

THESIS

AN EXPLORATORY STUDY OF AN EQUINE-ASSISTED INTERVENTION FOR PEOPLE
WITH DEMENTIA LIVING IN A RESIDENTIAL CARE FACILITY

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ABSTRACT

AN EXPLORATORY STUDY OF AN EQUINE-ASSISTED INTERVENTION FOR PEOPLE WITH DEMENTIA LIVING IN A RESIDENTIAL CARE FACILITY

There are an estimated 5.3 million Americans diagnosed with Alzheimer's disease or related dementias (Alzheimer's Association, 2015) and the prevalence of dementia is predicted to rise to one million new cases per year. As there is no cure for dementia, health care for people with dementia has begun to incorporate nonpharmacological approaches that aim to improve quality of life. Environmentally based approaches, such as music therapy, aromatherapy, and animal-assisted interventions were found to be effective nonpharmacological interventions for people with dementia (Padilla, 2011b; Wood, Hoesly, Rose, & McLure, in press). Initial evidence produced by Dabelko-Schoeny et al. (2014) indicates that an equine-assisted intervention for people with dementia is feasible and can reduce problematic behaviors. The current mixed methods exploratory case study aimed to investigate: 1) the negative and positive quality of life indicators, and 2) environmental correlates of positive and negative quality of life indicators, specifically occupational opportunities and environmental supports, that are offered during an equine-assisted intervention. The program selected for this study was Riding in the Moment, an equine-assisted intervention for people with dementia. I video recorded observations of four participants during four one-hour sessions of Riding in the Moment. I used the Activity in Context and Time (Wood, 2005) to code quality of life indicators present during eight of the sixteen recorded observations. During the program, I recorded field notes, which were qualitatively analyzed using the Lived Environment Life Quality Model (Wood, Lampe, Logan,

Metcalfe, & Hoesly, 2016) to describe the occupational opportunities and physical and social environmental supports. Results revealed that participants with dementia demonstrated more and longer durations of positive quality of life indicators in comparison to negative quality of life indicators during Riding in the Moment. Qualitative findings revealed a number of occupational opportunities offered, such as riding, grooming, and petting the horse. Qualitative findings also revealed various physical and social environmental supports that were critical to supporting engagement. Overall, the Riding in the Moment program was an engaging, equine-assisted intervention that promoted autonomy in an enriched environment.

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DEDICATION

This thesis is lovingly dedicated to my mother, Sharon Busselman whose endless love and dedication, even from Heaven, continues to inspire and encourage me. May she rest in eternal peace and comfort. Also, to my father Darrell Busselman who is an unwavering spring of love, assurance, and inspiration in my life.

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LIST OF DEFINITIONS

1. Alzheimer's disease and related dementias: Characterized as a group of symptoms that are often progressive in nature resulting in loss of memory, judgment, language, and complex motor skills (Fraker, 2012).
2. Animal-assisted interventions: Goal-directed interventions incorporating animals that are designed and implemented by credentialed health care professional to promote social, physical, cognitive, and/or emotional function (Animal Assisted Intervention International, 2013).
3. Apparent affect: How persons with dementia express their emotions through facial expressions, body movements, and body position that indicate pleasure, interest, anxiety or fear, sadness or depression, and anger (Lawton, Van Haitsma, & Klapper, 1996).
4. Dementia with Lewy Bodies: Abnormal aggregations of protein alpha-synuclein that accumulate in neurons of the cortex, resulting in dementia (Alzheimer's Association, 2015).
5. Dementia: An umbrella term for decline in mental functioning that ultimately reduces one's ability to perform their daily activities (Alzheimer's Association, 2015).
6. Dementia-specific quality of life: The general well-being of individuals that includes "The multidimensional evaluation, by both intrapersonal and social-normative criteria, of the person-environment system of an individual in time past, current, and anticipated" (Lawton, 1991). For this thesis, dementia-specific quality of life will be viewed through the domains of the LELQ Model.
7. Environmental press: In any context, physical, social, and interpersonal environmental stimuli interact to generate an *environmental press* (Lawton & Nahemow, 1973), that

elicits the “expression of some behaviors and suppression of others” (Wood, Womack, & Hooper, 2009, p. 338).

8. Environment-based interventions: Strategies that use the “social and physical environment situation within context to...provide insight into the overarching, underlying, and embedded influences on engagement.”(American Occupational Therapy Association, 2014, p. 62).
9. Equine environment: The natural surroundings or social, physical, and emotional conditions that occur where equines live.
10. Equine-assisted activities (EAA): “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 International, 2015).
11. Equine-assisted therapies (EAT): “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 International, 2015).
12. Mixed Dementia: Characterized by the hallmark of one or more causes of dementia (Alzheimer's Association, 2015).
13. Neuropsychiatric symptoms: Problematic behavioral symptoms demonstrated by people with Alzheimer’s disease and related dementias that include aggression, agitation, depression, anxiety, delusions, hallucinations, apathy, and disinhibition (Fraker et al., 2014).

14. Occupational therapy: “The art and science of helping people do the day-to-day activities that are important and meaningful to their health and well-being through engagement in valued occupations” (Boyt Schell, Gillen, & Scaffa, 2014, p. 50).
15. Psychotropic medications: Medications, typically antipsychotics used to control neuropsychiatric symptoms for people with Alzheimer’s disease and related dementias (Fraker et al., 2014).
16. Residential care facility: A nursing home, assisted living, or long term care residential facility.
17. The Activity in Context and Time (ACT): A direct observational measure that records environmental correlates of daily patterns of time use and apparent affect of people with moderate and severe Alzheimer’s disease and related dementias living in nursing homes or other long term care facilities (Wood, 2005).
18. The Lived Environment Life Quality (LELQ) Model: A dementia-specific conceptual practice model designed to “guide client-centered, ecologically valid, and occupation-focused services aimed at optimizing the quality of life of institutionalized adults with dementia” (Wood et al., 2016, p. 2).
19. Vascular dementia: The second leading cause of dementia which commonly occurs when there is blood vessel blockage or damage leading to infarcts or bleeding in the brain (Alzheimer's Association, 2015).

CHAPTER ONE: STATEMENT OF THE PROBLEM

“There are ways that the horse-human bond heals us that we don’t even have words for yet.” - Joanne Tortorici-Luna

Today, many older adults are diagnosed with dementia. In fact, there are an estimated 5.3 million Americans diagnosed with Alzheimer’s disease or related dementias (Alzheimer's Association, 2015), diagnoses that are collectively referred to simply as dementia in this thesis. With aging adults becoming an increasingly large proportion of the overall population, the prevalence of dementia is predicted to rise to one million new cases per year. Health professionals caring for people with dementia are seeking ways to maintain human dignity and respect for life for people with dementia by optimizing their quality of life (QoL). Most forms of dementia are considered progressively debilitating, however improved QoL is possible for people with dementia (Moyle & O’Dwyer, 2012). Currently, there are no medications to cure dementia and few medications to manage negative neuropsychiatric symptoms associated with dementia. Negative symptoms that can degrade QoL include aggression, agitation, depression, anxiety, delusions, hallucinations, apathy, and disinhibition (Fraker, Kales, Blazek, Kavanagh, & Gitlin, 2014). For example, aggression or agitation make it difficult for people with dementia engage in social interactions with other residents and staff, which can lead to isolation. To date, many new nonpharmacological treatment strategies are under investigation to enhance QoL for people with dementia.

Health care for people with dementia has begun to incorporate nonpharmacological approaches that aim to improve QoL for people with dementia. Environmental-based approaches constitute one category of nonpharmacological interventions. This thesis focuses on equine-

assisted interventions (EAI), which are environmentally-based approaches that have potential to create positive experiences of QoL for people with dementia. EAIs are designed for specific individuals or groups and aim to produce positive outcomes through engagement with horses and/or the larger equine environment. Yet there is little research on the effects of EAIs for people with dementia living in residential care facilities. A large mapping review of EAI identified only one article pertaining to EAIs for people with dementia. This article was written by Dabelko-Scheny et al. (2014) and supported the implementation of an EAI for people with dementia who attended an adult day program. Therefore, this thesis explores the potential of EAI to improve the QoL for people with dementia living in a residential facility.

In the following sections of this chapter, I discuss the importance of the environment in terms of how it can influence QoL experienced by people with dementia who live in residential care settings. I also introduce the Lived Environment Life Quality (LELQ) Model, a practice model that conceptualizes the importance of the environment and QoL for people with dementia, and the Activity in Context and Time (ACT), an observational tool that measures environmental correlates of dementia-specific QoL (Wood, 2005; Wood et al., 2016). I then present animal-assisted interventions (AAI) and benefits that relate to improved QoL for people with dementia. I further elaborate on EAIs as one subset of AAIs that has potential to improve the experience of QoL for people with dementia. Lastly, I introduce the equine-assisted activity group that is the primary focus of this thesis and conclude the chapter with the research aims, research questions, and the glossary of definitions.

The Influence of the Environment on Quality of Life for People with Dementia

The environment is influential for people with dementia. Negative behaviors that arise from the manifestations of dementia are thought to stem from unmet needs, environmental

overload, and the interaction of people with dementia, their caregivers, and other environmental factors (Fraker et al., 2014). Environmental-based approaches manipulate and alter the surrounding physical and social environment to improve behaviors and support retained capacities or preferences (Padilla, 2011a).

The environment of residential care facilities are especially important as they “shape where people live, how they live, whom they see, what they do, and the relationships that transpire within families and communities” (Kane, 2001, p. 294). Kane explained, “Long term care is intimate care, and how it is given, when it is given, and by whom it is given shapes the biography of the long term care consumer, . . . family caregivers, and the collective biography of the whole family.” To provide more personalized care for people with dementia, caregivers can provide opportunities for engaging in activities that a person with dementia enjoys, and mitigate activities that are not favored. For example, if a person with dementia enjoys spending time with animals, the opportunity to engage with animals ideally should be provided more frequently than a less desirable activity. Adjusting the environment, based on personal likes and dislikes, demonstrates respect for the unique individuality of the person, which may contribute to enhanced QoL.

The Lived Environment Life Quality (LELQ) Model is a conceptual practice model that provides direction for understanding QoL for people with dementia living in a residential care setting (Wood et al., 2016). The LELQ Model consists of two domains, the lived environment and quality of life. The lived environment domain emphasizes the importance of environmental and personal factors that can contribute to either an enlivening or a deadening occupational experience. The QoL domain focuses on how a person with dementia uses their time, their functional performance in activities, and their relative well-being. According to the LELQ

Model, a vibrant and stimulating environment that a person prefers can result in positive QoL experiences. Therefore, it should be the aim for health care professionals to create preferred enlivening and stimulating experiences for people with dementia to improve QoL.

One tool available to measure QoL indicators through direct observation of people with dementia is the Activity in Context and Time (ACT) (Wood, 2005). For this thesis, I used a modified version of the ACT tool as an outline to capture the QoL experiences of people with dementia involved in an EAI. In particular, I recorded patterns of time use and apparent affect of people with dementia to evaluate the presence or absence of QoL indicators (Wood, 2005). I specifically selected the ACT tool as it aligns with the LELQ Model; both emphasize the importance of time use and relative being. For example, the ACT measures correlates of time use and apparent affect, whereas the LELQ Model situates time use and relative being (which includes apparent affect) as QoL outcomes and indicators. More broadly, the LELQ Model and the ACT highlight the importance of how aspects of the environment can influence QoL.

One environmental-based intervention implemented in residential care facilities involves people with dementia interacting with animals during AAIs. By incorporating animals such as dogs or cats into therapy, people with dementia have an opportunity to physically, socially, and emotionally engage with another living creature within safe contexts. The partnership with animals for therapy has demonstrated a reduction in agitation, aggression, daytime behavioral disturbances, and heart rate while increasing social behaviors and communication (Filan & Llewellyn-Jones, 2006). Furthermore, having horses be a part of therapy has been identified as a feasible, nonpharmacological intervention that may reduce problematic behaviors and positively impact the QoL for people with dementia participating in a day program (Dabelko-Schoeny et al., 2014). However, day programs are fundamentally different from living in a residential care

facility. For example, people with dementia participating in day programs generally have a caregiver that they have known for some time and can return to a private, familiar home setting each night. This may not be the case for those living in residential settings. Therefore, the influences of incorporating horses into activity groups for people with dementia living in residential care facilities are unknown.

Initial evidence suggests that an EAI may help to reduce problematic behaviors and favorably impact QoL for people with dementia (Dabelko-Schoeny et al., 2014). Yet, there is no description of the intervention or explanation as to why these benefits are experienced. Theorized explanations try to identify the active ingredients of an intervention that bring about, or otherwise favorably influence or make positive changes. For example, one theorized explanation for why EAIs are beneficial is that the horse is non-judgmental, therefore people can easily relate, interact, and form a relationship with a horse (Kendall, Maujean, Pepping, & Wright, 2014). Additionally, Bachi (2013) suggests that interventions with a horse takes place in a non-institutional setting, such as a barn or outside space, which is a more natural and relaxing setting.

This thesis focuses on Riding in the Moment, an EAI offered by Hearts and Horses Therapeutic Riding Center in Loveland, Colorado. Riding in the Moment offers people with dementia an opportunity to safely engage in an equine-assisted intervention to promote experiences of well-being ("Hearts and Horses Therapeutic Riding Center," 2016).

Research Aims and Questions

This study had two aims: 1) to describe positive and negative QoL indicators demonstrated by people with dementia as they participated in Riding in the Moment and 2) to describe environmental correlates of observed positive and negative QoL indicators.

