INVESTIGATING CAMP EXPERIENCES OF AUTISTIC YOUTH

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TABLE OF CONTENTS

LIST OF TABLES

ABSTRACT

INVESTIGATING CAMP EXPERIENCES OF AUTISTIC YOUTH

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Camp experiences and the outcomes associated among autistic youth is a relatively understudied area, but the current literature suggests there is a relationship between camp experiences and positive outcomes for autistic youth. Benefits of camp experiences for autistic individuals include improved social skills, increased academic skills, specifically sentence comprehension, motor skills, and improved self-esteem/self-perception. Other impacts of camp experiences found for autistic individuals are increased communication skills, independent living skills, and prosocial behaviors, with decreased maladaptive social behaviors and social impairment. A recent meta-analysis was conducted and confirmed statistically significant outcomes for autistic youth after attending camp in areas of improved social skills and communication, as well as a significant overall effect size for positive outcomes following a camp intervention. Although there are many studies examining specific outcomes, there is a gap in the literature regarding camp specific outcomes for autistic individuals. Therefore, the purposes of the present study are to examine the outcomes experienced by autistic children and adolescents and identify potential predictors of camp outcomes for autistic youth.

Keywords: Autism, Camp Outcomes, Social Skills, Communication, Independence, Self-Esteem, Camp Connectedness

CHAPTER ONE: INTRODUCTION

Investigating Camp Experiences of Autistic Youth

The Diagnostic and Statistical Manual of Mental Disorders Fifth Edition, Text Revision (American Psychiatric Association [APA], 2022) defines autism spectrum disorder (ASD) as a neurodevelopmental disorder characterized by difficulties in social communication, social interaction, and restricted, repetitive patterns in behaviors, interests, and activities. ASD is often referred to as autism, and this will be the term used to refer to this neurodiverse group for the purposes of this document. The Centers for Disease Control and Prevention (CDC) states approximately 1 in 36 children have been identified as autistic (Maenner et al., 2023). Autism is reported to occur in all racial, ethnic, and socioeconomic groups; however, it is diagnosed nearly four times as often in boys than in girls (Maenner et al., 2023). In 2018, a novel pattern was found in which the percentage of Black and Hispanic 4-year-old children identified as autistic was higher than the White children identified as autistic; this pattern continued in 2020 and was seen among 8-year-olds for the first time (Maenner et al., 2023). These new patterns imply improvements in awareness and identification of autism and an increase of access to services in underserved communities.

Interventions for Autism

The literature on evidence-based interventions for autism indicates that early intervention predicts the best possible outcome. Early intervention refers to interventions that begin before the age of five or before entry into formalized schooling (White et al., 2018). Within the area of early intervention, different treatment modalities are present, including Applied Behavior Analysis (ABA,) and social skill interventions. These intervention approaches are seen across the

disciplines of psychology, speech-language pathology, occupational therapy, and developmental pediatrics (Will et al., 2018).

Applied Behavior Analysis (ABA) Interventions

Within the discipline of psychology, the most prevalent evidence-based intervention is Applied Behavior Analysis (ABA). The procedures used in ABA are based on the principles of behavioral learning theory and acknowledge all factors impacting the maintenance of the maladaptive behaviors, such as what precedes the behavior (antecedents) and what happens following the behavior (consequences), as well as environmental influences (Kearny, 2015). Another distinguishing characteristic of ABA is the inclusion of objective data that are collected during sessions in intervention decisions, which includes baseline data of behaviors and data of behaviors following the implementation of a new intervention/approach (Kearny, 2015). Baer et al define ABA as "the process of systematically applying interventions based upon the principles of learning theory to improve socially significant behaviors to a meaningful degree," summarizing all the unique characteristics of this intervention (Baer et al., 1968).

When considering interventions for autism through developing effective and adaptive social skills, various interventions are evidence-based. Such interventions include social skill groups, peer-mediated intervention, modeling/video modeling, and story-based interventions, which include social narratives (Will et al., 2018). Each of these interventions is described in detail below.

Social Skills Interventions

Evidence-based interventions addressing social skills include social skills groups, peer mediated intervention, modeling or video modeling, and story-based interventions or social narratives. Social skills groups involve teaching specific social skills that can be rehearsed with

group members and reinforced by therapists. There are a variety of social skills groups regarding format, length, and goals, and each format varies in effectiveness (Hotton & Coles, 2016). Peer-mediated intervention refers to a type of treatment in which sessions are led by "typically developing" peers that are first taught how to initiate conversations with autistic individuals. This type of intervention aims to increase the number of social interactions for autistic children and is conducted primarily in the school setting. The most reported outcomes from peer-mediated intervention include improvements in social skills, specifically increased social initiations and responses to peers (Chang & Locke, 2016).

Modeling describes a technique in which a teacher/therapist demonstrates a desired behavior followed by the learner/student imitating the behavior directly after observing. Video modeling involves the client/learner watching a video of the desired behavior being performed, either by the therapist or a peer, and then imitating the behavior after observing. Both modeling and video-modeling are evidence-based practices for addressing social skills among autistic children (Will et al., 2018). Story-based interventions include the use of written and/or visual descriptions of specific social situations in which certain behaviors are expected to occur as a response (Will et al., 2018). Social narratives describe certain social situations that are written, typically by the therapist or teacher, but can also be created by parents or other adults (Will et al., 2018). Story-based interventions are designed to address perspective-taking and self-regulation skills among autistic youth. Although story-based interventions are considered an "Established Intervention," there have been mixed reviews reflecting the effectiveness of this type of intervention, indicating a need for further research on the efficaciousness for this population (Will et al., 2018). Overall, there are a wide range of interventions available to address the domains of social skills, communication, and maladaptive behaviors for autistic children and

adolescents, however, there is a lack of evidentiary support for interventions addressing other areas.

Camp as an Intervention for Autism

One recently developed intervention approach is camps developed to target various domains of functioning, in which address a variety of domains for autistic youth. The current literature illustrates the presence of positive benefits of camp as an intervention for autistic individuals. Camp may be defined as an experience, usually shared among peers, of skill attainment and/or self-exploration through socialization with others in a designated space with a specified time frame. There are a variety of camps, including overnight, day, wilderness, traditional, adventure, science, religious, and specialized camps. A meta-analysis of camp outcomes among this population indicated significant improvements in social and communication skills following camp (Barker et al., 2024), and a significant overall effect size for positive camp outcomes. Other domains of improvement due to camp include self-esteem (Kaboski et al., 2015), affect perceptions and motor skills (Guest et al., 2017), academic functioning (Davenport, 2012), and independent living skills (Retherford & Schreiber, 2015). Each of the studies mentioned above include camps that are held across a variety of settings, contain differing structures, and have unique targets of intervention, suggesting that camps are broad and can be effective at addressing many domains for autistic youth. Overall, the current findings of the literature indicate a wide range of areas that can improve among autistic youth related to the camp experience.

Important Aspects of Camping Experiences

There are various factors that influence how the camper is impacted by the camp experience. Some prevalent factors include the target of the intervention/camp, setting of the

camp (Ziegler & Morrier, 2022), camp length, inclusivity of the camp (Bobzien & Judge, 2014), and the overall structure of the camp (Henderson, 2007), which includes the number of scheduled activities compared to the amount of free time the campers are allowed. Other aspects of the camp experience that may impact the outcomes include the inclusion of natural elements, such as trees, water, and hills/mountains (Ramshini et al., 2018), and the inclusion of animals (O'Haire, 2013), including either therapy animals or those naturally occurring in the landscape.

Camp inclusiveness/inclusivity refers to the degree of involvement autistic campers have within the camp, and includes full inclusivity, partial inclusivity, and camps designed only for autistic campers. Fully inclusive camps have been found to be beneficial for autistic campers and their typically developing peers (Bobzien & Judge, 2014). The target of intervention is reflected by the goals of treatment for each camp, such as improvements in social skills, communication, sensory motor skills, interpersonal relationships, academic skills, affect perceptions, and independent living skills. The length of camp must be considered when examining the structure of camp, as camps can range from 1 week to 10 weeks, and this could have implications for the outcomes reported by the campers (Ibrahim & Cronin, 2020). Other factors of camp that can impact the outcomes of camps include the structure of the camp, including the following factors: overnight, day camp, amount of free time (Henderson, 2007) and the setting of the camp, as defined by outdoor, indoor, or both (Ziegler & Morrier, 2022). All these factors of camp have the potential to impact the experience of the campers, and, therefore, have the potential to influence the outcomes and degree of improvement reported by the campers.

Setting of Camp and Elements of Nature

The setting of camp impacts the outcomes reported from camp experiences, with the main distinction being an outdoor or indoor setting. Within the outdoor setting, it is important to

take note of the landscape, for example, the presence of wooded areas, open fields, bodies of water, or mountains. A recent systematic review and meta-analysis (Fan et al., 2023) found improvements in social functioning, behavioral functioning, emotional functioning, and sensory functioning, as well as increased general well-being associated with nature-based interventions for autistic children. This meta-analysis evaluated 24 studies that investigated various domains of functioning for autistic children following an intervention involving nature in some aspect, often reported as group-based recreational therapy. The findings from this analysis provide evidence for a relationship between nature-based interventions and positive short-term outcomes on sensory, social, and behavioral functioning for autistic children (Fan et al., 2023). This study supports the use of nature-based interventions for addressing these areas of functioning for autistic children.

