Impacts of an Equine-Facilitated Learning Program on College Students

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Dalton Campana

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Dalton Campana

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Dalton Campana, Student Date

Approvals:

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Dr. Karen Larwin, *Dissertation Chair* Date

_____

Dr. Kenneth Miller, *Committee Member* Date

_____

Dr. Eddie Howard, *Committee Member* Date

_____

Dr. Salvatore A. Sanders, *Dean of Graduate Studies* Date

Abstract

Students at the collegiate level face chronic stress due to the lifestyles of heavy workloads, schoolwork, and adjustment to campus life. Being in prolonged periods of stress could negatively affect students' well-being, which can adversely affect other psychological areas such as mindfulness, motivation and engagement, and sense of belonging, as they are related through Seligman's (2011) Positive Emotion, Engagement, Relationships, Meaning, and Accomplishment (PERMA) model. Large-animal activities, such as equine-facilitated learning activities (EFLA), are unique and innovative strategies to lessen the stress of college endeavors. The current mixed-methods investigation focused on implementing an EFLA program with college students at Youngstown State University. The study aimed to determine the impact of a four-week EFLA program on college students by assessing mindfulness, well-being, motivation, engagement, and a sense of belonging. Results from the current investigation can inform researchers and educators about the impacts an EFLA program on college students. Quantitative data results suggest that there were significant differences amongst the control and treatment groups from pre- and post-survey administration on mindfulness and well-being, along with suggesting no statistically significant differences in the sense of belonging, motivation, and engagement. However, the treatment group's mindfulness, well-being, motivation, engagement, and sense of belonging scores increased after the EFLA program, while the control group's scores decreased. Additionally, qualitative accounts suggested themes and favorable responses in students who felt their well-being, mindfulness, motivation, engagement, and sense of belonging increased from the program. Participant perceptions regarding the EFLA program aligned with the

quantitative results in the belief that it improved their well-being, mindfulness, sense of belonging, motivation, and engagement. Additionally, well-being, mindfulness, motivation, and engagement levels seemed to decrease without the EFLA program when observing the six-week post-follow-up of the treatment group. The current investigation implicated the alignment with the PERMA framework, as all scales increased from pre-to-post-survey distribution in the treatment group, along with offering further insight into having future EFLA research utilizing qualitative reports, follow-up surveys, and journal logs to add strength to the methodological design.

Keywords: Equine-facilitated learning activities, well-being, mindfulness, motivation and engagement, sense of belonging, college students

Dedication

First and foremost, I would like to thank God for all he has done for me, giving me strength and confidence to know I can accomplish such an honorable degree. The road was difficult, but my vigilance, commitment, and help from my faculty and family eased the path. To my dissertation chair, Dr. Karen Larwin, thank you for being patient, kind, and helpful throughout this journey. I am forever thankful for your help and support during my time in the program. Thank you for believing in my research! To my dissertation committee, Dr. Kenneth Miller and Dr. Eddie Howard, thank you for participating in this journey with me. I greatly appreciate your input and time, and I value your knowledge and commitment to help me through this process.

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Chapter I

Introduction

Many students are suffering from severe stress while pursuing their education at the collegiate level. High-stress levels occur in more than 75% of college students (Huberty et al., 2019). Additionally, students reported feeling overwhelmed during their college experiences (Neely et al., 2009). College stressors are a significant issue—they cause increased loneliness, depression, anxiety, sleep disturbance, lack of engagement, and possibly suicidal thoughts for many students (McIndoo et al., 2016; O'Donovan & Hughes, 2007; Roberts & Danoff-Burg, 2010). These factors negatively affect college students' well-being, mindfulness, sense of belonging, and engagement skills (Altinyelken, 2022; Waldrop et al., 2019; Waters, 2011; Wright et al., 2022). Each college student faces many categories of stressors (Zaman & Ali, 2019).

Academic stress is significant in college (Jones et al., 2018). Further, academic stress is the most dominant factor affecting the well-being of college students (Barbayannis et al., 2022). Students often feel that their academic performance, pressure to succeed, and plans after graduation tend to increase their anxiety in college (Jones et al., 2018). Financial stress is also one of the most significant forms of pressure on a typical college student (Jones et al., 2018). Financial stressors are associated with a decrease in mental and physical health, along with an increase in anxiety levels (Jones et al., 2018).

Additionally, lower support correlates with everyday stressors for college students (Falcon, 2015). Often, students feel unsupported and unfamiliar with the college experience due to the lack of parental help, high school, and social circles (Falcon, 2015).

Lastly, sleep deprivation is attributed to students' perceived stress during their education (Bolin, 2019). Fifty percent of students describe daytime sleepiness and 70% get insufficient sleep throughout the night (Hershner & Chervin, 2014). For students, lack of sleep and drowsiness impacts learning, causes memory issues, and affects academic performance during class (Hershner & Chervin, 2014). As a result, many students look for outlets and ways to cope with the taxation of college stressors (Zaman & Ali, 2019).

Previous research has demonstrated that coping strategies can utilize animals through specific programming, interventions, and techniques (Hoagwood et al., 2017; Mueller & 2017; Muckle & Lasikiewicz, 2017; Potvin-Bélanger et al., 2021; Saggers & Strachan, 2016). Coping is when individuals change their cognition and behavioral efforts to ease taxing internal and external demands (Schoenmakers et al., 2015). These animal interventions often branch into animal-assisted therapies and animal-assisted activities (Hoagwood et al., 2017; Muckle & Lasikiewicz, 2017; Mueller & Mccullough, 2017; Potvin-Bélanger et al., 2021; Saggers & Strachan, 2016). Studies have shown that animal-assisted activities are safe coping mechanisms that can help decrease college students’ anxiety and stress as well as increase mindfulness (Klonoff-Cohen, 2022).

Furthermore, these animal approaches can branch into larger animal interventions that contribute to student coping mechanisms when improving college students' mindfulness, stress, engagement, and well-being (Chakales et al., 2020). Large animal-assisted therapies are most recognized as equine-assisted therapy and psychotherapy and show excellent results in students positively coping with anxiety or depression (Wilson et al., 2017). Equine-assisted therapy is an approach that is increasing rapidly in the mental

health field; equine-assisted therapy components include equine-assisted psychotherapy, therapeutic riding, and hippotherapy (Mueller & Mccullough, 2017).

Studies have even displayed improved perceived stress in college students after interacting with horses during a two-month equine-assisted therapy course (Chakales et al., 2020). Additionally, previous studies have shown the same positive results when college students utilize an equine-facilitated psychotherapy program (Morgan, 2017). A study with college students active in equine-facilitated psychotherapy showed reduced stress compared to a group who did not participate in the equine-facilitated psychotherapy activity (Morgan, 2017). Similarly, equine-facilitated learning activities (EFLA) are excellent tools that incorporate large animals when seeking a solution to improve student failure rates and increase engagement, along with social-emotional needs, coping skills, and reliance without using a licensed therapist or doctor (Saggers & Strachan, 2016).