Environmental correlates correspond with the lived environment domain of the LELQ Model, as

developed further in chapter two. In this study, environmental correlates encompassed *occupational opportunities*, or specific opportunities to engage in meaningful activities that staff and volunteers offered to participants with dementia in Riding in the Moment; they also encompassed *physical and social environmental supports and barriers* that appeared to influence whether or how participants engaged in those occupational opportunities. QoL indicators correspond with the QoL domain of the LELQ Model, as also further developed in chapter two. These indicators therefore encompassed how participants occupied time, their apparent affect, and whether they were agitated or upset during Riding in the Moment. I asked four research questions:

1. What durations of positive and negative QoL indicators are evident in four older adults with dementia as they participate in Riding in the Moment?
2. What occupational opportunities do staff and volunteers provide to participants throughout Riding in the Moment?
3. What physical and social environmental supports and barriers are evident in context of the specific occupational opportunities offering during Riding in the Moment?
4. What positive QoL indicators related to time use, (gaze, position and movement, communication) apparent affect, (sadness/depression, anxiety/fear, anger, interest, or pleasure) and agitation do participants demonstrate while engaged in specific activities during Riding in the Moment?

Summary of Chapter One and Organization of Thesis

This thesis is comprised of five chapters. Chapter one introduced the problem of an increasing number of institutionalized individuals with dementia needing care that promotes their QoL through nonpharmacological interventions. The concept of EAIs, which are types of

nonpharmacological interventions, was also introduced. Literature related to environmental influences on the QoL of people with dementia was briefly summarized. It was posed that EAIs may be a promising environment-based approach to enhancing the QoL of people with dementia. With this foundation in place, the study's aims and research questions were identified. Chapter one concluded with a glossary of key concepts of relevance to this thesis. In chapter two, I elaborate upon the theoretical rationale of the thesis through an extensive review of literature pertaining to Alzheimer's disease and related dementias and environmental perspectives on dementia-specific QoL. Chapter three describes the methods of the study, including its general research approach and methods for collecting and analyzing both quantitative and qualitative data. Chapter four reveals the results of the study, including descriptions of occupational opportunities, physical and social environmental supports and durations of QoL demonstrated during Riding in the Moment. Chapter Five provides a consolidated interpretation of the data, an integration of data with current research, study limitations, future directions, and a conclusion.

CHAPTER TWO: LITERATURE REVIEW

In chapter two, I provide an insight into the degenerative nature of dementia and how this disease negatively impacts the daily functioning of people with dementia. To begin the chapter, I elaborate on the types of dementia, common symptoms, approaches for symptom management, and care for people with dementia in residential settings. I then discuss the unique aspects of quality of life (QoL) for people with dementia and how the environment influences dementia-specific QoL. Next, I present my theoretical rationale encompassing the Lived Environment Life Quality (LELQ) Model as a guide to understand dementia-specific QoL. I then further elaborate on benefits that people with dementia have experienced through engaging in animal-assisted interventions (AAI). The chapter then transitions to the promising potential of equine-assisted interventions (EAI) to improve QoL for people with dementia. Chapter two concludes with a summary of the theoretical rationale and background information.

Dementia and the Movement toward Nonpharmacological Environmental Interventions

The Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-V) defines dementia as a condition characterized by multiple cognitive deficits, of which the main deficit is impairment of memory (American Psychiatric Association, 2013). Types of dementia include Alzheimer's disease (AD), vascular dementia, frontotemporal lobar degeneration, dementia with Lewy bodies, mixed dementia, Parkinson's disease dementia, Creutzfeldt-Jakob disease, and normal pressure hydrocephalus (Alzheimer's Association, 2015). In this thesis, I will specifically focus on the progressive, degenerative types of dementia, such as those just listed. According to the Alzheimer's Association (2015), the number of Americans with Alzheimer's disease and related dementias will increase each year as the population of people aged 65 and

older continues to increase. Knowledge of dementia and its increasing prevalence is important; however, more noteworthy is elucidating how the disease affects the person and how to provide the best care.

Symptoms of dementia vary in presentation, but are typically related to the neurodegenerative nature of the disease. Common symptoms include “memory loss that disrupts daily life, challenges planning or solving problems, confusion with time or place, problems with words in speaking and writing, decreased or poor judgment, and withdrawal from work or social activities” (Alzheimer's Association, 2015, p. 335). Throughout the course of dementia, short-term memory is typically affected first, which can manifest as a person misplacing items such as keys or a wallet. Other symptoms related to dementia include difficulty performing spatial tasks, poor judgment, poor insight, anxiety, defensiveness, gait disturbances, disinhibited behavior, and psychotic symptoms such as hallucinations or delusional thoughts. Consequently, these symptoms interfere with a person’s everyday living and performance of activities. One method to mitigate the safety concerns associated with problems performing everyday living tasks is by providing additional supervision and support.

Residential care facilities are one of the main settings that provide care for people with dementia. According to the Center for Disease Control and Prevention, in 2014 there were 1.4 million people living in residential facilities that provide some level of assistance, such as a nursing home or long term care facility (Harris-Kojetin et al., 2016). Between 23% and 42% of residents living in these types of facilities are living with some degree of dementia (Zimmerman et al., 2005). With a high prevalence of people with dementia in residential care facilities, care providers should focus on implementing opportunities that aim to enhance QoL. However, many residential care facilities encounter barriers, such as limited resources, that restrict

implementation of activities or opportunities that may enhance QoL. Additionally, many people dread the thought of living in a residential care facility because of rigid schedules, lack of autonomy, and lack of opportunity for engagement (Zimmerman et al., 2005). To remedy these concerns, researchers have suggested that care providers implement various pharmacological and nonpharmacological approaches.

Pharmacological treatment is the use of prescription drugs to mitigate or eliminate specific symptoms of diseases or the disease itself. Because there is no cure for dementia, people with dementia can use pharmacological treatments that alleviate symptoms of dementia such as depression, agitation, and hallucinations. Clinicians often prescribe small doses of anxiolytic, anticonvulsant, antipsychotic, or antidepressant medications to mitigate the side effects of dementia (Minati, Edginton, Bruzzone, & Giaccone, 2009). However, pharmacological means should only be introduced if nonpharmacological interventions prove ineffective, there is significant risk of danger, or the person is very distressed (Small et al., 1997). Additionally, the use of these medications has demonstrated only modest effects, significant risk, and ineffective treatment of some behaviors (Gitlin, Kales, & Lyketsos, 2012). To promote QoL, the first line of intervention should focus on the use of nonpharmacological treatment approaches.

By definition, nonpharmacological interventions do not involve the use of medications (Gitlin et al., 2012). There are three broad categories of nonpharmacological interventions, which include unmet-needs interventions, learning and behavioral interventions, and environment-based interventions (Padilla, 2011a). The focus of this thesis is on environment-based approaches. These interventions use the physical and social environment to promote engagement in activities that match the person's abilities and preferences. For example, a person with dementia becomes agitated and shows aggression in a large crowded recreation room. After

encouragement from staff, the person with dementia chooses to participate in a small group activity in a less crowded room. In this example, there is a change in the physical environment from a large room to a smaller room. Additionally, there is a change in the social environment from a crowded room to a less crowded room. These physical and social environmental changes can help the person with dementia to feel more at ease and comfortable, which can diminish the demonstration of aggressive behaviors. Therefore, changing the environment to match the person's abilities can potentially mitigate negative behaviors and elicit positive behaviors. Furthermore, environment-based interventions that do elicit positive experiences have potential to improve the QoL of people with dementia.

Quality of Life

Health care for people with dementia has begun to shift from focusing on the process of how care is provided to the outcomes of that care (Sloane et al., 2005). One primary target is the improvement in QoL as a care outcome for people with dementia living in residential care facilities. *Dementia-specific quality of life* is a broad term used to describe the well-being experienced by people with dementia. For the rest of this thesis dementia-specific quality of life will just be referred to simply as QoL. QoL is a multidimensional and subjectively understood experience viewed through individual perceptions (Lawton, 1991). Some aspects that uniquely contribute to dementia-specific QoL include individuality, social relationships, the ability to function, and emotional well-being (Lawton, Van Haitsma, & Perkinson, 2000; Moyle et al., 2011). Moyle et al. (2011) discussed that people with dementia express the desire to be treated as individuals and to engage in social interaction. In addition, these researchers also demonstrated that functional capacities are important because frailty can compromise opportunity to participate in meaningful activities. Lawton et al. (2000) suggests that people with dementia have the right

to maximize positive feelings and minimize negative feelings and to be treated as a person with a past, present, and future. Unfortunately, the debilitating course of dementia causes loss of the higher cognitive abilities to process or communicate, through verbal language, their subjective experience of QoL. Therefore, it can be difficult to operationalize and properly analyze QoL for people with dementia. A number of theories and models have been designed to guide the comprehension of QoL, many of which highlight environmental influences.

Environmental Influences on QoL. The notion that the environment can provide opportunity to elicit negative or positive behaviors refers to *environmental press*. The definition of *environmental press* is the “specific physical, social, and interpersonal stimuli of the immediate environment that elicit the expression of some behaviors and the suppression of other behaviors” (Wood et al., 2009, p. 338). The range of opportunities for participation in the residential care facility, or activity situations, directly influence environmental press. *Activity situations* are routinely occurring and observable periods of time structured and offered by residential staff to people with dementia (Wood et al., 2009). Within a residential care facility, activity situations could include mealtimes, snack times, downtimes, or activity groups. The progressively debilitating nature of dementia may be one reason that people with dementia demonstrate lower levels of ability to participate in activity situations. However, participation is still possible for people with dementia because they can retain certain abilities that allow for engagement in activities (Wells & Dawson, 2000).

Many people with dementia are able to retain certain capacities or abilities, such as self-care, social, interactional, and interpretive abilities (Wells & Dawson, 2000). Environments that provide opportunity to use these retained capacities can prevent excess disability. *Excess disability* is described as more disability than what can be directly attributed to the disease

progression that is experienced by people with dementia (Wood et al., 2009). To prevent excess disability, people with dementia need opportunities to tap into and use their retained capacities. For example, a person with dementia living in a nursing home used to make coffee every morning for her and her husband. In the residential care facility, however, staff do not allow this woman to make coffee and, instead, bring coffee to her. Excess disability can ensue as she is not given the opportunity to exercise her cognitive capacities to sequence the steps to make coffee or her physically capacities to lift and manipulate the objects used to make coffee. However, if the person with dementia has an environment that presses toward engaging in meaningful activities, the person with dementia is able to utilize and exercise retained capacities. Using the previous coffee example, if physical and social environment supports making coffee, the lady with dementia has an opportunity to engage in a meaningful activity and use her physical, cognitive, and social retained capacities. An environment that offers engaging and meaningful activities is an enlivening environment that can contribute to positive experiences of QoL. These basic tenets inform and provide a link between environmental concepts and dementia-specific components of QoL. The Lived Environment Life Quality (LELQ) Model is a representation of the link between dementia-specific QoL and the environment.

The Lived Environment Life Quality (LELQ) Model

The LELQ Model provides a foundation for understanding QoL in this thesis. As shown in Figure 1, the LELQ Model has two domains that emphasize the link between the environment and dementia-specific quality of life, which are the lived environment domain and the QoL domain (Wood et al., 2016).

The lived environment domain consists of three subdomains including the caregiving microsystem, the person with dementia, and an environmental press. The caregiving

microsystem encompasses the daily activity situations that occur within the residential care facility, as well as the attitudes of the caregiving culture. People with dementia are exposed to positive or negative experiences because of the caregiving microsystem. Whether the experience is perceived as positive or negative depends on the person with dementia, which is another subdomain of the lived environment. The person with dementia subdomain consists of the person's history, preferences, and functional abilities. Depending on the person's fit with the caregiving microsystem, the environment can create a press towards an enlivening, or positive experience, or a deadening, or negative experience. For example, if the caregiving microsystem provides garden time (i.e. an activity situation) and the person with dementia enjoys gardening, the person with dementia has a positive experience in an enlivening environment. Yet, if a person with dementia enjoys gardening, but the caregiving microsystem only offers indoor activities, the person with dementia experiences a deadening environment. An enlivening environment promotes an experience that can improve QoL for a person with dementia.

The QoL domain consists of three subdomains including time use, ability to function, and relative being. The fit between the person with dementia and the surrounding environment elicit a press toward either the suppression or expression of certain behaviors, which can be directly observed from time use, ability to function, and relative being. Time use refers to the level of engagement with the surrounding environment. For the person that enjoys gardening, the person with dementia will be engaged for longer durations of time in a gardening activity. Ability to function focuses on functional competence and incompetence influenced by the ability to use and exercise retained capacities. Again, a person with dementia gardening has the ability to use social and physical retained capacities. In this example, exercising social capacities may include a conversation with staff. Exercising physical capacities may include lifting and manipulating

plants, watering cans, or other gardening tools. Relative being refers to the experience of well-being or ill-being, which can be observed by a person’s apparent affect. For example, the person with dementia that enjoys gardening will show interest and pleasure, both indicators of positive affect and therefore, well-being. Overall, the LELQ Model emphasizes the importance of a fit between the lived environment and the person to create an enlivening environmental press that can improve QoL.

