood can affect neurobiological development over time. Maltreatment occurs when an adult responsible for a child or adult, harms the child directly or indirectly. Maltreatment can also occur when the needs of a child or adult are unmet and encompasses abuse, neglect, and abandonment. The structure and function of areas, such as the hippocampus, prefrontal cortex (PFC), and amygdala, in the brain can change (Cross, Fani, Powers, & Bradley, 2017). Typical development of the hippocampus includes receiving perceptual information and connecting that information to contextual information (Cross et al., 2017). Information about what and who are connected with information about where and when. Furthermore, the PFC provides perceptual and contextual information with attributional information, essentially, the

why. An example of perceptual, contextual, and attributional connection follows: Alyssa told Shauntel she was crying because she will miss the routine of graduate school and the mystery of the future frightens her.

Additionally, the PFC helps regulate the amygdala by inhibiting emotional responses of individuals and also consolidates emotional and perceptual responses by communicating with the hippocampus. When trauma frames neurobiological development, the hippocampus, PFC, and amygdala can cause the individual to associate perceptual, contextual, and attributional information with traumatic events (Cross et al. 2017). Therefore, the typical neural pathways are hindered by trauma so the response the individual elicits becomes the predominate response. For example, as a result of trauma, the individual may have difficulty maintaining control of their memories so they may associate the emotions they experienced during the trauma when they recall the traumatic event later.

Executive Functioning

Executive functioning (EF) can be impacted by impaired neurobiological development. EF is responsible for mental processes that allow individuals to be aware of and adapt to external and internal stimuli and goals (Cross et al. 2017). EF includes inhibition and interference control, working memory (WM), and cognitive flexibility. Inhibition involves the ability to control emotion, attention, and behavior in order to negate impulsive responses or reaction to negative environmental stimuli. For example, individuals are able to resist temptations such as taking items that belong to others or over indulging in sugary foods. EF allows individuals to surrender immediate pleasure

for greater pleasure later. Inhibitory control allows individuals to have different types of attention such as selective, sustained, divided, and alternating attention. EF also allows individuals to have inference control or cognitive inhibition in which unwanted thoughts or memories are suppressed. Additionally, EF allows individuals to have self-control and to resist blurting out and jumping to conclusions. Individuals with intact EF develop concise responses in various situations.

Working memory (WM) allows individuals to retain information and to recall the information when engaging in cognitive tasks (Cowan, 2013). There are two types of WM, verbal working memory (VWM) and visual-spatial or nonverbal working memory (NWM). Manipulation and maintenance of verbal information is known as VWM (Diamond, 2012). NWM refers to the ability to maintain and manipulate nonverbal information such as faces, sounds, smells, feelings, shapes, songs and any stimuli that is not written or spoken. WM is necessary to decipher information as it is gained over time. WM helps individuals during decision making and organization. WM aids with inhibitory control because the manipulation of the stored information can prevent impulsive responses. For example, when child B wants to a toy that child M has, the initial thought may be to snatch the toy away. However, child B's WM allows her to stop, think about what could happen, then react. Instead of snatching the toy from Child M, Child B may ask to play with the toy when Child M is done with it. Because child B's WM was intact, she was able to use stored information to guide her decisions. Inhibition also aids WM because it allows individuals to refrain from obsessing on single thoughts and ideas.

Inhibition allows individuals to resist distractions that are internal and external so that the mind does not wander (Cross et al. 2017).

Lastly, cognitive flexibility occurs later in development and allows individuals to spatially and interpersonally change perspective (Cross et al. 2017). Cognitive flexibility builds off of WM and inhibition because in order to obtain a new perspective, the old perspective needs to be inhibited so information used to create the new perspective can be stored into the WM where it can be maintained and manipulated. Cognitive flexibility also allows an individual to adjust to changes in the environment and to grasp unexpected opportunities. For example, cognitive flexibility allows adult B to adjust his schedule when adult M has to reschedule because he forgot about the parent-teacher conference at his daughter's school.

When a child experiences trauma EF can be impaired, especially with early exposure (Cross et al. 2017). For instance, Cowell et al (2015) found children who had been exposed to maltreatment during infancy, or if the maltreatment recurred during pertinent development periods would have impaired inhibition and WM which persisted during adolescence and into adulthood (Cross et al. 2017). Additionally, various studies found that adults exposed to maltreatment during childhood were negatively associated with inhibition, WM, and cognitive flexibility. Due to the relationship between PFC and EF, "individuals exposed to childhood trauma point to the PFC as an important site of neurobiological response to early stress" (Cross et al., p. 6, 2017).

Emotional Regulation

Emotional regulation is also impaired as a result of exposure to trauma. Emotional regulation provides individuals with appropriate management strategies for responding to emotion (Cross et al. 2017). Responses to emotion can include cognitive, behavioral, and physiological responses. Individuals must be able to be aware, understand and accept emotional experiences in order to respond appropriately. Past researchers have found that trauma impacts "emotional awareness, understanding, and regulation" which all require interaction and support from parents and adults who are supportive (Cross et al., p. 6, 2017). Exposure to abuse and neglect during childhood prevents children from receiving appropriate models of "emotional labeling, expression, and regulation behaviors" (Cross et al., p. 6, 2017). Emotional regulation can become impaired in part due to impaired EF. EF is pertinent for emotional regulation because WM prevents an individual from obsessing about negative thoughts (Cross et al. 2017).

Cognitive flexibility prevents individuals from using ineffective coping strategies, and prevents impulsive cognitive, behavioral, and emotional responses. Like EF, trauma impacts emotional regulation the most during early development (Cross et al. 2017). Furthermore, the occurrence of trauma exposure can cause immediate or persistent responses to emotion. Due to the inability to control emotions individuals often self-medicate or engage in self-injurious or high-risk behaviors ("Center for Substance Abuse Treatment," 2014). Some individuals who have experienced trauma may also engage in healthy positive experiences such as exercise and getting involved in the community. Emotional dysregulation can occur as a result of trauma and in the absence of supportive relationships which are necessary for individuals to learn how to self-soothe.

Communication

Communication refers to the exchange of "thoughts, feelings, and ideas that leads to mutual understanding" (Psychology Today, n.d.). Communication can be demonstrated in various modes including words, gestures, sign language, body language, vocalizations, objectics, paralinguistics, and proxemics. For successful communication, individuals must have the ability to use and understand the actions of others. Effective communication allows individuals to "express needs, wants, feelings and preferences" and to increase independence (ASHA, n.d.b).

Speech and Language

The brain is primed for speech and language acquisition from birth to three years of age (Suskind, 2015). From birth to three, children are able to develop speech and language through stimuli they are exposed to in their environment. Speech and language may become more difficult to learn after three years old as the critical developmental period has ended. Early communication signs in infants occur when the child cries for food, to be changed, or for attention. While speech and language skills vary based upon the child, all children typically follow "a natural progression or timetable for mastering" these skills (National Institute on Deafness and Other Communication Disorders, 2018). There are several checklists to help doctors and other professionals determine if children are developing typical speech and language skills. Children exposed to maltreatment or trauma during the critical period of development of speech and language skills could have a 76% chance of acquiring deficits in language, emotion, and brain development (Westby, 2018). Children who have been exposed to trauma have a shorter mean length

of utterance (MLU) when compared to typically developing peers (Knolle, Vallotton, &

Ayoub, 2018).

Social Communication

Social communication refers to the use of language in various social contexts. It

involves "social interaction, social cognition, pragmatics, and language processing"

(ASHA, n.d.e). Social communitive abilities include the ability to alter speech styles,

change perspective, use and understand rules necessary for effective nonverbal and verbal

communication as well as using the appropriate language structure such as syntax,

phonology, semantics, and vocabulary. Social communication is necessary for language

expression and comprehension. There are influential factors that determine what social

norms are considered acceptable. Those factors can include family, culture, experience.

Difficulties with social communication can prevent individuals from participating in

various social settings, creating and maintaining relationships with peers, and obtaining

success in academics and in the workplace (ASHA, n.d.e).

Pragmatics includes the use of language for different reasons, for example, using

language to greet, inform, demand, request, and promise. Another skill includes adjusting

language depending on the situation or listener. For instance, providing the listener with

more information if the topic is unfamiliar and less information if the topic is familiar.

Pragmatics also involves the ability to follow conversation and storytelling rules such as

turn-taking, topic maintenance, use of gestures, facial expressions, providing context.

Difficulty with social communication may result in the individual expressing

inappropriate utterances or exhibiting inappropriate behaviors during conversation,

telling non-sequential and in cohesive stories, and displaying limited use of language (ASHA, n.d.d).

While individuals can have difficulty with social communication, individuals can have severe social communicative deficits in which the individual can be diagnosed with a social (pragmatic) communication disorder (SCD). SCD is a related disorder of autism spectrum disorder (ASD). ASD is "a neurodevelopmental disorder characterized by deficits in social communication and social interaction and the presence of restricted, repetitive behaviors" (ASHA, n.d.a). SCD is "characterized by difficulties with use of verbal and nonverbal language for social purposes" (ASHA, n.d.e).

Individuals with SCD may have difficulty participating in social environments, developing and maintaining relationships with peers, establishing success in academics, and achieving success in the workplace. Other disorders that are concomitant with SCD are "intellectual disability, developmental disability, learning disability, spoken language disorders, written language disorders, attention-deficit/hyperactivity disorder, traumatic brain injury, aphasia, dementia, and right hemisphere damage" (ASHA, n.d.e).

Purpose

The aim of this study is to focus on the association between ACEs and social communication. A survey was used to collect information about participants' ACEs and social communication to ascertain all the factors that might influence an individual's ability or inability to communicate effectively.

Research Question

How do ACEs relate to social communication in adults?

a. How do ACEs relate to social interaction in adults?

b. How do ACEs relate to social cognition in adults?

c. How do ACEs relate to pragmatics in adults?

Hypothesis

It is hypothesized that the higher the ACEs score (more trauma experienced), the more difficulty one will have with social communication (social interaction, social cognition, and pragmatics).

