

Farm Animal-Assisted Therapy for Individuals with Autism Spectrum Disorder:
Parent's Perspectives

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ABSTRACT

Autism Spectrum Disorder (ASD) is a developmental disorder that affects an individual's ability to communicate, create social relationships, and regulate sensory input and repetitive behaviors. An uncommon intervention used in ASD treatment is farm animal assisted therapy (AAT). AAT interventions focus on the use of animals in adjunct to achieve goals and outcomes. Farm AAT is defined as the use of farm animals such as cows, sheep, goats, horses, and pigs in AAT interventions. There is a lack of evidence on the use of farm animals and their benefits within the scope of AAT and in recreational therapy. The purpose of this study was to provide evidence, from the perspective of parents, of the potential benefits of farm AAT as a recreational therapy intervention for individuals with ASD. Data collection using a semi-structured interview guide was conducted over the phone with parents who participated in family session programs at the study location. Five participants were selected who matched the inclusion criteria for this study. The findings from this study reported that there were increases in social behaviors, regulation of behaviors, and a sense of normalcy for the children. The findings from this study will provide a foundation for future research related to farm AAT such as evidenced-based

curriculum and practices. The data will provide therapists and parents with an understanding of the potential benefits that are gained from participation in farm AAT interventions.

Farm Animal-Assisted Therapy for Individuals with Autism Spectrum Disorder:
Parent's Perspectives

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LIST OF ABBREVIATIONS

AAI: Animal assisted interventions.....	39
AAT: Animal assisted therapy.....	1
ADHD: Attention-deficit/hyperactivity disorder.....	37
ASD: Autism spectrum disorder.....	1
COREQ: Consolidated criteria for reporting qualitative research.....	8
DSM-5: Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition.....	37
EAT: Equine assisted therapy.....	4
HAB: Human-animal bond.....	3
HBM: Horse Boy Method.....	5
IPA: Interpretive phenomenological analysis.....	8
RT: Recreational therapy.....	1

SECTION I: MANUSCRIPT

Introduction¹

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder that creates difficulties in social communication and interaction, sensory regulation, and repetitive behaviors (London et al., 2020). These symptoms can impair an individual's ability to form relationships, perform academically, secure job candidacy, and become involved in their communities (Center for Disease Control [CDC], 2022). These symptoms are usually present in early childhood but can be found in adulthood and are classified from mild to severe (CDC, 2022). The recommended management of symptoms is early treatment using interventions that address those complexities and are tailored to the individual, but management also needs to be continued throughout the life span (CDC, 2022). Recreational therapists play an important role in providing crucial interventions that target those goals and outcomes for children and adults with ASD. Recreational therapy (RT) is the systematic process that utilizes recreation and leisure activities in interventions to address the needs of the client (National Council for Therapeutic Recreation Certification [NCTRC], 2022).

One such intervention used in RT is animal assisted therapy (AAT). Overall, AAT focuses on the positive influence of animals as adjuvant or complimentary to therapy in achieving therapeutic goals (Flynn et al., 2020; London et al., 2020). Recreational therapists use AAT in treatment for psychosocial and physical related issues for a variety of disability populations (Hallyburton & Hinton, 2017). While the therapeutic use of animals has been in existence

¹ Manuscript adheres to the style and headings of the *Therapeutic Recreation Journal*.

since the nineteenth century, research on the use of animals among a variety of disability populations and settings did not start until the 1960s and 1970s (Wolfe et al., 2016).

Furthermore, the first research article based on the use of animals as an RT intervention was not published in an RT-based journal until the early 2000s (Fairias-Tomaszewski et al., 2001). This study focused on therapeutic horseback riding for people with physical disabilities.

AAT can be broadly inclusive from therapeutic horseback riding to the use of animals such as dogs, cats, guinea pigs, and rabbits. More recently, it has also included the therapeutic use of farm animals such as cows, sheep, goats, horses/ponies, donkeys, ducks, chickens, and alpacas (Barnhart et al., 2020). Use of such farm animals can demonstrate similar benefits to animals considered as pets (Flynn et al., 2020); however, there is a lack of evidence on the use of farm animals and their benefits within the scope of AAT.

Recreational therapists use an important framework called the APIED process. APIED stands for assessment, planning, intervention, evaluation, and documentation (American Therapeutic Recreation Association [ATRA], 2019). This process is the most fundamental part of RT and must be integrated to be considered therapy. A recreational therapist's job is to assess client needs before choosing AAT as an intervention. The therapist evaluates contraindications associated with AAT to ensure the client is a good fit and will be safe during the session. Documentation is used throughout the entire process of the APIED process; but it is crucial that every session be documented.

Autism Spectrum Disorder and AAT

Recreational therapists utilize AAT in the treatment of individuals with ASD where animals can address social, behavioral, and psychological symptoms of ASD (Hallyburton & Hinton, 2017). Research on AAT that includes individuals with ASD has shown positive

outcomes. Recent evidence has reported benefits related to anxiety (Wright et al., 2015), social behaviors (Fung & Leung, 2014), community participation (London et al., 2020), and stress (Wijiker et al., 2019a, 2019b). While most of the research is based on using pets (cats and dogs) in AAT for individuals with ASD, there is very little research to demonstrate the therapeutic influence of farm animals on individuals with ASD. However, Barnhart et al. (2020) did suggest that using farm animals can help the social-behavioral functioning of individuals with ASD.

Improving social-behavioral functioning is an important outcome for individuals with ASD and is necessary to further explore in relation to AAT, most specifically with farm animals. The human-animal bond (HAB) and how it affects individuals with ASD has become increasingly popular in recent years. The HAB is based on the biophilia hypothesis, which suggests that humans have an innate desire to connect with other living organisms and just viewing or being around nature and animals can often improve health (Wilson, 1984). The HAB is also based on attachment theory, which suggests that social interactions between humans and animals can further help individuals understand themselves (Mano et al., 2011). In attachment theory, animals are used as a social support, which further explains the reason so many people rely on companion animals (such as pets), especially in difficult situations (Fine, 2019).

Parent's Perspective

To understand how communication and interaction are “bridged” in treatment within recreational therapy and in other aspects of the client’s lives, the focus of this study is the parents’ perspective and observations. While few studies on AAT and ASD have focused on this perspective, it remains an important area to be explored (London et al., 2020). Parents are in a unique position where they spend significant time with their child and thus have a better understanding of how their child behaves and acts. Therefore, any changes to the dependent's

typical behavior can often be recognized by the parent. The child's involvement and experience in the intervention also allows the parent to see what changes are occurring. They can observe externally to the intervention and see how skills and knowledge learned during the intervention are taken into the world outside of therapy. Parents are aware of their dependent's behavior, and as such, can be good observers of change (London et al., 2020). Therefore, this study examines parent involvement in the farm AAT family sessions.

Farm Animal Assisted Therapy

Farm AAT can include alpacas, cats, chickens, cows, dogs, donkeys, ducks, geese, goats, guinea pigs, horses, pigs, rabbits, sheep, and turkeys (Barnhart et al., 2020). Many animals included in farm AAT can also be included in regular AAT such as cats, dogs, guinea pigs, and rabbits. While some articles suggest that there are benefits to using farm animals in AAT (Barnhart et al., 2020) evidence is lacking on the benefits of using farm animals in AAT.

Barnhart et al. (2020) explored which species of farm animal in farm AAT improved social skills, empathy, communication, and tactile stimulation in targeting specific autistic symptoms (deficits in social skills, emotional regulation, and sensory regulation) and discovered that several animals (goats, horses, dogs, etc.) were effective. This study showed that there are benefits of using farm animals but there needs to be further research into the evidence-based approach and outcomes for individuals. An overall lack of research exists related to AAT and individuals with ASD. Furthermore, there is even more limited research on the effects of farm ATT and its benefits for individuals with ASD. To address this gap, this study will explore how using farm animals in AAT impacts individuals with ASD

Horses may be used in farm AAT but there are limitations to what may be done before the process branches into equine assisted therapy (EAT). EAT, according to Rigby and

Grandjean (2016), is defined as “A broad term that includes any activities or therapies that incorporate equines. The term includes any specific riding center activity (e.g., therapeutic horseback riding) and any rehabilitative treatment (e.g., hippotherapy)” (p. 9). A lack of research exists concerning the separation of regular AAT with horses and EAT (Fry, 2013).

Theoretical Framework: The Human-Animal Bond and Horse Boy Method

According to the American Veterinary Medical Association (AVMA, 2023) the human-animal bond (HAB) is defined as “a mutually beneficial and dynamic relationship between people and animals that is influenced by behaviors essential to the health and wellbeing of both” (para. 1). HAB has been a documented phenomenon since humans began domesticating animals. Animals acting as social support can be explained through attachment theory and the biophilia hypothesis. Both help support and explain the HAB (Fine, 2019). Attachment theory was developed by Bowlby and provides insight into adjustment across the human's lifespan. The theory suggests that social interactions with others, including animals, assist in forming an unconscious and conscious understanding of oneself (Mano et al., 2011). Similarly, biophilia, as a broader framework, asserts that to the degree that we come to understand other living organisms, the more we will place value on and come to understand them- *and* ourselves (Wilson, 1984). More specifically, the biophilia hypothesis suggests that humans have an innate desire to connect with other living organisms and that human health can be improved by viewing and being around nature and animals (Wilson, 1984).

One AAT method that incorporates both attachment theory and biophilia is called the Horse Boy Method (HBM) (Isaacson & Lorenz, 2012). This study focused on the HBM because of the partnering research agency's utilization of this method in their farm AAT interventions. The HBM originated as an equine intervention designed to help individuals with ASD bridge the

communication gap and interact more with the outside world by targeting chemicals in the brain and relaxing the nervous system (Isaacson & Lorenz, 2012). Learning is accomplished through movement with the horse and involves a six-stage process:

1. Set up the right environment for the child.
2. Address the child's sensory issues.
3. Move to riding in the same saddle with the child to explore the exterior world.
4. Implement perspective-taking and rule-based games like "Tag" on horseback.
5. Teach academic based activities on horseback.
6. Teach the child to speak for his or herself (self-advocacy) (Isaacson & Lorenz, 2012).