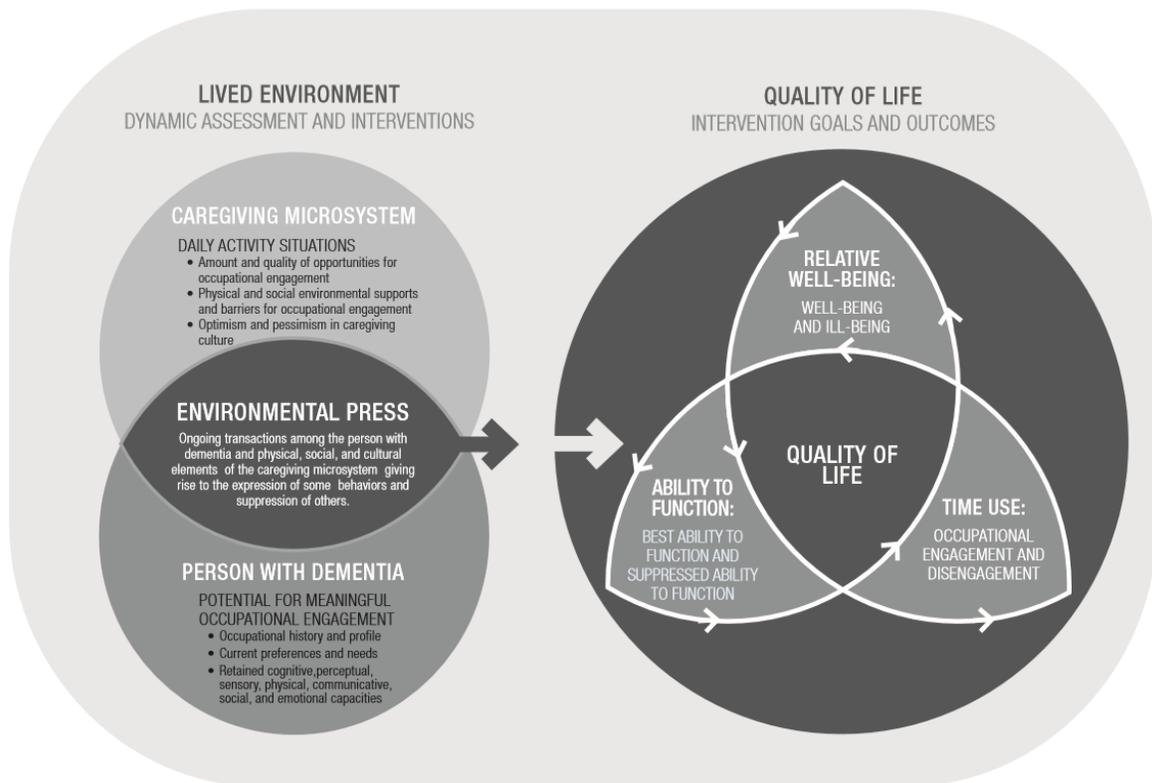


Figure 1. The Lived Environment Life Quality Model

Measuring QoL

For this thesis, I selected the Activity in Context and Time measure (ACT) to record two QoL indicators, time use and apparent affect (Wood, 2005).

One key aspect of understanding and measuring QoL is observing how people with dementia use their time. The LELQ Model and the ACT include time use as an important construct. Time

use is directly observed and analyzed using different measures including engaged gaze, functional mobility, participation in conversation, and participation in activity (Wood, 2005). Time use is a good indicator of QoL because the four time use measures cover the various levels at which people with dementia are able to engage and respond to their environment. For example, engaged gaze is a minimal expression of responsiveness to the environment used to measure intentionality. Functional mobility is an intermediate level of environmental engagement that requires more retained capacities. Participation in conversation and activity is the highest level of engagement with the environment as they indicate meaningful use of capacities. There are a number of activity situations that can elicit engagement, including activity groups. Today, there exists a wide variety of activity groups; my thesis will focus on animal-assisted interventions.

Within the LELQ Model, apparent affect is another important component to understanding if a person with dementia is experiencing well-being or ill-being. *Apparent affect* is defined as the ability for people with dementia to display emotions through facial expression, gestures, posture, non-word vocalizations, and body movements (Bartol, 1979; Mace, 1989). Apparent affect is also used as an indicator of QoL in the ACT (Wood, 2005). Apparent affect is a good indicator of QoL because it provides insight into the emotions, either positive or negative, of a person with dementia. These displays of emotion are categorized into both positive and negative apparent affect. Positive emotions include pleasure and interest (Lawton, Van Haitsma, Perkinson, & Ruckdeschel, 1999). Negative emotions include anger, anxiety or fear, and depression or sadness. Being able to differentiate negative and positive apparent affect is a method to understand the likes and dislikes of a person with dementia. Recognizing likes versus dislikes is

important as QoL is a subjective and individual experience that can guide how to care for a person with dementia.

Animal-assisted Interventions (AAIs)

“No future study of human health should be considered comprehensive if the animals in which they share their lives are not included” (Beck & Glickman, 1987).

Animals have been used in residential care facilities as part of programming to provide positive experiences for residents, with the ultimate goal of improving QoL (Filan & Llewellyn-Jones, 2006). Studies have suggested that animals are a valuable asset to programs because they offer unique and beneficial relationships by promoting a dynamic environmental press in a residential care facility. Besides pet visits for residents with dementia, AAIs have also become commonplace in residential facilities.

Animal-assisted interventions (AAI) are an umbrella term for animal-assisted therapies and animal-assisted activities (Morrison, 2007). *Animal-assisted therapies* are goal-directed interventions that incorporate animals and are designed and implemented by credentialed health care professional in order to promote social, physical, cognitive, and/or emotional function (Animal Assisted Intervention International, 2013). *Animal-Assisted activities* are much like animal-assisted therapies in that they focus on enhancing quality of life, but do not have specific therapeutic goals (Morrison, 2007). There are a number of benefits for people with dementia engaging in AAI including increased social relationships, improved emotional wellbeing, reduced problematic behaviors, increased relaxation, and reduced depression (Moretti et al., 2011; Petterson & Loy, 2008; Tamura et al., 2004). AAIs have also demonstrated the ability to lower stressors as objectively documented through lowered blood pressure and heart rate (Filan & Llewellyn-Jones, 2006; Hines, 2003). AAIs are also associated with improvement in a

person's cognitive and physical capacities, happiness, comfort, the quality of their interactions with other people, and experiences of being entertained (Velde, Cipriani, & Fisher, 2005, pp. 44-45).

A number of theorized explanations have sought to describe benefits associated from the human-animal interaction. Some explanations highlight the social and emotional aspect of interacting with an animal. Animals can act as social catalysts by stimulating conversation about them or other animals and pets (Netting, Wilson, & New, 1987). Moreover, animals can provide informal emotional support because they are often considered non-judgmental companions (Netting et al., 1987). Other explanations speculate that positive changes result from the physical nature of interaction, or activities, shared with animals. These activities that are shared include, among others, petting, grooming, playing, walking, holding, talking to, teaching, and talking about the animal (Buettner, Fitzsimmons, & Barba, 2011; Nordgren & Engstrom, 2014; Sellers, 2006). These theorized explanations are generally focused on animals such as dogs, cats, or birds.

Wood et al (in press) conducted a study of particular importance for this thesis. These authors systematically mapped research on AAIs for institutionalized people with dementia onto the LELQ Model. The authors concluded that positive AAI outcomes for people with dementia can be mapped onto the LELQ Model, specifically focusing on positive QoL indicators such as emotional vitality, occupational engagement, and functional abilities (Wood et al., in press). Findings also revealed that all included studies focused on canine-assisted therapy. However, in their discussion, the authors illuminate the potential opportunity and benefit for residents to travel offsite to a therapeutic horseback riding center and participate in an equine-assisted intervention.

Potential for Equine-assisted Interventions (EAIs)

“Since the domestication of the horse about 6000 years ago, the equine-human relationship has played a crucial role in the evolution of humankind. New fields have opened up in the past two decades, where horses are being utilized as friends, teachers, and therapists” (Garcia, 2010, p. 85).

Over time, the role of the horse has changed, and the relationship between horses and humans has shifted as the horse takes on a newly identified role as a healer. A variety of research and non-research based papers have offered different explanations of the therapeutic value of the horse for diverse populations. These ideas include: a horse’s non-judgmental attitude toward humans; an enriched sensory experience; use of non-verbal communication for emotional expression; the movement of the horse; and horses acting as catalysts for social interactions (Bachi, 2013; Chardonens, 2009; Dabelko-Schoeny et al., 2014; Kendall et al., 2014; Yorke, Adams, & Coady, 2008). These explanations demonstrate a potential to create a distinct opportunity to experience a positive relationship while addressing retained cognitive, physical, and social capacities within a rich environment.

Recent literature suggests that various populations ranging from grieving children to war veterans can benefit from interactions with horses, however the population of people with dementia is not represented (Glazer, Clark, & Stein, 2004; Yorke et al., 2008). Only one study has investigated the benefits of people with dementia interacting with horses in a therapeutic context. Dabelko-Schoeny et al. (2014) determined that implementing interventions incorporating horses and people with dementia in a day program is a feasible, non-pharmacological intervention that can reduce problematic behaviors. Based on Dabelko-Schoeny et al.’s (2014) study and other theorized explanations for the benefits of the incorporation of the horse and larger equine environment, this study sought to not only describe an EAIs for people

with dementia living in a residential care facility, but also explicate the experience of the participant through the lens of positive or negative QoL indicators.

Summary of Chapter Two

In this chapter, evidence was provided indicating that the numbers of people with dementia are increasing. In response to this increase, it was argued that dementia care providers need to focus on providing care that can enhance QoL. While pharmacological treatments can improve QoL, evidence suggests that nonpharmacological approaches are more effective. One nonpharmacological approach, environment-based interventions, modify the environment to elicit positive behaviors, suppress undesirable behaviors, and reduce the risk of excess disability by encouraging the use of retained capacities. AAI is one such approach. Recent literature suggests that various AAIs are associated with positive outcomes for people with dementia. EAIs are one type of AAI that have potential to influence QoL for people with dementia. One study has affirmed that people with dementia in a day program experienced benefits from interacting with horses (Dabelko-Schoeny et al., 2014). An EAI presents a unique opportunity to merge an AAI with a stimulating environment that has potential to impact QoL for people with dementia. The following chapter examines the methodological approaches that guided this study.

CHAPTER 3: METHODOLOGY

I conducted a mixed methods descriptive case study of four older adults with dementia who participated in the equine-assisted intervention (EAI), Riding in the Moment, at Hearts and Horses Therapeutic Riding Center in Loveland, Colorado. This program took place over four weeks during the fall of 2016. This study was nested within a larger study designed and implemented by a Ph.D. candidate.

A case study is the method of choice when the phenomena under study are not able to be distinguished from their contexts (Yin, 1993). As applied to this case study, the phenomenon of the EAI, Riding the Moment, cannot be separated from the overall equine environment including the physical structures of Hearts and Horses, the horses themselves, the leaders and volunteers who provide the program, and the many participants in the program. Furthermore, this descriptive case study aimed to present a complete description of the phenomenon within context. This descriptive case study used mixed methods, “a class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts, or language into a single study” (Johnson & Onquegbuzie, 2004, p. 17). The case included complementary quantitative and qualitative strands to add depth to the rich description of the phenomenon of the EAI.

Site Selection

The Professional Association of Therapeutic Horsemanship, International (PATH, Intl) has granted Hearts and Horses Therapeutic Riding Center (Hearts and Horses) its premier accreditation status ("Hearts and Horses Therapeutic Riding Center," 2016). Hearts and Horses offers a variety of equine-assisted activities and therapies to a number of populations. The

center's program, Riding in the Moment, aims to assist older adults with memory loss or other cognitive impairments to have safe and enjoyable experiences in equine activities. Riding in the Moment began in 2011 with a partnership with one senior living center and has expanded since. Hearts and Horses offers Riding in the Moment during the summer and fall to participants coping with dementia, Parkinson's disease, and traumatic brain injury. I chose Hearts and Horses for this study because it offers premier accreditation status and an innovative program for the population of interest, people with dementia. Additionally, I selected this program because it had offered Riding in the Moment for a number of years, which has refined a well-established program with experienced staff and volunteers.

Riding in the Moment was a bounded system, meaning that the case occurred within a specific time and place that cannot be fully replicated. This study was further bounded by its focus on four participants from Seven Lakes Memory Care that attended the program for four weeks during fall 2016. Data were collected during the four-week program spanning September 23, 2016 through October 14, 2016.

Participants

Participants in Riding in the Moment for the fall session included residents of Seven Lakes Memory Care that had been diagnosed with Alzheimer's disease or another related dementia. Staff at Seven Lakes Memory Care screened participants based on these criteria: 1) were able to ambulate by walking or wheel-chair, 2) on stable regimen of medications, 3) had been diagnosed with early to late dementia; 4) had lived in the residential care facility for more than four weeks ; and 5) were not allergic to horses. Staff at Hearts and Horses then assessed participants who met the aforementioned criteria for their abilities to follow directions and to get on and off a saddle supported by a barrel, which replicated mounting and dismounting a horse.

Participants who were able to complete the simulated mounting and dismounting task were cleared to ride horses during Riding in the Moment. Those who were not able to complete this task were not permitted to ride, but were welcomed to participate in ground activities such as grooming. Participation in Riding in the Moment was voluntary and both participant and their legally authorized representative consented to participation. Eight individuals participated in the fall 2016 session. For this thesis, participants had to meet the inclusion criteria of Seven Lakes Memory Care. Participants that had dementia as a secondary diagnosis were excluded.

Four participants in Riding in the Moment were purposively selected to represent a sample of maximum variation (Creswell, 2013). Maximum variation sampling is a common form of qualitative sampling, which consists of creating criteria that differentiate participants and then selecting participants based on those criteria. More specifically, in descriptive research, maximum variation allows for the exploration of both common and unique events or behaviors that can occur across a broad range of personal characteristics (Sandelowski, 2000). To achieve variation, participants for this study were selected based on their stage of dementia, experience with horses, and gender. The Director of Nursing at Seven Lakes Memory Care, in consultation with the primary care provider, determined the participants' stages of dementia, which could include early, early-moderate, moderate, late-moderate, or late stage. As part of a dissertation, a Ph.D. candidate created occupational profiles for all of the participants, which were used to determine the participant's level of experience with horses.

Sampling included two males and two females. Two participants in the sample had extensive prior experience with horses, while two participants did not. Also, participants varied in stages of dementia, which included one participant in early-moderate stage, one participant in moderate stage, and two participants considered in the late-moderate stage of dementia. The

pseudonyms for the four participants are Samantha, Lynn, Matthew, and Gary. Their occupational profiles are next briefly summarized as understood at the time of the study's start.

Samantha was a 71-year-old female who participated in Riding in the Moment in previous sessions. Samantha was in the early-moderate stage of dementia. Samantha was highly verbal but had trouble finding words at times. Samantha was born in California and moved to Colorado. She enjoyed animals, dancing, music, walking, volunteering, and watching "*Ellen*."