Use of Findings

It is hoped that the findings can be used to demonstrate the relationship between ACEs and social communication. Knowledge of the association between adversity during childhood and social communication is important when providing trauma informed care to help children and adults achieve success such as physical health, mental health, employment, and life opportunity. These findings can also be used to help identify children and adults with social communication difficulties, other than autism, who have significant ACEs scores and to provide social skill services to increase the social communication abilities of those individuals. Additionally, the findings could potentially bring awareness to healthcare professionals, who work with children and adults, about how adversity can influence communication, behavior, and health. Moreover, the findings will be used to encourage further investigation into how social communication, language, and ACEs are interrelated.

Definitions

Adverse childhood experience (ACE) is defined by the Center for Disease Control and Prevention (CDC) as "the term used to describe all types of abuse, neglect, and other potentially traumatic experiences that occur to people under the age of 18" ("About Adverse Childhood Experience," n.d.).

Adversity is defined as "a state or instance of serious or continued difficulty or misfortune" ("Adversity," n.d.).

Abuse refers to "any action that intentionally harms or injures another person" ("What is Abuse?", n.d.).

> *Emotional abuse*, known as psychological or verbal abuse, involves "controlling another person's actions and behaviors through verbal and emotional manipulation" ("Crisis Text Line," 2019).

> *Physical abuse* "occurs when a parent or caregiver commits an act that results in physical injury to a child or adolescent, such as red marks, cuts, welts, bruises, muscle sprains, or broken bones" (Peterson, 2018b).

> *Sexual abuse* refers to "unwanted sexual activity, with perpetrators using force, making threats, and taking advantage of victims not able to give consent" ("Sexual Abuse," n.d.).

Substance abuse refers to "a pattern of harmful use of any substance for mood-altering purposes" (T, 2018). Examples of abusive substances can include alcohol and drugs, both legal (fentanyl and valium) and illegal (heroin and cocaine).

Articulation refers to how speech sounds are made, specifically what structures are involved (lips, teeth, tongue) and how are the structures are being manipulated (rounded lips, teeth apart, tongue up) (ASHA, n.d.c).

Childhood trauma refers to "a scary, dangerous, violent, or life-threatening event that happens to a child (0-18)" ("What Is Child Trauma?", 2018).

Cognitive flexibility refers to the ability to appropriately adjust one's behavior according to a changing environment (Dajani & Uddin, 2015).

Emotional dysregulation is defined as "the inability to flexibly respond to and manage emotions" (Carpenter & Trull, p. 1, 2013).

Executive function (EF) refers to the ability to plan, organize, and execute cognitive information. EF includes maintaining control of mental processes such as inhibition, working memory, and cognitive flexibility (Diamond, 2012).

Fluency refers the quality of speech, specifically whether or not speech is smooth, effortless, and flowing (ASHA, n.d.c).

Household dysfunction/Household dysregulation occurs when a family regularly experiences conflict and instability (Hussung, 2017). Conflict and instability may be caused by abuse, neglect, addiction, mental illness, divorce, and incarceration of a family member.

Incarceration is defined as "the state of being imprisoned or confined" ("US Legal, Inc.," n.d.c).

Inhibition is defined as "the interference with or prevention of a behavioral or verbal response even though the stimulus for that response is present" (NCBI, n.d.).

Language is defined as "the comprehension and/or use of a spoken (listening and speaking), written (reading and writing), and/or other communication symbol system" (ASHA, n.d.c).

Maltreatment can be described as the negative level of care an individual receives from a caregiver or guardian (Office of Family and Children Services, n.d.). Maltreatment can range from mild to severe.

Mental Illness is defined as "a wide range of mental health conditions or disorders that affect mood, thinking, and behavior" (Mental illness, 2015). Mental illness can include schizophrenia, depression, eating disorders, or anxiety disorders.

Neglect refers to the "mistreatment of individuals from inadequate attention, especially through carelessness or disregard for the needs of others" ("What is Neglect?", n.d.).

> *Emotional neglect* refers to "the failure to provide adequate nurturing and affection to a child or the refusal to delay in ensuring that a child receives needed treatment for emotional or behavioral problems" ("US Legal, Inc," n.d.). Additionally, emotional neglect can "involve exposure to chronic or extreme domestic violence" ("US Legal, Inc," n.d.a).

> *Physical neglect* "occurs when the parent or caregiver does not provide the child with basic necessities like adequate food, clothing and shelter" ("US Legal, Inc.," n.d.b).

Pragmatics refers to the rules associated with the use of language in conversation and in social contexts (ASHA, n.d.c).

Social cognition refers to how individuals process and respond to information about other people and social context, as well as how information is applied to how individuals interact with the world (Sahi, 2017).

Social communication refers to "the use of language in social contexts" (ASHA, n.d.c).

Social interaction refers to "the process by which we act and react to those around us" (Moffitt, n.d.).

Speech refers to how words and sounds are produced (ASHA, n.d.c).

Trauma is defined as a "psychological, emotional response to an event or an experience that is deeply distressing or disturbing" ("What is Trauma," 2019).

Traumatic event is defined as "a frightening, dangerous, or violent event that poses a threat to a [an individual's] life or bodily integrity" (Peterson, 2018a).

Stress can be described as "a feeling of emotional or physical tension" ("Stress and your health," n.d.).

Toxic stress occurs when there is a "prolonged activation of the stress response, with a failure of the body to recover fully" (Franke, p. 4, 2014).

Voice refers to how the vocal folds are used to make sound as well as how respiration is used to make speech sounds (ASHA, n.d.c).

Working memory refers to "retention of a small amount of information in a readily accessible form" (Cowan, p. 1, 2013).

Chapter 2

Literature Review

Adversity is defined as "a state or instance of serious or continued difficulty or misfortune" ("Adversity", n.d.). Unfortunately, adversity occurs much more often than is reported by victims and victims' advocates. Currently, research is being conducted to investigate the different factors in adulthood that may be influenced by early adversity. Adverse childhood experiences (ACEs) is a term that refers to adversity or traumatic events experienced during the first 18 years of an individual's life, events such as abuse, neglect, and household dysfunction. It is necessary to address the conditions which cause ACEs to prevent or reduce them. Acknowledging ACEs children and adults have experienced is appropriate to aid those individuals in achieving success in areas such as physical health, mental health, employment, and life opportunity (Cameron, Carroll, & Hamilton, 2018; Campbell, Walker, and Egede, 2016; Crouch et al., 2017; Felitti et al., 1998; Loudermilk, Loudermilk, Obenauer, & Quinn, 2018; Merrick et al., 2017; Monnat & Chandeler, 2015; Topitzes, Pate, Berman, & Medina-Kirchner, 2016).

Trauma can influence neurobiological development, the ability to regulate emotions, and communicative development, all of which are necessary for successful human relationships (Center for Substance Abuse Treatment, 2014 & Westby, 2001). Deficits in these areas can influence an individual's behavior such as smoking, drinking, and drug use (Campbell, Walker, & Egede, 2016; Choi, Namkee, DiNitto, Marti, Segal, 2017; Felitti et. al., 1998; Hughes et al., 2017; Loudermilk et al. 2018; Monnat & Chandeler, 2015). (Behavior will now be referred to as response or challenging

responses). Additionally, it is important for professionals including SLPs, teachers, social workers, and psychologists, to appropriately manage challenging responses from individuals who experience trauma in order to refrain from retraumatizing during personal, educational, and professional interactions. Dr. Christina Bethell, a member of the Child and Adolescent Measurement Initiative (CAHMI), stated, "If more prevention, trauma-healing, and resiliency training programs aren't provided for children who have experienced trauma…many of the nation's children are likely to suffer chronic disease and mental illness" (Stevens, 2017). One-third of children aged 12 to 17 have experienced at least two ACEs that are likely to influence their mental and physical health in adulthood (Stevens, 2017).

Health and Wellbeing

In the Center for Disease Control and Prevention's (CDC) ground-breaking Adverse Childhood Experiences Study (ACE Study) researchers revealed a dose-response relationship between ACEs and physical and mental health (Felitti et al., 1998). Researchers also revealed 62% of the participants experienced at least one ACE and 24% of the participants experienced two or more ACEs (Anda et al., 2002; Dube et al., 2006; Felitti, 2002; Merrick et al., 2017). Additionally, it was found that an individual exposed to four or more ACEs had a "four to 12 fold increased health risks for alcoholism, drug abuse, depression, and suicide attempt; a two to four fold increase in smoking, poor-self rated health, 50 or more sexual intercourse partners, and sexually transmitted disease; and a 1.4 to 1.6 fold increase in physical inactivity and severe obesity" compared to children who have not experienced adversity (Felitti et al., p. 1, 1998). It was further concluded

that adverse experiences increase the likelihood of individuals having many health risk factors later in life such as addiction, depression, smoking, and reduction of functional ability just to name a few (Felitti et al., 1998).

Other researchers investigating ACEs have found similar findings; with a majority of the researchers discussing ACEs and the subsequent consequences as reported in the CDC-Kaiser Study as well as from "ACE data collected on the Behavioral Risk Factor Surveillance System (BRFSS)" (Merrick et al., p. 2, 2017). The CDC-Kaiser study was conducted by the CDC and Kaiser Permanente, a health maintenance organization. The study included 17,000 participants who were sent a questionnaire with questions pertaining to ACEs and health (Felitti et al., 1998). The researchers found participants who had an ACE score of 4 or more were four to twelve times more likely to have an increased risk for alcoholism, drug abuse, depression, and suicide attempts, were two to four times more likely to smoke or to report poor health, have 50 or more sexual partners, and have a sexually transmitted disease (Felitti et al., 1998). Additionally, participants who had an ACE score of four or more were 1.4-1.6 times more likely to be physically inactive and have severe obesity (Felitti et al., 1998).

