THESIS

# OCCUPATIONAL THERAPY IN AN EQUINE ENVIRONMENT:

# A TRANSACTIONAL DESCRIPTION OF PRACTICE

Submitted by

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In partial fulfillment of the requirements

For the Degree of Master of Science

Colorado State University

Fort Collins, Colorado

Summer 2018

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ABSTRACT

OCCUPATIONAL THERAPY IN THE EQUINE ENVIRONMENT:
A TRANSACTIONAL DESCRIPTION OF PRACTICE

Objective: The purpose of this thesis was to vividly illustrate and comprehensively depict occupational therapy in an equine-environment ($OT^{ee}$) –a novel intervention for children with autism spectrum disorder (ASD)– using a transactional perspective of inquiry.

Method: This thesis is comprised of three chapters: an introduction and statement of the problem, a manuscript written for submission to the Journal of Occupational Science and a final chapter reflecting on the thesis process. The study at the center of the manuscript sought to create an account of $OT^{ee}$ using methods informed by a transactional perspective. Guided by this theoretical framework, a hermeneutic narrative analysis was chosen to systematically move through almost 40 hours of video data and accompanying field notes. I conducted the narrative analysis in three steps, following a hermeneutic arc: naïve interpretation, structural analysis and comprehensive understanding.

Results: Through the process of narrative analysis, I produced a holistic description of $OT^{ee}$ that captured a large portion of the entire occupational experience. The results show that $OT^{ee}$ takes place across six architectural spaces. There were six categories of actors that played important roles during the intervention. Seventeen distinct occupational opportunities were identified and were organized in a consistent pattern across sessions. Individual differences in the construction of the intervention were found across the children with ASD, typically relevant to the occupational goals or challenges identified by the therapists before the intervention began. A narrative description of $OT^{ee}$ was then created, pulling all of the individual components together

and relating parts to a great whole. Three segments were identified and used to structure the storytelling, beginning with pre-mounted time, to mounted time and finally to post-mounted time. The roles of the actors are explored during each segment, as well as how they related to the architectural spaces and the other actors over time.

Conclusion: Hermeneutic narrative analysis is an effective method for producing a comprehensive description of OT$^{ee}$. As of yet, no study of any equine-assisted activity or therapy has produced a description of practice with as much detail while portraying the entire context as in this study. I argue that this work is consistent with the current literature attempting to adapt a transactional perspective to the study of occupation. Further, the methods I chose are novel and advance our understanding of occupation by illustrating occupational therapy in a way never before available.

# ACKNOWLEDGEMENTS

This thesis owes a great deal to the Carl and Caroline Swanson Foundation, whose support and dedicated interest in furthering our understanding of equine-assisted activities and therapies was necessary for the success of this and many other projects. Heart and Horses and all of the participants featured in this thesis have similarly been essential throughout the research process. Thank you for the daily, life-changing work you all are able to accomplish together.

Wendy Wood has the grace of a loving mother with unending wit. She is probably the reason that I am finishing this project in the shape that I am. Thank you for everything. I am touched by the genuine interest you have in me as a student, as a researcher and as a whole person.

Thank you to my committee members, Susan Hepburn and Mackenzi Pergolotti. Your expertise in my area of study helped me progress enormously. Caiti Peters, thank you for answering all of my questions. Your strength as a thoughtful researcher and as a future mentor to others is obvious. I am lucky that you were continuously able and willing to provide feedback and support my progress, step by step.

One more thank you to the friends I have found here in Fort Collin, CO and in my occupational therapy cohort. You all are gems. I cannot imagine being surrounded by a better bunch of people.

# DEDICATION

*This thesis is dedicated to my friend, Ian Drummond. He is a cowboy, outdoorsman, and perhaps, most importantly, a rock star.*

*Lots of really good times with you too.*

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# CHAPTER ONE: INTRODUCTION

The purpose of this thesis was to vividly illustrate and comprehensively depict occupational therapy in an equine-environment ($OT^{ee}$) –a novel intervention for children with autism spectrum disorder (ASD)– using a transactional perspective of inquiry. I aim to produce a description of practice that portrays the constituent parts as well as the dynamic transactions that make up $OT^{ee}$. The thesis itself is presented in a non-traditional format comprised of three chapters. In this chapter, I first describe ASD, including its potential impact on occupational functioning as well as an overview of current treatment approaches with a focus on interventions that involve horses. I then outline the importance of deeply understanding complex therapeutic interventions and suggest a method of doing so effectively as well as frame this discussion within occupational science and occupational therapy. Chapter two is written and formatted as a manuscript to be submitted to the Journal of Occupational Science and therefore reviews some of the material included in this introduction. Chapter three is a reflection of the thesis writing process as well as my thoughts on how the past two years will inform my future as an occupational therapist and scholar.

## Statement of the Problem

Autism Spectrum Disorder (ASD) is a developmental disorder that has seen a continued rise in prevalence and social prominence since its DSM-III recognition in 1980 (American Psychiatric Association [APA], 2013; Centers for Disease Control and Prevention [CDC], 2016). The Diagnostic and Statistical Manual-5th Edition criteria for ASD specifies two primary symptomatic criteria to describe and diagnose ASD: 1) persistent deficits to social communication and interaction across multiple contexts, and 2) restricted, repetitive patterns of

behavior, interests, or activities that cause significant clinical impairments to social, occupational, or other areas of current functioning (APA, 2013). An estimated one in 59 children in the United States had ASD as of 2014, a 20% increase from the 2012 estimate, suggesting that this incidence rate will continue to rise in the future (CDC, 2016). As a spectrum disorder, the experience of ASD symptomology is distinctively diverse and variable, but characteristically involves deficits to communication, social interaction, as well as restricted and repetitive behaviors (APA, 2013). These behaviors and patterns of engagement may describe the nature of how an individual with ASD might interact, adapt, or respond to their environment. The disorder occurs across all people and geographic locations, emphasizing the enduring need for continued societal and scientific interest in ASD.

Children with ASD and their families face significant care needs. Many families have reported difficulty accessing necessary services due to a lack of insurance coverage and the availability of quality care (Vohra, Madhavan, Sambamoorthi, & St Peter, 2014). Between accommodations, medical and non-medical services, education costs and productivity loss, families also experience financial burden when caring for an individual with ASD (Buescher, Cidav, Knapp, & Mandell, 2014). Children with ASD can face difficulties in their ability to participate across all areas of life, whether it be in school, home, or community settings. There is currently no known cure or intervention for ASD that addresses all ASD related barriers to participation in everyday activities. As such, the development of effective interventions is a priority for people with ASD and those who care for them. Although current pharmacological approaches target control of aberrant behaviors and emotional regulation with some success, they fail to meet the complex challenges related to ASD that inhibit full participation in valued life roles (LeClerc, 2015). To address the persisting needs of those with ASD that are not fully met

by pharmacological treatments, non-pharmacological approaches have gained popularity, one group of which involves equine-assisted activities and therapies (EAAT). Specifically, equine-assisted therapies (EAT) are interventions delivered by credentialed health professionals, such as occupational therapists, and include horses in some fashion during the scope of treatment.

A majority of children with ASD have accessed occupational therapy in some form (as many as 85%) to improve the child's ability to participate in and perform important life activities such as self-care, play, social engagement, learning, and many others (Goin-Kochel, Myers, & Mackintosh, 2007). Occupational therapy embraces the healing potential that occupation contains and seeks to wield its influence to foster human well-being. Yerxa et al. (1990) clearly defined occupation as not simply things humans wish to do, want to do, or necessarily like doing. Occupation is a need, a biological drive to actively participate in life through actions, achievements, expressions, explorations, and creations. Yerxa's (1990) definition places occupation as a quintessence to being human when she stated, "individuals are most true to their humanity when engaged in occupation" (p. 7). The effective use of occupation to facilitate growth, health, and well-being is well documented for individuals with ASD, as suggested by improvements in self-regulation (Koenig, Buckley-Reen, & Garg, 2012), social skills and relational functioning (Gutman, Raphael-Greenfield, & Rao, 2012), and overall occupational performance in life domains (Bulkeley, Bundy, Roberts, & Einfeld, 2016).

The incorporation of horses into therapeutic interventions appear in the scientific literature throughout recent decades and anecdotally since antiquity (Willis, 1997; Wingate, 1982). Therapies involving horses initially focused on the treatment of motor dysfunction, particularly for individuals with cerebral palsy or polio (Lessick, Shinaver, Post, Rivera, & Lemon, 2004). Although EAATs retain their motor-based legacy, their methods and practices

have broadened significantly since the industry's birth and now often acknowledge the value of EAATs in treating a wide range of conditions and dysfunctions. In recent years, treatment facilities accredited by the Professional Association of Therapeutic Horsemanship, International (PATH, Intl) have provided services to individuals with ASD more than any other group (PATH Int., 2016). Indeed, EAATs in general are gaining traction in the treatment of children with ASD, with as many as 11% of parents reporting that their child with ASD had participated in some type of EAAT (Thomas, Morrissey, & McLaurin, 2007). There is, however, no one agreed upon method of EAAT that exists for people with ASD.

In a systematic mapping review of EAATs provided to people with ASD, McDaniel Peters and Wood (2017) identified nine distinct types of interventions, all differing in approach and methodology. Furthermore, EAATs are provided by a wide range of professionals, each regarding the therapeutic benefit of horses from their own unique philosophical and technical perspective. Consequently the methods and outcomes targeted by the members of each profession vary as well. The empirical study of EAATs for individuals with ASD is relatively recent. In their systematic mapping review of all EAATs for individuals with ASD, McDaniel Peters and Wood (2017) reported 2003 as the earliest year of publication and only 33 studies have since been published on the topic until 2015. Initial evidence indicates support for the therapeutic value of EAATs for people with autism (McDaniel Peters & Wood, 2017; O'Haire, 2013). However, the current literature also calls for further research on the subject, citing a need for treatment manualization to help standardize interventions and an increased level of rigor when evaluating the efficacy of treatments. The unique perspectives of the participants, their families, and the therapists also need representation in research.

With such an eclectic range of approaches, it is important for health practitioners and the public to understand the distinct contribution that occupational therapy with horses can offer so that services may be referred and delivered appropriately and precisely. Even within a single profession like occupational therapy, EAT is not uniform and practitioners classify the therapy under a collection of different names including hippotherapy, equine-assisted occupational therapy (EAOT), and equine-facilitated learning. Hippotherapy is a treatment method focused on the therapeutic benefit of different equine movements and gaits, with a traditional emphasis on physical outcomes, although this definition is expanding to include more cognitive, sensory and functional outcomes as well (American Hippotherapy Association, 2017). Equine-assisted occupational therapy is a term that appeared recently in the literature to describe an EAT specifically provided by an occupational therapist (Llambias, Magill-Evans, Smith, & Warren, 2016). However, the definition of EAOT restricts the concept of EAT to include only intervention components directly involving a horse. This narrow view neglects the unmounted activities in the absence of a horse that are often also included in EATs. Occupational therapy in an equine environment is a new term to describe all therapeutic activities included in occupational therapy practice as well as recognizing the unique incorporation of horses and the equine-environment.

As a treatment approach, OT$^{ee}$ is a novel intervention because of its philosophical difference from other EATs provided by occupational therapists. Unlike previous terms, OT$^{ee}$ foregrounds occupational therapy as the primary therapeutic service with the inclusion of horses to assist in reaching a client's occupational goals. As of yet, OT$^{ee}$ does not appear in the literature although it may occur regularly in practice. Broadly, there is a dearth of research studying EATs provided by occupational therapists, with only a few publications on the subject

(Ajzenman, Standeven, & Shurtleff, 2013; Liddiard, 2009; Llambias et al., 2016; Memishevikj & Hodzhikj, 2010). To appreciate the unique worth of OT$^{ee}$, one must understand the intervention components and their interactions before it is possible to articulate the therapeutic value of OT$^{ee}$. For the purposes of this thesis, I consider OT$^{ee}$ to be a complex intervention as defined by Craig et al. (2013). Complex interventions are characterized by the "number of interacting components, the number and difficulty of behaviors required by those delivering or receiving the intervention, the number and variability of outcomes, and the degree of flexibility or tailoring of the intervention permitted" (p. 588). EAATs for children with ASD are widely heterogeneous across the industry, but also vary within each type of EAT or EAA (McDaniel Peters & Wood, 2017). Children with ASD are also diverse as a population and therefore require personalized interventions that are tailored to the specific needs of each child (Lord et al., 2005).