Lynn was a 95-year-old female in the late-moderate stage of dementia. Lynn participated in Riding in the Moment prior to this study. Lynn used a four-wheeled walker as she was at high risk for injurious falls. Lynn was verbal but tended to ramble and typically demonstrated some agitation and sadness. Lynn enjoyed walking and used to be a secretary of a college before working in a government office. Lynn enjoyed music and loved animals.

Matthew was an 81-year-old male who was in the late-moderate stage of dementia. Matthew participated in Riding in the Moment prior to the fall 2016 session. Matthew was communicative and sometimes demonstrated agitation and wandering. Matthew was a farmer and rancher that loved cattle and horses. Matthew enjoyed Polka dancing and woodworking.

Gary was an 83-year-old male considered in the moderate stage of dementia. Gary participated in Riding in the Moment in previous sessions. Gary had a history of falls and was highly verbal, but did have problems with word finding. Gary owned farmland and horses and obtained a degree in engineering. Gary was in the army and liked to travel and exercise, especially walking.

This study was nested within a larger study that obtained approval from the Colorado State University Institutional Review Board. Informed consent was obtained from participants and their legally authorized representatives.

Data Collection

The Riding in the Moment offered a rich context, which according to Yin (1993) indicates that there are a large number of variables. Therefore, multiple sources of evidence were needed to provide detailed, in-depth understandings of the case (Creswell, 2013; Yin, 1993). Additionally, case study information is commonly recorded using field notes and observational protocols (Creswell, 2013). Therefore, field notes (qualitative data) and recorded observations (quantitative data) were collected to provide rich descriptions of Riding in the Moment and durations of quality of life (QoL) indicators and occupational opportunities offered by staff and volunteers from the program. Because Riding in the Moment took place in the fall of 2016, I collected field notes and videotaped data of each participant between 10 and 11 AM on September 23, 2016, September 30, 2016, October 7, 2016, and October 14, 2016.

Data Collection: Quantitative

Videotaped data were collected and quantitatively analyzed to help answer research questions one and four. Trained videographers followed each of the four participants for one hour during every session of Riding in the Moment over the four-week program. Each videographer participated in education and practice sessions to ensure high quality video that would allow me to analyze the data accurately. Each videographer began videotaping when the participant exited the bus upon arrival at Hearts and Horses. Video observations continued throughout the entire session of Riding in the Moment and videographers followed participants during the various activities such as grooming, riding in the arena, and riding on the outdoor trail. Videographers were instructed to be as unobtrusive as possible and only engage with participants if directly initiated interaction or in exceptional circumstances.

I collected 16 videos for research question one; on average, each video was about one hour in length. Due to insufficient time to accurately analyze the 16 videos, I used stratified random sampling to selected eight videos to collect data. More specifically, the sample was stratified by participant as each participant was represented by two videos. I first assigned a number of one through 16 to each video. Using a random number table, I then randomly selected a beginning number and followed the sequence of numbers until there was a match with the video number. I continued this process until I randomly select two videos for each of the four participants.

I uploaded each of the eight randomly selected videos into Noldus Observer XT 13 (Noldus) in order to accurately describe and quantify durations of positive and negative QoL indicators demonstrated by the four participants across the eight randomly selected videos. Noldus is a “professional and complete manual event recorder for the collection, management, analysis, and presentation of observational data” (Noldus Information Technology, 2016). Noldus software can be used to study behavioral processes that require a fine-grain level of detail. Although originally developed for behavioral research of animals, the software capacities of Noldus have expanded to allow accurate and precise analyses of complex human behaviors and interactions.

Table 1 presents the measures that I used to capture, describe, and quantify positive and negative QoL indicators evident in the videotaped data using the method of continuous sampling in Noldus. I used continuous sampling to record all of the QoL indicators that occurred during the observations, meaning that there was always one code assigned from each category throughout the whole observation. For example, gaze was coded as either engaged gaze, unengaged gaze, eyes closed, or missed observation throughout the whole observation, with no duration of time missing a code. Each code category was mutually exclusive and exhaustive. Missed observation was coded if I was unable to see the appropriate indicators of a participant

demonstrating a certain behavior for ten seconds or more. For example, if I was unable to see a participant’s face for more than ten seconds I would code missed observation-affect. All codes other than missed observation had to be observed for a duration of five or more seconds to be coded. One of the codes, yes-participation, had a modifier group of codes to more richly describe what occurred during Riding in the Moment. For example, modifier codes such as “dance” or “pet horse” identified the specific activity in which a participant engaged when coded as yes-participation. Additionally, although agitation is not considered a positive or negative apparent affect, for this study it is included as an indicator of relative-being. To ensure coding accuracy, I viewed each of the recorded observation three times, focusing on coding two (of the six) subdomains each time. See the Appendix for code definitions, coding procedures, and coding rules.

As previously described, these measures are from the Activity and Context in Time (ACT), a direct observation tool that records environmental correlates of QoL of people with moderate and severe Alzheimer’s disease (Wood, 2005). As also previously described, measures in the ACT are congruent with the QoL domain of the Lived Environment Life Quality (LELQ) Model, specifically, with the QoL subdomains of time-use and apparent affect.

Table 1. Positive, Negative, and Neutral QoL Indicator Codes for Time-use and Apparent Affect.

	Codes: Positive QoL Indicators	Codes: Negative QoL Indicators	Codes: Neutral QoL Indicators
Time-Use Subdomains:			
Gaze	<ul style="list-style-type: none"> • Engaged Gaze 	<ul style="list-style-type: none"> • Unengaged Gaze • Eyes Closed 	<ul style="list-style-type: none"> • Missed Observation
Position and Movement	<ul style="list-style-type: none"> • Stairs • Standing • Walking • Sitting on Horse 	<ul style="list-style-type: none"> • Lying down 	<ul style="list-style-type: none"> • Sitting • Missed Observation
Communication	Yes Communication	No Communication	Missed Observation

Participation	Yes Participation <i>Modifiers:</i> <ul style="list-style-type: none"> ○ <i>Put on or take off helmet</i> ○ <i>Ride Horse</i> ○ <i>Mount or Dismount</i> ○ <i>Pet</i> ○ <i>Groom</i> ○ <i>Have Picture Taken</i> ○ <i>Pet and Ride</i> ○ <i>Pet and Groom</i> ○ <i>Ride and Mounted Game</i> 	No Participation	Missed Observation
Apparent Affect Subdomains:			
Apparent Affect	<ul style="list-style-type: none"> ● Pleasure ● Interest 	<ul style="list-style-type: none"> ● Anger ● Anxiety or Fear ● Sadness or Depression ● No Apparent Affect 	Missed Observation
Agitation	No Agitation	Yes Agitation	Missed Observation

To achieve accurate coding, I and another investigator coded 20% of the data set for interrater reliability. We spent over thirteen hours coding for reliability due to the rigorous nature of continuous coding. To be considered in agreement for continuous coding, we had to agree on the appropriate code for a behavior and when that behavior started and stopped within a three second window. We achieved an initial overall kappa coefficient of 0.73, or moderate agreement, after coding 12% of the data set (Viera & Garrett, 2005). Interrater reliability was also established after coding 12% of the dataset for each coding category including participation, gaze, apparent affect, position and movement, agitation, and communication with kappa

coefficient's of 0.60, 0.70, 0.50, 0.92, 1, and 0.66, respectively. To protect against interrater drift, we coded 4% of the dataset after I coded three of eight videotapes, then again after I coded six of the eight videotapes. There were two analyses for interrater reliability drift, both of which remained in the moderate agreement category with kappa coefficients of 0.68 and 0.73.

Data Collection: Qualitative

Qualitative data were collected using written field notes to help answer research questions two and three. I recorded written field notes at each of the four session for the duration of the four-week program. A Ph.D. candidate trained me to record descriptive information about what occurred during the sessions of Riding in the Moment. I collected the field notes by observing what occurred in the social context including interactions among participants, memory care staff, instructors, and volunteers. I also noted the physical aspects of the context, such as the arena structures and objects used for activities. During the first session, I observed all participants as a collective and took notes on individuals who were engaged in specific activities. In the proceeding sessions, I sought out novel activities or events that I had not previously documented. While documenting activities, I would record the actions of the participants, instructors, volunteers, or horses in addition to physical objects or space used during those interactions. I recorded parts of conversations among participants, instructors, and volunteers. Additionally, I recorded descriptions of the horses, including their movements and reactions to events that occurred in the environment. I completed one practice session of field notes during a different session of Riding in the Moment prior to beginning the field notes for this case. I hand wrote the field notes during the sessions, then transcribed the notes to a Word document. I reviewed each field note document no later than one week following the corresponding session; during this review, I added reflective comments and thoughts to the document in brackets. The first two

sessions yielded five pages each of documented field notes and the last two session yielding four pages each, totaling 18 pages of documented field note observations. I uploaded the four field note documents into NVivo for qualitative analyses, a qualitative software program that provides designs to organize, analyze, and find insights within qualitative data (Nvivo, 2014). I uploaded the four recorded field notes into Nvivo and developed an a priori coding scheme within the program.

Table 2 presents the coding scheme and definitions that were developed to analyze the field notes and extract qualitative data. The coding scheme that I developed used explicit language and key concepts from the LELQ Model (Wood et al., 2016). I developed codes based on the lived environment domain, concentrating on capturing the description of opportunities for occupational engagement and physical and social environmental supports or barriers for those offered occupational opportunities. Additionally, I developed codes from the quality of life domain to capture any evident time use, ability to function, or relative-being documented in the field notes.

Table 2. Codes and Code Definitions for Field Note Data Analysis.

Domain Code	<i>Subdomain Code</i>	Descriptor Code
Environmental Supports: Refers to any occupational	<i>Occupational Opportunities:</i> Opportunities or options for participants to participate in activities or tasks afforded by the program	X
	<i>Physical Environmental Supports:</i> Any aspect of the physical environment used by volunteers, researchers, or instructors to enhance or support participation for participants	<u>Space:</u> Descriptions of the physical surroundings of the participants, instructors, or volunteers, including music
		<u>Objects:</u> Physical objects or tools that participants, instructors, volunteers, or horses interact with or use during the program

opportunities or physical or social environmental supports present during Riding in the Moment.	<i>Social Environmental Supports:</i> Interactions that occur among the participants, instructors, or volunteers that impact the experience of the participants	<u>Care Staff:</u> Interactions or actions performed by care staff to support or enhance participant experience
		<u>Horse:</u> Interactions or descriptions of the horse that impact the participants, volunteers, instructors, or care staff
		<u>Instructor:</u> Interactions or actions performed by instructors to support or enhance participant experience
		<u>Participants:</u> Interaction or actions that occur among participants to support or enhance participant experience
		<u>Researchers:</u> Interactions or actions performed by researchers to support or enhance participant experience
		<u>Volunteers:</u> Interactions or actions performed by researchers to support or enhance participant experience
Quality of Life Indicators: Any indicators of in the moment quality of life pertaining to time use, ability to function, and apparent affect	<i>Ability to Function:</i> Actions or interactions that demonstrate a participant's use of retained capacities and functional competence, including physical and cognitive abilities	X
	<i>Apparent Affect:</i> Refers to emotional expression exhibited through body language or facial expressions	X
	<i>Participant Conversation:</i> Excerpts of conversations by or among participants	X
	<i>Time Use-Positive:</i> How participants use their time	X

	during the program in a positive way	
	<i>Time Use-Negative</i> : How participants use their time during the program in a negative way	X
Other Environmental Elements: Other elements of the environment that may have influenced the participants, but were beyond the control of the providers, such as weather conditions.	X	X
Other Miscellaneous: Refers to occurrences that did not fit or correspond with other LELQ Model domains or sub-domains	X	X

Data Management

I stored data as physical and digital copies. I transcribed the hand written field notes into Microsoft Word documents and then saved the documents as electronic files. These files were uploaded in the NVivo software program for coding. I saved the video observational data on a computer desktop, a network drive, and memory cards. The videos were uploaded into the Noldus software program for further data analysis of the recorded observations.

Data Analysis

To answer research question one, I used quantitative methods to analyze videotaped observational data of participants in Riding in the Moment. I answered research questions two and three by qualitatively describing Riding in the Moment using the field notes. I answered research question four by integrating qualitative and quantitative findings to determine which occupational opportunities elicited positive indicators of QoL.

Research Question One: What durations of positive and negative QoL indicators are evident in four older adults with dementia as they participate in Riding in the Moment?

I answered research question one using the videotaped observations that were coded in Noldus. I used descriptive statistics, specifically duration of the coded behaviors, to describe positive or negative indicators of QoL that were demonstrated during Riding in the Moment. Within Noldus, I coded the videos and created a data profile to analyze data from specific videos. To create a data profile, I narrowed the data set to only include the eight videos selected for this study and the specific behaviors that I wanted to analyze. I then used the statistical analysis function in Noldus to calculate the duration of each behavioral code. The data were reported by the duration of all behavioral codes in seconds for each individual participant. I exported these data into an Excel document to determine combined durations of codes and convert the durations into minutes. I then used the pivot table function to analyze and create visual representations of the data. The duration of behaviors helped me to describe how often participants demonstrated specific positive or negative indicators of QoL. QoL indicators were chosen based on the assumption that a longer duration of time spent in negative or positive states does speak to the experience of QoL, acknowledging that negative indicators of QoL are natural to human emotion and expression. Additionally, there are indicators of QoL that are neutral in nature, such position and movement, that do not solely provide accurate descriptions of the experience of QoL. I also calculated the duration of position and movement behaviors to speak to the use of retained functional abilities demonstrated during Riding in the Moment.

Research Question Two: What occupational opportunities do staff and volunteers provide to participants throughout Riding in the Moment?

Using the codes collected from field notes and the videotaped data, I qualitatively captured a comprehensive list of occupational opportunities that occurred during Riding in the Moment. While coding the four field note documents, I analyzed that data for frequency of coded categories. Any noted opportunities that were consistently present in all four field notes were considered occupational opportunities. I then compiled an accurate list and description of the occupational opportunities that occurred in Riding in the Moment. To demonstrate the richness of the data, I calculated the percentage of occupational opportunities that were coded in the four field note documents. To obtain this statistic, I used NVivo to generate a number of total references, domain references, subdomain references, and code descriptor references. To calculate the percentage of occupational opportunities, I divided the number of occupational opportunity codes by the total referenced codes.