While the HBM originated as an equine intervention, the method and concept expanded to other types of farm animals within the agency of focus for this study. For this study, the farm animals are the focal point to help individuals with ASD bridge the communication gap and interact more with the world, outside of therapy interventions, and where social, behavioral, and physical outcomes are targeted goals.

Research Questions

In summary, limited research exists on farm AAT interventions and a need exists for more evidence from agencies, recreational therapists, and parents who use, observe, or advocate for farm AAT for individuals with ASD. Existing research demonstrates substantial gaps in knowledge of the way farm AAT can be beneficial. As such, there is a lack of evidence-based practices and protocols for therapists to provide safe and effective treatment when utilizing farm AAT. As a result, knowledge of these practices is lacking among recreational therapists and parents about the advantages of using farm animals in treatment. Providing further evidence and knowledge will help therapists and parents feel more confident, comfortable, and safer in their

decision to choose farm AAT. This information can also potentially provide more support and consistency for farm AAT for recreational therapists. Therefore, the purpose of this study was to provide more evidence and knowledge of the possible benefits of farm AAT for individuals with ASD from the perspective of parents. Parents observe, are aware of, and understand their child's behavior the most within and outside of farm AAT. Their perspective is important when considering the daily lives of individuals with ASD. Finally, this study has the potential to provide a perspective within a unique area lacking in literature.

Therefore, to understand these gaps related to farm AAT with children and adults with ASD, this study focused on the following three research questions:

RQ1: To what types of farm AAT interventions do individuals with ASD respond?

RQ2: What outcomes provide evidence for the use of farm AAT for individuals with ASD?

RQ3: What perceptions do parents have concerning the outcomes from farm AAT internal and external to the intervention for their dependents?

To help answer these questions, this study focused on an agency that employed a recreational therapist using farm AAT interventions for individuals with ASD. The farm AAT at this agency also involved family sessions with parents engaging with the client with ASD.

Method

Study Design

The study design focused on the phenomenon of using farm animal AAT for individuals with ASD through the perspectives of the parents. A phenomenological approach in qualitative inquiry focuses on understanding the “essence” of experiences about a phenomenon and particularly when research is limited in the field of study. The classical approach of hermeneutic (or interpretive) phenomenology was addressed as well in this study (Chan et al., 2013; Creswell & Poth, 2018). This approach allows for the best opportunity for the development of a bonding relationship between the participants and the researcher to understand their “lived experiences” (Alase, 2017). Therefore, the best strategy for this approach is to collect data through in-depth semi-structured interviews with participants. In addition, engaging in interpretive phenomenological analysis (IPA) is also important, which ultimately occurs within a sequence of steps throughout the research process including the literature review and recognizing the role of the researcher (Alase, 2017; Chan et al., 2013). To document the latter, the reporting of qualitative methods was checked against the consolidated criteria for reporting qualitative research (COREQ) (Tong et al., 2007). This is a 32-item checklist or guideline to ensure the researcher(s) is going through each stage of the qualitative research process.

Setting and Program

Data collection for this study was located in the western United States at an agency that uses farm animal AAT interventions within their RT services. As a supporting partner, they assisted the researcher to best understand the problem and answer the research questions in this study (Creswell & Creswell, 2018). The farm animals at the ranch include six horses, four goats, two miniature horses, three rabbits, two cats, and two dogs. The facility utilizes the HBM as the

basis for their interventions with all the animals. The HBM is a way of using the various farm animals to help sensory regulation and improve social communication for individuals with ASD. The agency specializes in helping individuals with ASD and provides additional services to individuals with post-traumatic stress disorder (PTSD), mental health conditions, and other related trauma conditions.

This agency was appropriate for this study as it had a recreational therapist (RT) and RT interns available to support and collaborate within this research study (see Appendix B). This agency has farm animals and utilizes them to provide a variety of different interventions. Family farm AAT sessions are provided over a period of 13 weeks for individuals with ASD, which the agency defines as quarters. Client data (treatment goals and documentation) collected from the RT at the ranch was not available to the researcher.

The RT uses the APIED process to implement farm AAT programs and family sessions. New clients' needs are assessed before developing the client's goals and objectives. The goals and objectives of the child with ASD are re-evaluated every quarter to see if they are being met. The family program is implemented for each child and his/her family separately (i.e., families do not engage with each other during their sessions of farm AAT). The program is divided into 13 sessions (one per week) and typically involves allowing the child the freedom to choose what animals they want to interact with and activities they want to do. The RT and/or RT interns create activities dedicated to the clients' interests. Some examples of activities performed at the ranch are taking goats and mini ponies for walks, parallel play (playing independently, next to another individual or animal) with the animals, horseback riding, and sensory work with the animals through the HBM. The family sessions, which are the focus of the current study, allow for the parents (and any siblings) to have hands on experience with their children's interventions.

Sample

The primary target population were parents of individuals with ASD whose children received farm AAT at the agency. Family sessions at the agency also included any caregivers of the children. Therefore, the original proposal of the study included parents and caregivers to be included in the sample with the following criteria required for participation in the study:

- a. child participants at the ranch must be diagnosed with ASD and registered to participate in the family farm AAT program for 13 weeks;
- b. parents/caregivers need to have known the individual with ASD for at least one month prior to the start of each program to ensure they had adequate knowledge of child participant's behaviors;
- c. parents/caregivers must be in attendance for at least six of the 13 weeks to ensure they had adequate exposure to the phenomenon (i.e., AAT and potential behavioral changes);
- d. consent must be provided by parents or legal authority; and
- e. assent must be provided by the participants.

This criterion was used to make certain that quality assurance was maintained (Creswell & Poth, 2018) and that ample opportunity was provided to parents or caregivers to experience and provide perspectives regarding the phenomenon being examined. Creswell and Poth (2018) report that the phenomenological approach focuses on a group of individuals who experience a similar phenomenon which may vary in size from 5-25 research participants.

Five children received individual farm AAT services at the agency during the time of the study (the third quarter which ranged from July through September). Recruitment was focused on parents and caregivers of those five children who met the above criteria.

Data Collection

This phenomenological qualitative study explored outcomes of farm AAT for individuals with ASD as observed and interpreted from the parent perspective. Therefore, primary data was collected through interviews with the parents. Collecting data using interviews allows for more meaningful information to be revealed while still maintaining quality assurance to the data being collected (Alase, 2017). To facilitate the classical approach of hermeneutic (or interpretive) phenomenology (Chan et al., 2013; Creswell & Poth, 2018), the researcher made a pre-data collection visit to the ranch to observe the animals and build rapport with the parents, children, and RT. At the conclusion of the visit to the ranch, interview dates and times were scheduled with the parents, along with the signing of the research informed consent. The researcher then left after the one-week visit. Interviews with consenting parents as research participants were conducted via telephone and audio recorded at the conclusion of the 13-week third quarter program (i.e., July-September). Interviewing the parents after the program was complete and over the phone away from the agency site kept perspectives fresh but reflective in an off-site environment. Interview durations ranged from 20-50 minutes.

Overall, the purpose of the data collection process within the IPA approach was to develop rapport and a comfortable environment around the interview so that the participants could convey their own meanings to their “lived experiences” (Alase, 2017). While there was a possibility for biases to be present as the individuals interviewed are closely related to the participants with ASD, the purpose of using qualitative methods in this research study was to understand the phenomenon of farm AAT for individuals with ASD through one of the closest members of that individual’s family—the parents.

Instrument

An interview guide (see Appendix E) included multiple open questions with probes and was used to ensure fidelity for all interviewees (Alase, 2017; Chan et al., 2013; Creswell & Poth, 2018). Using open-ended qualitative questions allowed individuals to provide their thoughts, opinions, and beliefs unique to each parent. The interview guide addressed the following areas: (a) recreation, (b) social interaction, (c) ASD, (d) relationship to animals, and (e) the agency. These areas were identified to assist in the exploration of changes in participants' behavior and if any benefits were observed by the parents. A total of sixteen questions/probes were developed for the interview guide with the primary focus on exploring perceived benefits of farm AAT for children with ASD. Initial questions were created to collect background information and to understand the context of the child, family, and community life. The rest of the questions were specifically developed to explore the “what and how” farm AAT was experienced for the children with ASD and the families as perceived by the parents (Creswell & Poth, 2018).

Data Analysis

Creswell and Creswell (2018) report that data analysis “involves segmenting and taking apart the data (like peeling back the layers of an onion) as well as putting it back together” (p. 192). They report data analysis includes simultaneous procedures (e.g., while interviewing, the researcher can analyze earlier interviews, writing memos, and organizing the data); winnowing the data (focusing on some data and disregarding other parts); using qualitative software (e.g., NVivo); and taking “sequential steps to be followed, from the specific to the general, and involving multiple levels of analysis” (p. 193).

In applying this process, data analysis began with the interviews with the parents. After the interviews were completed, the analysis continued through the transcription of the interviews. The transcribed data were then put into NVivo 12 software to start the procedure of coding the

data. Coding is the process of organizing the data based on categories or themes with terms or language used by the participants. The purpose of using NVivo was to assist in the coding through relational mapping of the qualitative data. It also ensures security for collected data.

In addition to using the software, two primary coders along with a secondary coder were used from the research team. The primary coders included the first author/primary researcher, and the second author/thesis chair, who has over 26 years of qualitative research experience. The secondary coder included the third author who has extensive experience in qualitative research. The use of such multiple coders was used to ensure codes and themes were checked for confirmation and consistency between the participants' quotes and between the researchers.