Li et al. (2019) found that exposure to nature was related to increased sensory-motor, emotional, and social benefits for autistic children. Parents reported that sensory engagement increased in the natural environment, as the outdoor setting provided their children with more opportunities for developing their fine and gross motor skills (Li et al., 2019). Parents also noted that, regarding emotional benefits, their children laughed and smiled more often while in nature (Li et al., 2019). In terms of social benefits reported, only children who were more extroverted experienced an increase in parallel and group play with peers, leading to greater social interaction (Li et al., 2019). Li et al. (2019) highlighted the barriers and limitations to implementing outdoor activities with autistic children, such as maladaptive social behaviors/interactions, safety issues, judgments from others, social exclusion, phobias related to the outdoor environment, and lack of interest in being outdoors. The literature confirms the

positive impacts of nature-based settings within autistic children and the potential barriers to outdoor interventions for autism (Li et al., 2019).

Inclusion of Animals

The International Association of Human-Animal Interaction Organizations (2018) defines Animal Assisted Intervention (AAI) as "a goal oriented, planned and structured therapeutic intervention directed and/or delivered by health, education or human service professionals, including psychologists and social workers." The focus of AAI is to improve physical, cognitive, behavioral, social, and/or emotional functioning of the recipient in either individual or group settings (International Association of Human-Animal Interaction Organizations, 2018). Only domesticated animals well socialized with humans can be involved with interventions and activities provided to reduce the risks potentially introduced to clients. When considering implementing AAI in a group setting, it is possible and often beneficial to include animal-based interventions within the structure of a camp.

Including animals within a camp setting has implications for camp outcomes, as interactions with animals among autistic individuals have been shown to positively impact this population's functioning. A systematic literature review found the most common outcome of AAI for autistic children was increased social interaction, followed by increased use of language and communication (O'Haire, 2013). Other outcomes of AAI for autistic children include a reduction in the presentation of symptoms of autism and problem behaviors, such as physical and verbal aggression (O'Haire, 2013). The last frequently reported outcomes of AAI for autistic children are a reduced stress level and an enhanced quality of life, also described as increased general well-being (O'Haire, 2013). This literature review illustrates the importance of further study, as it states many of the studies within the body of literature on this topic include

significant limitations, such as methodological weaknesses of single-subject or within-participant design.

AAI includes the involvement of various animals, such as domesticated birds, horses, dogs, cats, reptiles, aquatic animals, farm animals, and other small mammals, including rabbits and rodents. One meta-analysis found the type and training/certification of animal used were significant moderators to the effects of AAI, specifically in improving communication and increasing social abilities of individuals receiving this intervention (Chitic et al., 2012). The findings of this study emphasize the importance of including in-depth descriptions of the type of animal used in AAI, the certifications and training of the animal(s), and the exact process of the intervention implemented with the animal(s) in research articles published.

Regarding autism, one study has found significant improvements specifically in communication skills correlated to a 16-week therapeutic horseback riding program (Zhao et al., 2021). This study utilized a quasi-experimental design with 61 participants aged 6 to 12 in which all had a diagnosis of autism. The researchers administered the Social Skills Improvement System (SSIS) and the Assessment of Basic Language and Learning Skills (ABLLS-R) to participants prior to, during, and after the intervention (Zhao et al., 2021). The results revealed that the horseback riding program greatly improved the children's overall social and communication skills, compared to the control group (Zhao et al., 2021). More specifically, the participants in this study reflected improvements in the subdomains of social interaction, communication, responsibility, and self-control (Zhao et al., 2021). This article illustrates some benefits that autistic children can obtain from animal interaction as a structured intervention.

Structure and Inclusivity of Camp

The structure of camp is best defined as the layout and rigidity of activities to be completed by the campers within the proposed schedule. Howley (2013) described one positive impact for structured interventions, specifically within a school setting, for autistic children as an increase in learning behaviors, such as engagement, independence, attending to activities, completing tasks, and transitioning. In addition to an increase in learning behaviors while in a structured an environment, this literature review also highlighted a reduction of challenging behaviors, such as dangerous, destructive, or distracting behavior that interferes with the child staying on task (Howley, 2013). The findings of this review suggest that structured interventions may be beneficial for increasing learning behaviors in autistic children, which can be beneficial depending on the target of the camp.

The inclusivity of the camp is impactful to the experience of, and outcomes associated with the camp. Addressing social skills within a camp setting is particularly reliant upon a fully inclusive camp setting, as one study illustrates (Brookman et al., 2003). This study describes a camp aimed at promoting healthy social development of autistic children through full involvement with their "typically developing" peers. This type of inclusion is referred to as fully inclusive, as the autistic children are engaged in activities with their neurotypical peers throughout the entirety of the camp experience. Another type of inclusivity is partial inclusivity, in which the autistic campers can interact with typically developing peers for a portion of the day/time at camp but are then separated from this group of peers. One rationale for partial inclusivity is to address goals and work on skills one-on-one with a therapist, however, this can often lead to social isolation and/or peer rejection. Rotheram-Fuller et al (2010) found, even in fully inclusive classrooms, autistic students only engage with their peers about half of the time they are in the same room. This finding appears to increase as grade level increases, suggesting

that older children are more vulnerable to isolation (Rotheram-Fuller et al., 2010). The results of this study indicate that promoting the growth of social skills and interest in shared activities with peers could act as a preventive measure for social rejection and/or isolation (Rotheram-Fuller et al., 2010). As autistic children are susceptible to peer rejection and/or social isolation even within a fully inclusive environment, camps that are either partially inclusive or not inclusive at all may hinder the growth of social and communication skills by preventing social interactions with neurotypical peers.

Impact of Camp on Social Relationships

Of all the domains studied, social skills are the most targeted and reported by researchers in terms of camp outcomes. Koegel et al. (2019) found all campers improved in the domain of social skills, following a 2-week summer camp program, allowing them to reach their year-long IEP goals, and these findings maintained at follow-up in natural environments. This camp was a fully inclusive experience for the autistic campers and was held both outdoors and indoors, including activities such as swimming, dancing, rock climbing, art, gymnastics, riding scooters, and playground ball games (Koegel et al., 2019). To address social skills of the autistic campers, peer mediation was utilized in which typically developing peers were recruited to initiate social interactions with the autistic campers. This study portrays the powerful impact of fully inclusive camp experiences.

Walker et al. (2010) found significant improvements in various domains, including verbal communication, social interaction, attention to task, and transitioning, as perceived by therapists, for autistic children ages 3 to 7 following a camp experience. Parent ratings revealed significant improvements in the domains of verbal communication and social interaction skills (Walker et al., 2010). Ratings from the parents and therapists for each camper did not differ significantly,

suggesting improvements gained at camp were retained within the home environment (Walker et al., 2010). This camp utilized sensory-motor and language-based play as methods for increasing peer interaction and improving social skills among the campers. All campers at this camp had developmental disabilities, and camp activities included art, drama, gym, and sensory activities (Walker et al., 2010). This article presents positive outcomes for social skills among autistic children relating to a camp experience, although therapists reported improvements in more areas than parents.

Brodoff (2018) found an increase in prosocial behaviors and a decrease in maladaptive social behaviors among autistic campers following a camp designed for children with special needs. The camp that was included in this study was not limited to only autistic children, rather, it is aimed at helping children with social cognitive deficits navigate challenging social interactions, therefore, children with ADHD and/or social anxiety were also included within this camp experience (Brodoff, 2018). The activities the campers engaged in included art therapy, music therapy, sports, indoor/outdoor play, computer lab, acting, circus arts, and social cognition lessons. This camp was thus fully inclusive and contained a mixed settings structure of both indoor and outdoor activities. This study's findings indicate that camp experiences that are fully inclusive can be significantly beneficial to autistic children in terms of social skills improvements. The above studies all include a varying level of inclusivity and outdoor activities, emphasizing that increases in social skills among autistic campers can be experienced across a variety of camp structures and settings.

Changes in Communication Skills Resulting from Camp

Communication skills are related to social skills, as effective communication is a key aspect of enhanced social skills. Regarding camp experiences, communication skills can be

taught to autistic youth through a range of methodologies. One qualitative study found an increased level of confidence in communication skills among autistic college students, as determined by self-reports, after a 13-day, remote video game coding camp (Begel et al., 2021). Additionally, participants from this study reported improved ability to work collaboratively on teams and express their ideas vocally to their peers (Begel et al., 2021). Two participants reported decreased levels of anxiety and stress due to the remote format of the camp (Begel et al., 2021). This study provides important context to approaches used for teaching communication skills to autistic individuals, as stress and anxiety around social interactions may impact the amount of benefit these individuals will receive from a camp experience.

Ibrahim and Cronin (2020) found significant differences between campers' communication skills before and after a 1-week day camp designed specifically for autistic children, as reported by the caregivers. Specifically, areas of improvement studied included communication, reciprocity, social cognition, initiation, perspective taking, and self-awareness. When analyzing the communication domain alone, statistical significance was found, however, the independent domains of social cognition, initiation, and perspective taking revealed statistically significant differences following the camp (Ibrahim & Cronin, 2020). In addition to the communication domain, the reciprocity domain was also found to have a statistically significant difference between parent-reported scores before and after camp (Ibrahim & Cronin, 2020). As mentioned above, these skills are closely related to social skills, as communication is one specific aspect of broader social skills. The camp investigated by the author was designed specifically for autistic youth and included activities such as arts and crafts, sports, games, swimming, horseback riding, archery, kayaking, rock climbing, and music. Both above articles discuss camps of different formats and settings, suggesting improvements in communication

skills can be achieved through various methods. These studies provide support for significant gains in communication skills among autistic campers, which are associated with the camp experience.