Research Question Three: What physical and social environmental supports and barriers are evident in context of the specific occupational opportunities offering during Riding in the Moment?

The field notes also provided insight into the physical and social environmental supports offered by Riding in the Moment. I used NVivo to analyze the field notes to extract information about environmental supports. According to Sandelowski (2000), qualitative description emerges from data that is observed in the field and should capture a complete, low-inference description of the elements of an event. I created an un-interpreted account of physical surroundings and actions of instructors, volunteers, care staff, horses, participants, and researchers that potentially impacted participants during their engagement in occupational opportunities. I coded all physical

and social environmental supports in NVivo and extracted these codes to create a list of individual physical and social environmental supports. I then connected these specific physical and social environmental supports to specific occupational opportunities. Again, to demonstrate the pervasiveness of the environmental supports, I calculated the percentage of physical and social environmental supports. With the total number of references generated by NVivo, I calculated the separate percentages of physical and social environmental supports by dividing the number of corresponding reference codes by the total referenced codes.

Research Question Four: What positive QoL indicators related to time use (gaze, position and movement, communication) and apparent affect (sadness/depression, anxiety/fear, anger, interest, or pleasure) do participants demonstrate while engaged in specific activities during Riding in the Moment?

To answer research question four, I used quantitative analysis within Noldus to determine the percentage of time that participants, as a whole, demonstrated positive indicators of QoL during specific activities. These specific activities were determined based on the occupational opportunities offered by Riding in the Moment, which were identified in the findings for research question two.

By definition for this thesis, specific activities are occupational opportunities that participants choose to engage in. For example, a participant could be offered the opportunity to pet the horse. If the participant declines petting the horse, they have declined the opportunity to participate in petting the horse. However, if they accept the opportunity to pet the horse, they choose to participate in that specific activity. To determine the specific activities, I created a list of high-level occupational opportunities, or opportunities that were integral to another more encompassing occupation. For example, when playing games occurred within the larger

occupational opportunity of riding the horse, I regarded riding a horse, but not playing games, as the key high-level occupational opportunity. Then, in Noldus, I identified instances of occupational opportunities with which participants chose to engage. In order to do so, I first looked at segments of videotape coded, yes-participation, which would indicate that a participant had chosen to engage in an occupational opportunity. I then identified the specific activity in which the participant had engaged; that is, riding, grooming, petting, putting on or taking off helmets, and dancing. Participation in the specific activities is exhaustive and mutually exclusive, meaning that one specific activity can be coded at one time.

After identifying the specific activities in which participants had actively participated, I created a nested data profile in Noldus. The data profile filtered the analysis so that I could extract the duration of all codes that are nested, or occur specifically within, one selected code. For example, if the chosen code was “riding the horse” I could extract the duration for codes such as interest or engaged gaze that occurred during any observation time that was coded as “riding the horse.” I created nested data profiles for riding, petting, grooming, putting on or taking off helmets, and dancing. I exported the data from Noldus into an Excel document. There, I used the pivot table function to continue to analyze the data. For each specific activity, I calculated the total duration of a specific code that occurred during a specific activity. For example, I calculated the total duration of time that interest was demonstrated during riding; I then calculated the overall percentage of time that interest was demonstrated by dividing its duration by the duration of total time riding. Overall, I was able to calculate the percentage of time that agitation, communication, position and movement, affect, and gaze were demonstrated during riding, petting, grooming, putting on or taking off helmets, and dancing.

Synthesis of Data from Qualitative and Quantitative Strands

My syntheses of qualitative and quantitative data pertained to findings related to research questions two, three, and four and were organized around the concept of occupational opportunities. Based on my qualitative analyses of field notes, I developed a general overview of how Riding in the Moment operated, as well as in-depth descriptions of each occupational opportunity. I also interwove relevant physical and social environmental supports within descriptions of each occupational opportunity, separating some distinct environmental supports for emphasis or clarity. Using my quantitative analyses of videotaped data, I attended to each instance where yes-participation was coded in Noldus, and, more exactly, to the modifiers that had indicated the specific activity in which the participant had chosen to engage (e.g., actively riding, grooming, or petting a horse). I then integrated into my description of the corresponding occupational opportunity (e.g., the opportunity to ride, groom or pet a horse) the positive indicators of QoL that were present during the chosen activity. Overall, I synthesized findings to develop a rich description of the occupational opportunities and QoL indicators that were present during Riding in the Moment.

Summary of Chapter Three

This study was a mixed methods case study of the EAI, Riding in the Moment. Field notes and recorded observations of four purposively selected participants comprised its two forms of data. These data were collected and analyzed using the NVivo and Noldus software programs to answer the four research questions. Data collection and analysis for research question included using codes derived from the ACT to describe the positive and negative indicators of QoL demonstrated by participants. Research question two used qualitative analyses to investigate the occupational opportunities that were offered during the EAI. Research question

three also used qualitative analysis to provide insight into the environmental supports present in the program to help participants engage in occupational opportunities. Data collection and analysis for research question four included calculating descriptive statistics for positive indicators of QoL that occurred during specific program activities. The data for research questions two, three and four were synthesized in a way that merges qualitative and quantitative findings.

CHAPTER FOUR: RESULTS

The results of this study are presented by first answering research question one through a description of the durations and percentages of time that negative and positive quality of life (QoL) indicators were demonstrated during Riding in the Moment. Research questions two and four are next answered by describing occupational opportunities and the QoL indicators elicited by those occupational opportunities. To answer research question three, physical and social environmental supports that promoted engagement in specific occupational opportunities are woven into the descriptions of those opportunities. The chapter concludes with a synthesis table that organizes findings based on relevant dimensions of the Lived Environment Life Quality (LELQ) Model, which provided the study's theoretical rationale.

Positive and Negative Quality of Life Indicators during Riding in the Moment

Research question one asked, "What durations of positive and negative QoL indicators are evident in four older adults with dementia as they participate in Riding in the Moment?" To answer this question, durations of specific QoL indicators are reported for the group of four participants as a whole based on 8.3 hours of total observation time. Percentages of time for each QoL indicator are also reported. The durations and percentages of missed observation codes are not reported; therefore codes for one domain may not add up to 100%. In the visual representations below, each of the durations of QoL indicators are categorized by participant. As each participant was represented by two videos, the longest duration for a QoL indicator is around 120 minutes. Quantitative analysis from the videotaped observations coded in Noldus revealed long durations of positive QoL indicators by the four participants, which are next reported in decreasing order of total durations across all participants.

Observations of Positive QoL Indicators

Overall, all participants demonstrated positive indicators of QoL (Figure 2). Of the positive indicators of QoL, engaged gaze was the most prominent positive indicator of QoL, coded for a total duration of 470 minutes (7.82 hours) or 94% total observation time. Second in prominence was the positive indicator of QoL, interest, coded for a duration of 366 minutes (6.10 hours), or 82% total observation time. It is important to note that engaged gaze and interest are different in that engaged gaze refers to orientation to the environment, whereas interest indicates substantial attention and focus to aspects of the environment. Yes-communication was the third most perceptible QoL indicator with a total duration of 266 minutes (4.42 hours), or 53% total observation time. Yes-participation was coded for the duration of 150 minutes (2.49 hours), or 30% of the total duration of the observations. Yes-participation was modified by codes indicating active engagement in dancing, grooming, having pictures taken, mounting or dismounting the horse, petting, riding and petting, petting and grooming, putting on or taking off helmets, and riding. Of these modifier codes, riding the horse, grooming the horse, and petting the horse had the longest durations (Figure 3). Pleasure was demonstrated for the duration of 55 minutes (0.92 hours), or during 11% of the observations.

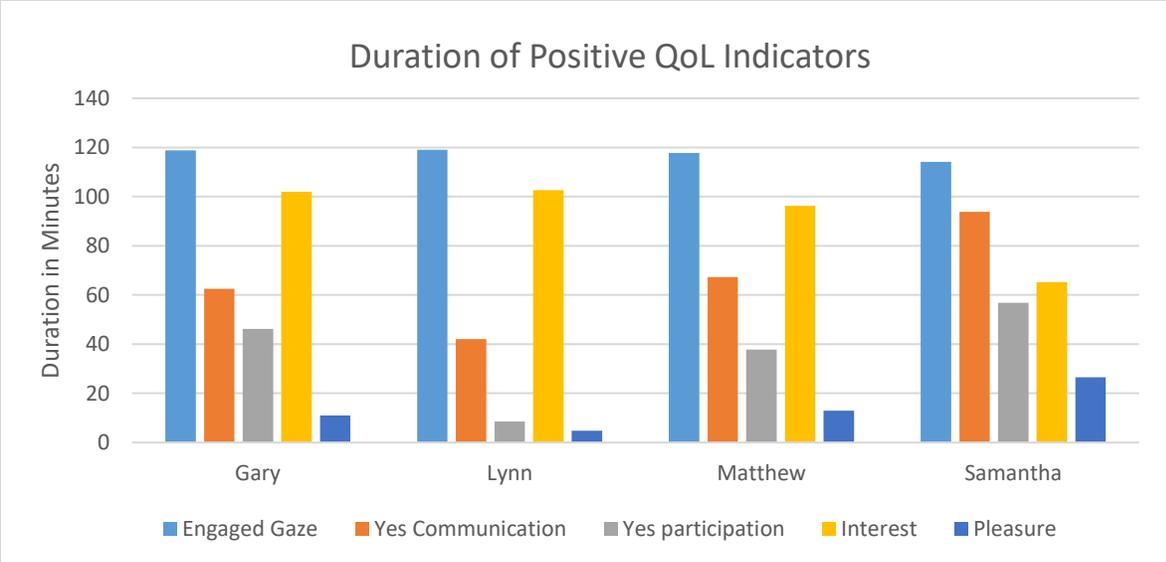


Figure 2. Duration of specific positive QoL indicators by participant

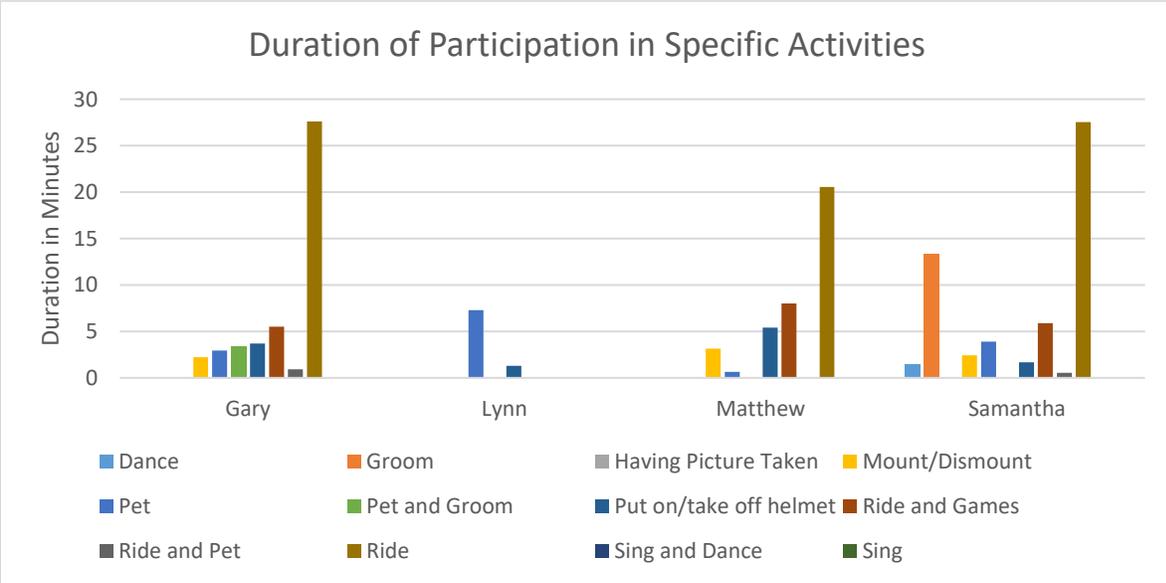


Figure 3. Duration of participation in specific activities by participant

The time-use domain of position and movement included the codes of lying down, sitting, sitting on the horse, standing, walking, and climbing stairs. The code, lying down, is considered a potentially negative QoL indicator, especially if recorded extensively during normal waking hours. The code of sitting is considered neutral, whereas the codes of sitting on the horse

while riding, standing, walking, and climbing stairs are potentially positive, especially if their durations suggest greater physical activity.

No participant was observed to spend any time lying down during the program. Sitting was observed for the longest duration, lasting 293 minutes (4.88 hours), or 58.8% of the total observation time. However, sitting on the horse was the second most frequently observed: specifically, participants sat on the horse while riding for 102 minutes (1.70 hours), or 20.5% of the total observation time. Standing, walking, and climbing stairs were also observed for the durations of 58 minutes (12%), 40 minutes (8%), and 3 minutes (<1%), respectively. (Figure 4).