The BRFSS is a national system used to collect information pertaining to "health-related risk behaviors, chronic health conditions, and use of preventive services" of residents in the United States via telephone surveys (CDC, n.d.). Common research topics that have been investigated by researchers in relation to adversity during childhood include physical and mental health, engagement in high risk behaviors, employment and opportunity.

Physical health can be greatly impacted by exposure to adversity in childhood. Researchers have found an association between ACEs exposure as a child and mental health as an adult. Examples of ACEs include verbal, physical, and sexual abuse, witnessing domestic violence of a parent, separation or divorce of parents, and living in a household with an individual who was depressed, incarcerated or suffering from chronic disease (Cameron et al., 2018; Campbell et al., 2016; Crouch et al., 2017; Loudermilk et al., 2018; Merrick et al., 2017; Monnat & Chandeler, 2015). Crouch et al. (2017) also assessed ACEs and physical health and found individuals who experience three or more ACEs had an increased chance of experiencing poor health or mental distress. Monnat and Chandeler (2015) found that specific ACEs related to physical and verbal abuse were associated with the way individuals rate their health and functional limitations. Functional limitations include the inability to complete typical everyday actions or activities. Monnat and Chandelar (2015) also discovered that witnessing parental domestic violence was associated with individuals diagnosed with diabetes Additionally, Felitti et. al. (1998) reported a ratio of individuals with diabetes who experienced 4 or more ACEs and who did not experience an ACE was 1.6:1. The ratio of individuals with chronic bronchitis or emphysema who experienced 4 or more ACEs and who did not experience an ACE was 3.9:1. Lastly, the odds of individuals who have had a skeletal fracture who experienced four or more ACEs and who did not experience an ACE is 1.6:1.

ACEs have been linked to poor mental health including depression and suicide (Merrick et al., 2017; Monnat & Chandeler, 2015). As the number of ACEs increase, the

risk for mental health increases. Results from a study completed by Monnat and Chandeler (2015) suggested that "psychological maltreatment may be just as or more detrimental to health than physical abuse." Merrick et al. (2017) found that emotional abuse and neglect have the greatest impact on mental health and were predictive of psychological symptoms of depression. Similar to Merrick et al. (2017), Bernet and Stein's (1999) findings revealed that emotional abuse predicted depression and depressive symptoms which can inhibit individuals from achieving success as they can interfere with daily life activities including an individual's ability to obtain and maintain a job and complete high school. Exposure to ACEs greatly impacts depression.

While most researchers agree Campbell, Walker, and Egede (2016) found that each ACEs except witnessing domestic violence has been associated with depression. Merrick et al. (2017) found that each ACEs except incarceration of a household member was associated with depression. Specific actions of emotional abuse can include humiliation, insulting, demeaning comments, and isolation or denials of affection for a child (Merrick et al., 2017).

Furthermore, ACEs have also been linked to suicide. The more ACEs a child is exposed to the more likely the individual will have "attempted suicide during childhood/adolescence and adulthood" (Choi et al., p. 2, 2017; Merrick et al., 2017; Thompson, Kingree, & Lamis 2019). Choi et al. (2017) reported that 30% of women and 23% of men who experience sexual abuse, physical abuse, and who witness domestic violence attempt suicide. Additionally, women who experience sexual abuse attempt suicide at a greater rate than men while men who experience emotional neglect attempt

suicide at a greater rate than women (Choi et al., 2017). Similarly, Thompson et al. (2019) reported that 78% of the individuals who have experienced sexual abuse during childhood attempted suicide. Moreover, it was also found that the number of individuals who attempted suicide and emotional abuse was double the number of those who did not attempt suicide and who did not experience emotional abuse (Briere, Madni, & Godbout, 2016; Thompson et al., 2019). Health and well-being are common themes in past and current research investigating ACEs, however researchers of ACEs have not investigated how ACEs pertain to how individuals think, interact, and use language with others socially. Another common theme in the literature is the relationship between ACEs and risky behaviors.

Risky Behaviors

Many studies conducted after the CDC-Kaiser study have also shown an association between ACEs and high-risk behaviors. High risk behaviors of individuals who experience ACEs include smoking, drinking and drug use (Campbell et al., 2016; Choi et al., 2017; Felitti et. al., 1998; Hughes et al., 2017; Loudermilk et al. 2018; Monnat & Chandeler, 2015). Researchers have also found that individuals who were exposed to at least four ACEs were at risk for smoking and engaging in heavy drinking. (Edwards et al., 2007; Hughes et al., 2017). Similar to those studies, Anda et al. (1999) found that each ACE category was significantly associated with smoking and heavy drinking. In their study, Kiburi, Molebatsi, Obondo, & Kuria, (2018) noted that emotional abuse had the strongest relationship between ACEs and individuals who smoke. Furthermore, individuals who witnessed domestic violence had a greater chance of

developing drinking problems later in life (Kiburi et al., 2018; Leung, Britton, & Bell, 2016; Rothman, Edwards, Heeren, & Hingson, 2008).

While many studies focus on substance abuse such as alcohol and tobacco use, Stein et al. (2017) found that individuals who experience adversity during their childhood can become dependent on opioids and other drugs which corresponds to the findings of Afifi, Henriksen, Asmundson, & Sareen, (2012) and Tam, Zlotnick, and Robertson (2003). A majority of the researchers investigating the interrelatedness of ACEs and high-risk behaviors have found a positive association (Anda et al., 2002; Campbell et al., 2016; Choi et al., 2017; Dube et al., 2006; Felitti et. al., 1998; Felitti, 2002; Graham, 2004; Hughes et al., 2017; Kiburi et al., 2018; Loudermilk et al., 2018; Merrick et al., 2017; Monnat & Chandeler, 2015).

Due to disease, mental health, and high- risk behaviors related to childhood adversity, individuals are expected to have a lower life expectancy and lower life potential than individuals who have not experienced adversity. Data from the BRFSS in 2009 for five states (Arkansas, Louisiana, New Mexico, Tennessee, and Washington) indicated that an individual is more likely to be unemployed if they have experienced many ACEs (Topitzes et al., 2016). Exposure to ACEs may cause individuals to have difficulty in the workplace such as "interpersonal relationship problems, emotional distress, somatic symptoms, low educational attainment, and substance abuse" (Topitzes et al., p.3, 2016). Moreover, individuals who experience four ACEs or more were more likely to have dropped out of high school and live in poverty (Metzler, Merrick, Klevens, Ports, & Ford, 2017). Anda et al. (2004) found that individuals who experienced

adversity were more likely to have mental health and physical health difficulties which impacted work performance. While risky behaviors are a common theme, an uncommon theme investigated is the relationship between ACEs and social communication specifically social cognition, social interaction, and pragmatics in adulthood.

Social Communication, Youth Development, and Adulthood

Social communication refers to the use of language in various social contexts. It involves "social interaction, social cognition, pragmatics, and language processing" (ASHA, n.d.e). All individuals interact with their environment by initiating conversations, maintaining topics of conversation, resolving conflicts, and making inferences about the communicative interaction. This is how individuals build relationships with other people. The ability to understand information and perceptions are influenced by others within an individual's environment (Stevens & Jovanovic, 2018). Social communication impacts youth development because children who have ACEs have difficulty learning to cope stressful environments. The inability to cope with stress can cause emotional, cognitive, and behavioral difficulties which can eventually lead to mental and physical health problems in adulthood (Cameron, Carroll, & Hamilton, 2018; Jones, Nurius, Song, & Fleming, 2018). Emotional difficulties that lead to poor mental health can include suicide, depression, and anxiety. For example, Monnat and Chandeler (2015) suggest exposure to ACEs "should be recognized as a social determinant of health" due to the health risk-factors that develop. Social determinants of health are social factors such as environment, education, SES, ethnicity, gender, employment and

sexuality (Graham, 2004). Each of these factors may be impacted by ACEs, which may cause individuals in adulthood to have impaired social communication abilities.

ACEs has also been found to be related to social isolation and inflexibility which can lead to "reduced self-esteem, increase disassociation, and anger hostility" (Monnat and Chandeler, p. 2, 2015). Similar to Monnat and Chandeler (2015), Choi et al. (2017) found that ACEs are related to isolation which can result in individuals who have experienced ACEs to have suicide ideations. The factors that lead individuals who experience ACEs to idealize suicide include "sense of isolation, self-blame, self-hatred, shame, and believing that their family does not need them or their family would be better off if they were dead" (Choi et al., p. 2, 2017).

Due to adversity exposure during childhood, adults may develop a "pessimistic explanatory style and cognitive attributional bias" which may influence the individual's ability to think socially, communicate, and follow the appropriate rules when interacting with others in their environment (Jones et al., p. 3, 2018). The impact of negative social environments influence how individuals interact with various environments in adulthood. For example, individuals seek the negative environments they grew up in (Jones et al, 2018). Additionally, Merrick et al. (2017) found that emotional abuse increases the risk of an individual to have "lower self-esteem, a lower sense of self-adequacy, to be emotionally unstable, and to harbor negative world view."

Additionally, environments where ACEs are typical can shape coping mechanisms of children and limit the ability of children to regulate stress. For instance, studies have found that impairments in coping mechanisms, regulation of emotions, and

social cognition can compromise "healthy social development, increasing the risk of subsequent exposure to environmental stressors, the perception of stress, and reactions that escalate stress or complicate adaptive coping" (Jones et al., p. 2, 2018).

Little research has been completed to investigate social communication in relation to trauma, though many studies have investigated social communication in individuals with ASD and other disorders. Understanding social communication outside the parameters of ASD, fetal alcohol spectrum disorder (FASD), Down Syndrome, and developmental delays is important because children who experience adversity may have social communication difficulties in social cognition, social interaction, and pragmatics as adults. Neurodevelopment in individuals who experienced trauma at a young age may be delayed or impaired making it difficult to build relationships with others which may influence employment, life opportunity, and health.

ACEs and Speech Therapy

Information about ACEs and the relationship with social communication could influence how therapeutic intervention is conducted by SLPs and other professionals, including providing trauma-informed care to reduce re-traumatization. Knowledge about trauma can be used to modify traditional approaches to enhance learning of students receiving speech-language intervention. Previous research reflects the relationship between ACEs and poor mental health but fails to reflect a relationship between social cognition, social interaction, and pragmatics.