As a result of the data analysis process, descriptions about people, places, and events in the setting were generated. Themes and sub-themes emerged that identified the phenomenon and as represented in the results of this study, these themes were constructed and viewed consistently between the parents. The descriptions and support of these themes in the parents' own words contributed to the narrative or story of the phenomenon (Creswell & Creswell, 2018, p.194).

Credibility and Trustworthiness

In qualitative research, the term "trustworthiness" of the data is generally used to replace terms such as reliability and validity. To make sure data was considered trustworthy, credible, and transferable as an IPA research study, the researcher used procedures including the COREQ checklist, bias clarification, triangulation of data, code cross checking through regular communication with the research team, rich descriptions to convey findings, and time in the field (Alase, 2017; Creswell & Poth, 2018; Creswell & Creswell, 2018; Tong et al., 2007).

The COREQ checklist was used to provide a complete reporting of the qualitative research process which "indirectly improves rigor, comprehensive, and credibility of interview"

studies (Tong et al., 2007, p. 350.). Bracketing was used by the researcher to remove as much personal bias as possible and is a concept “where investigators set aside their experiences as much as possible to take a fresh perspective toward the phenomenon under examination” (Creswell & Poth, 2018, p. 78). For example, by interviewing the parents later and not at the agency during the one week visit to the ranch, the researcher bracketed her perspective of the phenomenon in order to focus on the “fresh” experiences of the participants during their interviews. Triangulation of the data for the study included examining different sources of information (i.e., interview data and general observations of the processes at the ranch during the visit). Observations were used to later help inform the primary data results that emerged from the interviews to help better understand the nature of the phenomenon. Triangulation was also implemented in this study by involving several members of the research team to code and analyze data external to the setting and sample. Cross-checking of codes was implemented as members of this team used consistent communication to check and re-check codes/themes, and to support them directly from the participants’ own “rich” descriptions. The primary researcher also underwent the process of developing an in-depth understanding of the phenomenon of farm AAT for individuals with ASD by time in the field. This process included: researching and finding the agency; establishing rapport with the recreational therapist and owner over several months of online and in person meetings; establishing rapport with the parents during the ranch visit; and reading the literature in depth. While bracketing occurred later in the research process to help deflect personal biases and “start fresh”, the in person experience at the site and time with the parents was completed to help establish trust/credibility in studying the phenomenon itself.

Results

Characteristics of the Sample

Six potential participants matched the inclusion criteria during the time of this study, but one was unable to participate due to problems scheduling an interview. Therefore, in total, five parents were interviewed which included three mothers and two fathers of four children who participated in the farm AAT family program at the ranch during the third quarter. Of the parents, three were the primary caregiver of the child and two were secondary (see Table 1). One parent couple participated and were interviewed about the same child (Participants 3 and 5).

Table 1

Description of Parent Participants

Participant Number	1	2	3	4	5
Pseudonym	Chelsea	Amy	Katey	Daniel	Drake
Mom or Dad	Mom	Mom	Mom	Dad	Dad
Primary or Secondary Caregiver	Primary	Primary	Primary	Secondary	Secondary
Child Pseudonym	Sean	Henry	Oscar	David	Oscar

The parents in this study reflected on their child (one of four children) who participated in farm AAT at the ranch. All the children were male ranging from 4-11 years old each with their own unique set of symptoms as described by their parent(s) (see Table 2).

Table 2*Description of Children*

Parent Number	1	2	3/5	4
Child Pseudonym	Sean	Henry	Oscar	David
Age	11	5	4	11
Date Started at Ranch	2019	2022	2020	2015
Pets at Home	Yes	Yes	No	No
Parental Descriptions of Symptoms	Anxiety, Avoidance, Assertion of autonomy is most important, Challenges with social interaction	Limited communication, Verbal delay, Sensory seeker, Eloper	Nonverbal, Sensory seeker, Inability to follow directions, Non-responsive	Challenges with social interaction, Anxiety, Stimming behaviors

Major Findings

The parent of this study reported unique experiences associated with the farm AAT program. The analysis of interview transcripts found three major themes related to their child's and their family's participation in this program: 1) Social Behaviors, 2) Behavior Regulation, and 3) Sense of Normalcy. Quotes from the transcripts are presented to help define each theme and subtheme (see Table 3 for examples). The most important outcome from data analysis was how all the themes were found to be interconnected because of the family involvement in the sessions (see Figure 1). Without the family dynamic being included in sessions these findings may have been very different.

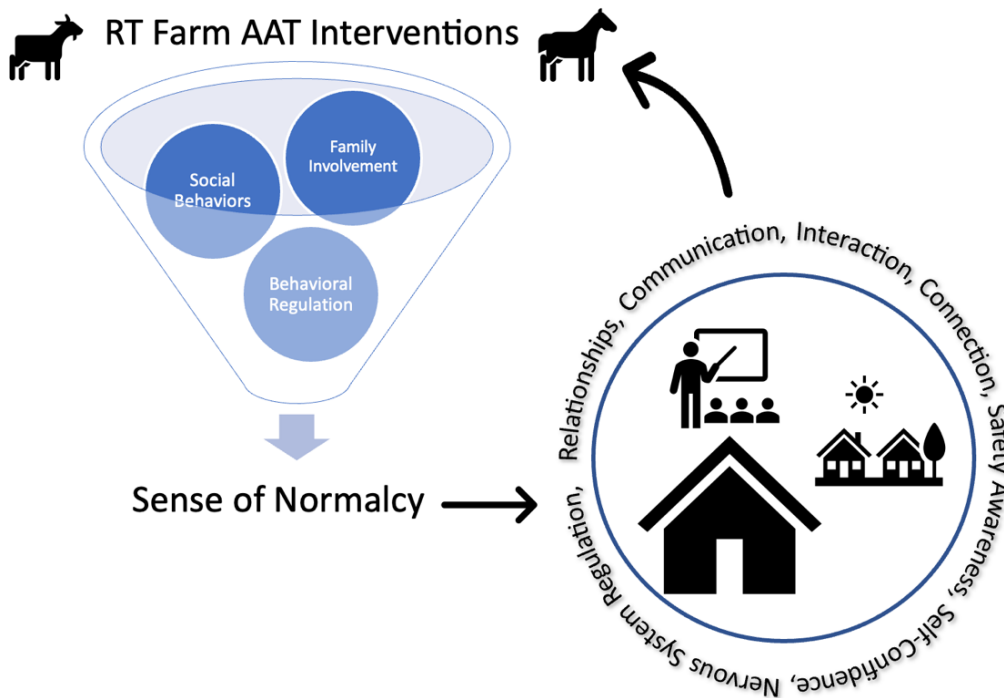
Table 3

Description of Themes

Theme	Example Quote
Social Behaviors:	“Sort of the same thing as if we're doing something, you're going somewhere he's able to communicate with us. I want to go over there or. I want to get up onto this thing, or he's. The signs he's learned and developed and really transferred into the real world. I'm telling us kind of what he wants to do.”
Behavioral Regulation:	“Sean really, really wanted to give Ruby an Apple and He sat almost the whole session just sat still and quiet in the pen where Ruby is just trying to Sort of, you know Be approachable. Um. And he was just so like so determined, but also, so just able to regulate his nervous system in that situation to do what was needed to make it safe for Ruby”
Sense of Normalcy	“I think like, that’s when the normalcy comes out. Because when there's not the pressure. the stress or the anxiety of. The regular world, that's when that brings out like the. autistic qualities, I think, but when he's like, relaxed and at home and comfortable. Then he's he acts like a normal child.”

Figure 1

Connection of Themes



Theme 1: Social Behaviors

Social behaviors are defined in this study as connecting with other people and creating social relationships (American Psychological Association, 2023). This theme contained three subthemes 1) increased social interaction, and 2) increased communication, and 3) connection. Many parents reported that their child had some increase in social behavior as it related to their child's participation in the farm AAT programs.

Increased Social Interaction

Social interaction was defined in this study as creating social relationships and maintaining them (American Psychological Association, 2023). Of the five parent participants, three reported some kind of increase in social relationships and interactions for their child after participation in programs at the ranch. These same three parents also reported that their child struggled with social interactions and developing relationships prior to participation in farm AAT. Amy (Interview 2) responded: "It is nice to see him building other relationships with adults who are able to understand him and he's able to feel comfortable with". One parent reported that the difference in their child's social interaction had completely changed after participating in programs at the ranch. A common occurrence happened where the parent reported that interaction with the animals helped their child better interact with people.

It's really just been night and day. He's more interactive with not only the family members, but with, staff and everyone at the ranch with, kids at school and it's just been fantastic to watch him kind of respond the way a normal kid would respond in social situations (Daniel, Interview 4).

Increased Communication

For the purpose of this study, communication was defined as communicating verbally or nonverbally to get something across to someone else (American Psychological Association, 2023). Of the five participants, two parents reported that their child had an increase in communication after participation in farm AAT.

Sort of the same thing as if we're doing something, you're going somewhere he's able to communicate with us. I want to go over there, or I want to get up onto this thing. The signs he's learned and developed and really transferred into the real world in telling us kind of what he wants to do (Drake, Interview 5).

Parents also reported that their child was able to better communicate through the animals and because of the way they communicate with the animals they were able to better communicate with people. The animals allowed a child who is non-verbal, the ability to communicate with the animals and other people nonverbally. That incredible bond, between the child and animal, as theorized in the HBM, is what built that confidence in being able to communicate and thus build a sense of normalcy for the child.

Connection

Connection was defined in this study as a sense of closeness and belonging (American Psychological Association, 2023). Connection could be found with both the animals and their family. Many parents explained that the connection the child had with the animals helped them to communicate and interact socially with others. One parent (Chelsea, Interview 1) indicated: “More like personalized because he knows the animals at the ranch, he knows our own animals, it’s like a closer connection for him”. Interaction with farm animals acted as a framework for the child to better interact with people.