This approach utilizes having individuals do activities with horses and is instrumental in building confidence and self-esteem, building trust, and forming healthy attachment styles (Saggers & Strachan, 2016). EFLA have even shown promising results in college students if the program was longer for participants (Chapman, 2017). For example, a study with 46 full-time college students attending five hours in an EFLA program showed no significant differences in perceived stress in the students but stated a longer timeframe would be beneficial for students (Chapman, 2017). However, limited research has been done regarding mindfulness and engagement levels in college students working with horses during EFLA (Wilson et al., 2017). Incorporating an EFLA program

for college students has decreased stress levels; therefore, leading to better performance during schooling and interpersonal skills in the workforce (Wilson et al., 2017).

EFLA programs have shown promising results; therefore, this study aimed to incorporate an EFLA program for students at Youngstown State University. The mixed-methods study aimed to observe if the implemented EFLA program improved college students' well-being, engagement in life, sense of belonging, and mindfulness skills. The study provides potential approaches for using an EFLA program to improve student mental health.

Problem Statement

The addressed problem in this study is the increase in student stress levels in the collegiate setting (Huberty et al., 2019). High-stress levels cause an increase in loneliness, hopelessness, anxiety, depression, sleep disturbance, lack of engagement, and suicidal thoughts for many students (McIndoo et al., 2016; O'Donovan & Hughes, 2007; Roberts & Danoff-Burg, 2010). Subsequently, these factors negatively affect college students' well-being, mindfulness, sense of belonging, and engagement skills (Altinyelken, 2022; Waldrop et al., 2019; Waters, 2011; Wright et al., 2022). Unfortunately, when an individual is in this state of stress for prolonged periods, it can hinder rational thinking, lessen proper connections to learning new material, create less success in everyday functions, and lower the desire to engage in everyday activities, ultimately setting students up to fail before after graduation (Desai, 2023).

Purpose Statement

Coping has been purposeful in reducing stress in college students (Zaman & Ali, 2019). Coping strategies can utilize animals through specific programming, interventions,

and techniques and have been fruitful in lowering stress in students (Hoagwood et al., 2017; Muckle & Lasikiewicz, 2017; Mueller & Mccullough, 2017; Potvin-Bélanger et al., 2021; Saggers & Strachan, 2016). For larger animals, horses have been the primary tool utilized for stress reduction, along with therapies (Chakales et al., 2020). However, current literature has limited research on EFLA programs when addressing other aspects of well-being, mainly targeting the population of college students (Wilson et al., 2017). Thus, the current investigation aimed to observe well-being levels, mindfulness, sense of belonging, and engagement skills; these categories formulate a gap in research in the current literature and are crucial skills to have after graduation and for future endeavors (Wilson et al., 2017).

Research Questions

This mixed-method study utilized a control and intervention group with a pre-and post-survey recruiting Youngstown State University college students. Additionally, the intervention group received a six-week follow-up survey after the last day of the program. A pre-and post-well-being, mindfulness, sense of belonging, and engagement skills surveys was distributed, and the researcher took field notes during the activities. Additionally, qualitative extended response questions were given after the study through Google Forms (Harris et al., 2006). The four field note data logs identified verbal and nonverbal cues (e.g., low, medium, high) and pre-demeanor and post demeanor (e.g., solemn, normal, active/ excited) of the intervention participants. Overall, this study observed if a four-week EFLA program improved college students' mindfulness, well-being, sense of belonging, and engagement levels. The listed research questions guided the researcher throughout the study:

1. Will a four-week EFLA program improve mindfulness levels in college students and significantly differ from a control group?
2. Will a four-week EFLA program improve the well-being of college students and significantly differ from a control group?
3. Will a four-week EFLA program improve engagement skills in college students and significantly differ from a control group?
4. Will a four-week EFLA program improve a sense of belonging in college students and significantly differ from a control group?
5. Will any improvements be sustained after the six-week follow-up?

Overview of Methodology

A four-week week study design was used incorporating a control and intervention group, with a pre-, post-1, and post-2 survey (Harris et al., 2006). All participants completed the Initial Pre-Survey (Appendix A). The control group took the Post-Control Group Survey (Appendix B). Additionally, the treatment group took the Post-Intervention Group Survey after the intervention (Appendix C) along with the 2nd Post-Intervention Group Survey six weeks after the program ended (Appendix D). All of the pre-, post 1- and post-2 surveys consisted of the World Health Organization Well-Being Index (WHO-5), the sample Motivation and Engagement Scale (MES), the Mindful Attention Awareness Scale (MAAS), and the Sense of Belonging Scales (SBS). The Post-Intervention Group Survey had an additional qualitative portion where participants answered eight questions regarding their experiences during the intervention (Appendix C). Further, a maximum of 10 intervention participants were selected from students at Youngstown State University and asked to partake in the study during the spring

semester, utilizing cluster random sampling through flyer distribution on campus (Chun Tie et al., 2019). The flyer had a QR code describing the study, and the Initial Pre-Survey asked if students could confidently attend all four sessions. With this practical assignment method, any student who selected no was placed in the control group. In contrast, any participant who selected yes was entered into a raffle-based draw where the first randomly selected 10 participants were selected as the treatment group. The other participants who selected yes but were not randomly selected were placed in the control group.

The participants then visited the Withers Horse farm in Greenford, Ohio once a week for an hour and a half between March and April (group sessions with alternating handling of the animals) with three horses (a 23-year-old gelding, a 17-year-old gelding, and a two-year-old colt). Within the four-week intervention program, students were required to attend at least six hours of the equine education program (dates and times were planned based on the availability of students) under the supervision of the barn manager, an equine trainer, and this researcher, who is a horse trainer. When the program ended, the students retook the surveys to assess their progress.

The surveys tested participant responses before and after the researcher distributed the intervention. A Pearson's zero-order correlation was conducted between the four factors. Additionally, a factorial ANOVA was conducted after the Pearson's zero-order correlation assumptions were met. A paired sample t-test analysis of the treatment group with pre-, post, and post-six-week follow-up surveys were used. For the qualitative portion, extended response questions were sent to each participant through the Post-Intervention Survey (Appendix C) after four weeks, utilizing grounded theory (Chun Tie

et al., 2019). Qualitative data was collected through eight extended response questions, looking at themes from the weekly journals and observing verbal, nonverbal, and demeanor changes before and after the exercises. The researcher observed the participants working with the horses and then recorded written notes of their activity levels, verbal and non-verbal cues, and pre- and post-demeanor in the field notebook.