Improvements in Affect and Self-Esteem Over Time

Other domains studied among autistic campers include perceived affect and increased self-esteem. Guest et al. (2017) found a significant improvement in motor skills, physical self-perceptions, and social skills among autistic girls ages 8 to 11 following a multi-sport camp. The camp was held over 5 days and addressed a variety of motor skills, including locomotor skills and object control. Regarding self-perception, significant improvements were found in sport/athletic competence and overall self-perception (Guest et al., 2017). The increased scores on the perception profile utilized by the authors suggests an increase in self-confidence and self-esteem among the campers in this study (Guest et al., 2017). This study demonstrates the ability of camp interventions to address motor skills, self-esteem, and socialization with peers.

Kaboski et al. (2015) found a significant decrease in self-reported social anxiety among the autistic campers after completing a week-long robotics summer camp in a fully inclusive environment. However, this study did not find significant improvements in social skills among the autistic campers (Kaboski et al., 2015). This camp included 8 autistic adolescents and 8 typically developing peers ages 12 to 17, was held indoors, and focused on robotics instruction and working collaboratively in teams. Each day at camp lasted 3 hours and was highly structured with all activities planned for the entirety of the camp. Each autistic camper was paired with a typically developing peer to program a robot together to engage socially with others during the last 2 days of camp. This study provides support for a reduction of social anxiety symptoms among autistic adolescents through a shared interest with peers (Kaboski et al., 2015). The

structure of this camp being highly structured suggests a reduced level of overall anxiety related to the predictability of activities/schedule (Kaboski et al., 2015). Both studies provide evidence for improved affect and reduced social anxiety for autistic children and adolescents correlating to a wide range of camp experiences.

Targeting Academic Outcomes during Camp

Improvements in academic skills are not studied as in depth as the other domains, however, research in this area supports camps being an effective method to teaching autistic youth academic material. Davenport (2012) found a significant increase in sentence comprehension after a 2-week, partially inclusive, camp for autistic youth within a wilderness setting, as determined by pre-post intervention comparisons of the Wide Range Achievement Test (WRAT4) via a Sign Test. This study included children aged 6 to 13 years old in which attended a camp aimed at addressing academic improvements by offering classes such as language arts, science, math, and art. The children were allowed free time on the playground before the first class each day and included additional activities/support of art therapy and one-on-one tutoring after classes each day. It is important to note that overall WRAT4 scores did not significantly improve after camp, therefore, the only statistically significant improvement found in this study was within sentence comprehension (Davenport, 2012). Due to the lack of significant findings from this study, further research should explore other areas of academic functioning and growth for autistic youth as they relate to a camp intervention.

Development of Independent Living Skills

Independence is a valuable skill for youth to develop and is a common target of intervention for autistic children and adolescents. In terms of camp, independent living skills can be effectively addressed with autistic individuals. Although this outcome is not studied

thoroughly, Retherford and Schreiber (2015) illustrated the positive impacts of a college preparation camp for autistic adolescents and young adults. Parent-reports of benefits from this camp include independently completing at least one of the following activities at home after camp: cleaning, laundry, cooking, shopping for personal products, and grocery shopping (Retherford & Schreiber, 2015). Additionally, self-reports revealed that 100% of the camp alumni were managing their finances independently or with assistance from their parents (Retherford & Schreiber, 2015). Campers reported that they were all enrolled in a university program after camp and 66% reported that they had a part-time job either on or off-campus after attending this camp (Retherford & Schreiber, 2015). This camp was highly structured with a pre-determined schedule, although campers were provided with 2 – 4 hours of free time each day, as this was an overnight camp experience. This camp was not inclusive, as all campers were autistic. This study provides support for camp programs being effective at teaching independent living skills to older adolescents and young adults, however, further research should investigate these impacts within younger autistic children.

Purpose of the Present Study

The purposes of the present study are (a) to examine the camp outcomes experienced by autistic children and adolescents and (b) identify potential relationships between camp outcomes for autistic youth and camp factors. There is not a standardized, valid, and reliable scale developed yet to measure camp outcomes for autistic youth; therefore, this study acted as a first step toward addressing the impacts of camp experiences for autistic children and youth. The Camp Youth Outcomes Battery developed by the American Camp Association does not directly address social, communication, and interpersonal skills separately, as they are grouped together to form scales on friendship skills, family relationships, and teamwork skills, which all require a

combination of the three. Due to how this battery was formatted, the researcher used friendship skills and teamwork to study social skills and communication as a combined domain. The other domains that were studied include perceived competence and camp connectedness as they relate to the camp experience. The perceived competence scale maps on to the domains of affect perceptions and self-esteem as described above. The camp connectedness scale relates to feeling accepted/respected within the camp environment. As the Camp Youth Outcomes Battery is intended to assess individuals ages 10 to 17, this study assessed that age range regarding direct reports, however, examine the relationship between camper and caregiver perspectives, this study also analyzed data collected from caregivers of autistic youth.

Research Questions

Research Question 1. What are autistic youth's experiences of camp?

Research Question 2. Do autistic campers report different camp experiences when compared to the normative sample?

H_0: Autistic campers will not report different camp experiences compared to the normative sample.

H_1: Autistic campers will report different camp experiences compared to the normative sample.

Research Question 3. Is camp connectedness related to positive camp outcomes recalled by autistic youth?

H_0: Camp connectedness will not be related to positive camp outcomes recalled by autistic youth.

H_1: Camp connectedness will be related to positive camp outcomes recalled by autistic youth.

Research Question 4. Do camp characteristics predict camp outcomes for autistic youth?

H_0: Camp characteristics will not predict camp outcomes for autistic youth.

H_1: Camp characteristics will predict camp outcomes for autistic youth.

CHAPTER TWO: METHOD

Method

Design

This study used a correlational design that employed online survey methodology via Qualtrics. The scales utilized were the friendship skills, teamwork, independence, perceived competence, and camp connectedness scales from the Camp Youth Outcomes Battery developed by the American Camp Association.

Participants

Participants were recruited from camps identified as serving autistic youth from the American Camp Association's "Find a Camp" tool. Camps utilized for recruitment included day and overnight camps within the United States. An autism and neurodiversity activist was contacted to ask to promote the study, and the online survey was posted on the advocate's LinkedIn and Facebook pages. Consent and assent forms for the online survey were included at the beginning of the survey, and the survey required the participants to click "I agree" before continuing with the survey. The participants included 139 autistic children and adolescents ages 10 to 17 and guardians/caregivers of autistic children who attended a camp within the last 5 years. The caregivers were at least 18 years old or older to provide consent for the children/adolescents to complete the survey.

Materials

Demographic and camp questionnaire. Demographic and camp factors questionnaires were developed for this study to document demographic information about campers and collect information about aspects of camp (Appendix B).

Camp Youth Outcomes Battery (Sibthorp et al., 2013). The primary measures used to assess camp outcomes were the Camp Youth Outcomes Battery and the Staff and Parent Perceptions Battery from the American Camp Association (Appendix C). The Camp Youth Outcomes Battery is intended to be used as a measure for developmental outcomes for children ages 6 to 17 after attending a camp. This battery consists of two versions: (a) the Camper Learning Scale for younger children (ages 6 to 9) and (b) the Camp Youth Outcomes Scales for older children (ages 10 to 17) also called the Basic Version. The Detailed Version of this scale includes measures of gains after the camp experience, and the degree to which those gains were related directly to camp. The Detailed Version takes longer than the Basic Version to complete, as there are two parts to each question. Both versions of this scale address the following areas of functioning: friendship skills, independence, teamwork, family citizenship, perceived competence, interest in exploration, responsibility, affinity for nature, problem-solving confidence, camp connectedness, and spiritual well-being.

The Camp Youth Outcomes battery was initially developed via a multi-year study aimed at identifying and measuring outcomes of summer youth programs (Sibthorp et al., 2013). This study included more than 5,000 youth and their families from across the United States (Sibthorp et al., 2013). From this multi-year study, the authors identified 10 key outcomes related to summer camps including independence, self-esteem, confidence, social skills, exploration, and spirituality (Sibthorp et al., 2013). This study indicated significant, small effect sizes for these outcomes and highlighted limitations with the first edition of this battery, which led to the development of the second edition of The Camp Youth Outcomes Battery (Sibthorp et al., 2013).