Along with connection to the animals, parents reported that participation in farm AAT programs helped them feel better connected to their child. Parents felt that farm AAT helped them better understand their child and understand what they liked and disliked. Parents also reported that they felt better connected to the whole family by participating in the family sessions. Daniel (Interview 4) said: “[The ranch] it doesn't help just him. It has helped me as well understand kind of what's going on with him better.” Not only is the connection between parent and child but also between siblings. Daniel (Interview 4) reflected on his son’s ability to engage in the farm AAT with his siblings to “where he's familiar enough with it and secure enough with it that he can share it with his sisters and be the big brother and the one who knows what's going on.” The agency sessions include the whole family and therefore, allows connections to be strengthened in the family dynamic.

Theme 2: Behavioral Regulation

For the purpose of this study, behavioral regulation was defined as understanding expectations, feeling relaxed, controlling unhealthy behaviors, and regulating emotions (American Psychological Association, 2023). Three subthemes emerged from this major theme including: (a) increased safety awareness, (b) nervous system regulation, and (c) increased self-confidence.

Increased Safety Awareness

Safety awareness was defined as the habit of thinking ahead about hazards in the environment (American Psychological Association, 2023). For two children, safety awareness was an important goal for the parents because of their child’s impulsivity and hyperactivity. The parents of the two children reported an increase in their child’s awareness of animal safety and how they learned to regulate behaviors associated with being around animals.

if there's a dog, he sort of like, gets down eye level and waits for the dogs to initiate interaction and you know, or he'll come up from behind and touch their butt or their back area, all the like, the safe zones (Drake, Interview 5).

Increased safety awareness had the most frequent reporting of transference of behaviors from therapy to the outside world. This increase in safety awareness was also seen to increase the sensitivity and compassion that the children built towards the animals.

Nervous System Regulation

Nervous system regulation was defined as the ability to resist unhealthy behaviors and to regulate emotions (American Psychological Association, 2023). Three parents indicated, their child experienced this regulation or calming effect during interactions with the animals on the ranch. The child's ability to calm themselves, relieve anxiety, and follow directions all happened when working with the farm animals. One parent told an amazing story about how her child was able to regulate his nervous system to better connect and make an animal feel safe.

Sean really, really wanted to give Ruby [mini mule at the ranch] an apple and he sat almost the whole session just sat still and quiet in the pen where Ruby is just trying to sort of, you know be approachable. Um. And he was just so like so determined, but also, so just able to regulate his nervous system in that situation to do what was needed to make it safe for Ruby (Chelsea, Interview 1).

All the children in this study had some sort of behavioral condition that required self-regulation (i.e., two had anxiety while the other two experienced hyperactivity). All parents indicated that farm AAT had some form of an effect their child's ability to regulate behaviors associated with the nervous system. Examples included increases in observed communication and calmness, which, as supported by the theory of the HBM, are associated with an increase in

oxytocin for a hyperactive child. Amy (Interview 2) supported this subtheme when she indicated: “I felt like our first 2 sessions, all he wanted to do was fit in the bunny cage and, like, have Raven [bunny at the ranch] sit in his lap, and I've never really seen him just sit there.” For another child, being on the horse allowed the parents to guide and direct him because he was calm.

Increased Self-Confidence

Self-confidence was defined as feeling comfortable, confident in self, and awareness of abilities (American Psychological Association, 2023). Increase in self-confidence was reported by four of the five parents as an outcome of farm AAT programs at the ranch. Self-confidence can create a sense of normalcy for some children, along with allowing them to feel more comfortable trying new things. Parents reported their children feeling confident and independent, in turn, made the child feel like they are in a “normal” environment and responded to things in a neurotypical way.

He was able to develop some sort of competency there. Like, he feels comfortable and knowledgeable doing tasks with the animals and interact with them, like, he knows how to, you know put the harness on to go to do what you wanted to do kind of stuff.

(Chelsea, Interview 1).

For many individuals with ASD there can be a lack in confidence or an increase in anxiety performing tasks. For the children in the study, they were able to regulate that anxiety and feel like they were in a safe environment to try new things with confidence. One parent reported a significant bond that was developed between siblings because their child felt confident enough to share the farm AAT experience with them. The knowledge and skills that the agency

teaches the children helped increase the child's self-confidence and helped siblings better connect.

Theme 3: Sense of Normalcy

A sense of normalcy was defined as a state of feeling normal, neurotypical or similar to everyone else (American Psychological Association, 2023). Four of the five parents reported a sense of normalcy as an outcome to farm AAT where an environment is created for the child to feel comfortable to be themselves and feel like they are in a safe place to learn and thrive. One parent supported this when she said reported on the effects of the farm AAT with her child:

I think like, that's when the normalcy comes out. Because when there's not the pressure. the stress or the anxiety of the regular world, that's when that brings out like the autistic qualities, I think, but when he's like, relaxed [here] and at home and comfortable. Then he's he acts like a normal child (Katey, Interview 3).

From the interviews, sense of normalcy and social behaviors and behavioral regulation appeared to have some overlap that significantly increased positive social behaviors and behavioral regulation of a child's sense of normalcy as perceived in their own environments. This may be the result of the agency allowing the children to learn, grow, and flourish at their own pace in a setting that is comfortable and safe for them. This sense of normalcy comes out most at the agency, but these "normal" behaviors have also been transferred after and outside of the farm AAT therapy into the real world and at home. Daniel (Interview 4) supported this when he said: "It's just been fantastic to watch him kind of respond the way a normal kid would respond in social situations."

Discussion

Key Findings

Increased social behaviors and behavioral regulation, as perceived by the parents in this study, emerged as two major themes in the current study for children with ASD who participated in farm AAT interventions. These findings are also supported by Barnhart, et al. (2020), who studied the outcomes of farm AAT for individuals with ASD using different animals. The authors suggested that farm animals provided a means to learn interaction and transfer those skills to people, along with a regulation in behaviors from the animals. In another study on AAT interventions for individuals with ASD, London et al. (2020) found that parents reported the interaction with a dog in therapy helped increase communication with other people (and the dog), behavioral regulation, and community participation.

A connection between themes also emerged from the analysis of the qualitative data. Many quotes from the parents and subthemes overlapped with one another. This connection between the subthemes is important to understanding the phenomenon of using farm animal AAT for individuals with ASD as perceived by the parents (see Figure 1). Increased social behaviors and behavioral regulation, along with family involvement, led to an increased “sense of normalcy” for the child as perceived by the parents, which emerged as the third major theme of the study. In a related study by Xue-Ling Tan and Simmonds (2018), the authors found that parents felt their child with ASD received a sense of normality from therapeutic horseback riding. They also noted that the children experienced an increase in self-regulating behaviors, along with social benefits that involved a trusting relationship with the horse, formation of relationships to people, and increased interaction (Xue-Ling Tan & Simmonds, 2018).

Larson (2006) suggested this sense of normalcy or normality in ASD can be explained by the sustainability of functioning routines. Lester et al. (2014) further discussed that while normality for ASD is based on the social model of disability because society unfortunately defines what is and isn't "normal," normalcy in ASD often has blurred boundaries. However, the article further discusses the dilemma between the social construct of normalcy and what is "normal" within ASD itself. Due to the continuum of symptoms and behaviors within the spectrum, the lines continue to be blurred between what is "normal" in ASD due to society's emerging but inconsistent definitions of what is "normal" and "abnormal" in general and within ASD. The current study's discussion of this theme and concept is not advocating that "normal" is what should be realistic or acceptable for an individual with a disability. The person first approach has never promoted that we even verbalize what should be normal for people with or without disabilities. However, what the parents themselves reported in their own words about their child's unique sense of normalcy, warrants discussion as to how they viewed the impact of RT and AAT outcomes for their children with ASD. The parents viewed the outcomes of farm AAT to bring a sense of normalcy to their child's own unique routines and behaviors as integrated into their own family dynamics and into their own communities.

The increased social behaviors and behavioral regulation which in turn, impacted this sense of normalcy, occurred at the ranch but also beyond the ranch in other aspects of the children's, parents', and families' lives. This pattern indicates RT using farm AAT can have an impact on facilitating intrinsic motivation and transference of behaviors with the various animals, parents, and siblings, within therapy but also beyond the RT sessions. London et al. (2020) supported this finding when they suggested that parents indicated that their child's

increased intrinsic motivation in AAT led to increase goal attainment and behaviors portrayed outside of therapy.

The current study supports research on the transference of behaviors from RT to the outside world. Specifically, parents reported seeing an increase in social behaviors in school and in the community and an increase in behavioral regulation at home and in the community. This transference, as reported by the parents, is further evidenced by what the children are learning during farm AAT and, then taking with them. Maujean and Kendall (2013) supported transference of learned social skills when they found that participants who took part in therapeutic horseback riding interventions had transference of skills and behaviors learned from therapy to school and the community. Those youth gained new skills and knowledge of how to create friendships and how to initiate interactions. In another study on EAT among adolescents with adverse childhood experiences, results showed that children had an increase in relational modeling and communication skills from the equine therapy that later led to a transference of skills and behaviors to other relational contexts (Craig, 2020). Transference was also exhibited in the current study because the children learned how to control challenging behaviors, increase confidence in what they did at the ranch and in turn felt more confident in themselves within and beyond the ranch in the home, school, and community.

In summary, all the themes and sub-themes being interconnected may be the result of the family being present during farm AAT sessions. Farm animals provided an opportunity for these families to bond and grow. Farm AAT supported the children to learn. Everyone who went to the ranch was given the opportunity to feel safe and loved. There are several reasons one might choose farm AAT as an intervention for their child. For these parents, the ranch was an option to expose their children to the outdoors and learn about new animals that they had never

experienced before. None of the families that participated in the sessions had any previous experience with AAT. Farm AAT was a unique experience and allowed individuals to not only learn therapeutic tools, but to also learn about new animals, about nature, and about farming.