Significance of the Study

Comparing the pre-and post-tests of mindfulness, well-being, sense of belonging, and engagement tests before and after the EFLA program expands the current understanding of how EFLA programs affect college student development. This study obtained qualitative reports on college students' perspectives regarding an offered EFLA program. Further, this study presented an opportunity for Youngstown State University to utilize an EFLA program and observe if the program successfully increased students' well-being, mindfulness levels, sense of belonging, and engagement skills. Specifically, the promising results benefited students' overall campus experience by enabling them to utilize their skills beyond the classroom and into the workforce.

Role of the Researcher

The researcher conducted weekly equine activities, distributed the pre-, post-, and post-2 surveys through Google Forms, obtained field notes, and gave the participants a qualitative eight extended response portion to write their experiences with the study after it concluded. As the researcher had an internal status in the setting, the participants were aware and notified of the researcher's insider role. When identifying the researcher's positionality in the study, the researcher addressed the biases to lower the effects on the selected participants, the setting, and the overall results (YSUID, 2022).

Research Bias, Assumptions, and Limitations

Along with identifying biases, strategies to minimize biases from internal research were considered (YSUID, 2022). Research bias can occur in any researcher's design by influencing his or her assumptions on the sampling strategy and analysis. Additionally, respondent bias can occur if the participants feel pressured by and want to please the researcher (Merriam & Tisdell, 2016). Data triangulation was used to minimize bias, meaning the researcher compared data collected at different times and places and had qualitative data collected from participants with different perspectives through eight follow-up extended response questions (Merriam & Tisdell, 2016). Limitations of the current investigation include the absences of a few participants throughout the program, the sample size, diversity in the sample, and the environment. Completion rates of surveys and the shorter program length are also limitations.

Definition of Terms

The following terms were used operationally in the current investigation.

Stress - The mental strain or worry caused by trials and tribulations from everyday activities (Baqutayan, 2015).

Coping - When individuals change their cognition and behavioral efforts to ease taxing internal and external demands (Schoenmakers et al., 2015).

Problem-focused coping - Utilizes problem-solving and understanding strategies and seeks social support to tolerate stress (Klonoff-Cohen, 2022).

Emotion-focused coping - Utilize positive reinforcement to tolerate stress and include all regulatory efforts to eliminate the emotional consequences of stressful occurrences (Schoenmakers et al., 2015).

Appraisal-based coping strategies - When a person relies on beliefs, existing goals, and values to motivate and sustain the coping techniques to sequester stress (Schoenmakers et al., 2015).

Avoidant-focused coping strategies - Focus on mental disengagement and are associated with behavioral disengagement, which utilizes avoidance of stressful situations and social withdrawal (Klonoff-Cohen, 2022).

Well-being - Synthesizes mental and physical health and provides details about outcomes related to health promotion, along with disease-preventative efforts in a specific population (Ridner et al., 2016). Well-being can be measured in unidimensional and multidimensional contexts (Kern et al., 2015). Unidimensional measures life satisfaction regarding a person's mood at one point, while multidimensional is more practical (Kern et al., 2015). Multidimensional identifies groups with specific weaknesses and strengths for improving the well-being of students (Kern et al., 2015).

PERMA framework: Represents the five building blocks to improving well-being (Seligman, 2011). The five categories of PERMA are positive emotion, engagement, meaning, relationships, and achievement (Kern et al., 2015).

Engagement - When individuals fully deploy their skills, attention, and strength for any task (Kern et al., 2015).

Student engagement - The effort and time students give to activities linked to the anticipated outcomes of college and what the institution does to entice student participation (Groccia, 2018).

Extrinsic engagement - Utilizes collaborative activities where students improve self-confidence in learning and achieve social self-efficiency among their peers (Liu, 2020).

Intrinsic engagement - This is the emotional engagement a student displays that predicts the development of behavioral engagement (Froiland & Worrell, 2016).

Mindfulness - A tool used to improve the well-being of an individual by being emotionally present and nonjudgmentally paying attention to a task (Gutierrez et al., 2020).

Emotional support animal (ESA) - Any animal trained or untrained and prescribed by a medical professional to help with psychiatric issues in individuals (Salminen & Gregory, 2018).

Animal-assisted therapy - A goal-oriented technique using animals in education, health or human services for therapeutic improvements (Hoagwood et al., 2017).

Equine-assisted therapy - A strategy used to treat individuals suffering from physical or emotional disorders such as motor dysfunction, cerebral palsy, multiple sclerosis, autism, trauma recovery, and learning disabilities (Mueller & Mccullough, 2017).

Therapeutic riding - Any mounted exercise, including traditional riding disciplines, conducted by a certified North American Riding for the Handicapped Association (NARHA) (Pyle, 2006).

Hippotherapy - A rehabilitative process where professionals use horses to assist individuals with various diagnoses (Potvin-Bélanger et al., 2021).

Equine-facilitated psychotherapy - An equine-assisted therapy involving a person with mental health issues working with a therapist and a horse; can be a mounted or unmounted therapy and uses the natural human-horse interaction with the incorporation of a therapist to offer a therapeutic experience for the individual (Mueller & Mccullough, 2017).

Animal-assisted activities - A division of the previously mentioned animal-assisted therapy that offers similar benefits that do not target a specific medical ailment, in which activities are meet and greets involving an animal specialist, not a medically licensed practitioner or doctor (Muckle & Lasikiewicz, 2017).

Equine-facilitated learning activities (EFLA) - interchangeably called equine-assisted activities - refers to activities guided by interactions between people and equids, facilitating positive reactions for human well-being function and promoting exploring feelings in an educational format instead of the clinical interpretation of feelings and behaviors (Arrazola & Merkies, 2020; Pyle, 2006).

Organization of the Dissertation

The current study is organized to allow the reader to comprehend well-being, engagement, and mindfulness in college students, along with the stressors and coping techniques prevalent in everyday life. College students are susceptible to lower well-being due to stress and must be mindful and engaged to increase well-being. Animal-assisted therapies and activities can be an exceptional way to increase well-being. This research specifically studied how an EFLA program affects college students' well-being, mindfulness, sense of belonging, and engagement.

After establishing the need to study an EFLA program with college students, the research methodology is discussed by describing the EFLA course offered and the quantitative and qualitative data distribution timeline. Additionally, a section on the quantitative surveys will be discussed, including the purpose, description, reliability, validity, and limitations. Data collection is examined in more detail, followed by the study's results. The last section concludes the study's summary and further research needs.