Future research is warranted to gain a better understanding of the relationship between ACEs and social communication. Answers to questions about the effects of all

types of adversity on social communication development are necessary to enhance speech-language intervention. A larger and more diverse sample size is needed to generalize results. Additionally, future research should include a more in-depth examination of the relationship between ACEs, pragmatic language, social cognition and social interaction including the stability of relationships with family, friends, and strangers. Moreover, further examination of the relationship between ACEs, spoken language and written language (phonology, morphology, syntax, and semantics) in children would allow healthcare professionals and educators to conduct more appropriate and effective assessments and intervention for student exposed to ACEs. Further research in this area would allow professionals to provide trauma informed care to students to prevent additional traumatization.

The aim of this study is to focus on the association between ACEs and social communication such as social cognition, social interaction and pragmatics, as it is important for SLPs, other healthcare professionals, and educators to consider all factors that might influence an individual's ability or inability to communicate effectively. The research questions that guide the author's purpose include:

How do ACEs relate to social communication in adults?

    a. How do ACEs relate to social interaction in adults?

    b. How do ACEs relate to social cognition in adults?

    c. How do ACEs relate to pragmatics in adults?

Adversity in childhood occurs frequently and typically exposure to an ACE can increase the probability of exposure to others (Hunt, Slack, & Berger, 2016; Shin,

McDonald, & Conley, 2018). One in seven children have experienced abuse and/or neglect; and "almost half of the nation's children have experienced one or more types of serious childhood trauma," which accounts for approximately 34,825,978 children (Stevens, 2017). Additionally, children with a low socioeconomic status (SES) experience abuse and/or neglect at a rate that is five times as great when compared to children whose families have a high SES (Child Trend, n.d.). According to the authors of the Child trend, the most common ACEs are economic hardship and divorce/separation of parents (Child Trend, n.d.). In the U.S., about 45% of children have been exposed to one ACE with Arkansas having the highest prevalence of 56% (Child Trend, n.d.). Children from cultural and linguistic backgrounds experience ACEs at a higher rate, for example, black (61%) and Hispanic (51%) children are exposed to at least one more ACE than white (40%) and Asian (23%) children (Child Trend, n.d.). Authors of the Robert Wood Johnson Foundation website (RWJF), an organization that seeks to improve health in the U.S., found that in every state, at least 38% of all children have experienced an ACE and at least 25% of all children in 16 states have experience at least 2 ACEs (RWJF, 2018). Moreover, members of RWJF found that 38.1% of the youth in Minnesota have been exposed to ACEs (RWJF, 2018). While most demographics pertaining to ACEs include the prevalence of ACEs in youth, Jones et al. (2018) found that 52% to 76 % of the adult population is suspected of experiencing at least one ACE.

Chapter 3

Methodology

Purpose

The aim of this study is to focus on the association between ACEs and social

communication as it is important for SLPs, other healthcare professionals, and educators

to consider all the factors that might influence an individual's ability or inability to

communicate effectively. A survey was used to collect information about participants'

ACEs and social communication.

How do ACEs relate to social communication in adults?

    a. How do ACEs relate to social interaction in adults?

    b. How do ACEs relate to social cognition in adults?

    c. How do ACEs relate to pragmatics in adults?

Hypothesis

It is hypothesized that the higher the ACEs score, the more difficulty one will

have with social communication (social interaction, social cognition, and pragmatics).

Institutional Review Board (IRB) Procedures and Compliance with Ethical

Standards

Prior to distribution of the survey, a proposal was submitted to the university IRB

for approval to conduct this study. Ethical concerns were examined by the researcher and

the primary faculty mentor to ensure the safety and confidentiality of students.

Setting

This study was completed at a public Midwest university established in 1868 in a rural community. The population of the university has approximately 15,000 undergraduate and graduate students, and 2,000 faculty and staff. About 2,200 students, faculty, and staff are from diverse backgrounds including the African American, Asian American, Latino, American Indian, or from countries outside of the U.S.

Participants

The participants were 109 undergraduate students from a Midwestern university. They completed the research survey between October 2018 and January 2019. Eight participant responses were excluded from the data set because participants answered less than 10 questions; 13 participants with incomplete responses were included in the data set because only two questions were left unanswered. The demographics of the participants included age, gender, ethnicity, primary language, languages spoken, number of languages spoken, socioeconomic status (SES), education, living arrangement, parenting style of parents and location (s) of primary residence during the first 18 years of life (Table 1). All data collected from participants was self-reported.

Research Design

A survey (Appendix A) was used to collect information about participants' ACEs and social communication abilities. This research design was used to investigate numerous variables across a large population. The survey included a consent form (Appendix B) which was distributed to participants electronically. The consent form disclosed the purpose of the research, as well as the risks and benefits for participating in the study. Additionally, participants were informed about the length and confidentiality

of the study. The survey consisted of a total of 68 questions that were multiple choice, short answer, yes/no, or rated on a 5-point rating scale (never, rarely, sometimes, often, and always). Ten questions were used to obtain information about background information and current status of the participants. Ten questions were used to obtain information about adverse experiences participants experienced during the first 18 years of life. The ACE questionnaire (Appendix D) used in this portion of the survey was obtained as a portable document format (PDF) from the National Council of Juvenile and Family Court Judges website. The questionnaire included questions pertaining to abuse and family dysfunction experienced during the first 18 years of life. The ACE questionnaire can be found in Appendix D. There were 36 statements regarding the current social skills of the participant. Ten statements regarding the setting (classroom, fairs, festivals, etc.) and populations size (small, medium, large group, etc.) were asked to understand the settings in which participants felt most comfortable. One question was used to understand the type of interaction (social, personal, professional) in which the participant felt the most comfortable. One question was a personal statement in which the participant elaborated on whether or not their experiences from childhood impact their ability to communicate. The participants completed the survey between October 2018 and January 2019.

Procedures

Prior to distribution of the survey, the study was approved by the IRB at a Midwestern university. A flyer (Appendix C) was emailed to 35 general education faculty. The flyer included a link to the online survey created on a secure website called

Qualtrics. Professors were asked to post the flyer on Desire 2 Learn (D2L) Brightspace.

D2L is the learning management system (LMS). D2L delivers "content or supplemental

materials for courses and also includes a place for discussions, announcements, dropbox

for assignments, quizzes, gradebook, and more" ("D2L Brightspace," n.d.). Professors

were encouraged to offer extra credit to students as an incentive to complete the survey.

Analytical Methods and Coding

Statistical Package for Social Sciences (SPSS) was utilized to complete a

quantitative analysis between January 2019 and March 2019. Additionally, Microsoft

Excel was used to code each item except the personal statement portion. An analysis of

the data focused on a correlation between the total ACE score and social communication

(social cognition, social interaction, and pragmatics). The total ACE scores were grouped

into significant (a score of 4 or more) and less significant (a score of 3 or less). T-tests

were run to compare significant ACE scores and social communication with less

significant ACE scores and social communication. Furthermore, t-tests were run to

compare each ACE with social communication. Descriptive statistics were used to

analyze the frequency of the data collected as well as to describe the standard deviation

(SD) and mean.

Chapter 4

Results

One hundred nine undergraduate students enrolled in general education courses at

a Midwest university completed a survey pertaining to ACEs and social communication.

The study aimed to determine if there was a relationship between adversity during

childhood and social communication in adulthood. The survey was completed from

October 2018 to January 2019. Data analysis was completed on 55 of 68 items on the

survey regarding demographics, ACEs, and social communication. 13 items were not

used they were not relevant to this study. Results of the analysis suggest a significant

difference in five of the ten ACEs and social interaction and pragmatics.

Group Comparison

A group comparison of ACEs data was used to identify social communication

abilities in adults. Social communication items were categorized into three areas (social

cognition, social interaction, and pragmatics) as shown in table 2. Results were averaged

for a total score in each area. Each social communication item was measured on a 5-point

rating scale (Never: 1, Rarely: 2, Sometimes: 3, Often: 4, Always: 5). Correlations and

independent samples t-tests were completed to determine if there was a statistically

significant difference in ACE scores and the average rating in each social communication

area for each participant.

Adverse Childhood Exposures

Participants answered ten yes/no questions pertaining to their exposure to ACEs.

Within the study the prevalence of ACEs is as follows: 17% of the participants

experienced emotional abuse; 12.9% of the participants experienced physical abuse; 5.9% of the participants experienced sexual abuse; 16.8% of the participants experienced emotional neglect; 2% of the participants experienced physical neglect; 32.7% of the participants experienced divorce or separation; 6.9% of the participants witnessed domestic violence; 16.8% of the participants lived with someone who abused substances; 34.7% of the participants lived with someone diagnosed with depression, a mental illness, or who had attempted suicide; and 5% of the participants lived with a someone who was incarcerated. Overall, 58% of the participants were exposed to at least one ACE and 17% of the participants were exposed to four or more ACEs.

Correlation between ACEs and Social Communication

A Pearson's correlation was completed to determine a relationship between the number of ACEs an individual experienced and their social cognition ability, social interaction ability, and pragmatics. The highest number of ACEs an individual experienced was seven. There was not a correlation between the total ACE score (M= 1.51, SD= .3671) and social cognition (M= 3.520, SD= .3671), r= -.147, p= .143, n= 101. There was a weak negative correlation between the total ACE score (M= 1.51, SD= .3671) and social interaction (M= 3.414, SD= .3810), r= -.364, p= .000, n= 101 indicating that the more ACEs an individual was exposed to, the more difficult they perceived their social interaction skills to be. There was also a weak negative correlation between the total ACE score (M= 1.51, SD= .3671) and pragmatics (M= 3.794, SD= .5428), r= -.308, p= .002, n= 101 indicating that the more ACEs an individual was exposed to, the more difficult they perceived their pragmatic skills to be.