In general, farm AAT can create opportunities for families in rural areas to receive AAT interventions, along with allowing families in cities the chance to experience nature and farm animals in a therapeutic way. Farm animal interventions can be implemented several ways in more than just ASD treatment. The agency used in this study also works with mental health and PTSD. Research has also shown providing older adults with farm AAT has positive outcomes as well (De Bruin et, al. 2009). While the current study focused on parents' perspectives of farm AAT as a RT intervention for their children with ASD, the broadening of programs, evidence, and literature on this and additional populations who may benefit from the RT at this ranch and other programs like it, are tangible and will continue.

Implications for Future Research

Research on the topic of farm AAT for individuals with ASD is severely lacking. The topic should be further explored to help better understand the possible therapeutic outcomes of farm AAT. First, increasing the range of ages to include adults can be beneficial in explaining the effects for all different age groups beyond just children. Additional research can also provide more evidence of the effectiveness of farm AAT in different populations like PTSD, mental health, and physical disabilities. Barnhart et al. (2020) did a similar study on farm AAT for ASD looking from the providers' perspective. They also found similar results and looked specifically at what animals target specific symptoms of ASD. They also recommended further research on farm AAT to better identify the effectiveness of treatment.

In addition, future research should work to develop evidence-based curriculums in an effort to provide standardized and consistent interventions to ensure that every individual receives similar treatment. A standardized protocol could create more room for quantitative and/or multiple method research to test more validity and reliability of instruments and curriculum within this intervention. This also would allow the recreational therapist to better assess what activities may lead to more positive behaviors and increase the potential to possibly achieve therapeutic goals and objectives.

Furthermore, research should be done on the difference between the use of horses in farm AAT and how that differs from more traditional EAT. Horses are considered farm animals; however, more research needs to be done on where to distinguish and determine using the horse in therapy and EAT. Horses have the potential to be extremely beneficial for use in farm AAT, especially groundwork like grooming, feeding, cleaning, and bonding. More research that compares and contrasts the use of horses as farm AAT to EAT is needed.

Another consideration when it comes to the farm animals is the difference between herding animals and non-herding animals. Herding animals like goats, cows, pigs, dogs, and horses all have social behaviors. Research on how those social behaviors in the animals transfer over to humans, specifically individuals with ASD, could provide an interesting perspective.

The size of the farm animal is also something that could be further researched. Parents in the current study reported their children having favored the smaller animals rather than the horses or vice versa. Exploring how that relationship to different species and sizes can reveal more about the treatment process.

Lastly, the current study determined that parents experienced confusion on whether their children were learning these changes in behavior from farm AAT or actually from their children

maturing due to some of their experiences occurring before and after the COVID pandemic.

Therefore, research taking into consideration developmental factors and controlling for any other outside factors (e.g., other therapies occurring at the same time), may provide more valid data for the use of farm AAT with children with ASD.

Implications for Practice

Recreational therapists use research to help guide their decisions to use certain interventions for specific populations. This study will hopefully provide recreational therapists a better understanding of the possible benefits for farm AAT on children with ASD and use or recommend it in practice with clients. This study also provides farm AAT the ability to cite research on reported outcomes to help educate those interested in participating. This study also provided parents and caregivers to see and become more knowledgeable about the positive benefits of participation in farm AAT for their child with ASD.

Family therapy is a form of therapeutic intervention involving the whole family dynamic. This study found that family sessions can be extremely beneficial for not just the child but the parents and siblings as well. Allowing involvement of all family members in sessions provides opportunities for the growth in connection and knowledge of experiences within the family's dynamic. The farm AAT experiences provide parents a better understanding of their children and more importantly how to better help them. With this said, a paradox was noted based on some of the parents' responses when asked if they knew if their child's goals were met or not. Some of the answers were vague in that they were not sure what all the goals were for their child. Different implications from this could be related to the COVID pandemic, memory, and passage of time when the goals were set, but these perceptions could also have an implication in facilitating families as part of the therapy and transference of outcomes even more than it was

noted from the study results. While not knowing the overall reasons for the parent confusion, this could still be an implication of how important it is to involve the parents more in the setting and service. Including parents in the communication and follow-up of goals is just as important to the APIED process, intervention outcomes, and protocol/curricula development.

Therefore, as a final practical implication, evidence-based curriculum is beneficial for future research. It can also be crucial for recreational therapists to use in practice. Having this framework for farm AAT interventions can lead to more research and better-quality interventions. Recreational therapists use evidence-based practices to be better informed about their choice in interventions or their recommendations. Hopefully, this study will pave the way for further insight into creating curricula using the APIED process for the use of farm AAT in RT.

Limitations

The number of participants for this study was limited to five parents instead of the original target sample of thirteen due to practical enrollment and agency constraints. While five is the lowest acceptable number of participants for phenomenological based qualitative research, (Creswell & Poth, 2018), the overall low number of individuals was due to several factors related to the sample criteria and difficulty scheduling an interview with one participant. While the original goal of thirteen was not reached there was still detailed information that came from the five completed interviews. Future research should look to gain more participation to better understand parental experiences through quantitative and qualitative inquiry.

The site used for this study did not include a consistent curriculum for every participant. Therefore, each session was unique to the individual and what they wanted to do on each particular day. More consistency may have been needed to allow for better knowledge of how

different activities with the animals can impact the achievement of therapeutic goals and objectives. Having a consistent curriculum with standardized procedures could also allow for more reliable and valid research to be conducted.

Conclusion

In conclusion, several positive outcomes, reported benefits, and future research recommendations were discussed in this paper. The first research question from this study was “What types of farm AAT interventions do individuals with ASD respond to?” This question was not completely answered from this study. Further research on farm AAT interventions and specific animals that help meet client outcomes would be valuable to the field of RT. Farm AAT has been reported to help with social behaviors with an increase in communication, interactions, and connection along with helping behavioral regulation with an increase in safety awareness, self-confidence, and nervous system regulation. Parents stressed the importance of being outdoors is to the family. Farm animals is an intervention that is done outside and from what is known about the biophilia hypothesis, nature can be an important factor in the treatment process. Lastly, farm AAT has been reported in this study to help increase a “sense of normalcy.” More research on the topic is needed to better understand the farm animals' effects on individuals. A curriculum should be created and tested to ensure that client goals are being met. Parents and recreational therapists can use this study to help support their decision to participate in farm AAT for their child or client.

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SECTION II: EXTENDED REVIEW OF LITERATURE

Autism Spectrum Disorder

Autism spectrum disorder (ASD) is characterized by “impairments in social communication and repetitive behaviors, highly restricted interests, and/or sensory behaviors beginning early in life” (Lord et al., 2020, p. 5). Diagnosis usually happens early in life around infancy but can be diagnosed up into adulthood (Mayo Clinic, 2018). Detection can be difficult to determine as there are no blood or medical tests that are used to diagnose an individual. Doctors use diagnostic criteria, found in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) to help determine if an individual has ASD (Centers for Disease Control [CDC], 2022). According to the DSM-5-Text Revision (TR) (American Psychiatric Association, 2022) the diagnostic features of ASD include the following: “persistent impairment in reciprocal social communication and social interaction, and restricted, repetitive patterns of behavior, interests, or activities. These symptoms are present from early childhood and limit or impair everyday functioning” (Autism Spectrum Disorder-Diagnostic Features section, para. #1). Diagnoses are more prominently made during childhood but diagnosing ASD in adults is often much more difficult. “In adults, some ASD symptoms can overlap with symptoms of other mental health disorders, such as anxiety disorder or attention-deficit/hyperactivity disorder (ADHD)” (National Institute of Mental Health [NIMH], 2022, p. 5).

Symptoms of ASD can include reduced eye contact, repetition of words or phrases, failure to respond to name, delayed speech or nonverbal communication, repetitive behaviors, problems with coordination, problems with sensory input, and lack of engagement in normal play (Mayo Clinic, 2018). Symptoms vary from person to person in severity, which makes ASD so unique and why it is considered to be a spectrum (Mayo Clinic, 2018). Many of these symptoms can be identified during developmental screening at 9, 18, and 30 months (CDC,

2022). The primary cause of ASD is unknown, but many believe genetics and environmental factors could play a role (CDC, 2022).

Early treatment for ASD using behavioral interventions is considered the gold standard for treating symptoms in ASD (Masi et al., 2017). Many treatments for individuals with ASD occur through schools, like sensory interventions (Lord et al., 2018). Sensory oriented interventions can help with sensory regulation. In addition, social skills training can help improve social communication, and cognitive behavioral therapy can help reduce symptoms related to anxiety (Lord et al., 2018). Some common therapies related to recreational therapy that can benefit individuals with ASD include therapeutic riding (Kemeny et al., 2021), art therapy, (Martin, 2011), cognitive behavioral therapy for recreational activities (Hesselmark et al., 2013), and animal-assisted therapy (Hallyburton & Hinton, 2017).

In the article by Lord et al. (2018), the authors discuss in detail the different treatment aspects of ASD. The authors noted how cognitive behavioral therapy is a theoretical framework for most therapies and helps to reduce symptoms of anxiety (Lord et al., 2018). Hesselmark et al. (2013) confirmed this in their study about cognitive behavioral intervention with recreation activities for individuals with ASD. Kemeny et al. (2021) discussed the benefits of therapeutic riding for adolescents with ASD. The study showed that individuals experienced a reduction in stressors after involvement in the intervention. Art therapy according to Martin (2011), is beneficial in teaching social skills, and self-expression to individuals with ASD. A study by D'Amico & Lalonde (2017) confirmed that art therapy teaches social skills in children with ASD. Hallyburton et al. (2017) found that participation in animal-assisted therapy for individuals with ASD helped improve social interaction, anxiety, and balance. In a single subject design

study by Dawson et al. (2022), participation in equine assisted therapy (EAT) found an improvement in social communication.