Chapter II

Literature Review

Stress is the mental strain or worry caused by trials and tribulations from everyday activities (Baqutayan, 2015). It is a natural human response that addresses problems threatening daily life endeavors (Baqutayan, 2015). Stress or anxiety can manifest from irritability, body pains, an upset stomach, a lack of focus, a loss of appetite, trouble sleeping, and headaches (World Health Organization, 2023). However, it is natural to experience stress, and specific individuals are more susceptible to stressors (World Health Organization, 2023). Stress affects the brain in many ways (Desai, 2023). The brain's prefrontal cortex utilizes academic categorizations for success (Desai, 2023). The academic portion of the brain helps individuals plan, organize, regulate emotions, and inhibit impulsion (Desai, 2023). The brain's limbic area is accountable for fight or flight, producing cortisol or adrenaline into the body; therefore, causing heart rate-increasing effects, sweaty palms, and muscle contractions (Desai, 2023). Unfortunately, when an individual is in fight or flight for prolonged periods, rational thinking can be hindered due to increased cortisol levels; therefore, lessening proper connections to learning new materials (Desai, 2023). Students are typically in a fight or flight situation when there are exams, increased workload, lack of sleep, job interviews, or work-school life imbalances (World Health Organization, 2023).

College stress also negatively affects students' well-being (Yu & Luo, 2018). Well-being plays a considerable role in college students' lives, as time spent in the university setting changes an individual's psychological development (Yu & Luo, 2018). Well-being synthesizes mental and physical health and can be improved through being

mindful of one's emotions and actively engaging in activities (Ridner et al., 2016). Thus, higher well-being is a cumulative effect of improved engagement skills, mindfulness, and reduced stress levels (Ridner et al., 2016). Coping techniques are a significant way to attain higher well-being and engagement levels, increase mindfulness skills, and reduce stress (Schoenmakers et al., 2015). Coping is when individuals change their cognition and behavioral efforts to ease taxing internal and external demands (Schoenmakers et al., 2015). The four main coping strategies to relieve stress are problem-focused, emotion-focused, appraisal-based, and avoidant-focused (Klonoff-Cohen, 2022). Each category is intertwined with interventions to relieve stress, improve well-being, and increase mindfulness and engagement skills (Klonoff-Cohen, 2022). Furthermore, coping strategies are part of many therapeutic practices or activities, which can include animals (Schoenmakers et al., 2015). Thus, animal therapy and animal-assisted activities can be great tools for coping with stressful situations, inevitably improving well-being, mindfulness, and engagement levels (Hoagwood et al., 2017).

College Stress

High-stress levels occur in more than 75% of students in college(Huberty et al., 2019). Previous literature shows that college students often reported higher stress levels than people of other age groups and report feeling overwhelmed (Neely et al., 2009). College stress could be from the unique set of tribulations and difficulties students experience, for example, moving, departing family and friends, managing finances, juggling high academic workloads and outside activities, and selecting career options (Anastasiades et al., 2017; Neely et al., 2009). College stressors cause increased loneliness, anxiety, depression, sleep disturbance, lack of engagement, and possible

suicidal thoughts (McIndoo et al., 2016; O'Donovan & Hughes, 2007; Roberts & Danoff-Burg, 2010).

In addition, stress factors can be related to poor academic performance (Vorontsova-Wenger et al., 2022). More research is necessary regarding engagement to improve these associations from an investigative standpoint. College students are at a higher risk of falling victim to stress; however, improved well-being can be crucial in stress prevention (Ridner et al., 2016). Living with unresolved stress can harm health if sustained for extended periods (Chapman, 2017). University students have many different opportunities to reduce their anxiety, but they must utilize actions to have an effect (Chapman, 2017). Stress level coping mechanisms and therapies vary per individual, and students must find their niche regarding stress management (Chapman, 2017).

Academic Stress

Academic stress is significant in college (Jones et al., 2018) and is the most dominant factor affecting the well-being of college students (Barbayannis et al., 2022). Often, students feel that academic accomplishment, pressure to be successful, and post-graduation plans tend to increase their anxiety in the college setting (Jones et al., 2018). Academic stress causes students to associate college experiences negatively (Jones et al., 2018); however, academic distress and anxiety are bidirectional and can help motivate students to perform better in college (Jones et al., 2018).

Nonetheless, too much stress can hinder the student and cause student attrition, failure in school, and decreasing grade point averages (Jones et al., 2018). There is also a correlation between stress and mental health issues, linking the two with lower retention in the academic setting (Chapman, 2017). This lack of retention ultimately leads to lower

GPAs and decreased academic success (Chapman, 2017). Research also shows that 12-50% of students worldwide present at minimum one criterion of one or more mental conditions, exemplified when facing the pressure of the college academic setting (Ramón-Arbués et al., 2020).

Additionally, research shows that academic anxiety stems mainly from exams, workload, leisure time, competition, not meeting professors' or teachers' expectations, and the inability to establish personal relationships due to time constraints (Ramón-Arbués et al., 2020). While academic stress is the most frequent type of stress experienced by students, concerns about finances can also be stressful for college students (Jones et al., 2018).

Financial Stress

Financial stress is one of the most significant forms of pressure on a typical college student (Jones et al., 2018). Financial stress is correlated with low physical and mental health along with an increase in anxiety levels (Jones et al., 2018). Students often take out loans for financial support and have concerns about whether to complete their degree due to economic reasons (Jones et al., 2018). To compensate, students work longer hours to afford a high living cost, leaving less time for academic work (Jones et al., 2018). Students must also be aware of financial resources to aid their struggles (Jones et al., 2018). For example, first-year college students must familiarize themselves with the resources that help with financial stress or other resources to have a smooth college transition (Falcon, 2015). Financial stability and readiness are easily accessible through participation in college readiness programs if students are aware (Falcon, 2015).

Additionally, financially stressed students are more prone to drop out of school than financially stable students (Moore et al., 2021). Data from the National College Health Assessment also shows that most college students believe finances negatively affect their classroom performance (Moore et al., 2021). A qualitative study observing four focus groups was led in large, private, and urban universities in the United States over one month, and results demonstrated that financial burdens lowered academic performance and increased stress levels in students (Moore et al., 2021). The negative performance inevitably correlates with working extra hours to pay bills, thus substantially limiting studying abilities for the classes at hand (Moore et al., 2021). The major themes found in this cohort were that financial distress created challenges for the students to navigate relationships, along with a healthy relationship to work life and school balance (Moore et al., 2021). The ending result led to feelings of isolation, stress, anxiety, and embarrassment for the students, inevitability leaving them to feel unsupported (Moore et al., 2021).

Lack of Support

Support is critical to reducing stress for college students (Jones et al., 2018). Social support softens the damaging effects of stressful events and has an inverse relationship with stress. For example, college students with higher support will likely adjust to college favorably (Jones et al., 2018). Maintaining strong ties to family support and friendships in college is ideal for adjustment to college life and readiness (Jones et al., 2018). On the other hand, low college readiness is an unsuccessful preparation for students to shift into college and the workforce (Malin et al., 2017) and contributes to

students lacking college support and a sense of belonging (Falcon, 2015; Wright et al., 2022).