In designing and evaluating complex interventions, Craig and colleagues (2013) outlined these important questions to answer: 1. What are the effects and how do they vary? 2. How does the intervention work and what are the active ingredients? Understanding processes contained within a complex intervention allows an evaluator to "assess the fidelity and quality of implementation, clarify causal mechanisms, and identify contextual factors associated with variation in outcomes" (Craig et al., 2013, p. 591). A comprehensive description of how and what occurs within a session is required to understand OT$^{ee}$ fully as a complex intervention and, based on those understandings, to develop protocols and manuals for treatment standardization (Smith et al., 2007). To do so, the unit of study must be clearly bounded to organize data collection and analysis, but simultaneously remain flexible enough to allow the elements within the intervention to 'breathe.'

The perspective known as transactionalism, first conceived by Dewey and Bentley (1949), offers a philosophical framework that may allow for exactly that. The transactional perspective recognizes that experiences are comprised of a multiplicity of factors that exist and exert influence over an entire situation such that to understand one component, one must also understand the other components as well as how they relate. This perspective has attracted the interest of scholars seeking a paradigm that allows for the study of complex phenomenon without forcing a method that separates individual components from the context. Occupation is one construct known for its ordinary place in everyday life, but also for its intricacy and variation across people and cultures (Dickie, 2010). Occupational scientists theorizing about how to apply a transactional perspective used the term occupational situation to describe an arena of occupational engagement that recognizes the co-definition of its component parts. Occupational science is a discipline devoted to the study of occupation for its own sake, but also generates knowledge that supports the profession of occupational therapy. Occupational therapists also contribute to the understanding of occupation as a complex construct through the development of professional knowledge when designing occupational interventions. Investigating an intervention like OT$^{ee}$ using a transactional perspective may bestow occupational science with insights about how to apply research methods informed by holistic philosophies and further our understanding of occupation in general.

The purpose of this thesis was to vividly illustrate and comprehensively depict OT$^{ee}$ –a novel intervention for children with ASD– using a transactional perspective of inquiry, producing a description of practice that portrays its constituent parts as well as its dynamic transactions. In meeting this purpose, I had two aims: a) comprehensively describe OT$^{ee}$ from a

transactional perspective, and 2) operationalize a method for analyzing occupational situations concretely, dynamically and comprehensively.

## Summary of Chapter One

This chapter introduced the problem as related to this thesis: children with ASD face many challenges regarding their daily functioning and more research is needed to evaluate novel and complex interventions like OT$^{ee}$. Complex interventions require a comprehensive level of description to understand and reproduce the treatment so that it can be studied with more rigor in the future. To accomplish this, a transactional perspective was adopted to acknowledge the existence of the many moving and intersecting parts within an occupational situation. This problem offers the opportunity to explore the application of a transactional perspective to occupational therapy research, leading to methodological implications for occupational science.

CHAPTER TWO: MANUSCRIPT

## Background

On the cusp of a new millennium, the birth of occupational science in the late 1980s fit squarely with the spirit of the times. Elizabeth Yerxa, Ann Wilcock and other early pioneers of occupational science recognized the need to establish a complementary academic discipline to the profession of occupational therapy; namely, a science that could pursue the study of occupation, occupational therapy's defining construct, without always needing to directly address practice (Wilcock, 1991; Yerxa et al., 1990). Citing mounting pressures to defend the practice of occupational therapy with transparent and justifiable methods, Yerxa et al. envisioned occupational science as strengthening a foundation of knowledge that occupational therapy practitioners could stand upon when distinguishing their practice from those of other professionals. As the relationship between the scientific discipline and the practice enters its third decade, scholars have begun to investigate how occupational science contributes to occupational therapy (Hooper, Krishnagiri, Taff, Price, & Bilics, 2016; Molke, Laliberte-Rudman, & Polatajko, 2004; Reed, 2017). Yet for a science rooted in Meyer's (1921) conception of occupation, and how "man maintains and balances itself in the world of reality and actuality," there may be value in exploring what occupational therapy might contribute to occupational science.

This paper reports on a study of occupational therapy in an equine-environment ($OT^{ee}$) for children with autism spectrum disorder (ASD). Scholarship in occupational science pertaining to a transactional perspective on occupation contributed centrally to the conceptualization and design of $OT^{ee}$. Furthermore, this study of an innovative approach to

occupational therapy sought to advance research methods in occupational science pertaining to a transactional perspective of occupation.

## A Transactional Perspective of Occupation

Occupational scientists are interested in understanding and representing occupational engagement while respecting the complexity of occupation as a subject matter. Over the past decade, the concept of transactionalism has reached a level of prominence in the occupational science literature, often regarded for its potential utility and advantageous perspective in studying occupation (Aldrich, 2008; Cutchin & Dickie, 2013b). Transactionalism is a philosophical approach that recognizes human experiences as indivisible from the world that surrounds them (Dewey & Bentley, 1949). In defining transactionalism, John Dewey, an American pragmatist philosopher, described people as "live creatures" who live *through* the external environment in a constant codependent relationship (Dewey & Bentley, 1949). Instead of a dualism between people's bodies and their environments, all people experience a continuous process of embodiment, or an ongoing coordination among themselves and their ever-changing worlds. When studying human experiences from a transactional perspective, all elements that comprise an observable situation are co-defining, such that to understand one aspect, the other related components making up an experience must also be understood. The transactional perspective suggests that the environments where occupations occur (e.g. physical and social) are not simply containers for holding people and their actions. Through occupational engagement, people and their environments are transformed into a unified whole (Cutchin & Dickie, 2013b).

Foundational to the concept of transactionalism, Dewey (1949) gave terminology to describe "the cosmos of knowledge" comprised of "facts" that are observable and nameable events (p. 23). Dewey used the word, *situation*, to describe an arena where events are

observable, but also as a place where the transactional elements of an event are recognized, realizing the presence and influence of all objects within a specified environment (Dewey & Bentley, 1949). Dewey defined the transactional situation as a holistic stimulus that humans respond into, rather than simply to, because there is no beginning nor end between people and their contexts. Recent efforts to investigate occupation from a transactional perspective have used the term, *occupational situation*, to describe where, when, and which transactions occur with whom (Cutchin, 1999; Johansson, Josephsson, & Lilja, 2008; Rosenberg & Nygard, 2011). In reference to an occupational therapy session, an occupational situation is comprised of "multiple interpenetrating elements, including the client, the occupation, and temporal, cultural, social and physical contexts" (Humphry & Wakeford, 2013, p.219). Thus, an occupational situation is a whole, encompassing an array of co-defining elements related to occupational engagement.

### OT$^{ee}$: Actors, Architectural Spaces, Occupational Opportunities and the Distal Environment

To develop a transactional perspective, we propose that three constituent units comprise the occupational situation of OT$^{ee}$: actors, architectural spaces, and occupational opportunities. *Actors* are conscious beings that interact with their surroundings through actions. Actors influence other actors and the physical environment, performing actions for ends that are both known and unknown to them (Cutchin, Aldrich, Bailliard, & Coppola, 2008). Prominent actors in OT$^{ee}$ include children with ASD, family members, volunteers, horses, and occupational therapists. The physical environment must be recorded, namely the qualities of *architectural spaces* designed by humans that are accessed during OT$^{ee}$. Hasselkus (2011) asserted that an architectural space becomes an occupational place when a person associates it with memories that infuse the space with meaning. Stegner (1992) affirmed this concept when writing about the

American West, where humans and horses spent months on cattle trails without a permanent home: "a place is not a place until people have been born in it, have grown up in it, lived in it, known it, died in it—have both experienced it and shaped it" (p. 201).

The *occupational opportunities* that emerge from the collective push of all forces within the occupational situation of OT$^{ee}$ must also be chronicled. Occupational opportunities refer to how OT$^{ee}$ avails different possible occupations via dynamic transactions among actors and architectural spaces. In keeping with a transactional perspective, these three constituent units are co-defining, such that to understand the entire occupational situation of OT$^{ee}$, we must recognize that the meaning of one constituent unit depends on its configuration with the other two.

Reaching a comprehensive understanding of an occupational experience like OT$^{ee}$ does not end at the barn doors. Opening our perspective beyond the immediate context and into the *distal environment* recognizes that there are factors that influence every occupational situation that are enveloping and largely out of the control of the actors. These are points of influence that hold power within the situation and originate from cultural, societal, political, and historical realms. The elements may be in part attached to the actors, who bring their own culture and history to color the experience. Other influential elements may be thrust upon the situation by even more distal sources. For example the policies of lawmakers or the underlying societal sentiments of the day may flow into an occupational situation to leave its mark as well.

**Children with ASD and EAATs**

There are no known cures or interventions for children with ASD that address all ASD-related barriers to participation in everyday activities. Although current pharmacological approaches target aberrant behaviors and emotional regulation with some success, they fail to meet the complex challenges related to ASD that inhibit full participation in valued life roles (LeClerc, 2015). To help address these challenges, non-pharmacological approaches have gained

popularity, one group of which involves equine-assisted activities and therapies (EAATs). In a systematic mapping review of research about EAATs provided to children with ASD, McDaniel-Peters and Wood (2017) identified nine distinct types of EAATs. Therapeutic riding, an adaptive riding approach that is classified as an EAA, was found to improve the social functioning of children with ASD (e.g., Gabriels et al., 2012; Gabriels et al., 2015). Hippotherapy, a treatment strategy focused on equine movement that is classified as an EAT, was found to improve motor function and activity performance in children with ASD (see e.g., Ajzenman et al., 2013; Liddiard, 2009; Memishevikj & Hodzhikj, 2010). One study of equine-assisted occupational therapy reported improved social functioning of children with ASD, however, was not informed by a transactional perspective (Llambias et al., 2016). Thus to represent the complexities of OT*ee* from a transactional perspective, we chose the practice of hermeneutic narrative analysis as a method of interpretation, as next developed.

The purpose of this paper is to vividly illustrate and comprehensively depict OT*ee* using a transactional perspective of inquiry, producing a novel description of practice that portrays its constituent parts as well as its dynamic transactions. We had two aims: a) comprehensively describe OT*ee* from a transactional perspective, and 2) operationalize a method for analyzing occupational situations concretely, dynamically, and comprehensively. To meet these aims, we asked the following questions:

1. In what architectural spaces, and for how long, does OT*ee* typically transpire?
2. What occupational opportunities comprise individual sessions of OT*ee* and how are they sequenced throughout the sessions?
3. What do the children with ASD and their occupational therapists do throughout a session of OT*ee*?

4. How do the constituent parts of OT$^{ee}$, as analyzed in questions one through three, transact with one another?

## Method

We adopted a case study approach using naturalistic observation of OT$^{ee}$. Naturalistic case study is a method of choice when investigators want to describe a case in detail from data collected in a real world setting and ultimately present an in-depth understanding of that case (Creswell, 2013). The first author conducted naturalistic observation as a non-participant observer of OT$^{ee}$ as it actually transpired. The study was nested within a larger study, which was led by the second author, and approved by Colorado State University's Institutional Review Board.

### Site Selection and Participants

The study site was a premier PATH Intl. accredited therapeutic riding center. We recruited two licensed occupational therapists to provide OT$^{ee}$ using purposive and convenience sampling methods. Ruth (pseudonym) had practiced occupational therapy for 18 years and provided hippotherapy to children for 16 years. Laura (pseudonym) had practiced occupational therapy for 11 years and provided hippotherapy to children for eight years. Both practitioners had extensive experience incorporating horses within their services for children with ASD; both also offered their services at the study site prior to the current study.