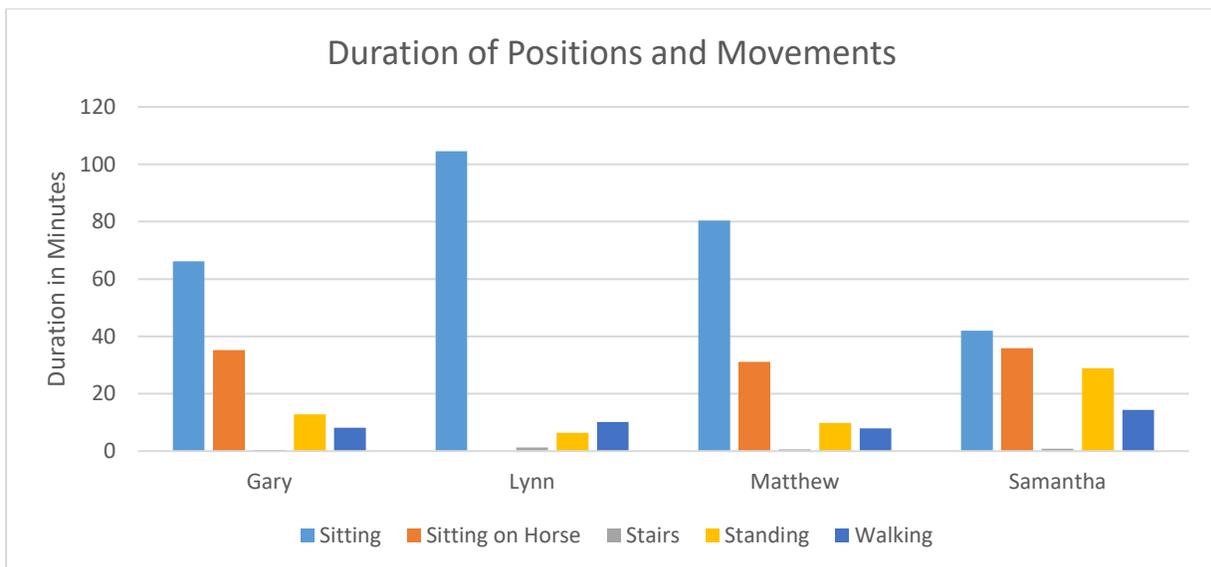


Figure 4. The duration of specific positions and movements by participants.

Observations of Negative QoL Indicators

The negative QoL indicators of anger, sadness or depression, and agitation were not observed during the eight randomly selected 8.3 hours of videos. However, eyes closed was observed for one minute in Lynn, and for five minutes in Matthew. Unengaged gaze was observed in Lynn for 63.5 seconds. Anxiety or fear was observed in Matthew for 21.3 seconds. It is interesting to note

that both of these participants, Matthew and Lynn, are considered in the late-moderate stage of dementia. The observations of negative QoL indicators each comprised less than 1% of the total observation duration.

To summarize, the four participants demonstrated longer durations and more positive indicators of QoL than negative indicators of QoL. On average, 52% of all observations were of positive indicators of QoL and 48% were of neutral indicators of QoL. Conversely, only 0.24% of total observations were of negative indicators of QoL. Additionally, missed observations were most common for affect (13%), communication (3%), and gaze (4%). A variety of positions and movements were also recorded for participants, with sitting being the most common and sitting on the horse being the second-most common.

Occupational Opportunities in Riding in the Moment

Answers to research questions two, three, and four are next presented. Research question two asked, “What occupational opportunities were offered during Riding in the Moment?” In this study, occupational opportunities are considered specific opportunities to engage in meaningful activities that staff and volunteers offered to participants with dementia during Riding in the Moment. Question three asked, “What physical and social environmental supports promote engagement or success in occupational opportunities?” For this study physical environmental supports are considered aspects of the physical environment used by volunteers, researchers, or instructors to enhance or support participation. Social environmental supports include interactions that occur among the participants, instructors, or volunteers that impact the experience of the participants. Qualitative analyses of field notes demonstrated a rich array of occupational opportunities and related social and physical environmental supports aimed at enabling participation in those opportunities. A total of 386 codes were applied to the four field

note documents: 71% of all coded texts in the field notes pertained either to occupational opportunities (17%) or to physical and social environmental supports (54%). Recorded videos acted as a secondary check to the field notes to ensure richness and depth of description of occupational opportunities and environmental supports. Five main occupational opportunities were identified: 1) riding a horse, 2) grooming a horse, 3) petting a horse, 4) putting on or taking off helmets or coats, and 5) bench time. Other occupational opportunities included taking tours of the facility, getting on and off the bus, dancing, taking pictures, and social interactions with a horse or other people. Below, physical and social environmental supports are related to each occupational opportunity and identified in Table 3.

Question four asked, “What positive QoL indicators related to gaze, position and movement, communication and apparent affect are demonstrated while participants actively engage in specific activities during Riding in the Moment?” Answers to this question are included in the descriptions below of each occupational opportunity and identified in Table 3. Table 3 organizes findings using dimensions of the LELQ Model, which provided the theoretical framework of the study.

General Description of Riding in the Moment

During the program, the participants had the choice to engage or not engage in the offered occupational opportunities, therefore the opportunities that a participant chose to engage in varied according to each participant. For example, some participants preferred not to ride or could not ride the horse due to physical limitations. To begin the session, all participants exited the bus, walked inside the barn, then sat on a bench or in chairs. With help from volunteers, most participants put helmets on while seated. The participants then sat in chairs and had an opportunity to engage in social interactions until a volunteer, care staff, or a riding instructor

initiated one of the occupational opportunities offered at Riding in the Moment. Riding in the Moment was a one-hour session during which participants could engage in any of the offered occupational opportunities. At the end of the hour, volunteers and riding instructors would guide the participants back to their bus and help them up the stairs of the bus.

Descriptions of Occupational Opportunities and Nested QoL Behaviors.

Riding. Each participant that chose to ride had one opportunity for riding each session. The amount of time that participants rode the horse varied from about 10 to 20 minutes per session, depending on the number of participants that chose to ride that day. Typically, about four to six participants rode during a session. Components of the occupational opportunity of riding the horse included mounting and dismounting, adjusting the saddle, using the reins to steer the horse, and participating in games that were set up in the arena or on the outside trail. The participant mounted the horse using a raised platform structure and directions from a riding instructor, held the reins, asked the horse to “walk on,” then rode into the arena. When in the arena, the volunteers and riding instructor helped the participant safely adjust the saddle so that he or she was sitting upright and centered in the saddle. Volunteers then placed the participant’s feet in the stirrups as the riding instructors inspected the length of the stirrups. The participant then rode inside the arena, with the option of maneuvering through one to three different games set up in the arena. A horse leader guided the horse while two side walkers provided physical support to the participant. Common games in the arena included maneuvering the horse through cones, walking over poles, guiding the horse into a box shaped by poles, putting on and taking off rings from a ring tree, steering around barrels, and tossing a ball through a hoop. After riding in the arena, the participants usually rode on the outside trail. Common games offered on the outside trail included guiding the horse over poles laid in different designs, and stepping onto and off a

bridge. After maneuvering through the outside trail, the participant would go back inside the arena, dismount the horse in the arena, then ambulate back to sit in the chairs. The participant then had the option to take the riding helmet off. For a complete description of physical and social environmental supports, refer to Table 3.

Three of the four participants in the group participated in riding the horse during the program. In total, the participants were observed to ride the horse for 102 minutes, or 1.7 hours (20%) of the 8.3 hours of observations. Findings pertaining to the codes that are nested within the time observed riding demonstrate long durations of active orientation to the environment, or engaged gaze, and of participation in communication. Additionally, in 77% of all riding observations, participants demonstrated either interest or pleasure. During riding, participants demonstrated no agitation. For more detailed descriptions and statistics, refer to Table 3.

Grooming. One horse and volunteer stayed at a grooming station throughout the session. The grooming station was located outside the arena, opposite the gate the horse and riders used to enter and exit the arena. The amount of time grooming was not restricted. During the last session, it was recorded in the field notes that participants, not just the four included in this study, groomed the horse up to nine times. The opportunity for grooming was typically initiated by a volunteer asking the participant if they would like to groom. The volunteer would then walk the participant over to the grooming station and help the participant select a brush. At the grooming station, the participant could brush and/or pet the mane and the body of the horse using soft brushes or combs. The volunteers would provide verbal and demonstrational cues for how to brush the horse. Sometimes the volunteer would groom the horse beside the participant. The volunteer that stayed at the grooming station would ensure that the participant was in a safe position to groom the horse. The volunteers would ask the participant if they were finished

grooming. If the participant was finished, the volunteer would collect the brushes and put them away. After the brushes were returned, the volunteers would guide the participants to the bench or move to another occupational opportunity.

Only two of the four participants were observed to groom the horse during the video observations. Grooming was observed for the duration of 13 minutes (3%) of the total observation time. The codes nested within grooming demonstrated large proportions of engaged gaze and communication. Moreover, grooming required the physical capacities of walking and standing which were observed 97% and 3% of the total observations for grooming, respectively. There were positive indicators of relative being demonstrated during grooming. These included interest being demonstrated 43% of the time and pleasure being observed 29% of the time grooming. Additionally, no participants demonstrated signs of agitation.

Petting. Participants had the opportunity to pet the horse during grooming, while seated, when riding the horse, or after dismounting the horse. One opportunity directly aimed to elicit participation in petting included one volunteer leading a miniature horse into the barn near the bench area where participants were sitting. Occasionally, the volunteer at the grooming station would lead the grooming horse to the benches for the participants to pet. Volunteers would move ambulation devices away from participants so that the horse could be moved within reach of the participants. Volunteers sitting on the bench would provide verbal and hand-over-hand cues for some participants. Although most participants would sit and reach for the horse, some participants would stand to pet the horse. The horse was led down the line of participants, stopping at the participants that used verbal communication or physical gestures to indicate that they were interested in petting the horse. The volunteer leading the horse determined how long the participants could participate in petting before leading the horse away from the participants.

The videotaped observations revealed that petting elicited a number of positive indicators of QoL. In the group of four participants, all engaged in the occupational opportunity of petting. Overall, the duration of petting was 18.1 minutes, or 4% of total observation time. Participants demonstrated engaged gaze 100% of the time that petting was observed. Yes-communication was also demonstrated to occur 69% of the time that participants were petting the horse. While petting, participants were predominantly sitting or standing. Petting also elicited positive indicators of relative being including interest and pleasure. Petting elicited longer durations of pleasure than other specific activities, as pleasure was observed 34% of the time that petting occurred. Refer to Table 3 for the physical and social environmental supports and the durations of time use and relative being that were demonstrated during petting.

Putting on or taking off articles of clothing. During Riding in the Moment, there were opportunities to put on or take off riding helmets. After arriving to the horse barn and sitting on the benches, the volunteers would help the participants to put on riding helmets. The volunteers would bring a helmet to the participant, place it on their head, check the helmet for fit, and then help the participant fasten the chinstrap of the helmet. In later sessions, some volunteers would hand the participant the riding helmet and provide verbal and physical cues as needed to complete the task. Participants were required to wear the helmets throughout the duration of program as a safety measure. At the end of the session or when participants were finished engaging in the various occupational opportunities, volunteers would help participants take their helmets off. Volunteers would help the participant unclip the chinstrap, remove the helmet, then put the helmet away.

All four participants engaged in putting on or taking off articles of clothing. Noldus data were only analyzed for putting on or taking off helmets. In total, putting helmets on and taking

them off was observed for 12 minutes (2%) of the total observation time. Putting helmets on and taking helmets off elicited communication 72% of the total time spent in this specific activity. Engaged gaze was also demonstrated for 77% of the time during putting helmets on and taking helmets off. This activity was predominately completed while sitting, however standing was observed 11% of the time. In relation to relative being, putting helmets on or taking them off elicited interest, pleasure, and no agitation.

As the program occurred during the fall months, the volunteers also helped participants put on warm coats. The program provided warm coats for the participants to borrow during the session. First, volunteers would ask participants if they would like a coat to borrow. The volunteers would then determine the appropriate size of coat and provide verbal and physical assistance to put the coat on. Specifically, volunteers would guide the participant's arms through the sleeves and zip the coat if needed. At the end of the session, the volunteers would collect the coats before the participants went to the bus. Volunteers would provide verbal prompts for removing the coat and provided physical assistance as deemed necessary. If needed, the volunteers would help the participants unzip the coats, guide their arms through the sleeves, and remove the coat.

Dancing. Dancing was an occupational opportunity offered at Riding in the Moment. Volunteers organized music that played throughout the entire session for all four sessions. The music was upbeat music that was played loud enough to hear near the bench area. However, as one participant demonstrated, music was not a necessity for dancing. Volunteers would encourage participants to sing or dance to the music playing in the background by singing or moving to the beat of the music. One volunteer even began dancing with a participant after the participant had initiated dancing.

Although dancing was an option for all participations, only one participant engaged in dancing. Overall, the participant was observed to dance for one minute and thirty seconds (<1%). During this time, the participant demonstrated engaged gaze and communication. By nature, dancing demonstrated retained physical capacities of gross motor movement. During dancing, the participant demonstrated more pleasure than interest and demonstrated no agitation.

Bench Time. Participants had the opportunity to engage in an occupational opportunity called bench time. Bench time was the period of time that participants were seated in chairs or benches set up by the volunteers; bench time was, by design, highly social in nature in that participants were seated next to one another and volunteers and other staff frequently initiated interactions with them during bench time. Bench time, essentially, acted as the central station for participation. Participants were seated on the benches when they were not participating in any other occupational opportunity and returned to bench time after completing other occupational opportunities offered by the program. For example, participants were seated on the benches when they first arrived or after completing grooming or riding. During bench time, participants had the opportunity to engage in social conversations with volunteers or other participants. Additionally, bench time offered the opportunity to engage in observing what is occurring within the environment, such as other participants riding the horses in the arena.

Because bench time was defined as the participant sitting on the bench during the absence of participation in other occupational opportunities, bench time was not incorporated into the Noldus coding scheme. Moreover, because bench time was not recorded in the quantitative coding scheme, the duration of bench time could not be determined. However, there were important physical and environmental supports for bench time. First, the physical benches and chairs and the proximity of the layout of the chair set up is critical for supporting this

occupational opportunity. The layout of the chairs contributes to the ability to socialize with other participants and volunteers and provide an advantageous view of the events occurring within the environment, such as participants riding horses in the arena. The critical social supports included volunteers that conversed and initiated occupational opportunities with the participants. Additionally, many participants conversed with other participants seated next to them. Overall, bench time was an important time during the program that acted as a central station for participation in specific activities.