Often, students feel like they do not belong, are unsupported, and are unfamiliar with the college experience due to the low help from parents, high schools, and social circles (Falcon, 2015; Wright et al., 2022). High percentages of unsupported students are from low-performing school systems where their education is not a priority (Toyokawa et al., 2020). These low-achievement and performing schools often have students with low achievement results, low positive attitudes towards schools, lack of parent involvement, low supportive teachers, oppositional culture (subculture rejection of conforming to values and norms), and perceived discrimination (Amitava Banerjee, 2016). Research indicates that students attending low-academic schools have low Scholastic Assessment Test (SAT) and American College Testing (ACT) scores, problems adapting to new college life, and low self-esteem (Falcon, 2015). These factors contribute to a lower college completion rate due to the need for more student support (Falcon, 2015).

Lack of support also stems from racial disparity (Toyokawa et al., 2020). Ethnic and racial disparity in the school system is well documented in U.S. history (Falcon, 2015). Minority groups in the United States are characteristically low-income families who do not view college as a priority (Falcon, 2015). Underrepresented groups can lack the education and knowledge to achieve greatness in college, inevitably causing stress on students trying to earn degrees (Falcon, 2015). First-generation college students from different cultural upbringings often feel uncomfortable in the college atmosphere, feel like they don’t belong, and lack family support (Means & Pyne, 2017; Wright et al.,

2022). Additionally, low-income families tend to give their children less exposure to the college scenery and may see college as an adventure for the rich (Falcon, 2015).

Furthermore, whether a parent or guardian supports their children's college ambitions, guardians with college experience may need to understand the commitment, resources, and time for the journey (Falcon, 2015). These actions may lead to insufficient levels of emotional support or a limited understanding of how to thrive in college settings for the students (Falcon, 2015). Students who remain emotionally close to family and friends familiar with college readiness display increased help-seeking behavior (Jones et al., 2018). However, other factors can deprive students of seeking help even in a supportive environment due to health complications (Ranasinghe et al., 2018). Lack of sleep can alter one's mind if prolonged and cause stress even in a healthy environment (Ranasinghe et al., 2018).

Sleep Deprivation

In contemporary society, sleep deprivation is insufficient rest (Wang et al., 2023). Sleep deprivation can cause sleepiness, weight changes, fatigue and negatively affect the brain’s cognitive function (Ranasinghe et al., 2018). Deprivation also causes a decrease in brain waves in the frontal cortex, lower attention spans, impaired memory, greater anxiety, and negative mood swings (Ranasinghe et al., 2018). Students at the collegiate level are among the most sleep-deprived in the United States (Ranasinghe et al., 2018). This sleep deprivation is attributed to students' perceived stress during their education (Bolin, 2019). Fifty percent of students describe daytime sleepiness, and 70% undertake insufficient sleep throughout the night (Hershner & Chervin, 2014). For students, lack of

sleep and drowsiness impact learning and academic performance during class and cause memory issues (Hershner & Chervin, 2014).

Common themes found in sleep-deprived college students range from memory loss in college students, forming inadequate sleep hygiene patterns, an increase in alcohol, energy, and caffeine drink consumption, the development of sleep disorders, lower grade point averages, and the risks of unsafe driving (Hershner & Chervin, 2014). Evidence also formulated the need for sleep courses and educational programs to be promoted to decrease sleep stress in college students (Hershner & Chervin, 2014). Incorporating sleeping education interventions for college students has the potential to improve college students' sleep behaviors, sleep quality, stress levels, and well-being (Hershner & O'Brien, 2018). Thus, sleep deprivation is an added stressor to the college experience and amplifies the stress associated with academic, social, and financial tribulations (Hershner & O'Brien, 2018). All of these factors negatively affect the well-being of students at the collegiate level (Waters, 2011).

Well-Being of College Students

Well-being synthesizes mental and physical health (Ridner et al., 2016), providing details about outcomes related to health promotion along with disease-preventative efforts in a specific population (Ridner et al., 2016). Higher well-being in people also creates positivity in the educational setting, providing a pathway for increased sophistication, enhancing social cohesion and civic citizenship, a sense of belonging, and promoting learning and creativity (Waters, 2011; Wright et al., 2022). Given the benefits of well-being and positive emotion, universities should consider how to build a great support system for student well-being (Kern et al., 2015).

Rather than a single measurement, well-being comprises many readily measured aspects (Seligman, 2011). Well-being can be measured in unidimensional and multidimensional contexts (Kern et al., 2015). Unidimensional measures life satisfaction regarding a person's mood at one point, while multidimensional is more practical (Kern et al., 2015), identifying groups with specific weaknesses and strengths for improving the well-being of students (Kern et al., 2015). In education, overall grade point averages are an example that indicates academic success but obscures the areas where the students struggled (Kern et al., 2015). However, evaluations must go beyond the assessment domains of well-being in students to improve and understand positive emotions in the education system (Kern et al., 2015).

Therefore, the PERMA framework of well-being attempts to answer how to improve well-being in people (Kern et al., 2015). According to Seligman's (2011) model, PERMA represents the five building blocks to improving well-being. The five categories of PERMA are engagement, positive emotion, meaning, relationships, and achievement (Kern et al., 2015). Positive emotion increases well-being and utilizes cultivating gratitude and forgiveness, positive emotion about the present (using mindfulness and savoring physical pleasures), and positive emotion about the future (Kern et al., 2015). However, this route is limited to how much an individual can experience positive emotions and tends to fluctuate within ranges (Kern et al., 2015). Individuals can utilize the following techniques from PERMA to look for routes to increasing positive levels and improving well-being (Kern et al., 2015). The first step to increasing well-being and positive feelings is increasing life engagement (Kern et al., 2015).

Engagement is when individuals fully deploy their skills, attention, and strength for any task (Kern et al., 2015). Engagement produces a flow experience (doing an activity at a great cost due to optimal involvement in that activity) that gratifies people, making the engagement activity a reward (Kern et al., 2015). It also pertains to physiological connections to activities or organizations where individuals absorb, show interest, and engage in life (Kern et al., 2015). Relationship dynamics are another fundamental aspect of well-being (Kern et al., 2015). Relationship experiences amplify well-being through joy, laughter, belongingness, and accomplishment (Kern et al., 2015; Wright et al., 2022). Connection to other things, people, places, or animals gives life purpose and meaning; support from these connections is an antidote to low points in one's life (Kern et al., 2015).

Meaning and accomplishment are the last fundamental components of well-being (Kern et al., 2015). A sense of meaning derives from belonging to and serving something of higher significance than oneself to feel accepted and belonging (Kern et al., 2015; Wright et al., 2022). These institutions include family, religion, politics, work organizations, social causes, science, and community (Butler & Kern, 2016). Accomplishment is essential for well-being as people pursue achievement in various domains, including the workplace, sports, hobbies, or games, and does not necessarily have to lead to positive outcomes (Butler & Kern, 2016). All five pillars of well-being relate to all people and are particularly important to college students at risk of low well-being (Butler & Kern, 2016).

Well-being plays a considerable part in college students' lives, as time spent in the university setting changes an individual's psychological development (Yu & Luo, 2018).