We distributed fliers to ASD community organizations to recruit children with ASD. Inclusion criteria were as follow: (a) children ages 6 – 12 years old, (b) autism diagnosis confirmed by clinical cut-offs on the Autism Diagnostic Observation Schedule, as well as the Social Communication Questionnaire, (c) met PATH, Intl safety standards for physical, mental and emotional behaviors, including tolerating a helmet. Children were excluded if they had previously participated in any EAATs in the last six months or weighed more than 200 pounds.

Table 1

*Participant Characteristics*

| Pseudonym | Gender | Age | Race | NVIQ | Goal Behavior |
|---|---|---|---|---|---|
| Kayla | Female | 9 | Caucasian | 123 – 137 | Transitions |
| Ryan | Male | 8 | Caucasian | 105 – 117 | Reciprocal Conversation |
| Fisher | Male | 6 | Caucasian | 99 – 112 | Don Shoes |
| Josh | Male | 8 | Native American | 71 – 83 | Transitions |
| Jorge | Male | 11 | Hispanic | 43 – 55 | Transitions |
| Maya | Female | 13 | Hispanic | 103 - 116 | Emotional Expression |
| David | Male | 13 | Multi | 71 - 83 | Community Safety |

*Note:* NVIQ = Nonverbal IQ

Table adapted from (Peters, Wood, Hepburn, & Bundy, Manuscript in preparation)

Ultimately, seven participants completed the intervention and one left prematurely due to concerns over missing school for therapy. Table 1 outlines the characteristics of the children with ASD who completed the study.

**Intervention**

Each session of OT$^{ee}$ was individualized to address the goals and needs of each child with ASD and consequently the exact design of each session varied. We utilized a fidelity checklist (see Appendix A) to guide the basic construction of all treatment sessions to include certain components consistently, such as a minimum length of total session time or mounted time. This process necessarily influenced the content of each session and therefore the resultant data collected during the implementation of OT$^{ee}$. The occupational therapists matched the children based on developmental levels to receive the therapy concurrently, designing the therapeutic activities around the abilities, strengths and goals of the paired children.

**Data Collection**

Data were collected using two methods: videotaped sessions of OT$^{ee}$ and field notes. The first author videotaped every session of OT$^{ee}$, following one child per videotape and ultimately collected 38 hours of video data. As every session included two children with ASD, the focus of videotaping alternated between the two children every week. When a child with ASD was not the direct subject of videotaping, the child was referred to as the "peer." Videotaping followed a predetermined schedule to ensure that each child was equally videotaped. The first author also collected field notes during and following each day of data collection. The notes included information not readily available from videotapes such as the type and size of room, temperature, prevailing smells, sights, textures, and sounds as well as any quotes from the actors. The field notes were also used to memo about common patterns that appeared across all sessions.

**Data Analysis**

We followed Ricoeur's (1976) hermeneutic arc to analyze data. Traditionally, hermeneutics is the art and science of understanding and interpreting texts (Manen, 1990). Ricoeur (1976) broadened the definition of interpretable texts to include human actions and lived experiences. According to Ricoeur, hermeneutic interpretation transpires within a hermeneutic arc, an exchange between parts and the whole where an observer moves back and forth successively between a part and the projected whole until comprehensive understanding of the subject matter is realized (Tan, Wilson, & Olver, 2009). Ricoeur related this process to observing a three-dimensional cube in space, "which may be viewed from several sides, but never from all sides at once" (Ricoeur, 1976, p. 77). Hence, Ricoeur's theory of interpretation is appropriate to use with a transactional perspective of inquiry because of the additive nature of understanding offered by the hermeneutic arc. Entering the hermeneutic arc begins with a *naïve interpretation*, then an *explanation* and finally moves into a *comprehensive understanding*.

**Hermeneutic arc: Naïve interpretation.**

The naïve interpretation is a basic and initial understanding of the subject matter removed from the author's intent, forging a new relationship between the interpreter and the subject matter (Ricoeur, 1976). This first interpretation is essentially a guess that may or may not be validated through the explanation of the subject matter. The first author formed a *naïve interpretation* after observing each session of OT$^{ee}$ without further analysis. After reaching a naïve interpretation, we sought to explain our initial understanding through structural analysis.

**Hermeneutic arc: Explanation (structural analysis).**

Ricoeur (1976) recommended using structural analysis to extract and examine the constituent units (i.e. individual sentences or actions) out of context and pull them back together to form a sequence. This sequence explores interactions among the constituent units, but does not reference the whole; in other words, it is not a transactional representation. The second part of the arc, a comprehensive understanding, brings the decontextualized structure into reference with the entire subject matter as well as the interpreter. This is not a single step, but rather a conversation between the interpreter, the constituent units, and the whole that results in a new understanding. We used the method of qualitative content analysis (QCA) (Schreier, 2012) to develop our explanation (structural analysis), which allowed for separate examination of each constituent unit of OT$^{ee}$. In QCA, the coding scheme is developed to allow specific questions to be answered as derived from theory, but also permits the inductive formation of codes from the data. The coding schemes are created during the early stages of QCA and agreement coefficients can be used to confirm that the scheme was applied consistently. Qualitative content analysis is well suited for the explanation stage of hermeneutic narrative analysis because QCA often uses

descriptive statistics including frequencies of code usage and percentages to extract information entrenched in the data.

To conduct the QCA, we comprehensively coded for the presence and duration of the occupational opportunities, the actors and the architectural spaces using the qualitative data analysis program NVivo for Windows, version 11.4.1.1064 (QSR International, 2017). To meet theoretical saturation, 21 sessions were simultaneously collected and sampled, choosing one videotaped session from each child's first, middle and final sessions. A total of 19 hours and 15 minutes of video data were analyzed until no new codes were found. We coded the occupational opportunities as mutually exclusive and exhaustive from other possible opportunities such that only one prevailing occupational opportunity existed at a single time. The actors were described through their presence and observable actions. Action codes were not mutually exclusive with one another, but rather coded concurrently; for example, we often coded "riding horse—walking" at the same time as "engaged in social interaction." Although all actors contributed to how the occupational situations of OT$^{ee}$ unfolded, we described the actions of the occupational therapists and the children with ASD in greatest detail because of the prominent role that the therapists played in creating the intervention and because the children were the targeted beneficiaries of the intervention. We portrayed the architectural spaces by describing each therapeutic area using information from the videos and the field notes.

To refine the coding scheme and reach agreement on code definitions, the authors convened for deliberation throughout the coding process. A research assistant was trained in the coding scheme separately from the research team to establish coding interrater reliability for the occupational opportunities, the architectural spaces and the sequence of occupational opportunities, achieving 96.84% agreement. We then queried NVivo to report the frequencies

and duration of the occupational opportunities, the actors, their actions, and the architectural spaces.

**Hermeneutic arc: Comprehensive understanding.**

Finally, to form a *comprehensive understanding*, the first author synthesized the individual parts of OT$^{ee}$ into a coherent narrative, using three segments, identified during the naïve interpretation, to organize the storytelling. We visually determined the sequence of the occupational opportunities and the architectural spaces during every video and then aggregated each sequence to create figures 1, 2 and 3. To further explore the relationships among the individual components, we used matrix queries in NVivo to report the duration of overlap between two components. For example, this analysis reported that the children engaged most in problematic social interactions while the therapist provided instruction to the child or family members. Each author contributed to the development and synthesis of information into the resultant visual displays. Following the hermeneutic arc, we moved back and forth between the fine details of the structural analysis to our comprehensive understanding of the whole, creating a coherent, sequential narrative that presents a multiplicity of perspectives about OT$^{ee}$.

## Findings

### Naïve Interpretation

OT$^{ee}$ provided to children with ASD was a highly social treatment program, involving a wide selection of occupational opportunities, architectural spaces and social environments, ordered in a distinctive pattern. Broadly, this pattern took the shape of three distinct segments that occurred during every session: pre-mounted time, mounted time and post-mounted time.

### Explanation – Structural Analysis

The average session of OT$^{ee}$ lasted 55 minutes and 2 seconds. The following results are presented in a linear fashion, but in reality, we conducted a hermeneutic narrative analysis as

conversation between the parts (structural analysis) and the whole (comprehensive understanding), alternating back and forth across the hermeneutic arc.

**The architectural spaces of OT$^{ee}$.**

Six distinct architectural spaces were observed: the equine arena, the gear room, an outside "sensory" trail, the tack room, the therapy room and the viewing room. All seven participants spent time in the equine arena, gear room, sensory trail and viewing room; three participants spent time in the tack room and four participants spent time in the therapy room. On average, the participants spent the most amount of session time in the equine arena (Table 2). The equine arena (area≈950 $m^2$) had an enclosed dirt floor room, direct access to the sensory trail, the tack room, and the viewing room, and contained mounting blocks, a white board, and various obstacles. One child mentioned, "I like the smell in here" in response to the equine arena. The sensory trail (distance≈730m) was a looping outdoor dirt trail containing a whiteboard, garden, bridge, glockenspiel, a "car wash" (a rectangle frame with hanging firehose), a gazebo, birdhouses, hills, a "rubber tire dragon" (obstacle), a 30 m "race track" and a section of poles and platforms (obstacles). The temperature, wind, and ground precipitation of the sensory trail

Table 2
Average proportion of total and segment session time spent in architectural spaces

| Architectural Spaces | Percent of Total Session (mm:ss) | Percent of Total Session During Pre-mounted Time | Percent of Total Session During Mounted Time | Percent of Total Session During Post-mounted Time |
|---|---|---|---|---|
| Equine Arena | 61% (33:27) | 22% | 34% | 5% |
| Sensory Trail | 19% (10:21) | 0% | 19% | 0% |
| Gear Room | 12% (06:33) | 6% | 0% | 6% |
| Therapy Room | 4% (02:23) | 3% | 0% | 1% |
| Viewing Room | 3% (01:31) | 1% | 0% | 2% |
| Tack Room | 1% (00:47) | 1% | 0% | 0% |

varied greatly across sessions. A child remarked, "It smells nice out here, doesn't it?" after entering the sensory trail. The wood paneled gear room contained helmets, gait belts, and other safety equipment. The therapy room was a small room containing a fold-down therapy mat and whiteboard. The viewing room was a small room containing five chairs and three windows looking into the equine arena. The tack room contained saddles, reins, horse leads, and six hitching posts where horses could be tacked and groomed. See Appendix B for a map of architectural spaces.

**The occupational opportunities of OT$^{ee}$.**

Seventeen occupational opportunities were identified. Five occupational opportunities required modifiers to further describe the occupational opportunities. For example, the occupational opportunity "managing equipment" is modified by "setting up equipment" or "cleaning up equipment" (see Appendix C for definitions of occupational opportunities and modifiers). Every session consistently offered these occupational opportunities at least once: mounting, riding horse – standing, riding horse – walking, dismounting, transitions, managing equipment, and social interaction. On average, each session devoted 29:19 (mm:ss) to mounted occupational opportunities (Table 2).

**The actors of OT$^{ee}$ and their actions.**

Six categories of actors were identified, each present during the therapy session for a different average proportion of time: child with ASD (99.79%), occupational therapist (97.16%), volunteers (85%), horses (80.15%), peers (78.98%), and family members (15.64%). The children with ASD performed 17 different observable actions. Additionally, 29 modifiers were used to further describe six of the actions. For example, different activities and games, such as basketball and Simon says, modify the main action of "riding horse- standing" (Appendix C

defines actions and modifiers). These modifiers typically prompted the child to participate in activities that demanded more complex social or physical skills. The children spent the largest proportion of session time engaged in social interaction. Some actions were performed more frequently in one segment compared to the others. For example, problematic social interactions occurred, on average, about four times per session during pre-mounted time. Table 3 presents average proportions of session time that children spent performing each action.