The Camp Youth Outcomes battery was normed with 1,993 youth from 22 different camps (Sibthorp et al., 2013). The youth in this norming group was 69% female and had a mean

age of 11.9 years. Of this sample, 49% reported identifying with an ethnicity other than Caucasian. Statistical analysis of this scale revealed a Cronbach's *a* of .85 and item-to-total correlations ranging from .29 to .61. More specifically, the Basic Camp Outcomes Scale contains reliability coefficients exceeding .85 and item-to-total correlations greater than .5. For the Detailed Camp Outcomes Scale, Cronbach's *a* was reported to range from .87 to .93, and alpha coefficients for the perceived status measures were above .80. Regarding the Basic Version, the status norms for all campers for each scale are as follows: Family Citizenship ($M = 3.31$, $SD = 0.91$), Competence ($M = 3.55$, $SD = 0.87$), Responsibility ($M = 3.48$, $SD = 0.98$), Independence ($M = 3.59$, $SD = 0.98$), Teamwork ($M = 3.53$, $SD = 0.95$), Problem-Solving ($M = 3.29$, $SD = 0.97$), Affinity for Exploration ($M = 3.94$, $SD = 0.85$), Camp Connectedness ($M = 5.21$, $SD = 0.85$), Friendship Skills ($M = 3.8$, $SD = 0.93$), Affinity for Nature ($M = 3.84$, $SD = 0.06$), and Spiritual Well-Being ($M = 3.7$, $SD = 0.13$). Regarding the scales utilized in the current study, the Cronbach's *a* for each are as follows: Affinity for Nature (*a* = .96), Friendship Skills (*a* = .96), Teamwork (*a* = .94), Independence (*a* =.92), and Perceived Competence (*a* = .90) (Sibthorp et al., 2013). See Table 1. This study utilized the Basic Version of both the Camp Youth Outcomes Battery and the Staff and Parent Perceptions Battery to reduce the time commitment needed to complete the survey.

The scales that were included are as follows: (a) friendship skills, (b) independence, (c) teamwork, (d) perceived competence, and (e) camp connectedness. The researcher selected these scales for the present study to capture areas related to social skills, communication, independent living skills, improved affect, and reduced self-esteem among autistic campers following camp, as discussed by the current literature. Camp connectedness was selected to examine the level of engagement autistic campers have with peers and camp staff, as autistic youth often experience

social isolation, as supported by the literature above. These scales were also administered to the caregivers via the Staff and Parent Perceptions items. These scales were all included in an online survey created on Qualtrics and sent via a secure email or accessed via the website of camps serving autistic youth in the United States that agreed to assist with recruiting participants. Participants were also recruited via social media sites, such as LinkedIn and Facebook.

Procedure

The researcher obtained Institutional Review Board (IRB) approval through the Western Carolina University office before beginning the recruitment process. The researcher contacted the author of the Youth Outcomes Battery to get permission to administer the scales online and to modify the items to reflect retrospective recall of camp experiences. The researcher contacted camps serving autistic youth throughout the United States to describe the current study and asked if they would promote it via flyers in the camp offices and/or links to the study on their website. The caregiver participants were provided with an informed consent on the first page of the online survey, which required the participants to click "*I understand and agree*" before continuing with the survey. The survey then asked demographic questions, including age, sex, gender identity, and ethnicity of the caregivers, and the age of the campers. The caregivers were then asked if they would like to complete the survey first or if they would like their child to complete the survey first. To complete the survey, the caregivers first completed the demographic information with the camper present or nearby to answer the camper questions after the caregiver completed their portion of the survey. The page that was shown directly after the demographics section asked questions about the specific structure of the last camp their child attended, such as the length, setting, strictness of schedule, inclusivity, target of camp, interaction with animals, and presence of natural elements (e.g., trees, water) completed by the caregiver. See Appendix A for

demographics and camp factors questionnaires. Following this questionnaire, if the caregiver chose to let the camper answer first, the campers were presented with an assent form for the youth completing the survey. After the autistic child or adolescent read through the assent form or is read the assent form by their caregivers, they then indicated that they agree to take the survey by clicking "*I agree*" before being able to progress. The assent form was provided directly before the camper took the survey. After providing consent and assent, the participants were then presented with the scales of interest from the Camp Youth Outcomes Battery, as mentioned above. These scales were modified to reflect retrospective recall of camp experiences. The researcher contacted the author of the scales and confirmed that scales can be administered via an online platform. The test author also provided permission to modify the questions to reflect past tense. Once the survey was completed, the participants were shown a completion screen and given the opportunity to be entered into a raffle for a chance to win a $25 gift card of their choice from a selection by entering their email. The caregivers were given the option to enter the raffle for themselves and their child.

Data Analysis

To examine the inter-item reliability of the Youth Outcomes Battery and the Parent Perceptions scales, reliability amylases were conducted for each scale utilized in the present study. To determine the suitability of these scales for analysis, the researcher calculated internal consistency using Cronbach's alpha coefficient for each of the scales. To determine if there was a significant difference between the average scores and the normed averages for each of the scales used, one-sample, two-tailed, z-tests were conducted for each scale discussed above. To assess the relationships between the camp factors and the total scores of the Youth Outcomes Battery scales, the researcher calculated bivariate Pearson correlations with total scores from the

Youth Outcomes Battery scales and the following camp factors: (a) camp type, (b) camp length, (c) camp setting, (d) free time, (e) inclusivity, (f) presence of nature, and (g) presence of animals. To examine whether the camp factors of length, type, setting, free time, inclusivity, the presence of animals, and the presence of nature were predictors of camp outcomes, the researcher ran five linear regressions with each YOB scale as dependent variables and camp characteristics as independent variables.

Power analysis

Power analyses were conducted for a linear multiple regression, fixed model, R^2 increase for seven tested predictors with 95% power at a two-tail level using G*Power 3.1.9.6 (Faul et al., 2009). To detect a small effect size, a sample size of 1,099 is required. To detect a medium effect size, a sample size of 153 is required, and a sample size of 70 is required to detect a large effect size. Based on recruitment sites, a sample size of 153 was targeted for recruitment to identify medium effect sizes of predictors for camp outcomes.

CHAPTER THREE: RESULTS

Results

Data Cleaning

The total number of survey responses was 432. Two hundred ninety-three were excluded from the current study for various reasons to yield a final sample size of 139. First, ninety-three responses were excluded that were collected in clusters of exact same times to ensure that the data were not skewed by bot activity. Next, fifty-four duplicate responses were excluded, and thirty-two responses that included participants outside the age range of 10 to 17 were excluded. The next group consisted of twenty-seven excluded responses that spent less than 5 minutes on the survey. After this, twenty responses were excluded that did not include responses to any of the survey items. To account for potential bot activity, twenty atypical responses were excluded, such as responses to open-ended questions that did not relate to the question, as well as fourteen responses that came from duplicate locations, identified via identical IP addresses. Next, fourteen responses were excluded that did not include any demographic information, including age, sex, gender, and ethnicity. Then, eleven responses were excluded with no age of camper identified. Finally, eight responses were excluded that included less than 50% of the survey completed.

Descriptive Information for Included Participants

Of the 139 participants, the mean age of the caregivers was 39.17 with a standard deviation of 5.18 years; 70.5 percent of the caregivers were female, and 25.9 percent were male. Over half of the caregivers identified as white (67.6), and 17.3 percent of the caregivers identified as black or African American, and 5 percent of the caregivers identified as Asian. The

mean age of the campers was 12.92 with a standard deviation of 1.99 years. See Table 2 for full demographic information of participants.

Camp Characteristics

The average camp length was 5.03 days with a standard deviation of 4.66 days. Different types of camps were represented; 46 percent were overnight camps, 37.4 percent were day camps, and 12.2 percent were half-day camps. The mean length of the camp was 5.03 days with a standard deviation of 4.66 days. The camps were located across the United States, with the largest percentage from North Carolina (24.5 percent.) In terms of setting, 51.1 percent of camps were a mixed setting of both indoor and outdoor and 42.4 percent were strictly outdoor camps. Campers in this study had a mean of 3.83 hours of free time or down time with a standard deviation of 1.27 hours. Regarding inclusivity and targets of camps, 41.7 percent of camps were fully inclusive and 76.98 percent of the camps reported multiple targets or aims. Regarding the presence of animals and nature at the camps, 77 percent of camps had animals present, and 83.5 percent of the camps had a presence of natural elements. See Table 3 for full descriptives of camp factors.

Scale Reliability Analysis

To examine the inter-item reliability of the Youth Outcomes Battery and the Parent Perceptions scales, reliability analyses were conducted for each scale utilized in the present study. For the Youth Outcomes Battery, the Friendship Skills scale consisted of 14 items, (α = .84), the Teamwork scale consisted of 8 items (α = .75), the Independence scale consisted of 6 items (α = .61), the Perceived Competence scale consisted of 8 items (α = .74), and the Camp Connectedness scale consisted of 12 items (α = .84). For the Parent Perceptions scales, the Friendship Skills scale consisted of 4 items (α = .30), the Teamwork scale consisted of 4 items (α

= .43), the Independence scale consisted of 3 items (α = .53), the Perceived Competence scale consisted of 3 items (α = .45), and the Camp Connectedness scale consisted of 5 items (α = .66). Due to the Parent Perceptions scales not reaching the threshold for acceptable reliability, these items were excluded from further analysis. See Table 1 for full descriptives and internal reliability coefficients for the scales.

Descriptive Summary and Comparison with Normative Sample Z-Tests

The averages score for each of the Youth Outcomes Battery scales varied depending on the range of responses available to participants. For Friendship Skills, Teamwork, Independence, and Perceived Competence, response options ranged from 1 (decreased) to 5 (increased a lot, I am sure). For Camp Connectedness, response options ranged from 1 (false) to 6 (true), with midpoints of 3 (a little false) and 4 (a little true).