The main area of psychological change comes from the transitional to preparatory stages college students face from development to adolescence to adulthood and acquiring a career after college (Yu & Luo, 2018). Factors that can alter a student's well-being are sleep deprivation, stress from school, personal issues, medical conditions, sexual orientation, and mental illnesses (Ridner et al., 2016).

Incorporating well-being programs in education is advantageous, especially for vulnerable groups such as college students susceptible to decreased well-being (Ridner et al., 2016). These kinds of programs incorporate activities utilizing exercise, outdoor activities, and the promotion of sleep quality, which show significant results for the improved well-being of college students (Ridner et al., 2016). Such programs have also displayed an increase in dispositional optimism and efficiency, which is crucial for the psychological development of students at the collegiate level (Yu & Luo, 2018). Increased well-being decreases anxiety attachment in students, creating positive beliefs in students' sense of self, increasing their confidence to graduate, and improving mindfulness skills (Lane, 2016). However, one must be mindful to maintain optimism and enhance well-being (Gutierrez et al., 2020).

Mindfulness of College Students

Mindfulness is a tool used to improve the well-being of an individual by being emotionally present and by nonjudgmentally paying attention to a task (Gutierrez et al., 2020). Additionally, mindfulness is a valuable tool used to create positive behavioral changes in individuals and can be incorporated into therapeutic interventions for anyone suffering from stress or a lack of well-being (Gutierrez et al., 2020). Mindfulness interventions can range from face-to-face groups, including animals, online and

individual settings, and have a timeframe of a few days to several weeks (Gutierrez et al., 2020). Furthermore, mindfulness significantly benefits younger populations and has been gradually applied to educational settings worldwide (Altinyelken, 2022).

Higher education also supports mindfulness as it promotes mental health awareness in universities and stimulates reflective learning (Altinyelken, 2022). In addition, including mindfulness practice can help students improve coping strategies to deal with life struggles, along with developing self-care, compassion, belongingness, and well-being (Altinyelken, 2022; Wright et al., 2022). The benefits of mindfulness can help students make healthier choices and better cope with stressors in university transition and everyday life on and off campus (Altinyelken, 2022). Therefore, university counseling services can be enhanced by including mindfulness practices (Altinyelken, 2022). Notably, studies have also shown that college students are more than willing to try mindfulness as a therapeutic approach, and many studies have shown significant positive results (Gutierrez et al., 2020).

One research study demonstrated that when college students learned specific techniques for managing stress through mindfulness their well-being improved across various measures and led to better mental health (Seppälä et al., 2020). In this research study, a team evaluated three college classroom-based wellness-based programs incorporating mindfulness techniques, such as breathing and emotional intelligence strategies, which improved well-being (Seppälä et al., 2020). The researchers discovered that such mindfulness-based programs can be valuable for addressing campus mental health concerns (Seppälä et al., 2020). In addition, this also taught students how to fulfill proper work-life balances when attending college successfully (Seppälä et al., 2020). This

fulfillment positively impacted depression, stress, mindfulness, positive affect, mental health, and preventatively addressed mental health for university students (Seppälä et al., 2020).

Another recent study applied cognitive-behavioral and mindfulness-based programs for students on campus to improve students' mindfulness skills (Long et al., 2021). In this study, students enrolled in a mindfulness-based course displayed promising advances in improving well-being and coping strategies to tackle stress (Long et al., 2021). These results suggested that cognitive-behavioral classes, along with mindfulness-based practices, are tools to enhance the prevention of mental health troubles and coping mechanisms (Long et al., 2021). The results also indicated that mindfulness programs should be offered in college to decrease student stress and increase well-being (Long et al., 2021).

Furthermore, a recent study involved one group of students who listened to a mindfulness audio compact disc, while a non-experimental group listened to a neutral story (Vorontsova-Wenger et al., 2022). Results revealed significant improvements in psychopathological systems and academic achievement in the experimental group (Vorontsova-Wenger et al., 2022). Thus, mindfulness is crucial for students at the collegiate level. However, to participate in activities on campus to increase mindfulness and well-being and decrease stress, one must actively engage in campus programs (Zhou et al., 2022).

Student Engagement on Campus

Student engagement is the effort and time students apply to activities linked to the desired outcomes of college and what the institution prepares to entice the students to

participate (Groccia, 2018). Engagement includes the magnitude to which a student is active in co-curricular and academic activities on campus, communication with faculty, community interaction with other students, and research (Groccia, 2018). To increase engagement, intrinsic and extrinsic motivational factors are also associated with college students' participation (Creswell & Poth, 2018). Extrinsic factors amplify the improvement of increased engagement among college students by motivating college students to achieve their goals (Liu, 2020). This form of motivation utilizes collaborative activities where students increase their self-confidence in learning and achieve social self-efficiency among their peers (Liu, 2020). It also measures external incentives during participation throughout an engaging activity in the hopes that students will develop a deep interest in engagement (Liu, 2020). Thus, extrinsic factors positively affect social self-efficiency, activity participation, and intrinsic motivation regarding engagement levels (Liu, 2020).

Intrinsic engagement is the emotional engagement a student displays that predicts the development of behavioral engagement (Froiland & Worrell, 2016). Intrinsic student engagement emphasizes three interrelated aspects for college students (Mandernach, 2015). These categories are the cognitive criteria, behavioral criteria, and affective criteria (Mandernach, 2015). The cognitive criterion reaches the magnitude to which students contribute and put in the mental effort to learn during the activities (Mandernach, 2015). Behavioral criteria are used to observe if students actively respond to learning the task during the activities (Mandernach, 2015). Lastly, affective criteria observe students' investment level and emotional reactions to learning during an activity (Mandernach, 2015). The engagement indicators measure student engagement and give

an improved understanding of assessing if activities are successful for the students (Mandernach, 2015). Therefore, careful planning must be needed to fulfill intrinsic and extrinsic motivators (Liu, 2020).

Strategic planning for campus activities that engage students requires collaboration from different campus divisions and can be challenging (Sinatra et al., 2015). Collaboration requires careful planning amongst other departments, the use of best practices, and academic and student services professionals working together to create enticing programs (Groccia, 2018). Although engagement is challenging, creating a campus that engages students is crucial because students risk low well-being due to many college stressors (Acosta-Gonzaga, 2023). With improved well-being, students actively participate in academics and campus activities (Acosta-Gonzaga, 2023). Student participation is especially crucial during college, as students face many obstacles that can lower their well-being, increase stress, and cause them to look for unhealthy outlets (Acosta-Gonzaga, 2023).

When students go to college and leave their hometown they anticipate utilizing their college setting as their new home (Zhou et al., 2022). This anticipation leads students to use community-based engagement activities (Zhou et al., 2022). A campus should play an essential role in supporting students socially; therefore, can offer students a variety of activities (Zhou et al., 2022). Engagement in activities lessens loneliness on campus, depression, and overall negative adjustments to the new atmosphere and stress of college coursework (Waldrop et al., 2019). Therefore, engagement is significant on campus, as it can lessen the strain from tension and make the college experience more positive, ultimately reducing dropout rates (Waldrop et al., 2019).