The actions of the other actors were all described in reference to how they directly interacted with the child receiving therapy. Consequently, actions that were not directly observable were not coded during the structural analysis because the additional interpretation may have misrepresented the reality of the situation. For example, the occupational therapists were occasionally observed stepping away from the horse and child to survey the entire situation, but the exact purpose of this action was unclear. The occupational therapists were observed performing 14 distinct actions, spending the largest proportion of session time providing instruction to the children with ASD. Other notable actions were performed frequently yet for smaller proportions of session time, such as eliciting communication (average of 36.14 times per session, but only 2.92% of session time), verbal positive reinforcement (23.5 and 1.8%), facilitating social interaction (13.6 and 2.39%), physical facilitation (9 and 4.45%), instructing volunteers (6.14 and 3%) and eliciting choice making (5.3 and 0.65%). At least two volunteers were present for each child during mounted time, one being the horse leader and second walking alongside the horse. The volunteers were observed performing seven distinct actions. The volunteers spent most of their time providing physical support to the child with ASD (average of 18% of session time). Volunteers also periodically provided instruction and elicited

communication from the child with ASD. See Tables 4 and 5 for average proportions of session time spent performing each action for the children with ASD and the occupational therapists.

**The distal environment.**

Moving distally from the immediate occupational situation, consider the cultural lives of the actors. Horseback riding is a rich tradition for many and for some of the children with ASD, horses played a significant role in their family histories. A few of the children's families emigrated from Mexico and periodically visit grandparents who still care for horses. The parents of the children also commented on the feeling of continuity as they watched their children ride horses just as they had growing up. The primary speaking language for these family was Spanish. This fact largely did not affect the flow of therapy sessions because of the innate physical and nonverbal nature of equine-assisted therapies. However, the communication between the Spanish-speaking parents and the therapists was more labored, requiring more effort from the parent and the therapist to convey their message to each other compared to the English-speaking parents.

The OT*ee* services were offered free of charge as a part of the present study, but any equine-related activity can be relatively cost-prohibitive for many wishing to explore the experience. Barring horse ownership, which includes expenses for boarding, transport, medical care and feed, accessing any EAAT service can be costly. The therapeutic riding center at the focus of this study offers one hour group rates at $280 and private 30 minute rates at $320 (Hearts and Horses, 2017). There are some insurance companies that cover certain types of EAAT (e.g. TRICARE under Extended Care Health Option), but by in large many will cover the established medical service such as occupational therapy rather than a specific EAAT ("TRICARE Covered Services," 2018). At the time of writing, the United States continues to

Table 3
Average proportion of total session and segment time devoted to occupational opportunities

| | Percent of Total Session (mm:ss) | Percent of Total Session During Pre-mounted Time | Percent of Total Session During Mounted Time | Percent of Total Session During Post-mounted Time | Average Number of Opportunities Per Session |
|---|---|---|---|---|---|
| **Mounted Occupations** | | | | | |
| Riding Horse-Standing | 28% (15:11) | 0% | 28% | 0% | 16 |
| Riding Horse-Walk | 25% (13:36) | 0% | 25% | 0% | 16 |
| Mounting | < 1% (00:12) | 0% | < 1% | 0% | 1 |
| Dismounting | < 1% (00:10) | 0% | < 1% | 0% | 1 |
| Riding Horse-Trot | < 1% (00:08) | 0% | < 1% | 0% | < 1 |
| Total Mounted Time | 53% (29:17) | 0% | 53% | 0% | |
| **Unmounted Occupations – Horse Present** | | | | | |
| Social Interaction | 14% (07:39) | 12% | 0% | 2% | 6 |
| Tacking | 6% (03:15) | 5% | 0% | < 1% | 2 |
| Managing Equipment | 3% (01:24) | 2% | 0% | 1% | < 1 |
| Grooming | 2% (00:53) | 2% | 0% | 0% | < 1 |
| Unmounted Games | < 1% (00:10) | < 1% | 0% | < 1% | < 1 |
| Horse Leading | < 1% (00:02) | < 1% | 0% | 0% | < 1 |
| Total | 24% (13:23) | 21% | 0% | 4% | |
| **Unmounted Occupations – Horse Absent** | | | | | |
| Social Interaction | 14% (07:31) | 6% | 0% | 7% | 5 |
| Managing Equipment | 4% (02:04) | 3% | 0% | < 1% | 2 |
| Sensorimotor Regulation | < 1% (00:13) | < 1% | 0% | < 1% | < 1 |
| Drawing and/or Writing | < 1% (00:04) | < 1% | 0% | < 1% | < 1 |
| Total | 18% (09:52) | 10% | 0% | 8% | |
| **Transitions** | 4% (02:28) | 3% | 0% | 2% | 6 |

Table 4
Child with ASD: Average proportion of time spent performing actions

| Actions | Percent of Total Session (mm:ss) | Percent of Total Session During Pre-mounted Time | Percent of Total Session During Mounted Time | Percent of Total Session During Post-mounted Time |
|---|---|---|---|---|
| Social Interaction | 92% (50:44) | 30% | 53% | 10% |
| Riding Horse-Stand | 28% (15:11) | 0% | 28% | 0% |
| Riding Horse-Walk | 25% (13:36) | 0% | 25% | 0% |
| Verbalization | 10% (05:42) | 4% | 5% | 2% |
| Managing Equipment | 5% (02:51) | 3% | < 1% | 2% |
| Problematic Social Interactions | 5% (02:51) | 2% | < 1% | 2% |
| Transitioning | 4% (02:06) | 3% | < 1% | 1% |
| Tacking | 4% (01:59) | 3% | < 1% | < 1% |
| Grooming | 1% (00:42) | 1% | 0% | < 1% |
| Petting Horse | 1% (00:38) | < 1% | < 1% | < 1% |
| Mounting | < 1% (00:13) | 0% | < 1% | 0% |
| Sensorimotor Self-Regulation Tasks | < 1% (00:11) | < 1% | 0% | < 1% |
| Dismounting | < 1% (00:10) | 0% | < 1% | 0% |
| Riding Horse-Trot | < 1% (00:08) | 0% | < 1% | 0% |
| Drawing or Writing | < 1% (00:05) | < 1% | 0% | < 1% |
| Horse Leading | < 1% (00:02) | < 1% | 0% | 0% |

Table 5
Occupational Therapist: Average proportion of session time spent performing actions

| Actions | Percent of Total Session (mm:ss) | Percent of Total Session During Pre-mounted Time | Percent of Total Session During Mounted Time | Percent of Total Session During Post-mounted Time |
|---|---|---|---|---|
| Instructing the Child | 15% (08:18) | 6% | 8% | 1% |
| Physical Facilitation | 4% (02:27) | 2% | 3% | < 1% |
| Instructing Parents | 3% (01:38) | < 1% | 0% | 3% |
| Eliciting Communication | 3% (01:36) | < 1% | 2% | < 1% |
| Facilitating Social Interaction | 2% (01:19) | 1% | < 1% | < 1% |
| Positive Reinforcement | 2% (00:59) | < 1% | < 1% | < 1% |
| Physical Support | 2% (00:58) | 0% | 2% | < 1% |
| Individualizing equine equipment to child | 2% (00:54) | < 1% | 2% | < 1% |
| Instructing Volunteers | 1% (00:34) | < 1% | < 1% | < 1% |
| Eliciting Choice-making | < 1% (00:22) | < 1% | < 1% | < 1% |
| Collaboration with other OT | < 1% (00:17) | < 1% | < 1% | < 1% |
| Singing | < 1% (00:16) | < 1% | < 1% | 0% |
| Modeling | < 1% (00:15) | < 1% | < 1% | < 1% |
| Promoting sensorimotor regulation | < 1% (00:10) | < 1% | 0% | < 1% |

deliberate over the how its citizens should access healthcare and through which means. As the cost of care continue to rise, insurance companies will need to consider if EAAT is a service with an established record of efficacy and utility worth covering. If not, OT$^{ee}$ and all other EAATs may become increasing inaccessible for those without financial and geographic entry into such a specialized therapy. Therefore, the OT$^{ee}$ experience for some of the children in this study may be a singular one, rather than the beginning of a new leisure interest or ongoing therapeutic activity.

**Comprehensive understanding**

Thus far, we described OT$^{ee}$ by examining its constituent units, each providing a separate, but complementary understanding of OT$^{ee}$ as a complex intervention. In the spirit of a narrative, this is much like introducing the cast of characters at the beginning of a play, profiling their immediately observable qualities without yet knowing how the characters will all interact. To form a comprehensive understanding through narrative analysis, we next create a coherent storyline, chronicling the progression of an average OT$^{ee}$ session by describing the interaction of the occupational opportunities, the actors and the architectural spaces. The story of OT$^{ee}$ is presented in three segments: pre-mounted time, mounted time, and post-mounted time.

Figures 1, 2 and 3 support this storyline by depicting the sequence of the aggregate occupational opportunities for each segment on the horizontal axis. For each sampled session, the sequence of occupational opportunities were numbered. Some sessions contained many occupational opportunities during a segment, while others had very few. The vertical axis reports what percentage of sample sessions offered which occupational opportunities, in order (i.e. first presented occupational opportunity, second, third). As seen in the figures, when the stacked bars show 100%, then that bar represents the occupational opportunities for all sampled sessions.

When the stacked bars begin to drop below 100%, this indicates that a proportion of the sampled sessions have completed that segment and transitioned into the next segment. For example, in figure 1, more than 60% of sampled sessions began the first segment by offering social interaction, while less than 30% were transitioning and even fewer sessions began the session by immediately managing equipment. The background of each figure depicts the percentage of sessions making use of different architectural spaces across the ordered sequence of occupational opportunities. This sequence of occupational opportunities does not directly convey time or duration. Instead, it portrays a general order of how most OT$^{ee}$ sessions were constructed.

**Pre-mounted time.**

On average, pre-mounted session time lasted 18:25 mm:ss and was primarily devoted to preparing the child for mounting and riding the horse, as illustrated in Figure 1. Every session began in the gear room where an occupational therapist would greet the child with ASD and he or she would transition to donning safety equipment with some physical facilitation from the therapist or a volunteer. This transition, from a family context into an unfamiliar social context was often a trigger for problematic social interactions where the child engaged in self-stimulation, unsafe behaviors, or refusing to participate. The gear room was potentially over-stimulating; the gear room acted as a thoroughfare for clients, therapists and volunteers with as many as 13 different people present at a given time. Of the total duration that the children engaged in problematic social behaviors, about half occurred in the pre-mounted segment and the other half during the post-mounted segment, with little occurring while mounted.