Comparing High and Low ACEs and Social Communication

Independent sample t-tests were conducted to compare each social

communication domain (social cognition, social interaction, and pragmatics) with each

individual ACE to determine if there was a difference in how the individuals scored.

Following the example of Felitti et al. (1998), independent t-tests were conducted to

compare participants with a low ACE score (participants who experienced three ACEs or

less) and a high ACE score (participants who experienced four ACEs or more).

Emotional Abuse

An independent sample t-test was completed to compare self-reported social

cognition in participants who experienced emotional abuse and who did not experience

emotional abuse. There was not a significant difference in the social cognition scores of

participants who experienced emotional abuse (M= 3.426, SD= .4337) and who did not

experience emotional abuse (M= 3.540, SD= .3508); t(99)= -1.199, p= .233. An

independent sample t-test was also completed to compare self-reported social interaction

in participants who experienced emotional abuse and who did not experience emotional

abuse. There was a significant difference in the social interaction scores of participants

who experienced emotional abuse (M= 3.156, SD= .4603) and who did not experience

emotional abuse (M= 3.470, SD= .3396); t(99)= -3.324, p= .001. Additionally, an

independent sample t-test was completed to compare self-reported pragmatic skills in

participants who experienced emotional abuse and who did not experience emotional

abuse. There was a significant difference in the pragmatic scores of participants who

experienced emotional abuse (M= 3.432, SD= .6086) and who did not experience emotional abuse (M= 3.872, SD= .4975); t(99)= -3.268, p= .001.

Physical Abuse

An independent sample t-test was completed to compare self-reported social cognition in participants who experienced physical abuse and who did not experience physical abuse. There was not a significant difference in the social cognition scores of participants who experienced physical abuse (M= 3.419, SD= .4105) and who did not experience physical abuse (M= 3.535, SD= .3605); t(99)= -1.63, p= .290. An independent sample t-test was also completed to compare self-reported social interaction in participants who experienced physical abuse and who did not experience physical abuse. There was a significant difference in the social interaction scores of participants who experienced physical abuse (M= 3.180, SD= .4072) and who did not experience physical abuse (M= 3.448, SD= .3670); t(99)= -2.424, p= .017. Additionally, an independent sample t-test was completed to compare self-reported pragmatic skills in participants who experienced physical abuse and who did not experience physical abuse. There was not a significant difference in the pragmatic scores of participants who experienced physical abuse (M= 3.574, SD= .5656) and who did not experience physical abuse (M= 3.826, SD= .5351); t(99)= -1.574, p= .119.

Sexual Abuse

An independent sample t-test was completed to compare self-reported social cognition in participants who experienced sexual abuse and who did not experience sexual abuse. There was not a significant difference in the social cognition scores of

participants who experienced sexual abuse (M= 3.343, SD= .2798) and who did not experience sexual abuse (M= 3.531, SD= .3703); t(99)= -1.222, p= .225. An independent sample t-test was also completed to compare self-reported social interaction in participants who experienced sexual abuse and who did not experience sexual abuse. There was a significant difference in the social interaction scores of participants who experienced sexual abuse (M= 3.000, SD= .2676) and who did not experience sexual abuse (M= 3.440, SD= .3728); t(99)= -2.839, p= .005. Additionally, an independent sample t-test was completed to compare self-reported pragmatic skills in participants who experienced sexual abuse and who did not experience sexual abuse. There was not a significant difference in the pragmatic scores of participants who experienced sexual abuse (M= 3.442, SD= .4083) and who did not experience sexual abuse (M= 3.816, SD= .5443); t(99)= -1.648, p= .102.

Emotional Neglect

An independent sample t-test was completed to compare self-reported social cognition in participants who experienced emotional neglect and who did not experience emotional neglect. There was not a significant difference in the social cognition scores of participants who experienced emotional neglect (M= 3.379, SD= .2841) and who did not experience emotional neglect (M= 3.548, SD= .3768); t(99)= -1.751, p= .083. An independent sample t-test was also completed to compare self-reported social interaction in participants who experienced emotional neglect and who did not experience emotional neglect. There was a significant difference in the social communication scores of participants who experienced emotional neglect (M= 3.172, SD= .4071) and who did not

experience emotional neglect (M= 3.463, SD= .3585); t(99)= -2.983, p= .004.

Additionally, an independent sample t-test was completed to compare self-reported

pragmatic skills in participants who experienced emotional neglect and who did not

experience emotional neglect. There was a significant difference in the pragmatic scores

of participants who experienced emotional neglect (M= 3.482, SD= .5478) and who did

not experience emotional neglect (M= 3.857, SD= .5227); t(99)= -2.675, p= .009.

Physical Neglect

An independent sample t-test was completed to compare self-reported social

cognition in participants who experienced physical neglect and who did not experience

physical neglect. There was not a significant difference in the social cognition scores of

participants who experienced physical neglect (M= 3.361, SD= .1964) and who did not

experience physical neglect (M= 3.512, SD= .3621); t(97)= -.586, p= .560. An

independent sample t-test was also completed to compare self-reported social interaction

in participants who experienced physical neglect and who did not experience physical

neglect. There was not a significant difference in the social interaction scores of

participants who experienced physical neglect (M= 3.654, SD= .4895) and who did not

experience physical neglect (M= 3.357, SD= .2912); t(97)= 1.415, p= .160. Additionally,

an independent sample t-test was completed to compare self-reported pragmatic skills in

participants who experienced physical neglect and who did not experience physical

neglect. There was not a significant difference in the pragmatic scores of participants who

experienced physical neglect (M= 3.462, SD= .4351) and who did not experience

physical neglect (M= 3.792, SD= .5458); t(97)= .850, p= .398.

Divorce/Separation of Parents

An independent sample t-test was completed to compare self-reported social cognition in participants whose parents were divorced or separated and whose parents were not divorced or separated. There was not a significant difference in the social cognition scores of participants whose parents were divorced or separated (M= 3.530, SD= .3603) and participants whose parents were not divorced or separated (M= 3.515, SD= .3729); t(99)= .199, p= .842. An independent sample t-test was also completed to compare self-reported social interaction in participants whose parents were divorced or separated and whose parents were not divorced or separated. There was not a significant difference in the social interaction scores of participants whose parents were divorced or separated (M= 3.416, SD= .2837) and participants whose parents were not divorced or separated (M= 3.343, SD= .2975); t(99)= 1.179, p= .241. Additionally, an independent sample t-test was completed to compare self-reported pragmatic skills in participants whose parents were divorced or separated and whose parents were not divorced or separated. There was not a significant difference in the pragmatic scores of participants whose parents were divorced or separated (M= 3.677, SD= .5587) and participants whose parents were not divorced or separated (M= 3.850, SD= .5299); t(99)= -1.511, p= .134.

Domestic Violence

An independent sample t-test was completed to compare self-reported social cognition in participants who witnessed domestic violence and who did not witness domestic violence. There was not a significant difference in the social cognition scores of participants who witnessed domestic violence (M= 3.548, SD= .4642) and who did not

witness domestic violence (M= 3.518, SD= .3619); t(99)= .207, p= .837. An independent

sample t-test was also completed to compare self-reported social interaction in

participants who witnessed domestic violence and who did not witness domestic

violence. There was not a significant difference in the social interaction scores of

participants who witnessed domestic violence (M= 3.335, SD= .3509) and who did not

witness domestic violence (M= 3.369, SD= .2911); t(99)= -.293, p= .770. Additionally,

an independent sample t-test was completed to compare self-reported pragmatic skills in

participants who witnessed domestic violence and who did not witness domestic

violence. There was not a significant difference in the pragmatic scores of participants

who witnessed domestic violence (M= 3.588, SD= .6549) and who did not witness

domestic violence (M= 3.809, SD= .5346); t(99)= -1.040, p= .301.

Substance Abuse

An independent sample t-test was completed to compare self-reported social

cognition in participants who had a household member who abused a substance and who

did not abuse a substance. There was not a significant difference in the social cognition

scores of participants who had a household member who abused a substance (M= 3.379,

SD= .3156) and who did not live with a household member who abused a substance (M=

3.548, SD= .3719); t(99)= -1.751, p= .083. An independent sample t-test was also

completed to compare self-reported social interaction in participants who had a

household member who abused a substance and who did not abuse a substance. There

was not a significant difference in the social interaction scores of participants who had a

household member who abused a substance (M= 3.353, SD= .2936) and who did not live

with a household member who abused a substance (M= 3.370, SD= .2954); t(99)= -.211, p= .833. Additionally, an independent sample t-test was completed to compare self-reported pragmatic skills in participants who had a household member who abused a substance and who did not abuse a substance. There was not a significant difference in the pragmatic scores of participants who had a household member who abused a substance (M= 3.581, SD= .5669) and who did not live with a household member who abused a substance (M= 3.837, SD= .5310); t(99)= -1.786, p= .077.

Depression/Mental Illness/Attempted Suicide

An independent sample t-test was completed to compare self-reported social cognition in participants who had a household member with mental illness including depression or who attempted suicide and who did not have a household member with mental illness including depression or who attempted suicide. There was not a significant difference in the social cognition scores of participants who had a household member with mental illness including depression or who attempted suicide (M= 3.497, SD= .2874) and who did not have a household member with mental illness including depression or who attempted suicide (M= 3.532, SD= .4046); t(99)= -.456, p= .649. An independent sample t-test was also completed to compare self-reported social interaction in participants who had a household member with mental illness including depression or who attempted suicide and who did not have a household member with mental illness including depression or who attempted suicide. There was a significant difference in the social interaction scores of participants who had a household member with mental illness including depression or who attempted suicide (M= 3.296, SD= .3691) and who did not

have a household member with mental illness including depression or who attempted suicide (M= 3.477, SD= .3749); t(99)= -2.322, p= .022. Additionally, an independent sample t-test was completed to self-reported compare pragmatic skills in participants who had a household member with mental illness including depression or who attempted suicide and who did not have a household member with mental illness including depression or who attempted suicide. There was not a significant difference in the pragmatic scores of participants who had a household member with mental illness including depression or who attempted suicide (M= 3.659, SD= .4843) and who did not have a household member with mental illness including depression or who attempted suicide (M= 3.865, SD= .5620); t(99)= -1.831, p= .070.