For friendship skills, the sample mean (M = 3.42, SD = 0.65) was lower than the population mean (μ = 3.8, SD = 0.93) and was significantly lower, Z = -4.5, p <.001. For teamwork, the sample mean (M = 3.42, SD = 0.7) was lower than the population mean (μ = 3.53, SD = 0.95) but was not significantly lower, Z = -1.25, p = .21. For independence, the sample mean (M = 3.54, SD = 0.63) was lower than the population mean (μ = 3.59, SD = 0.98) but was not significantly lower, Z = -0.57, p = .57. For perceived competence, the sample mean (M = 3.52, SD = 0.69) was lower than the population mean (μ = 3.55, SD = 0.87) but was not significantly lower, Z = -0.33, p = .74. For camp connectedness, the sample mean (M = 4.27, SD = 0.86) was lower than the population mean (μ = 5.21, SD = 0.85) and was significantly lower, Z = -11.54, p <.001. In other words, the two significantly lower average scores when compared to the normative sample were Friendship Skills and Camp Connectedness. See Table 4 for

descriptive statistics of responses to Youth Outcomes Battery scales and Table 5 for a summary of Z tests results.

Relationships between Youth Outcomes Battery Scales and Camp Factors

Youth Outcomes Battery Scales

A set of Pearson correlations were calculated with total scores from all Youth Outcome Battery scales, and all scales were significantly and positively correlated with each other. There was a particular interest in the relationship between camp connectedness and all other scales, which was moderately and significantly correlated with Teamwork ($r = .657$, $p < .001$) and Perceived Competence ($r = .620$, $p < .001$). The strongest correlation revealed by the Pearson correlations was the significant, positive relationship between Friendship Skills and Perceived Competency ($r = .767$, $p < .001$). Another strong, positive correlation was discovered between Teamwork and Friendship Skills ($r = .738$, $p < .001$). The magnitude of correlations between the Youth Outcomes Battery scales ranged from $r = .491$ to $r = .767$. This means the Youth Outcomes Battery scales were all significantly correlated to one another, although the strength of the relationships ranges from moderate to strong. See Table 6 for complete correlation results.

Camp Factors

A set of Pearson correlations were calculated with the camp factors of length, type, setting, free time, inclusivity, the presence of nature, and the presence of animals, and significant, positive correlations were discovered between camp type and presence of nature ($r = .288$, $p < .001$), as well as free time and camp length ($r = .236$, $p = .01$). Additionally, significant correlations were revealed between free time and camp type ($r = .232$, $p = .007$) and the presence of nature and camp type ($r = .288$, $p < .001$). Interestingly, a significant, negative correlation was found between inclusivity and camp setting ($r = -.176$, $p = .039$). In other words,

some of the camp factors were related to one another, however, the majority of these relationships were weak. See Table 6 for complete correlation results.

YOB Scales and Camp Factors

A set of Pearson correlations were calculated with total scores from all Youth Outcomes Battery scales included in this study and the camp factors mentioned above. The only statistically significant correlation found was a weak, positive correlation between the presence of nature and Perceived Competence ($r = .186$, $p = .036$). All other correlations between camp factors and the total Youth Outcomes Battery scores were insignificant. The magnitude of correlations between camp factors and total Youth Outcomes Battery scores ranged from $r = -.153$ to $r = .143$. In other words, the Youth Outcomes Battery scales and the camp factors selected for this study were weakly related to one another. See Table 6 for complete correlational results.

Linear Regressions

A series of linear regressions were calculated to predict friendship skills, teamwork, independence, perceived competence, and camp connectedness based on camp type, length of camp, camp setting, free time, inclusivity, the presence of animals, and the presence of nature. The set of camp factors did not predict any camper outcomes measured by the present study: friendship skills, $F(7, 91) = 1.15$, $p = .34$, with an R^2 of .08; teamwork, $F(7, 93) = 1.78$, $p = .1$, with an R^2 of .12; independence, $F(7, 94) = 1.82$, $p = .09$, with an R^2 of .12; perceived competence, $F(7, 94) = 0.84$, $p = .56$, with an R^2 of .06; and camp connectedness, $F(7, 90) = 0.52$, $p = .82$, with an R^2 of .04. This means that the camp factors selected were not predictive of the camp outcomes included in this study. Results from linear regression analyses are presented in Tables 7 – 11.

CHAPTER FOUR: DISCUSSION

Discussion

When considering interventions for autism, the most common interventions include Applied Behavior Analysis (ABA), and social skill interventions, such as modeling and peer-mediated interventions. Camp is typically thought of as a shared experience amongst peers that is accompanied by skill attainment and/or self-exploration through socialization with others. This suggests that camps can provide intervention through the social interactions of campers, especially if they are structured in a similar manner as social skill interventions. Camp as an intervention for autism is a recently developed approach that targets a variety of skills for autistic youth.

The current literature on camp outcomes for autistic youth support camp as an effective intervention for the development of various skills, including social skills (Walker et al., 2010), communication (Ibrahim & Cronin, 2020), academic (Davenport, 2012), and motor independent living skills (Retherford & Schreiber, 2015). Findings from a recent meta-analysis indicate significant improvements in social and communication skills following camp, and a significant overall moderate effect size for positive camp outcomes (Barker et al., 2024). Autistic youth also report improved self-esteem (Guest et al., 2017) and reduced social anxiety (Kaboski et al., 2015) following camp experiences in fully inclusive environments. Camps aimed at teaching independent living skills to autistic adults and emerging adults have produced an increase in these skills. Camp as an intervention for autism is an understudied area, however, there is substantial support for positive outcomes and benefits for autistic individuals.

Review of Main Findings

Camp outcomes for autistic youth were hypothesized to be no different than the normative averages reported for all campers that completed the Youth Outcomes Battery scales during the norming study conducted by the American Camp Association in 2016. Analysis results indicated significantly lower scores for autistic campers within the domains of friendship skills and camp connectedness, and similar scores, across areas of teamwork, independence, and perceived competence. The difference found within friendship skills could be reflective of autistic campers' difficulties with social skills and/or the differences in social motivation observed in some autistic individuals. The significantly lower camp connectedness scores may indicate that autistic campers experience a lessened sense of belonging at camp and a lack of connection with others at camp or the camp activities.

Camp connectedness was hypothesized to be related to the other scales of the Youth Outcomes Battery utilized in this study. Bivariate correlation analyses revealed significant positive correlations between all outcomes and camp connectedness, suggesting that camp connectedness is strongly related to reported camp outcomes within the areas of friendship skills, teamwork, independence, and perceived competence. Additionally, bivariate correlation analyses indicated significant positive correlations between all camp outcomes, suggesting that all camp outcomes utilized in this study are strongly related to one another. When considering the relationship between camp factors, bivariate correlation analyses revealed significant positive correlations between the presence of nature, free time, the presence of animals, and camp type. These findings indicate that increased inclusion of nature within camp is related to increased amount of free time, increased animal interactions, and longer days spent at camp. Another bivariate correlation analysis revealed a significant negative correlation between inclusivity and

camp setting, which indicates outdoor settings are related to less inclusive settings for autistic campers, and/or autism specific camps. This suggests that autism specific camps are more likely to include outdoor activities in their programming and/or camps that involve outdoor settings may be less inclusive than camps that only include indoor settings. Further bivariate correlation analyses revealed positive correlations between camp length, camp type, and free time, suggesting that longer days spent at camp and longer camps in days are related to an increased amount of free time for campers. When considering the relationship between camp factors and camp outcomes, the only significant correlation revealed was a positive correlation between the presence of nature and perceived competence. This correlation was a weak positive correlation, which indicates that the presence of nature may be associated with greater reported perceived competence for autistic campers. It is also important to consider the average camp length when interpreting the results, as five days may not be a sufficient time for autistic campers to develop or strengthen skills in the areas assessed.

It is also important to note the lack of significant correlations between camp factors and camp outcomes apart from nature and perceived competence, as this suggests the characteristics of camp included in this study did not relate to the outcomes measured. Further, the camp factors of length, type, setting, free time, inclusivity, presence of animals, and presence of nature were not predictive of camp outcomes. This indicates that the camp characteristics selected for analysis in the current study do not impact or relate to improved scores among the scales used in the Youth Outcomes Battery. However, other camp factors that were not measured by the current study may impact the outcomes reported by autistic campers, as discussed below.

When considering how the findings of the current study relate to the current literature, discrepancies and similarities between previous knowledge of camps and data produced by the

analyses. For instance, previous studies support camp as beneficial for autistic youth in the areas of social skills (Walker et al., 2010), communication (Ibrahim & Cronin, 2020), self-esteem (Guest et al., 2017), and independent living skills (Retherford & Schreiber, 2015). However, the findings of this study suggest these skills do not show as much improvement as the typical camper within the normative group in the areas of social skills and communication. This indicates that autistic campers may not respond to camp activities in the same manner that typically developing youth do and/or the usual camp activities do not provide as many opportunities for growth within the areas of social skills and communication for autistic youth. Additionally, the substantially lower scores in Camp Connectedness for autistic campers as compared to typical campers within the normative sample supports the previous literature on autistic youth's level of engagement with peers in a classroom setting (Rotheram-Fuller et al., 2010). While camp is usually less structured than classroom settings, it can be suggested that autistic youth may act similarly in camp settings, as camps and classrooms have common factors, such as same-aged peers and shared activities. Overall, the findings of the present study support the literature on autistic youth's engagement with peers, however, they also differ from previous findings on camp outcomes for autistic youth.