Other Occupational Opportunities. Participants had the choice to engage in other occupational opportunities. These occupational opportunities included getting on and off the bus, taking pictures, and participating in a walking tour. Getting on and off the bus occurred at the beginning of the session and at the end. To complete this task, all participants exited and entered the bus by stepping down or up four stairs that had handrails on at least one side of the stairs. Care staff and volunteers offered verbal supports to locating the hand rails. Additionally, care staff and volunteers offered physical support when the participant was stepping up or down and volunteers also moved ambulation devices out of the way. Participants also had the opportunity to have pictures taken during the program. Care staff had a camera and would initiate taking pictures of the participants as they engaged in petting, riding, or grooming the horse. Care staff would direct the participant's attention to the camera and then verbally prompt them to smile. Volunteers for Riding in the Moment, in collaboration with the care staff offered an impromptu walking tour for participants. The volunteers and care staff guided the participants to a nearby barn where a horse was being exercised. A program volunteer provided information about the barn and the horse. To reach the toured barn the participants had to ambulate down a hill and to return to the main barn they had to ambulate back up the hill. Volunteers and care staff offered

physical guidance, such as guiding a walker, or verbal cues to return to the barn where the program was taking place.

Table 3. Environmental Supports and Quality of Life Indicators Associated with Active Participation in Riding, Grooming, Petting, Dressing, and Dancing

Life Quality Domain		
Environmental Supports	Time-Use	Relative Being
Riding the Horse		
Physical Environmental Supports	<ul style="list-style-type: none"> • 100% engaged gaze • 99% sitting on horse • 79% communication 	<ul style="list-style-type: none"> • 77% Interest • 16% Pleasure • 100% No Agitation • 0.34% Anxiety/Fear • 8 % Missed Observations Affect
Social Environmental Supports		
<ul style="list-style-type: none"> • 1 Riding Instructor who provided verbal and demonstrational cues for mounting and dismounting • 1 horse leading volunteer to guide the horse at a slow walk and communicate with the participant • 2 side walkers that provided physical support for the rider, provided verbal and demonstrational cues for guiding the horse with reins, and communicated with the participant • 2 horses; Spanish Barb and Quarter horse mix mare and Halfinger mare 		
Grooming the Horse		
Physical Environmental Supports	<ul style="list-style-type: none"> • 93% Engaged Gaze • 7% Missed Observation Gaze • 77% Communication 	<ul style="list-style-type: none"> • 43% Interest • 29% Pleasure

<p>Social Environmental Supports</p> <ul style="list-style-type: none"> • One volunteer at grooming station to monitor horse's movements • One volunteer assisting participant with ambulation to the horse; assisted participant to pick out brush; provided verbal and demonstrational cues to groom; communicated with participant; safely led participant around horse • One horse at grooming station; Appaloosa mare or Polish Arabian gelding 	<ul style="list-style-type: none"> • 23% No Communication • 97% Standing • 3% Walking 	<ul style="list-style-type: none"> • 100% No Agitation • 28% Missed Observation • Apparent Affect
<p>Petting the Horse</p> <p>Physical Environmental Supports</p> <ul style="list-style-type: none"> • Standard halter • Standard lead line • Adequate space for safe maneuvering of horse among participants • Chairs or benches <p>Social Environmental Supports</p> <ul style="list-style-type: none"> • One horse leader; led horse to participants, monitored for safety, communicated with participants • Volunteers moved ambulation devices out of the way, communicated with participant, provided verbal and demonstrational cues for safe petting, provided hand-over-hand assistance with petting, monitored for safety • One horse for petting brought near bench area; Appaloosa mare from grooming station or Shetland and Welsh mix mare (in training) 	<ul style="list-style-type: none"> • 100% Engaged Gaze • 69% Yes Communication • 36% No Communication • 69% Sitting • 8% Sitting on Horse • 30% Standing 	<ul style="list-style-type: none"> • 66% Interest • 34% Pleasure • 100% No Agitation • 9% Missed Observation • Affect
<p>Putting on or Taking off Helmet</p> <p>Physical Environmental Supports</p> <ul style="list-style-type: none"> • Riding helmet • Coat • Gloves • Benches or chairs <p>Social Environmental Supports</p> <ul style="list-style-type: none"> • Volunteers provided participants with the physical objects, assisted with putting on or taking off through verbal instructions and physical assistance, put items back after use 	<ul style="list-style-type: none"> • 77% Engaged Gaze • 23% Missed Observation Gaze • 72% Communication • 11% No Communication • 11% Standing • 87% Sitting 	<ul style="list-style-type: none"> • 57% Interest • 10% Pleasure • 100% No Agitation • 33% Missed Observation • Affect

Dancing

Physical Environmental Supports

- Bus music
- Adequate space for movement

Social Environmental Supports

- Volunteer to dance with

- 99% Engaged Gaze
 - 1% Missed Observation Gaze
 - 74% Communication
 - 26% No Communication
 - 100% Standing
 - 23% Interest
 - 40% Pleasure
 - 100% No Agitation
 - 37% Missed Observation Affect
-

CHAPTER FIVE: DISCUSSION

This mixed methods case study thoroughly investigated the quality of life (QoL) indicators and environmental correlates of observed positive and negative QoL indicators in a group of four participants that engaged in an equine-assisted intervention (EAI), *Riding in the Moment*, at Hearts and Horses Therapeutic Riding Center. This was the first study that has thoroughly explicated the components of an EAI and the specific relationship to quality of life indicators using a developed conceptual model. New evidence generated from this thesis linked detailed occupational opportunities to specific social and physical environmental supports and outcomes of participation in those occupations. This novel look at EAI practice supports the implementation of an EAI uniquely designed and tailored to produce a positive experience for people with dementia. Furthermore, this study richly described elements of occupational opportunities offered in the enlivening equine environment, which yielded and illuminated positive QoL indicators, including engaged gaze, yes-communication, yes-participation, pleasure, and interest, for the participants involved *Riding in the Moment*. The results of this study also eluded to unique differences in participant experiences engaging in an EAI that could result from varying stages of dementia or experiences with horses.

The forthright implication of this study is that people with dementia had a positive experience while engaging in an EAI that offered flexible and tailored occupational opportunities. These findings corroborate and enhance the current state of literature surrounding EAIs for people with dementia. Dabelko-Schoeny et al. (2014) determined that EAIs are feasible and can reduce behavioral problems for people with dementia enrolled in a day program. My study has generated evidence that people with dementia living in a residential setting

overwhelmingly demonstrated positive indicators of QoL and very few negative QoL indicators while participating in Riding in the Moment. Furthermore, this study identified riding, grooming, and petting the horse as dynamic occupational opportunities offered in a natural, equine environment that evoke the use of multiple retained capacities and elicit the demonstration of positive affective outcomes.

In the remaining sections of chapter five, I will offer beginning explanations as to why the intervention achieved positive QoL outcomes. I will discuss how Riding in the Moment offers meaningful activity through occupational opportunities. I then elaborate on the supportive physical and social environment that promoted a positive experience during Riding in the Moment. I will then detail limitations of the study and share future directions for research. I end with a final conclusion statement that includes a personal reflection.

Riding in the Moment as Meaningful Activity

People with dementia can benefit from meaningful engagement in activities. Chung (2004) found a significant association between the state of well-being for a person with dementia and participation in activities that have the potential for performance and enjoyment. In addition, this study found that low-functioning individuals with dementia were more likely to be passively engaged and experience less pleasure during their time in LTC settings. Riding in the Moment offered a number of occupational opportunities that encouraged active performance. For example, grooming the horse facilitated most participants' engagement in physical, social, and emotional performance. On the other hand, one participant in the late-moderate stage of dementia spent less time in active participation and correspondingly did not demonstrate many signs of pleasure. This same participant demonstrated durations of interest and engaged gaze similar to other participants. This finding suggests several things: 1) the Activity in Context and

Time (ACT) can be used as a sensitive measure to environmental responsiveness and engagement by measuring intentionality through gaze, and 2) the opportunities offered by Riding in the Moment include environmental features and activities that meet the needs and interests of the participants.

Zgola (1999) posited “there is probably no more valuable tool in the care of persons with Alzheimer’s disease than meaningful activity” (p. 158). To provide a structure for planning meaningful activities, Zgola developed the following criteria: 1) the activity must have an obvious purpose, 2) the participant must voluntarily engage in the activity, 3) the activity must be pleasurable, 4) the activity must be appropriate for the individual, and 5) the activity must ensure success. Riding in the Moment offered a number of occupational opportunities that were inherently permeated with these characteristics.

The occupational opportunities offered by the Riding in the Moment were specific and directed, meaning that they had an obvious purpose. For example, the occupational opportunity of grooming the horse had the obvious purpose of brushing the horse’s mane and body. Additionally, the final product of the activity was not important, but rather the primary focus was on the quality of engagement. This could be attributed to the recreational nature of the activity situation and a social culture that respected and honored the abilities of each individual. As in the grooming example, the result did not have to be a clean horse, but rather that the participant had an opportunity for freely engaging in grooming the horse.

Perhaps the most notable characteristic of a meaningful activity embedded into the occupational opportunities offered during Riding in the Moment is that all activities were voluntary to engage in. A recent study by Clare, Rowlands, Bruce, Surr, and Downs (2008) described how many older adults with dementia living in residential care facilities often

experience loss of control and one way to remediate that feeling is to maximize autonomy. In *Riding in the Moment*, participants had the autonomy to choose if they participated and also their level of participation in occupational opportunities. For example, participants chose if they wanted to ride the horse, and if so, they chose if they wanted to steer the horse or allow the horse leader to guide them. Findings from this study suggest that some autonomy, given within a structure, can produce positive outcomes, while maintaining safety.

The occupational opportunities of *Riding in the Moment* also contained meaning for people with dementia because they were pleasurable, appropriate, and fail-proof. Findings from this study demonstrated that the apparent affect of pleasure was demonstrated during most occupational opportunities. Participants were observed smiling, laughing, and gesturing during riding, grooming, petting, and dancing. The occupational opportunities were also appropriate for the social expectations of spending time in an equine environment. Participants were mainly offered activities that related to the horse, specifically riding, grooming, and petting the horse. Although dancing may seem as an unusual activity in an equine environment, music was provided during the program, therefore deeming dancing socially appropriate. Zgola (1999, p. 158) discussed that in order for meaningful activities to be socially appropriate, they must reflect the person's age and status. The occupational opportunities offered at *Riding in the Moment* afforded demonstrations of pleasure, but were not considered childish or silly.

Aided by the social and physical environmental supports, the occupational opportunities could be graded to the retained capacities of the individual, helping to ensure success. Jao, Algase, Specht, and Williams (2015) reported that people with dementia are likely to engage longer in activities that match individual functional levels. The social and physical environmental supports in *Riding in the Moment* offered modifications to occupational

opportunities so that participants could be successful. For example, one participant was limited in the physical capacity to walk and stand. For this participant, the occupational opportunity of petting the horse was modified so that the participant could remain sitting in a chair to pet the horse. Riding in the Moment demonstrated that opportunities can be tailored to the individual to promote successful participation.

Riding in the Moment provided people with dementia meaningful activity through various occupational opportunities and supportive physical and social environmental elements. Furthermore, these experiences fostered a sense of purpose, autonomy, pleasure, social acceptance, and success for the people with dementia.

Riding in the Moment as a Supportive Environment

The physical environment

A study by Jao et al. (2015) revealed that environmental stimulation from events, objects, or people can benefit people with dementia if the stimulation is clear and strong. Jao and colleagues defined stimulation strength as the degree to which a stimulation is loud, novel, interesting, or surprising. Specific to an EAI, Dabelko-Schoeny et al. (2014) theorized that the equine environment provides a multisensory experience and an enriched environment, filled with sounds, postures, smells, and touch, which potentially impact findings. The physical environmental supports provided by Riding in the Moment may have offered various strong stimuli within the enriched equine environment that could have promoted participant engagement and pleasurable experiences. Though recognized as a social aspect of the environment, physical elements of the horse, such as the horse's movement, provided stimulation. For example, during riding, the oscillation of the horse's back emits rhythmic locomotion impulses to the rider that induce a therapeutic effect (Janura, Peham, Dvorakova, &

Elfmark, 2009). Additionally, (Padilla, 2011a) posited that effective interventions for people with dementia often combine manipulative and tactical tasks. When riding, participants used brightly colored reins that provided visual and tactile stimulation. Furthermore, petting the horse offered tactile stimulation through feeling the texture of the horse's fur and mane.

Unlike many AAs, Riding in the Moment had the opportunity to utilize the equine environment, which included a natural, outdoor space. Recently, Chaudhury, Cooke, Cowie, and Razaghi (2017) conducted a systematic review of the influence of the physical environment on residents with dementia. The authors concluded that residents who participated in outdoor activities or spent time outdoors experienced positive impacts on mental health, QoL and mood, improvement in sleep efficiency and duration, and a reduction in falls, agitation, and need for behavioral medication. Because Riding in the Moment took place in a non-institutional setting, many of the occupational opportunities readily allowed for active engagement in a nature-rich environment. For instance, participants were encouraged to ride on an outdoor trail or walk outside. Therefore, Riding in the Moment had the unique advantage of supporting participation and activity in natural, outdoor spaces.

The social environment

As demonstrated by the qualitative findings, social supports and interactions were paramount in supporting participants during Riding in the Moment. Moreover, it could be the essence of the social interactions, rather than the quantity, that could contribute to positive QoL indicators. A study by Willemse et al. (2015) suggested that social interactions that attend to an individual's needs for attachment, agency, and inclusion can promote better well-being. Furthermore, decreasing the amount of social interactions that undermine the individual's comfort can also improve well-being. During Riding in the Moment, the social environment

promoted comfort, agency, inclusion, and attachment in various ways. Volunteers promoted comfort when they offered warm jackets to participants and substituted benches for supportive chairs. Riding instructors encouraged autonomy and agency by providing very basic instructions and allowing participants to freely choose what they did with the riding time offered. Volunteers also promoted inclusion as they initiated and invited all participants to engage in the various occupational opportunities. The social supports in place for Riding in the Moment embodied positive social interactions through addressing needs for comfort and genuinely attended to the individual participant through engaging in sincere social interactions. These positive social interactions mainly illustrate interactions with people, yet Riding in the Moment offered the unique opportunity to have positive social interactions with horses.