Following a period of social interaction where the therapist instructed the child about the contents of the day's session, the majority of sampled sessions transitioned by the fifth occupational opportunity into the viewing room, the therapy room or the equine arena. Family members typically accompanied the child with ASD from the gear room into the viewing room, but rarely joined the child in the equine arena, therapy room, or tack room during pre-mounted time. The arrival of the peer was inconsistent across sessions, sometimes the children prepared together and other times they would meet separately in the equine arena for shared mounted time. Sessions that utilized the therapy room prior to mounted time did so for two purposes: to

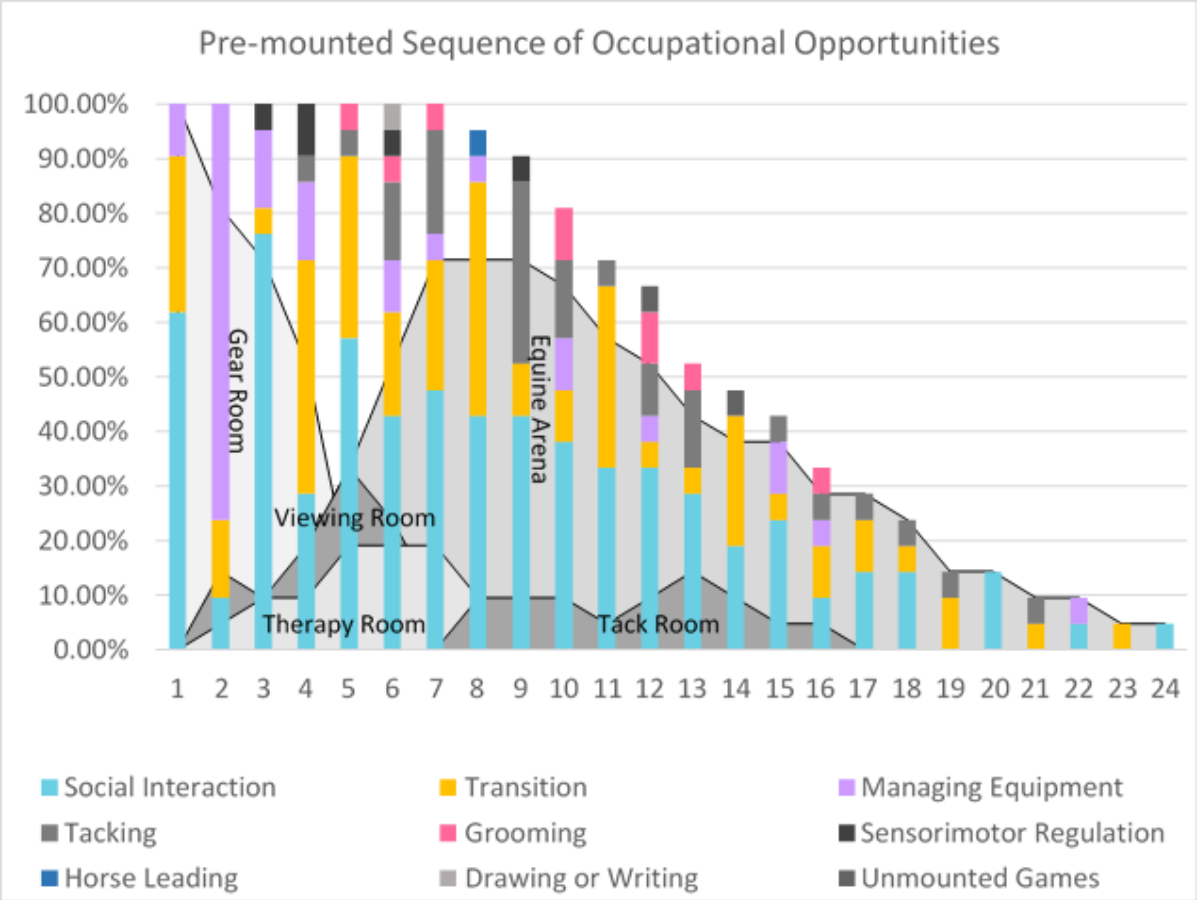


*Figure 1.* Pre-mounted sequence of occupational opportunities in the foreground with use of architectural spaces reflected in the background

facilitate sensorimotor self-regulation tasks or for an opportunity to collaboratively plan session activities with the children.

When sessions did use the tack room, it was primarily a social space for familiarizing the child with ASD to their horse and the volunteer team rather than an opportunity to tack or groom the horse. The tack room did provide opportunities for the children to make choices about what equine equipment they needed for eventually tacking and grooming the horse in the equine arena. Every pre-mounted segment concluded by transitioning into the equine arena where the primary occupational opportunities included social interaction, tacking, grooming and managing equine equipment. Although the children tacked their horses during every sampled session, grooming only occurred during the initial sessions and was later replaced by unmounted games or earlier mounting. During tacking or grooming, some of the children talked about the equine environment (it has a cooler temperature…it makes me calmer"), how the horse made them feel ("her walk, [the horse's] it has a nice feel to it, side to side") and that they wished to continue working with horses in the future. The majority of sessions concluded this segment after 14 occupational opportunities and transitioned into the second segment.

**Mounted time.**

On average, mounted session time lasted 29:06 mm:ss. Superficially, mounted time may appear repetitive as it followed the same basic format during every session and consequently the visual representation, seen in Figure 2, highlights the moments of variation rather than show the constant alternation between riding a stationary or walking horse. This segment began by mounting, during which the occupational therapist always provided physical facilitation to the child. Once mounted, the child with ASD rode the horse while it

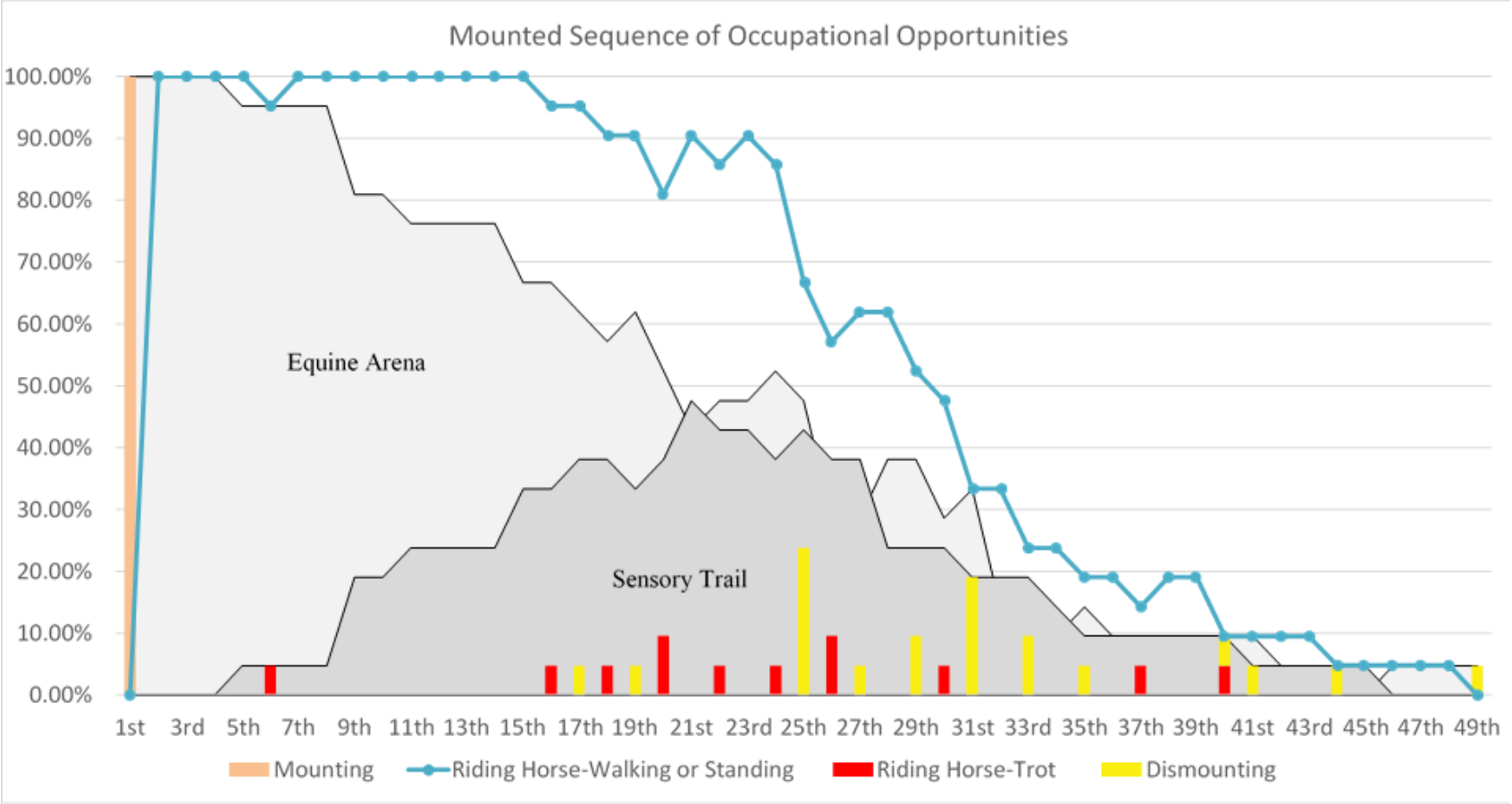


*Figure 2*: Sequence of mounted occupational opportunities in the foreground with use of architectural spaces reflected in the background

alternated between walking, standing, or infrequently, trotting. Compared to the first and third segments, the occupational therapist was most active during mounted time. The therapist performed all actions, except for parental instruction and sensorimotor regulation promotion, at a higher frequency and for longer durations during mounted time. This may indicate that mounted time required more skilled intervention compared to the pre- or post-mounted segments. The children with ASD engaged in very few problematic social behaviors during mounted time.

Compared to the other segments, mounted time was especially rich with activities that modified the occupational opportunities of horse riding. Twelve activities were identified during mounted occupations, which changed the way in which the child participated in riding the horse, see Appendix C for full list. On average, the children with ASD spent 04:20 mm:ss participating

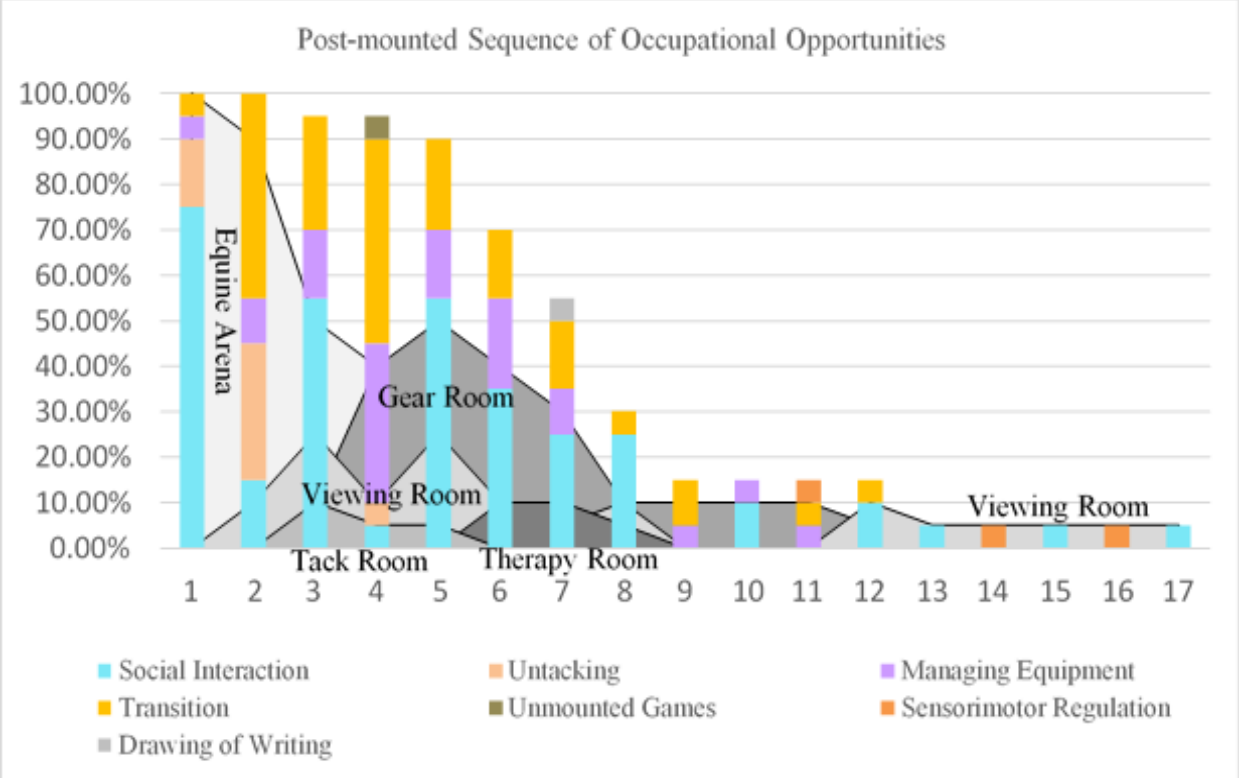


*Figure 3:* Post-mounted sequence of occupational opportunities in the foreground with use of architectural spaces reflected in the background

in activities that modified mounted time, including mounted basketball, follow the leader, Simon says, red-light/green-light and obstacle navigation. The specific activity chosen often related to the child's goals; for example Ryan participated in a question cards activity to develop his reciprocal conversation skills. On average, each session's mounted occupations were modified by six or more activities. The role of the volunteer during mounted time is best described as a physical extension of the occupational therapist, providing direct physical support so that the therapist's proximity to the child could be flexible. The child would always dismount to the side of the therapist who would provide physical facilitation with periodic support from the volunteer. The majority of sessions concluded this segment after 23 occupational opportunities and transitioned into the third and final segment.