Animal-Assisted Therapy

According to the American Veterinary Medical Association (2023a), animal-assisted interventions (AAI) are defined as “a broad term that is now commonly used to describe the utilization of various species of animals in diverse manners beneficial to humans. Animal assisted therapy, education, and activities are examples of types of animal assisted intervention” (Definitions section, para. 1). London et al., (2020) define AAT as “characterized by a professional therapist incorporating an animal in an intervention to achieve predetermined goals” (p. 4494). Pet Partners (2023), the registration agency of therapy animals, defines AAT as “goal-oriented, planned, structured, and documented therapeutic intervention directed by health and human service providers as part of their profession” (para. 2).

In a study by Odendaal (2000), the author examined brain chemicals (endorphins, oxytocin, prolactin, phenylacetic acid, dopamine, and cortisol) before and after AAT in human participants and found that there was an increase in dopamine. Nordgren and Engstrom (2013) found that participation in AAT, using a therapy dog, for older adults with dementia helped improve quality of life over a short period of time. In a study by Silva and Osorio (2018), the authors discovered that using AAT with dogs helped increase quality of life, anxiety, and depressive symptoms in pediatric oncology patients in a hospital setting. Lastly, a study by Olsen et al. (2016), found using a dog in AAT helped improve balance and quality of life in older adults with dementia.

More specifically, AAT has been shown to help with symptoms of anxiety. In a study by Holman et al. (2020), the authors concluded that incarcerated women who participated in AAT

interventions experienced a decrease in anxiety. Tsai et al. (2015) conducted a study on the effects of AAT on stress responses in hospitalized children and found decreased levels of anxiety and medical fear after participation. Guiliani and Jacquemettaz (2017), suggest that participation in AAT with a dog decreased anxiety in adults with mild learning disabilities. Study results from Crossman et al. (2018) also demonstrated that interaction with dogs decreased anxiety and increased positive emotions in children.

Another benefit of AAT is improved social skills. Research suggests that AAT using household animals such as dogs and cats and other pets can increase a variety of social skills. In a meta-analysis conducted by Chitic et al. (2020), the authors found that the use of AAT improved communication and social skills. Another study focused on the use of guinea pigs in a classroom setting and revealed significant increases in social skills (O’Haire et al., 2015). Another study by Barak et al., (2001), explored how AAT, using dogs and cats, assisted elderly schizophrenia patients with social functioning. An overall improvement in social behaviors and happiness in older adults was found when AAT was used in their home, facility, and community (Richeson, 2003). A study on RT interventions that focused on older adults with dementia using AAT reported a decrease in agitated behaviors and an increase in social interactions (Richeson, 2003). Rossetti and King (2010) reviewed several studies concerning AAT and psychiatric conditions and found increases in socialization and social communication. Additionally, this review suggested that AAT provides an increase in self-efficacy and social skills (2010).

Farm Animal-Assisted Therapy

Farm AAT can include alpacas, cats, chickens, cows, dogs, donkeys, ducks, geese, goats, guinea pigs, horses, pigs, rabbits, sheep, and turkeys (Barnhart et al., 2020). Many animals included in farm AAT can also be included in regular AAT such as cats, dogs, guinea pigs, and

rabbits. Most importantly, farm animals used for AAT is very distinct than using farm animals to just pet or ride (i.e., as in a petting zoo). Some articles suggest there are benefits to using farm animals in AAT. However, there is a lack of research available on the benefits of using farm animals in AAT.

Berget et al. (2008) investigated how utilizing farm animals could benefit individuals with psychiatric conditions; after 6 months of AAT with farm animals, participants demonstrated improved quality of life and self-efficacy. Flynn et al. (2020) explored AAT for youth using therapy farms which are farms that use AAT as interventions. They found increased engagement, improved sense of safety, and increased self-regulation. Scholl et al. (2008) found that the therapeutic benefits of goats with individuals with disabilities included increased overall joy, attentiveness, and active participation. There is a paucity of research on the effects of using farm animals in AAT. Further research into the benefits of using farm animals in AAT is needed to determine if such interventions have similar effects to household animals/pets in AAT.

Horses may be used in farm AAT but there are limitations to what may be done before the process branches into equine assisted therapy (EAT). EAT, according to Rigby et al. (2016), is defined as “A broad term that includes any activities or therapies that incorporate equines. The term includes any specific riding center activity (e.g., therapeutic horseback riding) and any rehabilitative treatment (e.g., hippotherapy)” (p. 11). A lack of research exists concerning the separation of regular AAT with horses and EAT (Fry, 2013).

Autism Spectrum Disorder and AAT

Research exists that suggests utilizing AAT for individuals with ASD can improve symptoms (Becker et al., 2017). A systematic review of 10 articles focused on using dogs in AAT for individuals with ASD, found positive outcomes in social interaction, anxiety levels, and

reduction in stress levels (Hallyburton & Hinton, 2017). Another systematic review by Hardy and Weston (2020) reviewed articles related to canine-assisted therapy and individuals with ASD. They found that many of the articles reported improvements in social behavior and anxiety.

Research has shown that involvement in AAT can improve social skills deficits in individuals with ASD. Becker et al. (2017) found that the use of a 12-week AAT social skills training curriculum involving dogs for individuals with ASD improved social skills, and decreased feelings of depression. According to a study by Fung and Leung (2014), use of AAT with a dog for children with ASD saw an increase in verbal social behavior when compared to a group that used a doll instead of a real dog. London et al. (2020) conducted a study using therapy dogs in AAT with children with ASD and found that the presence of the dog increased social communication, behavioral regulation, and community participation.

Research suggests that animals can help decrease symptoms of anxiety (Wright et al., 2015; Wijker et al., 2019b). A study by Wright et al. (2015) found that having a pet dog can decrease anxiety and social anxiety in children with ASD. A study by Wijker et al. (2019b) found that using a dog in AAT decreased anxiety and stress in adults with ASD compared to the control group. Another study by Wijker et al. (2019a), demonstrated that using dogs in AAT decreased stress, anxiety, and depression.

Farm Animal Assisted Therapy and ASD

Farm animals used in AAT and can include animals such as goats, miniature horses, horses, and donkeys (Barnhart et al., 2020). A study focusing on which species of farm animals assisted in targeting specific autistic symptoms (deficits in social skills, emotional regulation, and sensory regulation) for individuals with ASD, found that several animals (goats, horses, dogs, etc.) improve social skills, empathy, communication, and tactile stimulation (Barnhart et

al., 2020). This study showed there are benefits of using farm animals but there needs to be further research with an evidence-based approach for individuals. An overall lack of research exists related to AAT and adults with ASD. Furthermore, there is limited research on the effects of farm AAT and its benefits for individuals with ASD altogether. To address this gap, the current study explored how using farm animals in AAT impacted children with ASD through the perspective of the parents.

Parent Perspectives of AAT and ASD

Research exploring the parent and caregiver perspective will provide necessary information to improve understanding of the unseen behavioral changes outside of interventions. London et al. (2020) investigated the parents' perspective of changes in communication when their child with ASD participated in an AAT intervention with dogs. They found that per the perspectives of the parents there was improved communication with others, increased community participation, and behavioral regulation. A qualitative study conducted by Ang and MacDougall (2022) focused on three therapists and four parents' perspectives on AAT for individuals with ASD. The authors used interviews and reported that one of the major themes was that AAT benefits individuals with ASD physically, emotionally, and in sensory stimulation. Lastly, a study examining the parent's perspective of companion animals (pets) for their child with ASD found a companion animal contributed to social and behavioral support, as well as an increase in social activities being chosen if the companion animal was involved (Bystrom & Persson, 2015).

Theoretical Framework: The Human-Animal Bond

According to the American Veterinary Medical Association (AVMA, 2023b) the human-animal bond (HAB) is defined as “a mutually beneficial and dynamic relationship between

people and animals that is influenced by behaviors essential to the health and wellbeing of both” (para. 1). HAB has been a documented phenomenon since humans began domesticating animals. Animals acting as social support can be explained within the HAB. Furthermore, attachment theory and the biophilia hypothesis are used to help explain the HAB (Fine, 2019).

Research has demonstrated that the HAB can benefit social support networks, social behaviors, and stress. A study by Hill et al. (2020) found that when comparing pet owners to non-pet owners, the pet owners experienced more social support and stronger resiliency than non-pet owners. The study found it difficult to accurately measure the HAB and human mental health.

Attachment theory was developed by Bowlby and provides insight into adjustment across the human's lifespan. The theory suggests that social interactions with others, including animals, assist in forming an unconscious and conscious understanding of oneself (Mano et al., 2011). Jaspersen (2010) demonstrated that AAT interventions grounded in attachment theory helped to better provide AAT programs to female inmates with mental illness. Mano et al. (2011) found that applying the attachment theory as a model within AAT programs can be beneficial for therapy.

Biophilia, as a broader theory, asserts that to the degree that we come to understand other living organisms, the more we will place value on and come to understand them- *and* ourselves (Wilson, 1984). The biophilia hypothesis suggests that humans have an innate desire to connect with other living organisms and that human health can be improved by viewing and being around nature and animals (Wilson, 1984). Antonioli (2010) showed that using the biophilia hypothesis in research on animal facilitated therapy on individuals with depression helped provide efficacy of biophilia as evidenced from decreased scores of depressions and anxiety. Lastly, Harper

(2015) found that using biophilia as a foundation for AAT in educational settings assisting children with social, emotional, and educational difficulties.

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SECTION III: EXTENDED RESULTS

Theme 1: Social Behaviors

Social behaviors are defined in this study by connecting with other people and creating social relationships (American Psychological Association, 2023). This theme contained three subthemes 1) increased social interaction, and 2) increased communication, 3) connection. Many parents reported that their child had some increase in social behavior as it related to their child's participation in the farm AAT programs.