Implications for Camp

These findings suggest that autistic campers are not reporting camp outcomes as favorably as the average camper. This indicates that camps for autistic youth may not be as beneficial as they are for typically developing youth. However, camp connectedness and friendship skills are the two areas that appear to be the most significant lowest-rated areas for autistic campers, which suggests these are the areas that autistic campers need the most support. To support autistic campers in these areas, camp staff may provide direction or guidance within

social interactions to increase the amount and quality of friendships amongst campers. To train camp staff on these skills, camp directors may include workshops on social skills training interventions before campers arrive for the season. To improve camp connectedness among autistic campers, camp staff may encourage campers to participate in group activities, such as team-building activities, as well as take time to get to know campers on an individual level and create systems for open communication between campers and camp staff. Another possible approach would be to individualize the camp activities to focus on the needs and/or interests of the individual autistic campers to improve their level of comfort and engagement with peers, staff, and activities of the camp, however, this would require a small counselor-to-camper ratio, which may be difficult to achieve for some camps.

Although these findings suggest that camp may not be as beneficial for autistic youth when compared to average campers, the literature indicates autistic campers still benefit from camp experiences. Considering the positive camp outcomes for autistic youth presented in the current literature, camps should continue to provide experiences to autistic youth alongside typically developing peers, as well as in settings of autism-specific camps. As this is this the first study to the researcher's knowledge presenting the Youth Outcomes Battery to strictly autistic campers, it may be possible that this battery does not fully and/or accurately reflect the camp outcomes specific to autism. This may reflect a need to adapt these scales or create a battery specific to the experiences of autistic youth at camp. Additionally, there is a possibility that the retrospective nature of the modified items and the length of time passed after attending a camp may have impacted the responses provided by the campers. To determine if these factors influenced the reported outcomes of camp, camp counselors and other professionals in the field

could administer scales from the Youth Outcomes Battery to campers in person during or directly after camp.

Considering the current literature on camp experiences and outcomes for autistic youth, it is crucial to incorporate activities that include common interests among all campers in fully inclusive environments in which campers work collaboratively. These activities may include building or creating something in small groups and/or working together to achieve a goal. To address the social skills differences amongst autistic campers, previous literature suggests including social skills training, such as social cognition lessons and peer-mediated social interactions, within camp experiences. The findings from this study suggest friendship skills, a measure of one area of social skills, is not addressed as effectively for autistic campers compared to typically developing campers. Therefore, camp counselors and staff are encouraged to incorporate social skills interventions, such as those mentioned above into camp activities/programs that autistic campers attend and participate in.

Future Directions

Further studies conducted in this area would benefit from collecting more demographic information of the campers to gain a better understanding of what genders, races, and/or ethnicities represent this population. Additionally, others wanting to replicate this study should begin with stronger outreach methods from the beginning of recruitment to ensure a sufficient sample size is collected to conduct multiple linear regressions and identify predictors of camp outcomes. To improve the inter-item reliability of the Parent Perceptions scales, future research could utilize the detailed form, as this includes a greater number of items. Researchers wishing to utilize the Youth Outcomes Battery and/or Parent Perceptions scales via Qualtrics would benefit from enabling bot detection prior to collecting data, as this would assist in the data cleaning

process and ensure the absence of bot activity. Others wishing to examine the camp experiences and outcomes related to autism would benefit from collecting data evenly across camp settings (outdoor and indoor) to determine how camp setting impacts the experiences of autistic youth. To continue the study of camp predictors of camp outcomes, researchers may consider including other camp factors that may predict positive benefits of camp, such as the size of camp, the activities present at camp, the activity level of campers, and the camper to counselor ratio of the camp. Future research could be conducted during camp or directly following camp and/or with physical copies of the Youth Outcomes Battery Scale to ensure campers' responses are not biased or impacted by the passing of time following camp. To examine other reported outcomes of camp for autistic youth, researchers may administer other scales of the Youth Outcomes Battery, such as Responsibility and Problem-Solving Confidence. Further research could also examine the relationship between camper and staff perceptions of outcomes by utilizing the Staff Perceptions Scales in addition to the Youth Outcomes Battery.

Limitations

The results of this study should be utilized with caution, as there are a number of limitations to the study. Firstly, the researcher did not collect sufficient demographic information from the campers, which would provide useful information regarding the gender, race, and ethnicity of the campers. Obtaining more demographic information would allow the researcher to understand the diversity of autistic campers that attend camps. Next, the data collected using the Parent Perceptions Scales had weak inter-item reliability, leading to unusable data from the caregiver participants. The Independence scale of the Youth Outcomes Battery had questionable internal consistency, therefore, the results of the bivariate Pearson correlations related to this scale should be interpreted with caution. In addition, the researcher did not collect a sufficient

sample size to detect a moderate effect size within multiple linear regressions, which was the original data analysis plan for this study. Due to the inability to detect a moderate effect size, the results of the multiple linear regressions should be interpreted with caution. Further, the data was collected online and utilizing a modified format that reflected past tense experiences of camp, which may have impacted the campers' recall of camp.

Conclusion

The present study acted as an exploratory first step in addressing the camp experiences and self-reported outcomes of autistic youth. Compared to the findings of the current literature, this study presented information that confirms and deviates from previously-held knowledge about camps and autism. Firstly, the findings of this study support the previous findings related to the level of engagement autistic youth experience with peers. Secondly, this study presents novel information regarding autistic youth's self-reported outcomes of camp, as all areas examined have lower scores than the typical camper in the normative sample. In conclusion, the present study assessed an understudied area and provided information crucial to understanding the experiences and outcomes of camp for autistic youth, as well as guiding future research in the field.

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Appendix A: Tables

Table 1

Descriptives and Validity of Variables

Variable Type	Description	Number of items	Cronbach's alpha
	Predictors		
Camp length	In days	1	--
Type of camp	Day camp, overnight, half-day	1	--
Strictness of Schedule	Number of hours of free time	1	--
Inclusivity	Amount of interaction with "neurotypical" peers	1	--
Setting	Indoor, outdoor, or both/mixed	1	--
Target of camp	Goal of intervention	1	--
Interactions with animals	Presence of naturally occurring or therapy animals	2	--
Presence of natural elements	Description of natural landscape (if outdoors)	2	--

Camper rated outcomes			
Friendship skills	Self-rated friendship skills	13	.84
Teamwork	Self-rated teamwork skills	8	.75
Independence	Self-rated independence	8	.61
Perceived competence	Self-rated ability to achieve goals	8	.74
Camp connectedness	Self-rated connection with camp	12	.84
Caregiver rated outcomes			
Friendship skills	Parent-rated friendship skills	4	.3
Teamwork	Parent-rated teamwork abilities	4	.43
Independence	Parent-rated independence	3	.53
Perceived competence	Parent-rated ability to achieve goals	3	.45
Camp connectedness	Parent-rated connection with camp	5	.66

		Total number of items	
Caregiver Form	All items answered by caregivers	29	--
Camper Form	All items answered by campers	49	--

Note. Dashes represent missing data due to inapplicability.

Table 2

Participant Characteristics

Variable	*n*	%	*Min*	*Max*	*M*	*SD*
Sex						
Female	98	70.5	--	--	--	--
Male	36	25.9	--	--	--	--
Not disclosed	3	2.2				
Other	2	1.4	--	--	--	--
Total	139	100	--	--	--	--
Gender						
Woman	91	65.5	--	--	--	--
Man	37	26.6	--	--	--	--
Gender fluid	5	3.6	--	--	--	--
Non-binary	3	2.2	--	--	--	--
Other	2	1.4	--	--	--	--
Not disclosed	0	0	--	--	--	--
Age (yr)	--	--	20	49	39.17	5.184
Age of Camper (yr)	--	--	10	17	12.92	1.989
Ethnicity						
White	94	67.6	--	--	--	--
Black or African American	24	17.3	--	--	--	--

Asian	7	5	--	--	--	--
Native American or Alaskan Native	5	3.6	--	--	--	--
Native Hawaiian or Other Pacific Islander	5	3.6	--	--	--	--
Not disclosed	4	2.9	--	--	--	--

Table 3

Camp Characteristics

Variable	*n*	%	*Min*	*Max*	*M*	*SD*
Type of Camp			--	--	--	--
Overnight	64	46	--	--	--	--
Day	52	37.40	--	--	--	--
Half-day	17	12.20	--	--	--	--
Missing	5	3.60				
Other	1	0.70	--	--	--	--
Length (days)	--	--	1	30	5.03	4.66
State						
North Carolina	34	24.50	--	--	--	--
Missing	26	18.70				
California	24	17.30	--	--	--	--
Single States	19	13.70				
Texas	13	9.40	--	--	--	--
Florida	9	6.50	--	--	--	--
New York	3	2.20	--	--	--	--
Michigan	3	2.20	--	--	--	--
Minnesota	3	2.20	--	--	--	--
Virginia	3	2.20	--	--	--	--
Illinois	2	1.40	--	--	--	--