**Post-mounted time.**

On average, post-mounted session time lasted 07:21 mm:ss and was primarily devoted to transitioning socially and physically from mounted time, as seen in Figure 3. Directly after dismounting, the therapist facilitated social interaction, prompting the child to thank the volunteers and horse. The child then typically untacked the horse and then began to restore the equine and safety equipment back to their original locations. This was a moment that provoked frequent reflection from the children during the final sessions; the children expressed feelings of personal growth ("I accomplished a lot"), the bond they developed with their horse ("I love Gavin" [horse]), shifts in personal identity ("I feel like a cowboy") and sadness that the experience was ending ("I'll miss you" [speaking to the horse]). The majority of sampled sessions transitioned out of the equine arena by the fourth occupational opportunity and moved into gear room by way of the viewing room or the tack room. The final phase of the post-mounted segment was devoted to debriefing the session with the children and their family

members while in the gear room, therapy room or viewing room. This debriefing period was primarily an opportunity for social interaction for the child while the therapist provided parental instruction. However, the child was likely to engage in problematic social interactions while the therapist's attention was directed towards the parent rather than the child. This created an absence of occupational opportunities that directly engaged the child and therefore may have prompted the child to engage in more problematic social interactions rather than the social interaction offered. The majority of sessions concluded this segment after eight occupational opportunities.

## Discussion

The purpose of this paper was to describe OT$^{ee}$ with methods informed by a transactional perspective of inquiry. Transactionalism in its truest form may be unattainable from a methodological standpoint. In a way, transactionalism asks us fallible humans, to strive towards omnipresence, to observe and understand Ricoeur's cube from all directions at once. This challenge requires an almost otherworldly ability to empathize with experiences that are not our own, digest them in a way that maintains fidelity to the original and then produce a whole, realistic picture that we may study. Creating a perfect transactional representation of OT$^{ee}$ was never the purpose of this study, but instead we sought to learn how a transactional perspective might be applied to the study of occupational therapy. The results of this study bring us closer to understanding the holistic and co-defining nature of occupational engagement as well as providing a comprehensive description of occupational therapy practice using a unique methodological approach.

### Implications

These findings open a window into OT$^{ee}$, EAATs more broadly, as well as occupational therapy practice in general, that was previously unavailable. We offer an inside and

comprehensive look into how OT$^{ee}$ is constructed, providing practitioners with a realistic example of how occupational therapy can incorporate horses. To effectively evaluate complex interventions, Craig et al. (2013) asserted that the active ingredients of a treatment must be identified and understood before the quality of any intervention can be assessed or developed for further use. Our analysis displays the richness of OT$^{ee}$, distinguishing the interworking parts that coalesce into OT$^{ee}$ so that other therapists can produce interventions with similar active ingredients, but also the knowledge of how to tailor the therapy to individual clients.

Previously, EAAT researchers have primarily produced studies aimed at the feasibility and proof of concept for interventions, with little or no description of the therapy protocol and intervention components. Shurtleff and Engsberg (2012) offered perhaps one of the more comprehensive depictions of hippotherapy practice, including a list of gaits, gait changes, sitting positions, mounted activities, walking patterns, duration, frequency and location of sessions, as well as the presence and roles of the people involved. A similar level of description was provided by Llambias et al. (2016) studying EAOT, including short descriptions of on and off-horse activities. These examples are indicative of the extent to which EAAT has been described thus far, relying on a "telling rather than showing" approach and leaving the rest to the imagination of the reader.

Beyond generating an exhaustive account of OT$^{ee}$, this paper sought to understand an occupational experience in kind to Dickie's (2010) illustration of pottery making or Heatwole Shank and Cutchin's (2010) description of older women aging-in-place, each guided by a unique transactional perspective. No one study has applied Dewey and Bentley's (1949) philosophy in the same way while investigating occupation, but perhaps that fact is most appropriate given the all-inclusive nature of a transactional perspective. Dickie (2010) organized her description of

pottery making using a life cycle analysis framework. Although different from the hermeneutic narrative analysis we used, Dickie's methods also produced a story, chronicling the life journey of a clay pot from beginning to end. Due to the complexity of occupation, the exact journey of each pot was unique to its transactional combination of constituent units: the people, their culture, the time of production, and so on. However, she found that a coherent thread binds the experience of pottery making together, forming a general pattern across examples. Dickie's (2010) analysis drew heavily from biographical accounts found in the *Ceramics Monthly* magazine as well as personal experiences with pottery making. Heatwole Shank and Cutchin (2010) relied on interviews and field notes taken during observations of older women living at home. These in-depth accounts elucidated occupation as well as the richness of occupational engagement while recognizing a larger, co-defining context.

As of yet, our description of OT$^{ee}$ is the first to use videotape data as well as observational field notes to create a description that details exact percentages of occupational time use across physical and social contexts and also relate the individual components with one another to form something greater than the sum of its parts. We present an understanding of OT$^{ee}$ from a multiplicity of perspectives without focusing on a single individual. This study portrays these data in context, demonstrating the roles of each actor and architectural spaces in relation to each other and the whole storyline. In doing so, our methods contribute a possible approach for operationalizing the transactional perspective for future research in occupational science. Explicating the complexity of OT$^{ee}$ advances our understanding of occupation in general and the sheer number of interacting components that may comprise a broader human experience. Occupational science may now evaluate the strengths of this interpretation of the

transactional perspective and apply it to the study of other occupations or therapies, furthering our holistic relationship with the experience of human engagement.

**Limitations**

Although this paper advances our understanding of OT*ee* and the methodological possibilities for adopting a transactional perspective, it does not tell the full story of OT*ee*. For example, our perspective recognizes that other forces may change an occupational situation, but representing every source of influence would demand considerably more resources (e.g. geopolitical polices, ecological changes etc.). Our aim to comprehensively describe OT*ee* is limited by the number and variety of available data sources. Only one video camera was used to record each session of OT*ee* and consequently all findings are drawn from that single vantage point. However, the camera's position was not fixed and we were able to adapt as the situation changed in order to videotape from multiple perspectives in each architectural space. To capture more of the occupational situation, the experience of the actors could be better represented through interviews. In particular, the clinical reasoning of the occupational therapists should be recorded to understand what principles guided their decisions and how intervention components were tailored to fit the specific needs of each child. All efforts were made throughout data collection to maintain the role of non-participant observer however, across the total 19 hours and 15 minutes of video data, the children with ASD acknowledged the presence of the camera four times for a combined length of 20 seconds.

## Conclusions

These findings provide a basis to further develop the emerging practice of OT*ee* as well as offer a novel method of applying the transactional perspective to occupational research. There may not be a "right" way to operationalize a transactional perspective for occupational research, but because of the attempts made, we now stand closer than we ever have to doing justice to the

messy and sometimes befuddling world of occupation. If this trend of adopting some kind of holistic framework continues, there will be implications not only for our basic understanding of occupation, but also for occupational therapists to be the forerunners in providing comprehensive care, considering the entire occupational situation instead of treating piecemeal moments of occupational disruption. As the healthcare field continues to evolve, a transactional perspective, or a concept similar, may be the framework necessary to address rising costs and discontinuity of care by referencing the whole context of a patient. The advent of occupational science was a fitting response to the atmosphere of occupational therapy in the late 1980s. Let us now consider if it is in the spirit of our times to embrace and advocate for a transactional perspective in our research and practice.

# CHAPTER THREE: REFLECTION

## Reflection

Writing this thesis has been one of the most valuable experiences of graduate school. I was surprised when this team wanted me to join and contribute to a body of knowledge pertaining to horses when I had almost no equine experience. One of my favorite moments in the lab, appropriately tinged with imposter-syndrome, was when I leaned over to a nearby PhD candidate and asked, "what is a *dress-age"*... "well first, it's pronounced *dressaaage."*

### What Was Gained

At times, it seemed unfair that I was able to learn from people like Wendy Wood and Caiti Peters because of their role in facilitating my growth. Foremost, I believe that my writing has taken a giant leap forward. A professor from my first four years of college told me, "If you're a good writer for people, you're probably not a good writer for academics." I am not so sure that it true. Good writing seems to be born out of the willingness to be intimate with your audience, to anticipate their needs and to understand their priorities. I am still not good at this. However, this thesis has taught me the value of reader-centered writing, the importance of claiming one's voice and, of course, that precision is sexy.

This journey has also taught me the role of creativity in research. Not a week went by, when I was actually working on my thesis, that I did not hit some new obstacle brought on by the analysis, presentation or interpretation of my data. In the end, these problems were usually solved through creativity, which I credit as the reason why this process was continually interesting. Part of my enjoyment came from first time data ownership. Being responsible for the growth and evolution of my own data has been a treat. The moment when I finished data

analysis and was able to see how all my coding fit together to tell a story was fascinating and I quickly printed out graphs to tape to my lab station, refrigerator-art style.

Out and beyond these personal gifts, I have also learned everything I now know about qualitative research. Starting this project, I did not anticipate that I would spend time trying to understand the philosophies of John Dewey or Paul Ricoeur. I did not know that qualitative researchers were essentially storytellers or that there were entire data management paradigms that hinged on narrative analysis. Before graduate school, I knew the value of quantitative methods in science and the importance of qualitative concepts in life, but now I recognize the worth of both across all domains of life.

**Areas for Growth**

Although my writing has made progress, I still struggle with the same problems that my middle school teachers complained of when I was 14. Organizing ideas to flow logically from paragraph to paragraph remains difficult, as I tend to write about one idea while thinking of another and the reader is left confused about how I got from one place to the next. The paralysis of a blank page is difficult for many people and I know that I still spend far too long trying to begin "the right way," even though time and time I again I will erase the first two sentences anyway. In a similar vein, I spent more hours in the lab than I may have needed. It was always nice to know that I could find refuge from something else by working on this project or just working near to this project, but in the end, I hope in the future that I can become more efficient in working through a project as large as this.

**Experience as a Scholar**

I began this thesis with only a vague understanding of what occupational therapy involving horses for children with ASD might look like; you could even call this my naïve interpretation. I had some previous experience working with adults with ASD and EAATs, but

more as a bystander. Now I can describe these interventions in a level of detail few could match. I am privy to the complexity of occupation in a way I would have never seen had I not recorded, watched and coded all of the videos from my thesis.

As of now, I do not think I can devote myself to research as a career. I am not ready to take on a doctorate program, at least not until I come across a topic that feels like the next logical step for my growth as a clinician-scholar. Working with Wendy and Caiti and the rest of the lab showed me that I truly enjoy the process of research and the importance of knowledge generation. I consider myself a researcher now, with concrete skills that I can apply to occupational therapy practice and elsewhere. If I ever do end up taking up a PhD, this experience will be the foundation of any success that I can hope to enjoy.

## Conclusion

I leave this project with an expanded understanding of the type of occupational therapist I would like to be. The transactional perspective has had a profound effect on my personal and professional thinking. I aim to use what I have learned about transactionalism and apply it to my practice, using it as a theoretical framework to guide my professional decision-making. I believe that this type of approach is progressive and has the potential bring about effective care that is more socially and occupationally just in a country marked by inequity of resources and care.