Incarceration

An independent sample t-test was completed to compare self-reported social cognition in participants who had a household member who was incarcerated and who did not have a household member who was incarcerated. There was not a significant difference in the social cognition scores of participants who had a household member who was incarcerated (M= 3.433, SD= .4960) and who did not have a household member who was incarcerated (M= 3.524, SD= .3621); t(99)= -.538, p= .592. An independent sample t-test was also completed to compare self-reported social interaction in participants who had a household member who was incarcerated and who did not have a household member who was incarcerated. There was not a significant difference in the social interaction scores of participants who had a household member who was incarcerated (M= 3.454, SD= .3335) and who did not have a household member who was

incarcerated (M= 3.362, SD= .2927); t(99)= .679, p= .577. Additionally, an independent sample t-test was also completed to compare self-reported pragmatic skills in participants who had a household member who was incarcerated and who did not have a household member who was incarcerated. There was not a significant difference in the pragmatic scores of participants who had a household member who was incarcerated (M= 3.885, SD= .3639) and who did not have a household member who was incarcerated (M= 3.789, SD= .5515); t(99)= .383, p= .703.

Low and High ACE Score

An independent sample t-test was completed to compare self-reported social cognition in participants with a low ACE score and participants with a high ACE score. There was not a significant difference in the social cognition of participants with a low ACE score (M= 3.536, SD= .3668) and participants with a high ACE score (M= 3.441, SD= .3698); t(99)= .968, p= .335. An independent sample t-test was completed to compare self-reported social interaction in participants with a low ACE score and participants with a high ACE score. There was a significant difference in the social interaction of participants with a low ACE score (M= 3.462`, SD= .3575) and participants with a high ACE score (M= 3.176, SD= .4154); t(99)= 2.922, p= .004. An independent sample t-test was completed to compare self-reported pragmatic skills in participants with a low ACE score and participants with a high ACE score. There was a significant difference in the pragmatic scores of participants with a low ACE score (M= 3.849, SD= .5153) and participants with a high ACE score (M= 3.518, SD= .6062); t(99)= 2.346, p= .021.

Chapter 5

Discussion

Awareness of adverse childhood experiences (ACEs) and the impact ACEs may have on individuals' lives including health, opportunity, employment, and communication is necessary for professionals to provide successful interventions. This study attempts to identify an association between ACEs and social communication such as social cognition, social interaction and pragmatics. Analysis of survey data demonstrated a relationship between ACEs and social communication, specifically, social interaction and pragmatics. Overall, a significant difference was found between the two phenomena.

ACEs, Social Interaction, Pragmatics

A weak negative relationship was found between exposure to ACEs and how participants reported their social interaction skills (r= -.364, p= .000) in adulthood. This suggests that the more ACEs a participant experienced the more impaired they perceive their social interactions skills to be. A significant difference was also found between five of the ten ACES investigated and social interaction [household member who had a mental illness, depression, and suicide (p= .022), physical abuse (p= .017), sexual abuse (p= .005), emotional abuse (p= .001), and emotional neglect (p= .004)]. This indicates that individuals exposed to the ACEs listed above may have difficulty communicating with others in a social environment. The consequences of being raised in high stressed environments, such as those where adversity occurs, may cause individuals to have difficulty in social interactions. Difficulty initiating conversations with others,

maintaining the topic during conversations, resolving conflict, and balancing power in relationships are examples of complications that may arise due to the difficulty an individual may have when interacting with others (ASHA, n.d.d; Nietlisbach & Maercker, 2009; Stevens & Jovanovic, 2018).

A weak negative relationship was also found between the exposure to ACEs and pragmatics language development (r= -.308, .002) in adulthood. This suggests that the more ACEs a participant experienced the more impaired they perceived their pragmatic language skills to be. Additionally, a significant difference was found between two ACEs and pragmatic language use [emotional abuse (p= .001) and emotional neglect (p= .009)]. This suggest individuals exposed to the ACEs listed above may have difficulty with pragmatics. Moreover, individuals who experience adversity may have difficulty composing a coherent oral message, repairing conversational breakdowns, and communicating intent such as requests, comments, directives, promises, and demands (ASHA, n.d.d). A common theme in other studies was that emotional abuse and emotional neglect had the greatest impact on health and risk behaviors. The current study found that emotional abuse and emotional neglect influenced social interaction and pragmatics.

Difficulty in social interactions and pragmatics may prevent individuals from mutually understanding others (Rummel, 1991). A lack of mutual understanding is necessary to help build relationships and reduce social isolation. Social isolation increases risks for low self-esteem and a pessimistic lifestyle (Jones et al., 2018; Monnat & Chandeler, 2015). The researcher of this study found that the emotional abuse and

neglect an individual experienced during childhood may have the greatest impact on social communication. Emotional abuse and neglect were the only two ACEs where a significant difference was found with social interaction and pragmatics. This is similar to the results Kiburi et al. (2018) found which indicated that emotional abuse had the strongest relationship between those who smoke and other ACEs. Additionally, the findings demonstrate that experiences from childhood influence experiences in adulthood.

Limitations

There are many potential limitations that should be considered when interpreting the results of this study. A known limitation of this study include sample size which may have impacted the data and prevented a clear relationship between ACEs and social communication. Additionally, participant characteristics were similar in terms of ethnicity, education, and socioeconomic states (SES). All participants were undergraduate students enrolled in general education classes at a university in the Midwest. The lack of diversity in participants does not account for poverty and a culturally and linguistically diverse background. Students at this university are primarily Caucasian, so it is difficult to gain a highly diverse sample. The survey was developed to obtain data from college students regarding adversity experienced during childhood and perceptions of social communication abilities. Though the survey was anonymous to protect the identity of participants, participants may have reported inaccurate data about childhood experiences. For instance, all of the data collected pertaining to ACEs and social communication was self-reported and hindsight. Responses also reflect

associations between ACEs and social communication in adulthood. Since the data was self-reported, participants could have over or under reported exposure to adversity during childhood and their social communication abilities. These factors may limit interpretations of the data.

Clinical Implications

There is limited research investigating ACEs and social communication. Due to the increase in awareness of ACEs and how they may influence success in individuals' lives, additional research needs to be conducted to further examine the relationship between ACEs and social communication impairment. Communication is necessary to build interpersonal relationships with others in order for individuals to reach their full potential for success in areas such as education, occupation, and health. When the impact of ACEs is acknowledged, healthcare professionals and educators can provide appropriate intervention and reactions to challenging responses of children exposed to ACEs. Ultimately, this should reduce the stress of children and increase their ability to learn.

In order to better serve individuals who experience adversity, healthcare professionals and educators need to acknowledge factors such as policies and procedures that can potentially retraumatize individuals (University at Buffalo, 2019). A team should also be constructed to provide support to individuals who experience trauma (University at Buffalo, 2019). Moreover, a team should be constructed to provide support to professionals in order to equip them to react to challenging behaviors of individuals who experience trauma (University at Buffalo, 2019). Additionally, support should be given to

individuals committed to implementing a trauma informed care environment (University at Buffalo, 2019). All healthcare professionals and educators should be required to participate in training programs or professional developments to expand their knowledge of trauma and providing trauma informed care (University at Buffalo, 2019). When determining appropriate reactions to challenging responses and intervention approaches, members of the intervention team, administration, and other pertinent individuals should be included in the decision-making process (University at Buffalo, 2019). Most importantly, early screenings for trauma and informal and/or formal assessments should be administered for individuals suspected of communication impairments (University at Buffalo, 2019).

Summary and Conclusion

A survey was used to investigate the relationship between ACEs and social communication. The survey was distributed to college students at a Midwest university. The researcher hypothesized that the higher the ACEs score, the more difficulty one will have with social communication (social interaction, social cognition, and pragmatics). While the Individual with Disabilities Education Act (IDEA) require multidisciplinary teams to "determine that an identified language delay or impairment is not primarily the result of environmental or economic disadvantage", it is important for professionals to acknowledge the impact of trauma on the responses of individuals who have experienced trauma (Westby, p. 3, 2018). Due to the co-occurrence and potential interactions between language difficulties and trauma, research does not support individuals having language impairments resulting from "social and nonsocial biological risk factors" (Westby, p. 4,

2018). However, the results from the current study suggests that individuals who experience trauma may have difficulty regulating their emotions, difficulty with cognitive flexibility, interacting with other, and following the rules of language in social settings which may permit therapeutic intervention. Additionally, it is important for healthcare professionals and educators to be aware of the relationship between ACEs and social communication in order to increase success in physical health, mental health, employment, and life opportunity.