Setting						
Both (Mixed)	71	51.10				
Outdoor	59	42.40	--	--	--	--
Indoor	8	5.80	--	--	--	--
Missing	1	0.70	--	--	--	--
Down time (hrs)	--	--	1	6	3.83	1.27
Inclusivity						
Fully inclusive	58	41.70	--	--	--	--
Non-inclusive	53	38.10	--	--	--	--
Partially inclusive	26	18.70	--	--	--	--
Missing	2	1.40	--	--	--	--
Target/Aim						
Multiple	107	76.98				
Social skills	8	5.80	--	--	--	--
Communication	7	5	--	--	--	--
Independent Living	7	5	--	--	--	--
Academics	6	4.30	--	--	--	--
Athletics	4	2.90	--	--	--	--
Animals						
Present	107	77	--	--	--	--
Absent	29	20.90	--	--	--	--
Missing	3	2.20	--	--	--	--

Animal Role						
Therapy	83	59.70	--	--	--	--
Not therapy	15	10.80	--	--	--	--
Both	5	3.60	--	--	--	--
Present	116	83.50	--	--	--	--
Absent	21	15.10	--	--	--	--
Missing	2	1.40	--	--	--	--
Aspects of Nature						
Multiple	56	40.30	--	--	--	--
Open Fields	19	13.70	--	--	--	--
Woods/Trees	17	12.20	--	--	--	--
Bodies of water	14	10.10	--	--	--	--
Mountains/Hills	10	7.20	--	--	--	--

Table 4

Descriptive Statistics for Autistic Campers' (N = 139) Responses to Five Youth Outcome Battery Scales

Scale	*M*	*SD*
Friendship Skills	3.42	0.65
Teamwork	3.42	0.70
Independence	3.54	0.63
Competence	3.52	0.69
Camp Connectedness	4.27	0.86

Note. Reported means are averaged items within each scale. Response options range from 1 (decreased) to 5 (increased a lot, I am sure), except for camp connectedness, which ranges from 1 (false) to 6 (true.)

Table 5

Results from Contrasting Autistic Campers (N = 139) with Normative Sample for Five Youth Outcome Battery scales

Scale	*Z*	*p*
Friendship Skills	-4.50	<.001
Teamwork	-1.25	.21
Independence	-0.57	.57
Competence	-0.33	.74
Camp Connectedness	-11.54	<.001

Table 6

Bivariate Correlations for Five Youth Outcome Battery Scales and Camp Characteristics for Autistic Campers (N = 139)

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Friendship Skills											
2. Teamwork	.738**										
3. Independence	.545**	.69**									
4. Perceived Competence	.767**	.694**	.491**								
5. Camp Connectedness	.661**	.657**	.558**	.620**							
6. Camp Type	-.003	.097	-.012	.095	-.024						
7. Camp Length	.103	.081	-.007	.072	.006	.053					
8. Camp Setting	.068	.048	-.002	-.015	-.118	-.072	.119				
9. Free Time	.125	-.039	-.098	-.145	-.076	.232**	.236*	.066			
10. Inclusivity	.092	-.058	-.153	.021	-.036	-.089	-.078	-.176*	.082		
11. Presence of Animals	.083	-.001	.115	.030	.081	.168	.173	.050	-.044	.001	
12. Presence of Nature	.095	.143	.046	.186*	.084	.288**	-.069	.332**	.292**	-.002	.274**

** = Correlation is significant at the 0.01 level (2-tailed). * = Correlation is significant at the 0.05 level (2-tailed).

Table 7

Results from Simultaneous Multiple Linear Regression Analysis Predicting Friendship Skills

	b	*SE B*	β	*p*
Constant	51.13	9.49		<.001
Camp length	-0.32	0.23	-.15	.17
Camp type	0.82	1.5	.05	.59
Free time	-1.54	0.88	-.2	.08
Inclusivity	-0.33	1.13	-.03	.77
Setting	1.96	1.92	.12	.31
Presence of animals	0.13	2.66	.01	.96
Presence of nature	1.52	3.54	.05	.67

Table 8

Results from Simultaneous Multiple Linear Regression Analysis Predicting Teamwork

	b	*SE B*	β	*p*
Constant	40.22	5.4		<.001
Camp length	-0.17	0.14	-.13	.2
Camp type	-0.6	0.87	-.08	.49
Free time	-0.61	0.52	-.13	.24
Inclusivity	-0.46	0.65	-.08	.48
Setting	1.08	1.1	.11	.33
Presence of animals	2.24	1.56	.15	.15
Presence of nature	2.82	2.05	.16	.17

Table 9

Results from Simultaneous Multiple Linear Regression Analysis Predicting Independence

	b	*SE B*	β	*p*
Constant	30.38	3.92		<.001
Camp length	0.02	0.1	.02	.83
Camp type	-0.09	0.64	-.02	.88
Free time	-0.79	0.37	-.23	.04
Inclusivity	-0.97	0.47	-.22	.04
Setting	-0.04	0.8	-.01	.96
Presence of animals	1.43	1.13	.13	.21
Presence of nature	0.55	1.48	.04	.71

Table 10

Results from Simultaneous Multiple Linear Regression Analysis Predicting Perceived Competence

	b	*SE B*	β	*p*
Constant	33.07	5.67		<.001
Camp length	-0.12	0.14	-.09	.40
Camp type	0.24	0.92	.03	.80
Free time	-0.76	0.54	-.16	.16
Inclusivity	0.4	0.68	.06	.56
Setting	0.85	1.15	.09	.46
Presence of animals	0.30	1.63	.02	.86
Presence of nature	2.53	2.14	.14	.24

Table 11

Results from Simultaneous Multiple Linear Regression Analysis Predicting Camp Connectedness

	b	*SE B*	β	*p*
Constant	63.56	11.04		<.001
Camp length	.001	0.27	.001	.99
Camp type	-0.02	1.82	-.001	.99
Free time	-1.53	1.06	-.17	.15
Inclusivity	-0.56	1.33	-.05	.67
Setting	-1.61	2.29	-.10	.48
Presence of animals	1.25	3.25	.04	.70
Presence of nature	-0.50	4.15	-.02	.91

Appendix B: Demographic and Camp Factors Questionnaires

Demographic Questionnaire

1. How old are you?
2. How old is your child?
3. What is your sex assigned at birth?
    a. Male
    b. Female
    c. Other
    d. Choose not to answer
4. What is your gender identity?
    a. Man/boy
    b. Woman/girl
    c. Non-binary
    d. Gender fluid
    e. Other (please specify):
    f. Choose not to answer
5. Are you of Hispanic/Latino/Spanish origin?
    a. Yes
    b. No
    c. Choose not to answer
6. How would you best describe yourself?
    a. American Indian or Alaskan Native

b. Asian

c. Black or African American

d. Native Hawaiian or Other Pacific Islander

e. White

f. Other (please specify):

g. Choose not to answer

7. Do you provide consent for your child to take this survey?

    a. Yes

    b. No

If yes, please click the next arrow to complete the Camp Factors Questionnaire.

Camp Factors Questionnaire

1. What type of camp did your child attend?

    a. Overnight camp

    b. Day camp

    c. Half-day or less camp

    d. Other (please explain):

2. How long was this camp in days?
3. What was the setting of the camp?

    a. Indoor

    b. Both indoor and outdoor (mixed)

    c. Outdoor

4. How much free/down time did your child have every day at camp?

a. None

b. Less than 1 hour

c. 1 hour

d. 2 hours

e. 3 hours

f. More than 3 hours

5. Please select the most appropriate description of the peer demographics of the camp: (both identity- and person-first language is included in this item)

    a. The camp served only autistic youth/youth with autism

    b. The camp served autistic youth/youth with autism and/or youth with disabilities, as well as typically developing youth, and my child engaged with typically developing peers for the entirety of camp

    c. The camp served autistic youth/youth with autism and/or youth with disabilities, as well as typically developing youth, and my child rarely or never engaged with typically developing peers

6. What was the target of the camp? (please select all that apply):

    a. Developing social skills

    b. Developing communication skills

    c. Developing academic skills

    d. Developing movement/athletic abilities

    e. Developing independent living skills

    f. Other (please explain):

g. There was no target for this camp

7. Were there any animals at the camp your child attended?

    a. Yes

    b. No

    If yes, please select the interactions your child had with animals at the camp:

    a. They interacted with animals as a part of the camp program (therapy animals)

    b. They interacted with animals that were at camp, but not a part of the camp program (not therapy animals)

8. Was the camp held outside in nature?

    a. Yes

    b. No

If yes, please select what elements of nature your child was near/in while at camp: (select all that apply.)

a. Woods/trees

b. Open fields

c. Bodies of water (lakes, streams, ponds, ocean)

d. Mountains/hills

e. Other (please specify):

Thank you for completing this section. Would you like to complete the survey first as the caregiver, or would you like your child to complete the survey first?

a. I (the caregiver) will complete the survey first

b. My child will complete the survey first

If you (the caregiver) are completing the survey:

Please click the next arrow and complete the survey.

If your child is completing the survey:

Please click the next arrow and allow your child to complete the rest of the survey. You may read the questions to your child, but do not encourage them to answer in any specific way. Your child will first be presented with an assent form to explain the survey to them. After your child has completed their section of the survey, please complete the remainder of the survey independently.

Appendix C: Scales from Camp Youth Outcomes Battery and Parent Perceptions Scales

Friendship Skills (FR) — Basic Format

How much, if any, has your experience as a camper in this camp changed you in each of the following ways?