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## APPENDIX A. ORIGINAL FIDELITY CHECKLIST FOR SESSIONS OF OT*ee*

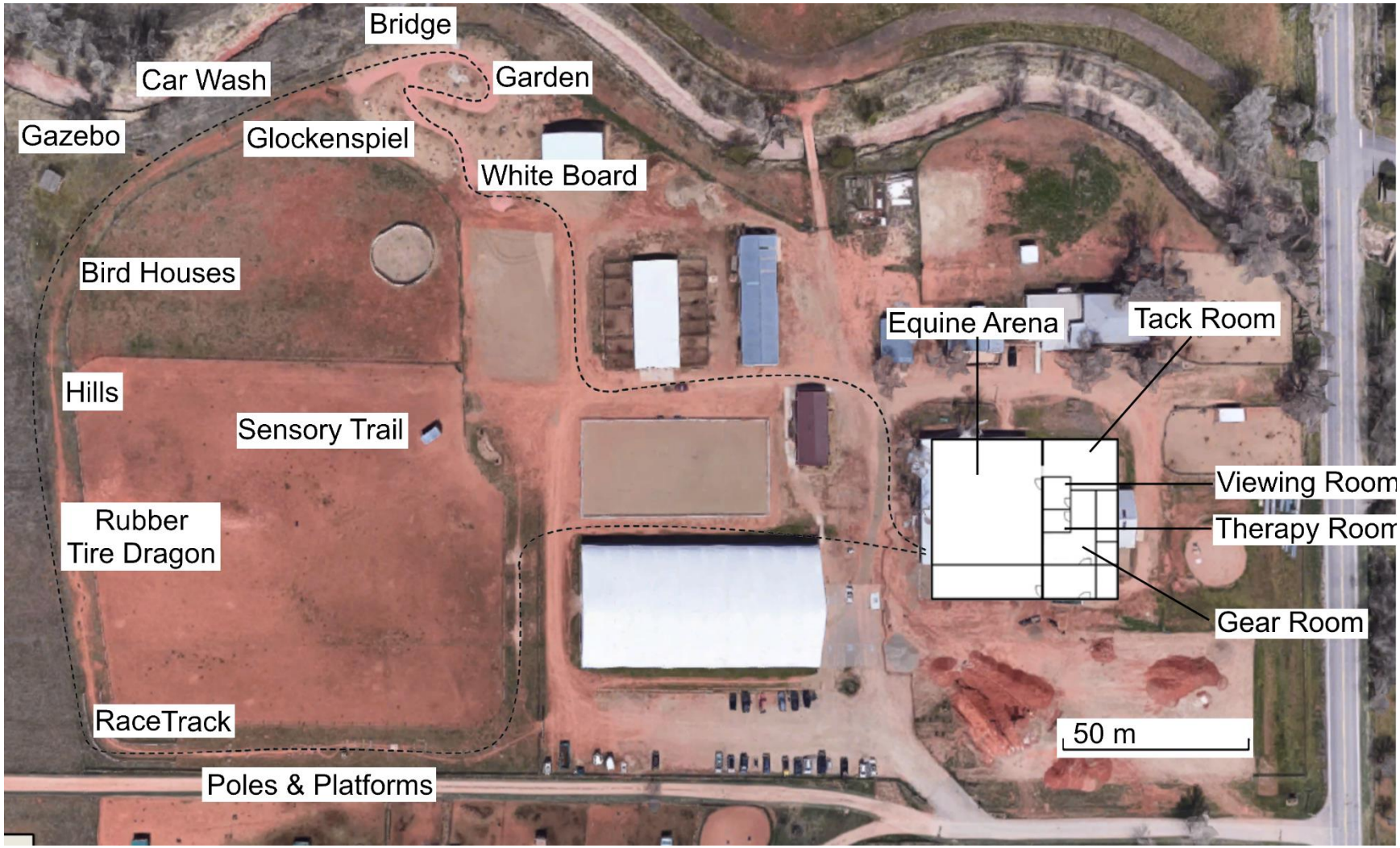
1. Intervention incorporates visual aids (to help with transitions, teach new skills, etc).
2. Intervention was individualized for each participant (i.e. addressed participants' specific goals, incorporated child's interests and motivators, differs from the other child's session in some way)
3. Session lasted at least 45 minutes
4. Child was mounted on the horse for at least 20 minutes
5. There was a one-to-one ratio between child and therapist
6. At least two volunteers were present for each child (1 horse leader and 1 side walker)
7. Therapist facilitated social interaction between the child and other people (another child, side walker, family, etc.)
8. Child received positive reinforcement for communication (positive reinforcement could be through equine movement, verbal praise, preferred activity, etc)
9. Child engaged in un-mounted activities such as grooming the horse or un-mounted games
10. Therapist gave caregiver strategies to try at home

## APPENDIX B. REVISED FIDELITY CHECKLIST FOR SESSIONS OF OT$^{ee}$ GENERALIZED FOR ANY PARTICIPANT POPULATIOIN

1. Intervention organized into three segments: pre-mounted time, mounted-time and post-mounted time.
2. Intervention to be individualized for each participant (i.e. addressed participants' specific goals, incorporated child's interests and motivators, differs from the other child's session in some way)
3. Intervention may include more than one participant receiving services concurrently to address social occupational goals. If so, there is to be a one-to-one ratio between participant and therapist.
4. At least two volunteers were present for each child (1 horse leader and 1 side walker)
5. Intervention is to occur in a range of physical environments, offering a selection of sensory, transitional and occupational opportunities (e.g. gear room, tack room, equine arena, therapy room, sensory trail etc.)
6. If available, a sensory trail is to be used outside of the equine arena. This trail should include occupational opportunities that challenge the participant's skills related to their individual goals, but may include activities that engage the participant's social skills, posture stability, proprioception, executive planning, memory, motor planning/execution and sensation.
7. Intervention to last at least 45 minutes
8. Mounted time is to last for at least 20 minutes.
9. Mounted time to include a variety of gaits including walking, trotting, starting and stopping.

10. Participant to receive positive reinforcement for behaviors related to advancing their goals (positive reinforcement could be through equine movement, verbal praise, preferred activity).
11. Participant to engage in unmounted activities before and after mounted time, including but not limited to grooming, tacking, unmounted games, managing equipment, social interaction
12. Intervention to incorporate visual aids as necessary to aid in participant learning, transitioning and communication.
13. Therapist to give caregiver strategies during post-mounted time to apply at home and review these strategies during pre-mounted time.

APPENDIX C. ARCHITECTURAL SPACES MAP



APPENDIX D. NVIVO CODEBOOK DEFINTIONS

Occupational Opportunities

| | | |
|---|---|---|
| **Occupational Opportunities** | | The prevailing occupation offered by the occupational situation |
| **Transitions** | | The opportunity to move from one task, activity or architectural space to another |
| **Mounted Occupations** | | The opportunity to participate in occupations taking place on top of a horse |
| Mounting | | The opportunity of moving from standing on the ground to sitting on a horse |
| Riding Horse-Standing | | The opportunity to sit on the horse while the horse is stationary |
| | **Modifiers** | Activities used to further described an occupational opportunity, but were not stand-alone opportunities in their own right |
| | Mounted Basketball | The opportunity to play basketball while sitting on a stationary horse |
| | Emotional Identification Activity | The opportunity for the child to recognize and name emotions while sitting on a stationary horse |
| | Hands in the Air | The opportunity to raise hands above head while sitting on a stationary horse |
| | Tube glockenspiel | The opportunity to use the musical pole instrument (glockenspiel) on the sensory trail while sitting on a stationary horse |
| | Question Cards | The opportunity to participate in a conversation starter card activity while sitting on a stationary horse |
| | Ring Game | The opportunity for the child to reach for, hold onto, toss, transport or manipulate a plastic ring while sitting on a stationary horse |
| | Simon Says | The opportunity to play the game Simon Says (command following) while sitting on a stationary horse |

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| | Red Light/Green Light | The opportunity to participate in a game of red light green light (stop and go with visual or auditory cues) while sitting on a stationary horse |
| | Ye-haw game | The opportunity to participate in a social game where participants take turns saying "ye-haw" while sitting on a stationary horse |
| Riding Horse-Walk | | The opportunity to sit on the horse while the horse walks (includes steering and commanding the horse) |
| | Mounted Basketball | The opportunity to play basketball while sitting on a walking horse |
| | Follow the Leader | The opportunity to go behind or lead a peer's direction while riding a walking horse |
| | Hands in the air | The opportunity to raise hands above head while riding a walking horse |
| | Obstacles | The opportunity to navigate around physical objects on a track while riding a walking horse |
| | Question Cards | The opportunity to participate in a conversation starter card activity while riding a walking horse |
| | Ring Game | The opportunity for the child to reach for, hold onto, toss, transport or manipulate a plastic ring while riding a walking horse |
| | Simon Says | The opportunity to play the game Simon Says (command following) while riding a walking horse |
| | Standing in the Stirrups | The opportunity to ride a walking horse while standing in the stirrups rather than sitting |
| | Red Light / Green Light | The opportunity to participate in a game of red light green light (stop and go with visual or auditory cues) while riding a walking horse |
| Riding Horse-Trot | | The opportunity to sit on the horse while the horse trots (a gait in-between walk and canter/gallop) |
| Dismounting | | The opportunity to move from sitting on the horse to standing on the ground |
| | | |
| **Unmounted Occupations-Horse Present** | | The opportunity to participate in occupations while on the ground, but taking place in the presence of a horse |
| Horse Leading | | The opportunity to guide the horse by physically moving the lead rope |

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| Unmounted Games | | The opportunity to play organized games while in the presence of the horse, but not riding. |
| | Ring Game | The opportunity for the child to reach for, hold onto, toss, transport or manipulate a plastic ring while unmounted, but in the presence of a horse |
| | Ye-haw Game | The opportunity to participate in a social game where participants take turns saying "ye-haw" while unmounted, but in the presence of a horse |
| Grooming | | The opportunity for combing, brushing, toweling the horse using tools |
| Managing Equipment | | The opportunity to collect, manipulate, and restore relevant equipment while in the presence of a horse, but unmounted |
| | Cleaning up | The opportunity to restore items to their original state e.g. replacing tools, equipment, and gear while in the presence of a horse, but unmounted |
| | Setting up | The opportunity to collect or manipulate items in preparation for the equine session: obtaining tools, equipment or gear while in the presence of a horse, but unmounted |
| Social Interaction | | The opportunity to engage in shared communication with other actors while unmounted and in the presence of a horse e.g. listening, talking, eye contact with people or relevant objects. The use of this code occurs only when it is clear there is no other obvious opportunity the child is directed to. Stands on its own within a social context (2 or more actors) |
| Tacking | | The opportunity to prepare a horse before or after riding. May include management of saddle pad, saddle, reins, belts etc. |
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| **Unmounted Occupations- Horse Absent** | | The opportunity to participate in occupations while on the ground and the horse is absent. |
| Drawing and/or Writing | | The opportunity to use a writing utensil such as a marker or pen to make marks on a surface for the purpose of drawing or writing |
| Sensorimotor Regulation Tasks | | The opportunity to engage in activities that promote sensorimotor regulation while not in the presence of a horse e.g. deep breathing, deep pressure, "push and pull game" |
| Social Interaction | | The opportunity to engage in shared communication with other actors while unmounted and without the presence of a horse e.g. listening, talking, eye contact with people or relevant objects. The use of this code occurs only when it is clear there is no other |