Increased Social Interaction

Social interaction was defined in this study as creating social relationships and maintaining them (American Psychological Association, 2023). Of the five parent participants, three reported some kind of increase in social relationships and interactions after their child's participation in programs at the ranch. These same three parents also reported that their child struggled with social interactions and developing relationships prior to participation in farm AAT. "It is nice to see him building other relationships with adults who are able to understand him and he's able to feel comfortable with" (Amy, Interview 2). One parent reported that the difference in their child's social interaction had completely changed after participating in programs at the ranch. A common occurrence happened where the parent reported that interaction with the animals helped their child better interact with people.

Before participating, at the ranch he interacted pretty minimally. When he was diagnosed, he was almost completely nonverbal and pretty much all his interaction was with television, and if there was anybody in the room, he wouldn't acknowledge them. It's really just been night and day he's more interactive with not only the family members, but with, staff and everyone at the ranch with, kids at school and it's just been fantastic to

watch him kind of respond the way a normal kid would respond in social situations (Daniel, Interview 4).

Increased Communication

Parents also reported that their child was able to better communicate through the animals. Because of the way they communicated with the animals, they were better able to communicate with people. The animals allowed a child, who was non-verbal, the ability to communicate with the animals and other people nonverbally. That incredible bond between the child and animal is what builds that confidence in being able to communicate. That in turn builds a sense of normalcy for the child.

He just gets low and is like, hey, I'm going to be at your level. And we're gonna communicate, non-verbally together and. And it's really sweet to watch the bond; I think that it has made a big impact on his life, whether he's communicating with animals or people, or with himself. It's because he's picked up on the mannerisms of the different types of animals (Katey, Interview 3).

That incredible bond between the child and animal is what builds that confidence in being able to communicate. That in turn builds a sense of normalcy for the child.

Connection

Connection was defined in this study as a sense of closeness and belonging (American Psychological Association, 2023). Connection can be found with both the animals and their family. Many parents explained that the connection the child had with the animals helped them to communicate and interact socially with others. “More like personalized because he knows the animals at the ranch, he knows our own animals, it’s like a closer connection for him” (Chealsea,

Interview 1). Interaction with farm animals acted as a framework for the child to better interact with people.

The connection with the animals has been really beneficial for David. It helps, like I said, it helps give him something external to focus on instead of being internally focused. And you can, you can tell it shows throughout his interactions with people as he's gotten more used to the animals, he's gotten better at interacting with people (Daniel, Interview 4).

Along with connection to the animals, parents reported that participation in farm AAT programs helped them feel better connected to their child. Parents felt that farm AAT helped them better understand their child and understand what they like and dislike. Parents also reported that they felt better connected to the whole family by participating in the family sessions. “[the ranch] it doesn't help just him it has helped me as well understand kind of what's going on with him better.” (Daniel, Interview 4). Not only is the connection between parent and child but also between siblings. “Where he's familiar enough with it and secure enough with it that he can share it with his sisters and be the big brother and the one who knows what's going on” (Daniel, Interview 4). The way that the agency is set up where sessions include the whole family also allows connections to be strengthened in that family dynamic.

One of the really good things that I like about the ranch, is that they incorporate the whole family, because my other child is used to Oscar getting a lot of attention and special treatment and because of this, it sort of triggers something in him where he feels like hey; maybe if I act out, I'll get that attention or maybe if I talk like a baby, I'll get that attention, so at the ranch, he's provided with that special love and care on his own making him feel special. Because, you know, it's hard having a brother who has needs extra help growing up, you don't quite understand why, or what. But as long as you feel loved too, it

doesn't matter why or what, At the ranch they give George [Oscar's older brother] that love just as equally as they give to Oscar. So, it feels normal. (Katey, Interview 3)

Theme 2: Behavioral Regulation

For the purpose of this study behavioral regulation was defined as understanding expectations, feeling relaxed, controlling unhealthy behaviors and regulating emotions (American Psychological Association, 2023). Three subthemes emerged from the transcripts. 1) increased safety awareness, 2) nervous system regulation, and 3) increased self-confidence.

Increased Safety Awareness

The habit of thinking ahead about hazards in the environment is how safety awareness was defined (American Psychological Association, 2023). For two children safety awareness was an important goal for the parents because of their child's impulsivity and hyperactivity. The parents of the two children reported an increase in their child's awareness of animal safety and have learned to regulate behavior associated with being around animals.

if there's a dog, he sort of like, gets down eye level and waits for the dogs to initiate interaction and you know, or he'll come up from behind and touch their butt or their back area, all the like, the safe zones (Drake, Interview 5).

Increase safety awareness had the most reports of transference of behaviors from therapy to the outside world. This increase in safety awareness has also increased the sensitivity and compassion that the children build towards the animals.

Nervous System Regulation

Nervous system regulation was defined as the ability to resist unhealthy behaviors and regulate emotions (American Psychological Association, 2023). For three parents this effect happened to their child during interactions with the animals on the ranch. The child's ability to

calm themselves, relieve anxiety, and follow directions all happened when working with the animals. One parent told an amazing story about how her child was able to regulate his nervous system to better connect and make an animal feel safe.

Sean really, really wanted to give Ruby [mini mule previously at the ranch] an Apple and he sat almost the whole session just sat still and quiet in the pen where Ruby is just trying to sort of, you know be approachable. Um. And he was just so like so determined, but also, so just able to regulate his nervous system in that situation to do what was needed to make it safe for Ruby (Chelsea, Interview 1).

Two of these children have anxiety while the other two experience hyperactivity. For all the children included in the study the parents reported that farm AAT had some form of an effect on the nervous system. Whether it was an increase in oxytocin which increases communication or an increased calmness in a hyperactive child. “I felt like our first two sessions, all he wanted to do was fit in the bunny cage and, like, have raven [bunny at the ranch] sit in his lap, and I've never really seen him just sit there” (Amy, Interview 2). For another child, being on the horse allows the parents to guide and direct him because he is calm.

Just get him up onto a horse and see how calm it makes him. He really loves being up there and pointing at different things and exploring and enjoying the ride; versus when he's not on a horse he is kind of just running wherever he goes in any direction. The horse helps give him more direction (Drake, Interview 5).

Increased Self-Confidence

Self-confidence was defined as feeling comfortable, confident in self, and awareness of abilities (American Psychological Association, 2023). Increase in self-confidence was reported by four of the five parents as an outcome of farm AAT programs at the ranch. Self-confidence

can create a sense of normalcy for some children, along with allowing them to feel more comfortable trying new things. Parents reported their children feeling confident and independent and in turn made the child feel like they are in a normal environment and responded to things in a neurotypical way.

He was able to develop some sort of competency there. Like, he feels comfortable and knowledgeable doing tasks with the animals and interact with them, like, he knows how to, you know put the harness on to go to do what you wanted to do kind of stuff.

(Chelsea, Interview 1).

For many individuals with ASD there can be a lack in confidence or an increase in anxiety performing tasks. For the children in the study, they were able to regulate that anxiety and feel like they were in a safe environment to try new things. The knowledge and skills that the agency teaches the children has helped increase the child's self-confidence and has helped siblings better connect with each other from that increased confidence. One parent reported a significant bond that was developed between siblings because their child felt confident enough to share the farm AAT experience with his siblings.

Theme 3: Sense of Normalcy

A sense of normalcy was defined as a state of feeling normal, neurotypical or similar to everyone else (American Psychological Association, 2023). Four of the five parents reported a sense of normalcy as an outcome to farm AAT. The ranch has allowed an environment for the child to feel comfortable to be themselves and feel like they are in a safe place to learn and thrive.

I think like, that's when the normalcy comes out. Because when there's not the pressure the stress or the anxiety of the regular world, that's when that brings out like the autistic

qualities, I think, but when he's like, relaxed and at home and comfortable. Then he's he acts like a normal child (Katey, Interview 3).

From the interviews, much overlap occurred between sense of normalcy and social behaviors and behavioral regulation. This overlap shows the significance that increased positive social behaviors and behavioral regulation have on the parents and child's sense of normalcy. The agency allows the child to learn, grow and flourish at their own pace in a setting that is comfortable and safe for them. This sense of normalcy comes out most at the agency, but these "normal" behaviors have also been transferred outside of therapy into the real world and at home. "It's just been fantastic to watch him kind of respond the way a normal kid would respond in social situations" (Daniel, Interview 4).

Appendix A

IRB Approval Letter/ IACUC Approval Letter

11/2/22, 8:59 AM

<https://epirate.ecu.edu/App/sd/Doc/0/C1AJB38C948UQ6K1LAIPOLIG00/fromString.html>



EAST CAROLINA UNIVERSITY
University & Medical Center Institutional Review Board
4N-64 Brody Medical Sciences Building · Mail Stop 682
600 Moye Boulevard · Greenville, NC 27834
Office 252-744-2914 · Fax 252-744-2284 ·
rede.ecu.edu/umcirb/

Notification of Initial Approval: Expedited

From: Social/Behavioral IRB
To: [Mackenzie Dolecheck](#)
CC: [Cari Autry](#)
Date: 7/25/2022
Re: [UMCIRB 22-000945](#)
Farm Animal-assisted Therapy for Individuals with ASD

I am pleased to inform you that your Expedited Application was approved. Approval of the study and any consent form(s) occurred on 7/25/2022. The research study is eligible for review under expedited category # 6,7. The Chairperson (or designee) deemed this study no more than minimal risk.