	Decreased	Did Not Increase or Decrease	Increased a Little Bit, Maybe	Increased Some, I am Sure	Increased a Lot, I am Sure
1. Becoming better at choosing people who would be good to be friends with	○	○	○	○	○
2. Becoming better at talking to friends about things that are important to them	○	○	○	○	○
3. Becoming better at listening carefully to things that my friends tell me	○	○	○	○	○
4. Becoming better at talking to friends about things that are important to me	○	○	○	○	○
5. Becoming better at getting to know more things about my friends	○	○	○	○	○
6. Becoming better at understanding my friends' feelings	○	○	○	○	○
7. Becoming better at understanding my friends' emotions	○	○	○	○	○
8. Becoming better at trusting my friends	○	○	○	○	○
9. Becoming better at being trusted by my friends	○	○	○	○	○

Basic Camper Outcomes Scales — Friendship Skills (FR) — Page 1 of 2

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How much, if any, has your experience as a camper in this camp changed you in each of the following ways?

	Decreased	Did Not Increase or Decrease	Increased a Little Bit, Maybe	Increased Some, I am Sure	Increased a Lot, I am Sure
10. Becoming better at enjoying being with my friends	○	○	○	○	○
11. Becoming better at helping my friends to have a good time when they are with me	○	○	○	○	○
12. Becoming better at finding ways to meet people who I want to be friends with	○	○	○	○	○
13. Becoming better at getting to know people who I might want to become friends with	○	○	○	○	○
14. Becoming better at finding friends who like many of the same things that I like	○	○	○	○	○

Basic Camper Outcomes Scales — Friendship Skills (FR) — Page 2 of 2

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Independence (I) — Basic Format

How much, if any, has your experience as a camper in this camp changed you in each of the following ways?

	Decreased	Did Not Increase or Decrease	Increased a Little Bit, Maybe	Increased Some, I am Sure	Increased a Lot, I am Sure
1. Needing less help from adults	○	○	○	○	○
2. Taking care of myself	○	○	○	○	○
3. Being less dependent on my family	○	○	○	○	○
4. Making good decisions even when members of my family are not around to help me	○	○	○	○	○
5. Making decisions without adults helping me	○	○	○	○	○
6. Making decisions by myself	○	○	○	○	○

Basic Camper Outcomes Scales — Independence (I)

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Perceived Competence (PC) — Basic Format

How much, if any, has your experience as a camper in this camp changed you in each of the following ways?

	Decreased	Did Not Increase or Decrease	Increased a Little Bit, Maybe	Increased Some, I am Sure	Increased a Lot, I am Sure
1. Becoming better at thinking of new things to do in my free time	O	O	O	O	O
2. Becoming better at understanding new information	O	O	O	O	O
3. Becoming better at doing art projects	O	O	O	O	O
4. Becoming better at doing recreation activities	O	O	O	O	O
5. Becoming better at doing recreation activities with other people	O	O	O	O	O
6. Becoming better at meeting new people	O	O	O	O	O
7. Becoming better at taking care of myself	O	O	O	O	O
8. Becoming better at learning new things	O	O	O	O	O

Basic Camper Outcomes Scales — Perceived Competence (PC)

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Teamwork (T) — Basic Format

How much, if any, has your experience as a camper in this camp changed you in each of the following ways?

	Decreased	Did Not Increase or Decrease	Increased a Little Bit, Maybe	Increased Some, I am Sure	Increased a Lot, I am Sure
1. Placing group goals above the things that I want	○	○	○	○	○
2. Working well with others	○	○	○	○	○
3. Helping others succeed	○	○	○	○	○
4. Cooperating with others	○	○	○	○	○
5. Being helpful in small groups of kids my age	○	○	○	○	○
6. Helping a group be successful	○	○	○	○	○
7. Supporting a group when they have selected an activity that I don't want to do	○	○	○	○	○
8. Appreciating opinions that are different from my own	○	○	○	○	○

Basic Camper Outcomes Scales — Teamwork (T)

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Camp Connectedness (CC) — Basic Format

WHILE AT THIS CAMP . . .

	False	Somewhat False	A little False	A little True	Somewhat True	True
1. The staff listen to me	○	○	○	○	○	○
2. I am treated fairly by staff	○	○	○	○	○	○
3. I am happy	○	○	○	○	○	○
4. I have a good time	○	○	○	○	○	○
5. I get to make decisions	○	○	○	○	○	○
6. I make choices that make a difference	○	○	○	○	○	○
7. I like the other kids	○	○	○	○	○	○
8. Other campers respect me	○	○	○	○	○	○
9. People are interested in me	○	○	○	○	○	○
10. I feel like I belong	○	○	○	○	○	○
11. I feel safe to express myself	○	○	○	○	○	○
12. I am respected for who I am	○	○	○	○	○	○

Basic Version Camp Connectedness (CC-Basic)

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ACA Youth Outcomes Battery: Parent Perceptions (Change Only or Basic format)

Your Child's Name:_____, Age:_____, Male or Female (circle one)

Please read each statement carefully and decide which description is most accurate for your child's experience during the most recent camp session. Circle the response that most accurately describes your child's experience during the most recent camp session.

My child:	How much, if any, has this session at camp changed your child? Please circle the most correct response.				
AE					
1. Likes to meet new people	Decreased	Did not increase or decrease	Increased a little bit	Increased some	Increased a lot
2. Likes to try new activities	Decreased	Did not increase or decrease	Increased a little bit	Increased some	Increased a lot
3. Likes to visit new places	Decreased	Did not increase or decrease	Increased a little bit	Increased some	Increased a lot
FS					
4. Makes friends	Decreased	Did not increase or decrease	Increased a little bit	Increased some	Increased a lot
5. Listens to other kids	Decreased	Did not increase or decrease	Increased a little bit	Increased some	Increased a lot
6. Empathizes with friends	Decreased	Did not increase or decrease	Increased a little bit	Increased some	Increased a lot
7. Helps friends to have fun	Decreased	Did not increase or decrease	Increased a little bit	Increased some	Increased a lot
AN					
8. Enjoys the outdoors	Decreased	Did not increase or decrease	Increased a little bit	Increased some	Increased a lot
9. Likes nature	Decreased	Did not increase or decrease	Increased a little bit	Increased some	Increased a lot
10. Prefers being outdoors	Decreased	Did not increase or decrease	Increased a little bit	Increased some	Increased a lot
CC*					
11. Gets along with camp staff	Decreased	Did not increase or decrease	Increased a little bit	Increased some	Increased a lot
12. Enjoys camp	Decreased	Did not increase or decrease	Increased a little bit	Increased some	Increased a lot
13. Makes meaningful decisions at camp	Decreased	Did not increase or decrease	Increased a little bit	Increased some	Increased a lot
14. Is respected by the other kids at camp	Decreased	Did not increase or decrease	Increased a little bit	Increased some	Increased a lot
15. Is included by others at camp	Decreased	Did not increase or decrease	Increased a little bit	Increased some	Increased a lot

COMP					
16. Is good at thinking of new things to do in free time	Decreased	Did not increase or decrease	Increased a little bit	Increased some	Increased a lot
17. Is good at understanding new information	Decreased	Did not increase or decrease	Increased a little bit	Increased some	Increased a lot
18. Is good at learning new things	Decreased	Did not increase or decrease	Increased a little bit	Increased some	Increased a lot
RESP					
19. Takes responsibility for actions	Decreased	Did not increase or decrease	Increased a little bit	Increased some	Increased a lot
20. Makes things right after a mistake	Decreased	Did not increase or decrease	Increased a little bit	Increased some	Increased a lot
21. Apologizes when appropriate	Decreased	Did not increase or decrease	Increased a little bit	Increased some	Increased a lot
IND					
22. Can figure things out without adult assistance	Decreased	Did not increase or decrease	Increased a little bit	Increased some	Increased a lot
23. Takes care of self	Decreased	Did not increase or decrease	Increased a little bit	Increased some	Increased a lot
24. Is good at making decisions without adult support	Decreased	Did not increase or decrease	Increased a little bit	Increased some	Increased a lot
TW					
25. Can place group goals above personal goals	Decreased	Did not increase or decrease	Increased a little bit	Increased some	Increased a lot
26. Can help others succeed on tasks	Decreased	Did not increase or decrease	Increased a little bit	Increased some	Increased a lot
27. Is supportive even when the group is doing something he or she is not interested in	Decreased	Did not increase or decrease	Increased a little bit	Increased some	Increased a lot
28. Appreciates the opinions of others	Decreased	Did not increase or decrease	Increased a little bit	Increased some	Increased a lot

PSC					
29. Is good at coming up with a plan to solve a problem	Decreased	Did not increase or decrease	Increased a little bit	Increased some	Increased a lot
30. Is good at brainstorming different solution to a problem	Decreased	Did not increase or decrease	Increased a little bit	Increased some	Increased a lot
31. When confronted with a problem, makes good choices about what to do	Decreased	Did not increase or decrease	Increased a little bit	Increased some	Increased a lot
FCB (Family Citizenship Behavior)**					
32. Helps with things at home without being asked	Decreased	Did not increase or decrease	Increased a little bit	Increased some	Increased a lot
33. Does things to make our home better without being asked	Decreased	Did not increase or decrease	Increased a little bit	Increased some	Increased a lot
34. Helps other members of our family without being asked	Decreased	Did not increase or decrease	Increased a little bit	Increased some	Increased a lot

*Some parents reported that Camp Connectedness (CC) was difficult to answer.

**Family Citizenship Behavior (FCB) was added after the pilot testing. While parents should have an easier time completing these items, camp staff cannot.