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Tables

Table 1: Demographics

Demographic Composition and ACE Prevalence	Total
Age	
18-26	96%
27-40	3%
Missing	1%
Race/Ethnicity	
Caucasian (White)	86%
Asian	5%
African American (Black)	4%
Multiracial- *"Black"/Hispanic, American Indian/Caucasian, "Black"/Caucasian*	3%
Middle Eastern	1%
African	1%
Primary Language	
English	96%
Arabic	1%
French	1%
Somali	1%
Korean	1%
Number of Languages Spoken	
One- *English*	84%
Two- *English and one of the following ASL, German, French, Korean, Spanish, Somali, Lao*	14%
Three- *English/Arabic/ Turkish, English/ASL/Spanish*	2%
Region	76%
Midwest	12%
Two or More	4%
Unknown, USA	2%
Asia	1%
Western	1%
Southern	1%
Unknown	83.2%
Gender	16.8%
Female	
Male	

Socioeconomic Status	64.4%
Mid	17.8%
High	8.9%
Low	8.9%
I don't know	
Education	88.1%
Some College	5.9%
Associate degree	3%
High School	2%
Bachelor's Degree	1%
Post Baccalaureate	
Living Arrangement	40.6%
With friends	37.6%
Student housing	13.9%
With family	3%
With husband	2%
With boyfriend	2%
Alone	
Parents' Parenting Style	84.2%
Authoritative	9.9%
Authoritarian	5%
Permissive	1%
Uninvolved	
ACE	42%
0	20%
1	13%
2	8%
3	8%
4	5%
5	2%
6	2%
7	0%
8	0%
9	0%
10	
Grouped ACE Score	83%
3 or less	17%
4 or more	

Demographic Composition	Total
Age	
18-26	96%
27-40	3%
Missing	1%
Race/Ethnicity	
Caucasian (White)	86%
Asian	5%
African American (Black)	4%
Multiracial- *"Black"/Hispanic, American Indian/Caucasian, "Black"/Caucasian*	3%
Middle Eastern	1%
African	1%
Primary Language	
English	96%
Arabic	1%
French	1%
Somali	1%
Korean	1%
Number of Languages Spoken	
One- *English*	84%
Two- *English and one of the following ASL, German, French, Korean, Spanish, Somali, Lao*	14%
Three- *English/Arabic/ Turkish, English/ASL/Spanish*	2%
Region	76%
Midwest	12%
Two or More	4%
Unknown, USA	2%
Asia	1%
Western	1%
Southern	1%
Unknown	
Gender	83.2%
Female	16.8%
Male	
Socioeconomic Status	
Mid	64.4%
High	17.8%
Low	8.9%
I don't know	8.9%

Education	88.1%
Some College	5.9%
Associate degree	3%
High School	2%
Bachelor's Degree	1%
Post Baccalaureate	
Living Arrangement	40.6%
With friends	37.6%
Student housing	13.9%
With family	3%
With husband	2%
With boyfriend	2%
Alone	
Parents' Parenting Style	84.2%
Authoritative	9.9%
Authoritarian	5%
Permissive	1%
Uninvolved	
ACE	42%
0	20%
1	13%
2	8%
3	8%
4	5%
5	2%
6	2%
7	0%
8	0%
9	0%
10	
Grouped ACE Score	83%
3 or less	17%
4 or more	

Table 2: Social Communication by Category

Social Cognition	Social Interaction	Pragmatics
Item 7 It is difficult to take compliments.	**Item 1** I could tell my parents how I felt as a child.	**Item 10** I feel comfortable talking with people I just met.
Item 8 It is difficult to give compliments.	**Item 2** I can do what I want to do.	**Item 11**

		I feel comfortable talking with people I've known for six months or more.
Item 9 It is hard for me to make connections with others.	**Item 3** I feel like I have to agree with what others say even if I don't.	**Item 12** I feel comfortable talking with people I've known for six months or less.
Item 13 I can express myself to others.	**Item 4** I am afraid to tell others how I really feel.	**Item 14** I can initiate interactions with others.
Item 17 I can follow a conversation.	**Item 5** I am a people pleaser.	**Item 16** I can ask for help and ask questions when I don't understand.
Item 21 I feel socially isolated.	**Item 6** I can verbally disagree with others.	**Item 18** I can maintain a topic during conversations.
Item 22 I get anxious about social interaction.	**Item 15** I can self-advocate.	**Item 19** I can tell when someone is being sarcastic.
Item 24 I can activate prior knowledge during conversations.	**Item 20** I can follow unspoken rules (hold the door open or people behind you, make a silent greeting when you make eye contact with someone, don't point, etc.).	**Item 23** I can say/ask follow-up comments or questions during a conversation.
Item 26 I can understand the perspective of others.	**Item 28** I can change the language and communication style based on the setting or partner.	**Item 25** I can initiate verbal interactions.
Item 27 I understand implied intent during conversations/discussions.		**Item 29** I can repair communication breakdowns such as rephrasing when misunderstood, repeating, etc.)
Item 33 I understand information not explicitly stated.		**Item 30** I can use appropriate verbal and nonverbal

		signals to regulate an interaction.
Item 34 I am self-confident.		**Item 31** I can interpret the verbal and nonverbal signals of others during an interaction
Item 35 I can adapt to unplanned events.		**Item 36** I maintain appropriate eye contact during conversations.

*Item 32 was taken out as the item was classified as language processing which language was not a focus of the current study.

Appendix A

Thesis Survey

Thesis Survey

Q24 Consent Form

You are requested to participate in research supervised by Dr. Bonnie Berg about how adverse childhood experiences impact social communication abilities in college students. This survey will take 10-15 minutes to complete. The purpose of this research is to determine if there is a correlation between adverse childhood experiences and social communication abilities in college age students; to understand how college age students with adverse childhood experiences perceive their social communicative abilities and how they interact with other individuals. It is important to understand how students view their social skills and if it impacts their communication in a variety of environments. If you have any questions about the research, please contact Dr. Berg at 507-389-5841 or bonnie.berg@mnsu.edu. Participation in this research is voluntary. You have the option not to respond to any of the questions. You may stop taking the survey at any time by closing your browser. The decision whether or not to participate will not affect your relationship with Minnesota State University, Mankato. Refusal to participate will involve no penalty or loss of benefits. You qualify to participate in this study because you are a college student over the age of 18 years of age. If you have any questions about participants' rights and for research-related injuries, please contact the Administrator of the Institutional Review Board, at (507) 389-1242. Responses will be anonymous. However, whenever one works will technology there is always the risk of compromising privacy, confidentiality, and/or anonymity. If you would like more information about the specific privacy and anonymity risks posed by online surveys, please contact the Minnesota State University, Mankato Information and Technology Services Help Desk (507-389-6654) and ask to speak to the Information Security Manager. There are no known benefits to participants. The results of the study may benefit speech-language pathologists and other related professionals who would have a better understanding of the potential relationship between social communication abilities and adverse childhood experiences. The risks of participating in this research are psychological harms (trigger, anxiety, depression, or emotional discomfort) and fatigue. The researchers have taken the following steps to minimize risks: You have the right to refuse to answer any questions or to stop completing the survey at any time by closing your web browser. All survey responses are anonymous. Responses will be maintained on a password protected computer.

Should you experience psychological harms the following resources are available to you: Minnesota State University, Mankato Counseling Center: The Counseling Center offers both individual and group session. The center is located on the second floor of the Student Union in CSU 285. Call 507-389-1455 anytime Monday through Friday from 8:00 - 4:30 during the

academic year.
Emergency: 911 National Suicide Prevention Lifeline: 1-800-273-8255
CADA Crisis Line (Domestic Abuse): 507-625-7233 or 507-625-3966
Disaster Distress Helpline (24/7): 1-800-985-5990
National Hotline for Crime Victims:1-855-4-VICTIM (1-855-484-2846)
http://victimconnect.org/get-help/connect-directory/

You can find other resources at http://victimsofcrime.org/help-for-crime-victims/national-hotlines-and-helpful-links

Submitting the completed survey will indicate your informed consent to participate and indicate your assurance that you are at least 18 years of age.

Please print a copy for your future reference.

MSU IRBNet ID#: 132337

Q27 After reading the consent form, do you agree to participate in this research?

○ Yes

○ No

Q22 How old are you?

○ 18-26

○ 27-40

○ 41-64

○ 65+

Q23 What is your ethnicity?

○   Asian (including Islander)

○   American Indian and Alaska Native

○   Hispanic or Latino

○   African American (Not of Hispanic origin)

○   Caucasian

○   Two or more ethnicities _____

○   Other _____

Q28 What is your primary language?

○   English

○   Spanish

○   Other _____

Q30 Do you speak more than one language?

○   Yes (Please list) _____

○   No

Q27 List all the states and countries you lived in as a child.

_____

Q24
What is your gender?

○   Male

○   Female

Q25 What is your (or your family's) socioeconomic status?

○   Low ($0-34,999)

○   Middle ($35,000-100,000)

○   High ($100,000)

○   I don't know

Q22 What is your education level?

○   Middle School

○   High School

○   GED

○   Some College

○   Associate degree

○   Bachelor's Degree

○   Post baccalaureate

○   Master's Degree

○   Other _____

Q31 What is your current living arrangement?

○　　Alone

○　　With family

○　　With friends

○　　With caregivers

○　　Student housing

○　　Institution/group home

○　　Other _____

Q25 What type of parenting style did your parents have when you were a child?

○　　Authoritarian or Disciplinarian- parents who use strict discipline who often punishes their child. The parents have highly inflexible expectations.

○　　Permissive or Indulgent- parents allow their children do what they want and provide little guidance and direction. The parents are more like friends than parents.

○　　Uninvolved- parents give children freedom and stay out of their way. Uninvolved parents may consciously parent this way while others are uninterested in parenting or are unsure of what to do.

○　　Authoritative- parents are nurturing and reasonable and set high but clear expectations. Children raised with authoritative parents are typically self-disciplined and independent thinkers.

Q1
While you were growing up, during your first 18 years of life:

1. Did a parent or other adult in the household often …
Swear at you, insult you, put you down, or humiliate you? or Act in a way that made you afraid that you might be physically hurt?

○　　Yes

○　　No

Q2 2. Did a parent or other adult in the household often …
Push, grab, slap, or throw something at you? or Ever hit you so hard that you had marks or were injured?

○   Yes

○   No

Q3 3. Did an adult or person at least 5 years older than you ever…
Touch or fondle you or have you touch their body in a sexual way? or Try to or actually have oral, anal, or vaginal sex with you?

○   Yes

○   No

Q4 4. Did you often feel that …
No one in your family loved you or thought you were important or special? or Your family didn't look out for each other, feel close to each other, or support each other?

○   Yes

○   No

Q5 5. Did you often feel that …
You didn't have enough to eat, had to wear dirty clothes, and had no one to protect you? or Your parents were too drunk or high to take care of you or take you to the doctor if you needed it?

○   Yes

○   No

Q6 6. Were your parents ever separated or divorced?