According to Bachi (2013), "...the therapeutic process is enriched by the presence of the horse, which as an additional living being in the relational context, evokes feelings, thoughts, and behaviors in the client" (p. 190). In Riding in the Moment, the presence of the horses may have enriched the social context that supported participation in the various occupations. Moreover, the participants may have formed relationships, or bonds, with the horses during the program. Hausberger, Roche, Henry, and Visser (2008), posited that human-horse relationships are built on the basis of a succession of interactions. As the participants in Riding in the Moment were offered multiple opportunities to interaction with horses, a relationship between participants and the horse may have formed. In current EAI literature, a study by Yorke, Adams, and Coady (2008) described a reciprocal bond between individuals recovering from trauma and horses as an intimate, nurturing bond that encompassed mutual respect and a sense of partnership that contributed to regaining a sense of self. As an example for Riding in the Moment, one participant stated, "She [the miniature pony] is the perfect size to be my friend." Also, when the pony

entered the barn on multiple occasions, the participant would beckon to the pony so that she could engage in petting the pony. Overall, Riding in the Moment offered a supportive and enriched social environment that promoted positive experiences.

Directions for Future Research

This research identified positive QoL indicators for people with dementia involved in an EAI. While the results from this study contribute to the limited research on EAI for people with dementia, more research is needed to understand the impact of an EAI beyond the duration of the program. Current research for AAI for people with dementia extends beyond the implementation of the intervention to capture short term and long term impacts (Filan & Llewellyn-Jones, 2006). It would be beneficial to investigate the long term impacts of an EAI on QoL to inform future activity planning for residential care facilities, influence reimbursement status, and impact future EAI treatment planning. Additionally, AAI research has expanded beyond QoL to focus on other aspects of well-being important for people with dementia such as nutrition and meal consumption (Filan & Llewellyn-Jones, 2006). Furthermore, sleep and mental health have been also been outcomes identified in current literature for this population (Chaudhury et al., 2017). It would be worthwhile for future research to address the aforementioned health determinates that are specific to the population of people with dementia.

This study provided a rich description of occupational opportunities available in one EAI. However, the only other EAI study for people with dementia revealed another occupational opportunity, painting the horse (Dabelko-Schoeny et al., 2014) Future studies should continue to explore and expand on possible occupational opportunities, providing thorough descriptions of those opportunities so that replication in program implementation is accurate. Additionally, this study provided some insight into opportunities that are beneficial specific to the participant,

including their stage of dementia. Research should begin to explicate those occupational opportunities that elicit positive QoL indicators for specific stages of dementia and provide theory as to why. Future research should also aim to explicate theory of mechanisms of action that are unique to EIAs for this population. For this type of research to be significant, a larger population of participants is needed.

Lastly, experimental studies should be conducted to move forward in establishing a causal relationship. Research should focus on a larger and more diverse group of participants with dementia that are randomly selected for the study.

Study Limitations

It is important to acknowledge that the nature of the small sample and the data set places some limitations on both the quantitative and qualitative findings. First, with the quantitative data, findings from the four participants' observations are not generalizable. Furthermore, the participants were purposively and conveniently selected for this study. Because I could choose the sample according to certain criteria, the participants in the study may not represent the larger population of people with dementia. For example, all participants in this study had some previous experience with Riding in the Moment or with horses, which may not represent experiences of most people with dementia. Additionally, as this is a descriptive study, there was no attempt to control for confounding variables, such as medication regimen, that may have influenced the participant's time use and affective responses at Riding in the Moment.

Qualitative description can introduce bias as data collection and analysis often rely on the perceptions, inclinations, sensitivities, and sensibilities of the describer (Sandelowski, 2000). As an individual that has experience working with horses and helping to provide EIAs, I may have introduced bias towards affirming positive outcomes for the participants involved in Riding in

the Moment. However, I attempted to mediate bias by checking field note data with the videotapes and merging the qualitative data with more objective quantitative findings.

Another limitation related to the challenge of video data collection. At times, it was difficult to capture all participant experiences during activities due to barriers in view. For example, there were long durations of missed observations because the lighting in the barn was dim. Also certain activities proved to have more barriers than others. For example, petting the horse required that the participant face the horse, creating a barrier to viewing the participant's facial expressions. The videos chosen from the random sampling also did not allow observations to represent all four weeks of the program, where time and experience in the program may have influenced outcomes. Because this study used a-priori coding not all occupational opportunities represented in the qualitative findings were able to be quantitatively analyzed. As this study is descriptive in nature, the quantitative data only provides descriptive statistics that cannot assume or prove direct causation of improved QoL arising from an EAI. Additionally, the reported statistics only described QoL indicators present during the program, which does not speak to the impact of the program outside of the observed sessions.

Conclusion

In conclusion, EAI is in the early stages of scientific development, but demonstrates great potential to promote health for people with dementia. As a basic, yet crucial beginning phase of research, this study revealed that active engagement in meaningful activities with an equine or in an equine environment elicited positive QoL. The occupational opportunities offered by Riding in the Moment were advantageously embedded with choice and autonomy, which allowed for sense of control for a population of people that generally experience loss of control over many aspects of their life. Additionally, Riding in the Moment provided structures and supports that

promoted success, making activities failure-proof, augmenting the sense of accomplishment and competency with functional abilities. Moreover, these meaningful occupational opportunities were supported through a stimulating physical environment and an optimistic social environment that may give rise to an enlivening environment that pressed toward meaningful time use and positive affective expressions.

Riding in the Moment provides context for a beneficial AAI that occurred in a nature-rich, non-institutional setting. Furthermore, this EAI was provided in an enriched and stimulating environment to a population of people that generally lack rich sensory experiences. The social environment moved beyond just supporting and structuring occupational opportunities for the participants with dementia, but initiated genuine social interactions that promoted inclusion.

This study aids to further develop an understanding of EAI for people with dementia, including the powerful potential of an enlivening equine environment. More research is needed that implements rigorous methods to investigate other measures of health and the longevity of outcomes for people with dementia living in residential care facilities.

When I began the journey of formulating and writing my thesis, I was interested in achieving a better understanding of the horse-human bond. I wanted to learn about how people and horses interact in therapeutic ways that contribute to better well-being. Reflecting back, I recognize now that I had a narrow perspective on elements of EAIs that produce positive outcomes for participants. Before this study, my mind was confined to the horse being the primary key to unlocking therapeutic potential for an EAI. However, this study has taught me that the horse may play a critical role in EAIs, but quality programming that offers opportunity and support is integral in promoting positive outcomes from participation in an EAI.

I have learned many lessons from this study that can help my future occupational therapy practice. The most prominent realization that I made is that people with dementia thrived on the opportunities provided by the EAI. For some, it was the opportunity for friendship. For others, it was an opportunity to be back in the saddle after an abrupt change from a lifetime of ranching to residing in a memory care center. The therapeutic value of an EAI truly depends on the personhood of an individual and their personal needs. I have also learned from this study that I need to broaden my beliefs about the active ingredients of an EAI that promote positive outcomes. I learned that in an EAI, quality therapy horses need to be paired with volunteers and riding instructors that are trained to work with special needs of specific populations. Additionally, I now recognize the need to analyze aspects of the physical environment that support participation and provide appropriate and tailored opportunities. Because of this study, I now have a deeper appreciation for meticulous EAI program planning that melds opportunity for quality interactions with horses that are supported by tailored social and physical environmental elements.

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APPENDIX: QUANTITATIVE CODE DEFINITIONS, PROCEDURES, & RULES

Time-Use Subdomains	
Gaze Codes	Definitions (Wood, 2005)
Engaged Gaze	Sustained intentional scanning, watching, or visual orientation to some person, event, object or physical environmental attribute in the absence of agitation or distress.
Unengaged Gaze	No evidence of attention to something in environment; eyes can be open.
Eyes Closed	Eyes are closed.
Missed Observations Gaze	Unable to determine gaze.
Position and Movement Codes	Definitions
Sitting	In a seated position.
Stairs	Ambulating up or down stairs.
Standing	Standing in an upright position.
Walking	Ambulating across an area (regardless of assistance or ambulation device). Participant must be continuously walking with less than a five second pause to be coded as walking.
Sitting on the horse	Seated on a saddled horse, regardless of whether the horse is moving or not.
Missed Observation Position and Movement	Unable to determine position or movement. You are not able to see any body part of the participant that would give you indication that the participant has or has not changed position.
Communication Codes	Definitions
Yes Communication	Any active communicative exchange of information that is either verbal or nonverbal, that can include physical contact, physical gestures, spoken language, or turn taking.
No Communication	There is no evidence of an exchange of information.
Missed Observation Communication	There is evidence that communication may be taking place, but are unable to see or hear any exchange of information.
Participation in Activity Codes	Definitions
Yes Participation	Active sustained engagement in activities that are appealing or acceptable to an individual and not externally coerced or driven (Wood, 2005).
modifier: Put on or take off Helmet	Putting on or taking off riding helmet or hat; participation in putting helmet on is complete

	when the chin strap is closed and the helmet is adjusted
modifier: Ride the Horse	Riding the horse inside or outside, can just be sitting on the horse, but does not include mounting.
modifier: Mount or Dismount	Process of getting on or off the horse that begins when the participant is physically touching the horse or tack with intent to get on the horse. Mounting ends when the horse begins to move forward out of the mounting block. Dismounting begins when the participant begins to swing their leg or move off of the horse. Dismounting ends when the participant has two feet on the ground.
modifier: Pet	Using hands or arms to stroke the horse (not using any type of equipment such as a brush). Activity begins when the participant touches the horse and ends when the series of stroking the horse has ended.
modifier: Groom	Grooming the horse with some type of equipment (i.e. brush); activity begins when participant touches horse with a brush and ends when the series of brush strokes has ended.
modifier: Have Pictures Taken	Having picture taken by care staff or volunteers or taking pictures.
modifier: Sing	Vocalizing or humming a song.
modifier: Dance	Rhythmic movement to a beat or song.
modifier: Pet and Ride	Petting the horse while mounted.
modifier: Pet and Groom	Using an instrument to groom the horse and also using a hand to pet the horse; has to be occurring simultaneously in order to be a complex activity.
modifier: Ride and Mounted Game	When a participant guides or is guided by the horse leader to an activity that has been set up by the program staff for the participant to engage in while riding. Games can include poles, cones, basketball, rings, barrels etc. Code as Ride and Game if you are able to see the participant engage in the activity or there is conversation about the performance of the activity (such as “Let’s go through these cones” or “You stopped the horse in the right position in the box of poles”).
No Participation	Absence of participation in activity.

Missed Observation Participation	Unable to determine if the state of participation has changed.
Apparent Affect Subdomains	
Apparent Affect Codes	Definitions (Lawton 1996; Lawton, Van Haitsma, & Perkinson, 2000)
Anger	Clenched teeth, grimace, shout, yell, curse, berate, push, physical aggression or implied aggression such as fist shaking, pursed lips, eyes narrowed, or knit brow.
Anxiety/Fear	Furrowed brow, motoric restlessness, repeated or agitated movement, facial expression of fear or worry, withdrawal from other, tremor, tight facial muscles, calls repetitively, hand wringing, leg jiggling, or eyes wide.
Interest	Eyes following object, intent fixation on object or person, visual scanning, facial, motoric, or verbal feedback to other, eye contact maintained, body or vocal response to music, turn body or move toward person or object.
Pleasure	Smile, laugh, stroking, touching with “approach” manner, nodding, singing, arm or hand outreach, open-arm gesture clapping, any signs of warmth or affection towards a person or horse.
Sadness/Depression	Cry, tears, sigh, mouth turned down at corners, eyes/head turned won and face expressionless, wiping eyes.
No Apparent Affect	No movement of eyes, face, or body.
Missed Observation Apparent Affect	Unable to determine apparent affect (such as if person’s face is turned away).
Agitation Codes	Definitions (Cohen-Mansfield, Marx, & Rosenthal, 1989)

Yes Agitation	Inappropriate verbal, vocal, or motor activity that is not judged by the outside observer to result from directly from needs or confusion of the individual; agitated behaviors are always socially inappropriate and can manifest as 1) abuse or aggression towards others, 2) appropriate behavior performed with inappropriate frequency, or 3) inappropriate according to social standards for the specific situation (most frequently manifestations are restlessness, pacing, complaining, repetitive sentences or questions, negativism, constant requests for attention, and cursing or verbal expression).
No Agitation	Absence of agitation behaviors.
Missed Observations Agitation	Unable to determine state of agitation.

Coding Procedures

- All codes are exhaustive and mutually exclusive
- Each category will be represented with one code throughout the observation duration
- Codes will be assigned based on observation of the behaviors as defined above
- Each code (other than missed observation) must have a duration of at least five seconds in order to be coded in the log
- Missed observation is coded if unable to determine the state of the person for 10 seconds or more

Rules for Complex Coding

- Coding Missed Observation:
 - If there are multiple segments of time where you cannot determine a given code or the duration of the behavior is under five seconds, and these time segments add up to 10 seconds or more, code missed observation
- Coding Gaze:
 - If you are unable to see the participant's face, but the participant is turning their head as an indication of scanning, code as engaged gaze.
 - If you can see a side profile of the participant and they show signs of tracking, code as engaged gaze
 - If you cannot see the participant's face (no side profile), and they are not turning or moving their head to scan the environment within five seconds, code missed observation gaze
- Coding Communication:
 - Code yes-communication if you can see and/or hear a verbal or nonverbal exchange of information

- Code missed observation if you suspect that there is exchange occurring but are not able to see or hear the exchange
- Code no-communication if you do not see or hear any evidence of an information exchange
- Code yes-communication if volunteers are using their bodies or body language to guide a participant to a pre-determined destination, such as when volunteers lead participants back to the bench after dismounting the horse.