As the Principal Investigator you are explicitly responsible for the conduct of all aspects of this study and must adhere to all reporting requirements for the study. Your responsibilities include but are not limited to:

1. Ensuring changes to the approved research (including the UMCIRB approved consent document) are initiated only after UMCIRB review and approval except when necessary to eliminate an apparent immediate hazard to the participant. All changes (e.g. a change in procedure, number of participants, personnel, study locations, new recruitment materials, study instruments, etc.) must be prospectively reviewed and approved by the UMCIRB before they are implemented;
2. Where informed consent has not been waived by the UMCIRB, ensuring that only valid versions of the UMCIRB approved, date-stamped informed consent document(s) are used for obtaining informed consent (consent documents with the IRB approval date stamp are found under the Documents tab in the ePIRATE study workspace);
3. Promptly reporting to the UMCIRB all unanticipated problems involving risks to participants and others;
4. Submission of a final report application to the UMCIRB prior to the expected end date provided in the IRB application in order to document human research activity has ended and to provide a timepoint in which to base document retention; and
5. Submission of an amendment to extend the expected end date if the study is not expected to be completed by that date. The amendment should be submitted 30 days prior to the UMCIRB approved expected end date or as soon as the Investigator is aware that the study will not be completed by that date.

The approval includes the following items:

Name	Description
Informed Consent	Consent Forms
Interview Guide	Interview/Focus Group Scripts/Questions
IRB Protocol	Study Protocol or Grant Application
Letter of Support	Additional Items
Recruitment Flyer	Recruitment Documents/Scripts
SGR Animal Safety	Additional Items
Thesis Proposal	Study Protocol or Grant Application
Verbal Recruitment Script	Recruitment Documents/Scripts

For research studies where a waiver or alteration of HIPAA Authorization has been approved, the IRB states that each of the waiver criteria in 45 CFR 164.512(i)(1)(i)(A) and (2)(i) through (v) have been met. Additionally, the elements of PHI to be collected as described in items 1 and 2 of the Application for Waiver of Authorization have been determined to be the minimal necessary for the specified research.

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

IRB00000705 East Carolina U IRB #1 (Biomedical) IORG0000418
IRB00003781 East Carolina U IRB #2 (Behavioral/SS) IORG0000418



July 11, 2022

Cari Autry, Ph.D.
Department of Recreation Science, ECU

Dear Dr. Autry:

Your Animal Use Protocol entitled "Farm Animal Assisted Therapy for Individuals with Autism Spectrum Disorder: Caregiver's Perspective" (AUP#P111) was reviewed by this institution's Animal Care and Use Committee on 07/11/2022. The following action was taken by the Committee:

"Approved as submitted"

****Please contact Aaron Hinkle prior to any hazard use****

A copy of the protocols is enclosed for your laboratory files. Please be reminded that all animal procedures must be conducted as described in the approved Animal Use Protocol. Modifications of these procedures cannot be performed without prior approval of the ACUC. The Animal Welfare Act and Public Health Service Guidelines require the ACUC to suspend activities not in accordance with approved procedures and report such activities to the responsible University Official (Vice Chancellor for Health Sciences or Vice Chancellor for Academic Affairs) and appropriate federal Agencies. **Please ensure that all personnel associated with this protocol have access to this approved copy of the AUP/Amendment and are familiar with its contents.**

Sincerely yours,

Jamie DeWitt, Ph.D.
Vice-Chair Animal Care and Use Committee

JD/GD

enclosure

Appendix B

Letter of Support from Agency

Support from [REDACTED]

4/26/2022

To Whom It May Concern,

I am pleased to write this letter in support of the proposed research by Mackenzie Dolecheck on The Benefits of Farm Animal Assisted Therapy for Individuals with Autism Spectrum Disorder: From the Parents Perspective, and the participation of Smiling Goat Ranch as a study site for this project. [REDACTED] is a nonprofit organization located in [REDACTED], providing therapeutic services for individuals with neuropsychiatric conditions. [REDACTED] offers individual, family, and group sessions using horses, small social animals, and movement-based activities to achieve nervous system regulation, communication, and individual goals. All programs at [REDACTED] are based in the Horse Boy Method of equine-assisted therapy and learning and incorporate recreation therapy principles and practices through a full-time CTRS. The Horse Boy Method and [REDACTED] recognize the importance of evidence-based practice, including utilizing interventions that are supported by research as well as implementing our own program evaluation processes. However, the majority of research to-date has focused on the benefits of horses and dogs. The proposed research on the benefits of farm animal assisted therapy will help us ensure program efficacy and inform best practice within farm animal assisted therapy.

[REDACTED] agrees to internally identify parents/guardians who meet study criteria and provide information regarding the purpose of the research, potential risks associated with involvement, and consent to participate. With parent/guardian written consent, [REDACTED] will release relevant documents and data to Mackenzie Dolecheck and associated investigators for the purpose of this research. Identifying information will be removed from all documents in order to protect client confidentiality. [REDACTED] will administer additional assessments or surveys requested by investigators as feasible. [REDACTED] will also arrange in-person, video, and/or phone interviews with participating parents/guardians. [REDACTED] will rely on the East Carolina University IRB for the review of all research activities.

We look forward to this collaboration. Please contact me with any questions about [REDACTED] or our involvement in the aforementioned research project.

Sincerely,

[REDACTED]

Appendix C

Definitions

Animal Assisted Intervention: According to the American Veterinary Medical Association, animal-assisted interventions (AAI) are defined as “a broad term that is now commonly used to describe the utilization of various species of animals in diverse manners beneficial to humans. Animal assisted therapy (AAT), education, and activities are examples of types of animal assisted intervention.”

Animal Assisted Therapy: London et al., (2020) define AAT as “characterized by a professional therapist incorporating an animal in an intervention to achieve predetermined goals.”

Attachment Theory: The theory suggests that social interactions with others, including animals, assist in forming an unconscious and conscious understanding of oneself (Mano et al., 2011).

Autism: Autism spectrum disorder (ASD) is characterized by “impairments in social communication and repetitive behaviors, highly restricted interests and/or sensory behaviors beginning early in life” (Lord et al., 2020).

Biophilia: The biophilia hypothesis suggests that humans have an innate desire to connect with other living organisms and that human health can be improved by viewing and being around nature and animals (Wilson, 1984).

Human-Animal Bond: According to the American Veterinary Medical Association the human-animal bond (HAB) is defined as “a mutually beneficial and dynamic relationship between people and animals that is influenced by behaviors essential to the health and wellbeing of both” (AVMA, 2023b, para. 1).

Primary Caregiver: is someone who has main responsibility for an individual who is no longer able to care for themselves, usually providing around the clock care

Recreational Therapy: the systematic process that utilizes recreation and leisure activities in interventions to address the needs of the client (NCTRC, 2022).

Secondary Caregiver: is an individual who accompanies the primary caregiver while still having responsibility for the person their responsibility is less than the primary caregivers.

Appendix D

Farm Animal-Assisted Therapy for Individuals with Autism Spectrum Disorder

Interview Guide

Introduction: Hello my name is Mackenzie Dolecheck and I will be interviewing you today about your child and family's experiences at [REDACTED]. Thank you for your participation and I appreciate you taking the time to talk with me. I want to begin by stating that this interview is recorded. We will protect your information and make every effort to keep your personal information confidential, but we cannot guarantee absolute confidentiality. No information which could identify you will be shared in publications about this study. Please provide me with an alternate name to use for you to ensure such confidentiality.

Pseudonym: _____

Date: _____

Thank you. During this interview, I will start by asking some questions to get to know more about your dependent. For the purpose of this interview when we refer to the participant at [REDACTED] as your "child." The second part of the interview will consist of questions to gain understanding and hear your opinions about how working with animals and receiving animal therapy at the [REDACTED] has influenced your child.

This interview will be no more than 60 minutes depending on how long we talk. Before we begin, do you have any questions for me?

Recreation Activities

1. What recreation activities (indoors and outdoors) does your child like to do?
 - a. At home
 - b. At school
 - c. In the community

2. Who does your child typically engage with during those recreation activities?
 - a. At home
 - b. At school
 - c. In the community

Autism Spectrum Disorder

1. What symptoms of autism do you feel your child is most affected by?

Everyday Behaviors

1. How did your child interact with people in their life before participating at [REDACTED]?
 - d. With you
 - e. Other family members
 - f. Others at school and/or in the community

2. What changes in your child's behaviors have you noticed since participating in recreational therapy at [REDACTED]?
Prompts: approaching others, communication (verbal and/or non-verbal), interactions, etc.

Relationship to Animals

1. What was your child's relationship to animals prior to coming to sessions at the [REDACTED] [REDACTED]?
2. How did that change over the course of these sessions these past 13 weeks?
1. How do you think the Horse Boy Method that is used at [REDACTED] helps your child?
2. What types of activities and with what the animals did your child respond to?
 - a. Most positively?
 - b. With more difficulty?
 - c. Together as a family?
3. Tell me about your child's relationship to animals now?
 - a. At the [REDACTED]
 - b. At home
 - c. In the community

[REDACTED] and Recreational Therapy

1. What goals did you have for your child before coming to therapy at the [REDACTED]?
2. What led you to coming to [REDACTED] and using farm animal therapy for your child? Prompt: referred by doctor, parent, word of mouth, website, etc.
3. Had your child or family been exposed to animal assisted therapy or other types of animal activities before coming to [REDACTED]?
4. Are you aware of the goals the recreational therapist set for your child?
 - a. How has your child met those goals set by the recreational therapist?
 - b. What did she/the RT do to help meet those goals?
 - c. How did the animals influence those goals being met?
5. What areas do you still wish to see change in your child?
4. How do you think the farm animal therapy at the [REDACTED] will help?
 - a. With your child's future?
 - b. In other areas of their life?
 - c. With you as a parent/guardian?
 - d. With you all as a family?

Thank you, these are all the questions I have for you today. Do you have any final thoughts you would like to share with me?

Closing Instructions: Thank you so much for your time. We will protect your information and make every effort to keep your personal information confidential. If you have any questions for me, please feel free to ask. Could I contact you if I needed to make clarifications or to ask any additional questions?

Response: ____ If yes, best way to contact: _____