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| | | obvious opportunity the child is directed to. Stands on its own within a social context (2 or more actors) |
| Managing Equipment | | The opportunity to collect, manipulate, and restore relevant equipment while unmounted, horse absent |
| | Cleaning up | The opportunity to restore items to their original state e.g. replacing tools, equipment, and gear while unmounted, horse absent |
| | Setting Up | The opportunity to collect or manipulate items in preparation for the equine session: obtaining tools, equipment or gear while unmounted, horse absent |
| | | Actors |
| **Actor** | | An autonomous organism capable of observable actions referring to the child, the horse, the volunteers, the family and the occupational therapist. |
| **Child with ASD** | | Indicates the presence of the child with ASD |
| **Actions** | | |
| Dismounting | | Anytime the child with ASD moves from a sitting position on the horse to standing on the ground |
| Drawing or Writing | | Anytime the child with ASD uses a pen, marker or pencil to write or draw |
| Unmounted Games | | Anytime the child with ASD participates in a game while dismounted |
| | **Modifiers** | |
| | Unmounted Obstacles | Anytime the child with ASD participates in navigating obstacles while dismounted |
| | Unmounted Ring Game | Anytime the child with ASD reaches for, holds onto, tosses, transports or manipulates a plastic ring while unmounted |
| | Unmounted Ye-Haw Game | Anytime the child with ASD participates in the "ye-haw" social game (child and peer say "ye-haw" back and forth) |
| Grooming | | Anytime the child with ASD is combing, brushing, or toweling the horse |
| Horse-leading | | Anytime the child with ASD grasps the lead rope of the horse and guides the horse |

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|---|---|---|
| Managing Equipment | | Anytime the child with ASD collects, manipulates, or restores relevant equipment |
| | Cleaning Up | Anytime the child with ASD restores items to their original state e.g. replacing tools, equipment, and gear |
| | Setting Up | Anytime the child with ASD collects or manipulates items in preparation for the equine session: obtaining tools, equipment or gear |
| Mounting | | Anytime the child with ASD moves from standing on the ground to sitting on a horse |
| Petting Horse | | Anytime the child with ASD uses their hand to directly interact with the horse |
| Problematic Social Interactions | | Anytime the child with ASD is interacting with others through behaviors contrary to their established goals |
| | Disengaged | Anytime the child with eASD is not participating in any occupation, activity or task AND he or she is not self-stimulating |
| | Refusing Activity | Anytime the child with ASD does not transition into the next parent/therapist directed activity or when he or she does not engage with non-preferred activities |
| | Self-stimulation | Anytime the child with ASD engages in self-directed behavior for the purpose of self-stimulating sensory experiences while also disengaged from other occupational opportunities |
| | Unsafe Behaviors | Anytime the child with ASD exhibits unsafe behaviors for self, other or the horse e.g. running away, aggression, sudden movements on top of the horse |
| Riding Horse – Standing | | Anytime the child with ASD is sitting on the horse while the horse is stationary |
| | Mounted Basketball | Anytime the child with ASD plays basketball while sitting on a stationary horse |
| | Emotional I.D. Activity | Anytime the child with ASD participates in an activity where he or she is asked to recognize and name emotions while sitting on a stationary horse |
| | Hands in the Air | Anytime the child with ASD raises their hands above head while sitting on a stationary horse |
| | Musical Pole Instrument | Anytime the child with ASD uses the musical pole instrument (glockenspiel) on the sensory trail while sitting on a stationary horse |
| | Question Cards | Anytime the child with ASD participates in a conversation prompted by question cards sitting on a stationary horse |

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| | Ring Game | Anytime the child with ASD reaches for, holds onto, tosses, transports or manipulates a plastic ring while sitting on a stationary horse |
| | Simon Says | Anytime the child with ASD plays the game Simon Says (command following) while sitting on a stationary horse |
| | Standing in Stirrups | Anytime the child with ASD stands up in the stirrups while stationary on the horse |
| | Red Light / Green Light | Anytime the child with ASD participates in a game of red light green light (stop and go with visual or auditory cues) while sitting on a stationary horse |
| | Ye-Haw Game | Anytime the child with ASD participates in a social game where participants take turns saying "ye-haw" while sitting on a stationary horse |
| Riding Horse – Trot | | Anytime the child with ASD sits on the horse while the horse trots (a gait in-between walk and canter/gallop) |
| | Red Light / Green Light | Anytime the child with ASD participates in a game of red light green light (stop and go with visual or auditory cues) while riding a trotting horse |
| Riding Horse – Walk | | Anytime the child with ASD |
| | Mounted Basketball | Anytime the child with ASD plays basketball while sitting on a walking horse |
| | Follow the Leader | Anytime the child with ASD goes behind or leads a peer's direction while riding a walking horse |
| | Hands in the Air | Anytime the child with ASD raises their hands above head while riding a walking horse |
| | Obstacles | Anytime the child with ASD navigates around physical objects on a track while riding a walking horse |
| | Question Cards | Anytime the child with ASD participates in a conversation prompted by question cards sitting on a walking horse |
| | Ring Game | Anytime the child with ASD reaches for, holds onto, tosses, transports or manipulates a plastic ring while riding a walking horse |
| | Simon Says | Anytime the child with ASD plays the game Simon Says (command following) while riding a walking horse |
| | Standing in Stirrups | Anytime the child with ASD rides a walking horse while standing in the stirrups rather than sitting |

| | | |
|---|---|---|
| | Red Light / Green Light | Anytime the child with ASD participates in a game of red light green light (stop and go with visual or auditory cues) while riding a walking horse |
| Sensorimotor Regulation Tasks | | Anytime the child with ASD participates in activities that promote sensorimotor regulation while not in the presence of a horse e.g. deep breathing, deep pressure, "push and pull game" |
| Transitions | | Anytime the child with ASD moves from one environment or task to another and does not continue to engage with other activities |
| Verbalization | | Anytime the child with ASD makes an audible vocal sound |
| **Family** | | Indicates the presence of family members |
| **Occupational Therapist** | | Indicates the presence of an occupational therapist |
| Eliciting Choice Making | | Anytime the therapist prompts the child with ASD to make a choice between 2 or more options |
| Collaboration with other therapist | | Anytime the therapist discusses the course of treatment or intervention choices with the other therapist |
| Eliciting Communication | | Therapist is directly eliciting expressive communication for the sake of communication. This code is differentiated from facilitating social interaction by its sole focus on improving expressive verbal or nonverbal communication. These are prompts that can typically be answered with a 1 word/sound response, sometimes done by repeating what the therapist says. e.g. OT: "say hello" Child: "hello" |
| Facilitating Social Interaction | | Therapist is directly facilitating social interaction to improve social skills, often through the use of open ended questions or direction of social cues e.g. recognizing peer's emotions and experiences as well as the consequences of one's own behavior on the experience of a peer |
| Individualizing equine equipment to the child | | The occupational therapist adjusting the horse, equipment, activities, environment, sequence to tailor the treatment to the child with ASD |
| Instructing Volunteers | | Anytime the therapist provides feedback, education or directions to the volunteer |
| Instructing the child | | Anytime the therapist provides feedback, education or directions to the child with ASD |

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| Instructing Family Members | Anytime when the OT provides the parent(s) with information about their child, the intervention, take home strategies etc. |
| Physical Facilitation | Any time where the therapist provides hands-on assistance with how the child relates with their environment e.g. hand over hand, assisting manipulation of equipment and tactile cues while on the horse. |
| Physical Support | Anytime the OT provides physical support such as bracing or holding. Differentiated from facilitation by a the OT providing support to the child's body rather than directly assisting their interaction with the environment |
| Verbal Positive Reinforcement (Praise) | Occupational therapist providing encouragement, praise, and/or support to the child with ASD during a session. |
| Promoting Sensorimotor Regulation | Anytime when the OT provides stimulation for the explicit purpose of promoting sensorimotor regulation. E.g. push and pull game, deep pressure, deep breathing |
| Singing | Anytime the therapist communicates with the child with ASD through song |
| **Peer** | Indicates presence of similarly aged child with ASD, not the focus of the current videotape |
| **Volunteer** | Indicates presence of the volunteer |
| Eliciting Choice Making | Anytime the volunteer prompts the child with ASD to make a choice between 2 or more options |
| Eliciting Communication | Volunteer is directly eliciting expressive communication for the sake of communication. This code is differentiated from facilitating social interaction by its sole focus on improving expressive verbal or nonverbal communication. These are prompts that can typically be answered with a 1 word/sound response, sometimes done by repeating what the therapist says. e.g. OT: "say hello" Child: "hello" |
| Facilitating Social Interaction | Volunteer is directly facilitating social interaction to improve social skills, often through the use of open ended questions or direction of social cues e.g. recognizing peer's emotions and experiences as well as the consequences of one's own behavior on the experience of a peer |
| Instructing the Child | Anytime the volunteer provides feedback, education or directions to the child with ASD |

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| Physical Facilitation | Any time where the volunteer provides hands-on assistance with how the child relates with their environment e.g. hand over hand, assisting manipulation of equipment and tactile cues while on the horse. |
| Physical Support | Anytime the volunteer provides physical support such as bracing or holding. Differentiated from facilitation by a the OT providing support to the child's body rather than directly assisting their interaction with the environment |
| Verbal Positive Reinforcement (Praise) | Occupational volunteer providing encouragement, praise, and/or support to the child with ASD during a session. |

Architectural Spaces

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| Equine Arena | Room where the primary equine occupational opportunities occur |
| Gear Room | Room where helmets and belts are stored |
| Sensory Trail | Area outside of the indoors rooms that forms a loop with a variety of sensory stimuli |
| Tack Room | Staging room where some equine occupational opportunities may occur. |
| Therapy Room | Room where the occupational therapist educates, prepares, instructs or provides other therapeutic treatments without the assistance of a horse. |
| Viewing Room | Room used by an occupational therapist to review the day's treatment session with the child and/or family members |

# GLOSSARY OF TERMS

1. Autism spectrum disorder (ASD): Developmental disorder characterized by limitations to social communication and interaction as well as restricted, repetitive behavior patterns (American Psychiatric Association, 2013)
2. Equine-assisted activities and therapies: Interventions involving horses and equine environments to promote health, develop skills and foster wellness for a variety of populations.
3. Equine-assisted therapies: "Equine-assisted therapy is a treatment that incorporates equine activities and/or the equine environment. Rehabilitation goals are related to the patient's needs and the medical professional's standard of practice" (PATH Int., 2017).
4. Equine-assisted activities: "Any specific center activity, e.g. therapeutic riding, mounted or ground activities, grooming and stable management, shows, parades, demonstrations, etc., in which the center's clients, participants, volunteers, instructors and equines are involved" (PATH Int., 2017).
5. Equine-assisted occupational therapy: A therapeutic approach that "may include on-horse activities that use movement to improve skills and off-horse activities that engender care and relationship building with the animal" (Llambias et al., 2016, p. 2). The activities are designed to engage clients and increase involvement with purposeful activities.
6. Occupational therapy in an equine environment ($OT^{ee}$): The incorporation of horses and the equine context into occupational therapy to aid in the elicitation, facilitation and/or engendering of therapeutic outcomes related to occupational participation and daily functioning. Includes all therapeutic activities related to occupational therapy practice as

well as the unique incorporation of horses and the equine-environment. As of yet, this term does not exist in the peer-reviewed literature and originates from Dr. Wendy Wood.

7. Transactional perspective: A perspective of inquiry the recognizes human experiences as indivisible wholes, with each aspect of an experience co-defining one another, a concept referred to as the 'organism-in-environment-as-a-whole' (Dewey & Bentley, 1949).
8. Complex intervention: Interventions characterized by the varied "number of interacting components, the number and difficulty of behaviors required by those delivering or receiving the intervention, the number and variability of outcomes, and the degree of flexibility or tailoring of the intervention permitted" (Craig et al., 2013, p. 588).
9. Occupational situation: An observable arena where occupational opportunities may occur. This term recognizes influence of all objects present during occupational participation (Cutchin & Dickie, 2013a).
10. Occupational opportunities: The prevailing opportunity to participate in occupation that emerges from the collective push of all the forces within an occupational situation to form a unique opportunity of that moment (Cutchin & Dickie, 2013a)
11. Architectural spaces: The surrounding built environment with features designed by humans.
12. Actors: Conscious beings that interact with their environment through actions during an observable experience and are social environmental elements (Dewey & Bentley, 1949).