○   Yes

○   No

Q7 7. Was your mother or stepmother (or guardian): Often pushed, grabbed, slapped, or had something thrown at her? or Sometimes or often kicked, bitten, hit with a fist, or hit with something hard? or Ever repeatedly hit over at least a few minutes or threatened with a gun or knife?

○ Yes

○ No

- -

Q8 8. Did you live with anyone who was a problem drinker or alcoholic or who used street drugs?

○ Yes

○ No

- -

Q9 9. Was a household member depressed or mentally ill or did a household member attempt suicide?

○ Yes

○ No

- -

Q10 10. Did a household member go to prison?

○ Yes

○ No

Q1
Please use this scale to rate the following statements about your social communication abilities (social skills).

	Never	Rarely	Sometimes	Often	Always
	1 (1)	2 (1)	3 (1)	4 (1)	5 (1)

1. I could tell my parents how I felt as a child.	○	○	○	○	○
2. I can do what I want to do.	○	○	○	○	○
3. I feel like I have to agree with what others say even if I don't.	○	○	○	○	○
4. I am afraid to tell others how I really feel.	○	○	○	○	○
5. I am a people pleaser.	○	○	○	○	○
6. I can verbally disagree with others.	○	○	○	○	○
7. It is difficult to take compliments.	○	○	○	○	○
8. It is difficult to give compliments.	○	○	○	○	○
9. It is hard for me to make connections with others.	○	○	○	○	○
10. I feel comfortable talking with people I just met.	○	○	○	○	○
11. I feel comfortable talking with people I've known for six months or more.	○	○	○	○	○
12. I feel comfortable talking with people I've known for six months or less.	○	○	○	○	○
13. I can express myself to others.	○	○	○	○	○
14. I can initiate interactions with others.	○	○	○	○	○
15. I can self-advocate.	○	○	○	○	○

16. I can ask for help and ask questions when I don't understand.

○ ○ ○ ○ ○

17. I can follow a conversation.

○ ○ ○ ○ ○

18. I can maintain a topic during conversations.

○ ○ ○ ○ ○

19. I can tell when someone is being sarcastic.

○ ○ ○ ○ ○

20. I can follow unspoken rules (hold the door open for people behind you, make a silent greeting when you make eye contact with someone, don't point, etc.).

○ ○ ○ ○ ○

21. I feel socially isolated.

○ ○ ○ ○ ○

22. I get anxious about social interaction.

○ ○ ○ ○ ○

23. I can say/ask follow-up comments or questions during a conversation.

○ ○ ○ ○ ○

24. I can activate prior knowledge during conversations.

○ ○ ○ ○ ○

25. I can initiate verbal interactions.

○ ○ ○ ○ ○

26. I can understand the perspective of others.

○ ○ ○ ○ ○

27. I understand implied intent during conversations/discussions.

○ ○ ○ ○ ○

28. I can change the language and communication style based on the setting or partner.

○ ○ ○ ○ ○

29. I can repair communication breakdowns such as rephrasing when misunderstood, repeating, etc.)	○	○	○	○	○
30. I can use appropriate verbal and nonverbal signals to regulate an interaction.	○	○	○	○	○
31. I can interpret the verbal and nonverbal signals of others during an interaction.	○	○	○	○	○
32. I can understand ambiguous or figurative language during interaction with others.	○	○	○	○	○
33. I understand information not explicitly stated.	○	○	○	○	○
34. I am self-confident.	○	○	○	○	○
35. I can adapt to unplanned events.	○	○	○	○	○
36. I maintain appropriate eye contact during conversations.	○	○	○	○	○

Q23 Do you believe the experiences you had as a child impacted how you interact with others?

○   Yes (Please explain) _____

○   Possible (Please explain) _____

○   No

○   Probably not

Q21
Please use this scale to rate the following environments you interact in. Rate them as never challenging to always challenging.

	1	2	3	4	5
Workplace	○	○	○	○	○
School	○	○	○	○	○
Small group size (2-5)	○	○	○	○	○
Medium group size (6-10)	○	○	○	○	○
Large group size (11+)	○	○	○	○	○
One on one	○	○	○	○	○
Events (fairs, festivals, symposiums, parties, etc)	○	○	○	○	○
Classroom presentations	○	○	○	○	○
In the classroom	○	○	○	○	○
Home	○	○	○	○	○

- -

Q26 Which type of interactions are most difficult for you? Select all that apply.

Social (e.g. school, sports events, extracurricular activities)

Professional (e.g. workplace, academic institutions and events)

Personal (e. g family, close friends)

Appendix B

Consent Form

You are requested to participate in research supervised by Dr. Bonnie Berg about how adverse childhood experiences impact social communication abilities in college students. This survey will take 10-15 minutes to complete. The purpose of this research is to determine if there is a correlation between adverse childhood experiences and social communication abilities in college age students; to understand how college age students with adverse childhood experiences perceive their social communicative abilities and how they interact with other individuals. It is important to understand how students view their social skills and if it impacts their communication in a variety of environments. If you have any questions about the research, please contact Dr. Berg at 507-389-5841 or bonnie.berg@mnsu.edu.

Participation in this research is voluntary. You have the option not to respond to any of the questions. You may stop taking the survey at any time by closing your browser. The decision whether or not to participate will not affect your relationship with Minnesota State University, Mankato. Refusal to participate will involve no penalty or loss of benefits. You qualify to participate in this study because you are a college student over the age of 18 years of age. If you have any questions about participants' rights and for research-related injuries, please contact the Administrator of the Institutional Review Board, at (507) 389-1242.

Responses will be anonymous. However, whenever one works will technology there is always the risk of compromising privacy, confidentiality, and/or anonymity. If you would like more information about the specific privacy and anonymity risks posed by online surveys, please contact the Minnesota State University, Mankato Information and Technology Services Help Desk (507-389-6654) and ask to speak to the Information Security Manager.

There are no known benefits to participants for participating in this research. The results of the study may benefit speech-language pathologists and other related professionals who would have a better understanding of the potential relationship between social communication abilities and adverse childhood experiences. Additionally as a compensation, extra credit *may* be offered by select instructors for completing the survey.

The risks of participating in this research are psychological harms (trigger, anxiety, depression, or emotional discomfort) and fatigue. The researchers have taken the following steps to minimize risks: You have the right to refuse to answer any questions or to stop completing the survey at any time by closing your web browser. All survey responses are anonymous. Responses will be maintained on a password protected computer. Should you experience psychological harms the following resources are available to you:

- Minnesota State University, Mankato Counseling Center:
    - The Counseling Center offers both individual and group session. The center is located on the second floor of the Student Union in CSU 285. Call 507-389-1455 anytime Monday through Friday from 8:00 - 4:30 during the academic year.
- Emergency: 911
- National Suicide Prevention Lifeline: 1-800-273-8255
- CADA Crisis Line (Domestic Abuse): 507-625-7233 or 507-625-3966

- Disaster Distress Helpline (24/7): 1-800-985-5990
- National Hotline for Crime Victims:
    - 1-855-4-VICTIM (1-855-484-2846)
    - http://victimconnect.org/get-help/connect-directory/
- You can find other resources at http://victimsofcrime.org/help-for-crime-victims/national-hotlines-and-helpful-links

Submitting the completed survey will indicate your informed consent to participate and indicate your assurance that you are at least 18 years of age.

Please print a copy for your future reference.

MSU IRBNet ID#: 1323377

Appendix C
Flyer

MINNESOTA STATE UNIVERSITY MANKATO

Research Participants Needed

Are you…
- 18 years and older?
- A student at Minnesota State University, Mankato?
- An English speaker?

If so then you qualify to participate in a research study "**The Effect of Adverse Childhood Experiences on Social Communication".** The purpose of this research is to study the relationship between your interactions with others and the experiences you had as a child.

You will complete a 10-minute online survey

<u>If you are interested</u>, please follow the link below:
https://mnsu.co1.qualtrics.com/jfe/form/SV_bfHJoMhreqXCXyZ

Extra credit <u>*MAY*</u> be offered by select instructors for completing the survey.

IRBNet ID#: 1323377

Appendix D
Adverse Childhood Experience (ACE) Questionnaire

Adverse Childhood Experience (ACE) Questionnaire
Finding your ACE Score ra hbr 10 24 06

While you were growing up, during your first 18 years of life:

1. Did a parent or other adult in the household **often** …
   Swear at you, insult you, put you down, or humiliate you?
   or
   Act in a way that made you afraid that you might be physically hurt?
   Yes   No   If yes enter 1   _____

2. Did a parent or other adult in the household **often** …
   Push, grab, slap, or throw something at you?
   or
   Ever hit you so hard that you had marks or were injured?
   Yes   No   If yes enter 1   _____

3. Did an adult or person at least 5 years older than you **ever**…
   Touch or fondle you or have you touch their body in a sexual way?
   or
   Try to or actually have oral, anal, or vaginal sex with you?
   Yes   No   If yes enter 1   _____

4. Did you **often** feel that …
   No one in your family loved you or thought you were important or special?
   or
   Your family didn't look out for each other, feel close to each other, or support each other?
   Yes   No   If yes enter 1   _____

5. Did you **often** feel that …
   You didn't have enough to eat, had to wear dirty clothes, and had no one to protect you?
   or
   Your parents were too drunk or high to take care of you or take you to the doctor if you needed it?
   Yes   No   If yes enter 1   _____

6. Were your parents **ever** separated or divorced?
   Yes   No   If yes enter 1   _____

7. Was your mother or stepmother:
   Often pushed, grabbed, slapped, or had something thrown at her?
   or
   Sometimes or often kicked, bitten, hit with a fist, or hit with something hard?
   or
   Ever repeatedly hit over at least a few minutes or threatened with a gun or knife?
   Yes   No   If yes enter 1   _____

8. Did you live with anyone who was a problem drinker or alcoholic or who used street drugs?
   Yes   No   If yes enter 1   _____

9. Was a household member depressed or mentally ill or did a household member attempt suicide?
   Yes   No   If yes enter 1   _____

10. Did a household member go to prison?
    Yes   No   If yes enter 1   _____