Students can participate in engagement on or off campus individually, with a group, with faculty, or with staff, depending on the event offered by the campus (Zhou et al., 2022). These programs can range from research courses, creative activities based on wellness and fitness, collaborations with community partners, clubs, Greek life, and recreational activities (Zhou et al., 2022). There are many positive outcomes if students engage in these activities (Zhou et al., 2022). For example, engagement improves academic learning and implies real-life obstacles after graduation (Zhou et al., 2022). The service-learning activities even suggest students improving personal career development, connections with others, and self-knowledge of one's actions (Zhou et al., 2022).

However, offering services to students on campus can take time and effort to create and sustain the program (Zhou et al., 2022). Also, poorly implemented campus programs cause students to show no interest, which causes low student attendance and demonstrates the inherent risks of a lack of campus engagement (Zhou et al., 2022). Low college engagement is a significant issue, as engagement correlates to many student benefits (Gray & Diloreto, 2016). If engagement is low, students display a higher risk of lacking learning, being persistent, and having adequate retention in college (Gray & Diloreto, 2016). The more engaged students are on campus (pertaining to programs, faculty, staff, and other students), the more likely they are to be successful in their college studies, have greater student satisfaction, and have higher levels of perceived learning (Gray & Diloreto, 2016). Thus, colleges should look for ways to improve student engagement (Gray & Diloreto, 2016).

For engagement to improve further in the classroom and programs, a gatekeeper can be utilized in a college setting (Creswell & Poth, 2018). A gatekeeper is a mediator

for socially accessing study settings and participants within research (McFadyen & Rankin, 2016). A gatekeeper facilitates researchers' access to potential participants and sites for the research process (McFadyen & Rankin, 2016). Additionally, a gatekeeper's positive influence is the smooth process of running research activities and completing research (McFadyen & Rankin, 2016). A gatekeeper builds trust and acceptance, so the participants feel safe expressing themselves without judgment (Creswell & Poth, 2018). Animals have been known as the perfect gatekeepers to let students bring out their best abilities and engagements in the school setting (Fynn & Runacres, 2022). Quantitative data has shown that animal-assisted activities reduce stress and anxiety in students and improve reading, literary skills, student interaction, self-esteem, social skills, and motivation to do work (Fynn & Runacres, 2022). Animal-assisted therapy is an intervention that benefits mental and physical health and is often used in an educational setting (Artz et al., 2021); it is a coping strategy to decrease the negative impacts of stress.

Coping Strategies

Coping is when individuals change their cognition and behavioral efforts to ease taxing internal and external demands (Schoenmakers et al., 2015). Coping is process-oriented, meaning it can change over time, differ in various contexts, and be categorized by stressful situations (Schoenmakers et al., 2015). The process adapts to changes in life struggles, work-life balance, and personal issues and even expands into the academic realm (De et al., 2016). The psychological well-being of individuals is lower in academia, especially in higher education (De et al., 2016). Since individuals in higher education are at risk of high stress, formulating ways to regulate stress responses is of great importance

(De et al., 2016). For optimal regulation, coping strategies are an ideal way to manage stress levels and improve well-being in college students (Klonoff-Cohen, 2022). To achieve this, students can utilize four coping strategies depending on their personal preference or personality type, which are problem-focused, emotion-focused, appraisal-based, and avoidant-focused (Klonoff-Cohen, 2022).

Problem-focused coping strategies are the most widely reported (Klonoff-Cohen, 2022)—this technique utilizes active problem-solving and understanding strategies and seeks social support to tolerate stress (Klonoff-Cohen, 2022). In the college setting, problem-focused coping pertains to students paying attention to all details in college tribulations (financial issues, academic stress, and feeling unsupported), planning outcomes, and making effective decisions to deal with the issues (Jones et al., 2018; Klonoff-Cohen , 2022). Additionally, problem-focused coping also demonstrates the impact on college students' happiness and well-being (Zaman & Ali, 2019). Students utilizing problem-focused coping strategies demonstrate a relationship between increased emotional intelligence, improved self-regulation skills, and better engagement with sustaining social relationships (Zaman & Ali, 2019). These are pillars of better well-being and emotional happiness (Kern et al., 2015).

Emotion-focused coping strategies utilize positive reinforcement to tolerate stress and turn to religion (Klonoff-Cohen , 2022). These strategies include all regulatory efforts to eliminate the emotional consequences of stressful occurrences (Schoenmakers et al., 2015). College students typically utilize emotion-focused strategies to manage their emotional distress throughout the hardships of college (Angelica et al., 2022). Appraisal-based coping strategies are when an individual relies on beliefs, existing goals, and

values to motivate and sustain the coping techniques to sequester stress (Schoenmakers et al., 2015). These forms of coping typically occur when a coping technique is ineffective and is used to restart a coping procedure (Schoenmakers et al., 2015). In the college setting, students often use mindfulness techniques to be self-aware of previous unsuccessful coping techniques in order not to avoid the main issue (Long et al., 2021).

Avoidant-focused coping strategies usually focus on mental disengagement (Klonoff-Cohen , 2022). Mental disengagement utilizes the transference of emotions when associated with stress and becoming involved in other activities (Klonoff-Cohen , 2022). The avoidant strategies are associated with behavioral disengagement, which utilizes avoidance of stressful situations and social withdrawal (Klonoff-Cohen , 2022). Avoidant-focused coping strategies are often seen in college students who experience tremendous stress and do not know how to eliminate the stress (Henshaw et al., 2023). However, there are many strategies and programs students can utilize to advance their coping strategies further and lower the risk of avoiding their troubles (Hoagwood et al., 2017; Muckle & Lasikiewicz, 2017; Mueller & Mccullough, 2017; Potvin-Bélanger et al., 2021; Saggers & Strachan, 2016).

In particular, the four strategies can also utilize animals through emotional support systems, specific programming, and interventions (Hoagwood et al., 2017; Muckle & Lasikiewicz, 2017; Mueller & Mccullough, 2017; Potvin-Bélanger et al., 2021; Saggers & Strachan, 2016; Salminen & Gregory, 2018). Emotional support systems utilize emotional support animals; animal programs and interventions can include animal-assisted therapies and animal-assisted activities (Hoagwood et al., 2017; Muckle & Lasikiewicz, 2017; Mueller & Mccullough, 2017; Potvin-Bélanger et al., 2021; Saggers

& Strachan, 2016; Salminen & Gregory, 2018). Furthermore, this approach branches off into larger animal therapy that contributes to student coping mechanisms when improving college students' mindfulness, stress, engagement, and well-being (Chakales et al., 2020). Typical examples of large animal therapies usually involve horses; these animals are ideal for coping mechanisms in college students (Chakales et al., 2020). Large animal-assisted therapies are most known as equine-assisted therapy and equine-assisted psychotherapy and show excellent results in students positively coping with depression and anxiety (Wilson et al., 2017).

Emotional Support Animals for College Students

Emotional support animals (ESA) are defined as any animal trained or untrained and prescribed by a medical professional to assist with psychiatric problems in individuals (Salminen & Gregory, 2018). College students have been shown to benefit from ESAs (Adams et al., 2017). Within the past decade, campuses have seen many student requests to utilize an ESA to cope with anxiety, depression, and stress (Adams et al., 2017). ESAs only offer college students companionship and comfort in coping with everyday life stressors in addition to college tribulations (Adams et al., 2017).

On campuses, ESAs typically involve cats, dogs, or other small animals such as birds or reptiles (Adams et al., 2017). Previous research has shown that college students utilizing ESAs have shown social, psychological, and physiological benefits when experiencing mental and emotional difficulties during their college experience (Smith et al., 2021). Previous research has also shown that ESAs offer students unconditional love and acceptance (Smith et al., 2021). Additionally, ESAs ease stress during college through the animals offering a distraction, along with giving students a sense of

responsibility aside from college tasks (Smith et al., 2021). Aside from college students, ESAs have been successful in uniting the human-companion-animal bond within people of all ages through feelings of unconditional love, which can create favorable mental health outcomes such as increased daily activity engagement (Poindexter & Marconi, 2021).

However, universities may require students with an ESA to follow policies for the safety of other students and the animal itself (Salminen & Gregory, 2018). Universities can also make policies that call for removing the ESA if it is loud, is not kept under proper confinement, and disrupts other students (Salminen & Gregory, 2018). Additionally, even though ESAs can provide sufficient support for college students, they may not be a realistic option for all students living on campuses (Adams et al., 2017). Therefore, counselors looking to assist students may utilize alternative programs to allow students to work with animals (Adams et al., 2017). Programs such as animal-assisted therapies and animal-assisted activities are ideal for college students who cannot utilize ESAs (Adams et al., 2017).

Animal-Assisted Therapy

Animal-assisted therapy is a goal-oriented technique that includes using animals in education or health and human services for therapeutic use (Hoagwood et al., 2017). This type of assisted therapy incorporates medically licensed professionals utilizing the animal as a tool to treat patients (Hoagwood et al., 2017). The therapy's primary goals depend on the ailment and include enhancing physical, psychological, and physiological health (White et al., 2015). Since animal-assisted therapy is a therapeutic technique, scheduled times and locations are stringent and must be abided by under strict

supervision from a licensed professional (White et al., 2015). Regardless of the program, all animals must be temperament tested, obedience trained, and veterinary screened before working with patients (Jones et al., 2019). Many studies regarding animal therapy involve targeted animal species ranging from dogs to small animals to large animals (Hoagwood et al., 2017). In therapeutic practice, animal-assisted therapy often uses large animals, such as horses (Ward et al., 2022). The main categories of animal-assisted therapy that utilize horses are equine-assisted therapy, equine-facilitated psychotherapy, and hippotherapy (White-Lewis, 2019).

Equine-Assisted Therapy

Equine-assisted therapy is an approach that is increasing rapidly in the mental health field (Mueller & Mccullough, 2017). Equine-assisted therapy is a strategy used to treat individuals suffering from physical or emotional disorders, such as motor dysfunction, cerebral palsy, multiple sclerosis, autism, trauma recovery, and learning disabilities (Mueller & Mccullough, 2017). Equine-assisted therapy includes therapeutic riding, hippotherapy, and equine-facilitated psychotherapy (Mueller & Mccullough, 2017). Therapeutic riding is any mounted exercise, including traditional riding disciplines, conducted by an individual certified NARHA (Pyle, 2006). The rider plays a role in controlling the direction and cadence of the horse (Pyle, 2006). The most significant benefits of therapeutic riding include better flexibility, coordination, improved posture, relaxation of the mind and body, well-being, lower stress levels, and body awareness (Pyle, 2006).

A recent study demonstrated that college students attending equine-assisted therapy displayed increased relaxation and engagement when working with horses (Berg

et al., 2021). During this study, college students were asked to participate in a 90-minute equine-assisted therapy session once per week for seven weeks. The results suggested significant improvement in self-compassion, along with attendance rates being high and great interest in the program (Berg et al., 2021). Additionally, a separate study also displayed improved perceived stress in college students after interacting with horses during a two-month equine-assisted therapy course (Chakales et al., 2020). This study collected data from 28 students involved with an equine-assisted therapy program. The results suggested significant improvements in perceived stress, depression, and stress severity (Chakales et al., 2020).

College students also improved their cognitive, social, and moral abilities after an equine-assisted therapy course, creating body awareness within the individual (Fuchikami et al., 2022). Thus, with the benefits shown and the desire to keep improving equine-assisted therapy, therapeutic techniques known as hippotherapy are also incorporated into rehabilitation (Potvin-Bélanger et al., 2021).

Hippotherapy

Hippotherapy is a rehabilitative process where professionals use horses to assist individuals with various diagnoses (Potvin-Bélanger et al., 2021). Historically, therapeutic riding programs utilized horses to help partners in activities that benefit therapy, rehabilitation, and recreation and improve patient skills (Saggers & Strachan, 2016). Therapeutic services encompass occupational, speech, and physical therapy (Saggers & Strachan, 2016). All three services are in the equine setting, utilizing the horse as a treatment to achieve therapeutic goals (Saggers & Strachan, 2016). Generally, the treatment is related to behavioral and neurological function (Léveillé et al., 2017).

Therapeutic riding involves various activities with the horse and having the individual perform movements on the animal (Léveillé et al., 2017). Each exercise for hippotherapy sessions adjusts for individual goals and therapy regimes (Silkwood-Sherer & McGibbon, 2022).

During hippotherapy sessions, some of the client's movements and positions include facing forward, backward, supine, standing, or prone (Pyle, 2006). The types of therapists used to treat clients during hippotherapy are physical, speech pathology, and occupational therapists (Pyle, 2006). Speech therapists utilize hippotherapy to target the neurological system involved with speech articulation in patients (Thrall & Moser, 2015). Through different activities and obstacles with the horses, speech therapists utilize speech coordination methods with patients and observe if there are improvements in speech-time articulation (Thrall & Moser, 2015). Hippotherapy is also a direct medical treatment that provides intensive trunk, coordination, and balance training and is even used for secondary benefits such as stress improvement, learning disabilities, and emotional disabilities (Pyle, 2006).

Physical and occupational therapists utilize intensive trunk training in which participants are placed on the horse to achieve better balance and movement (Govender et al., 2016). This technique increases the individual's trunk strength, improving postural strength, weight-bearing, and motor planning (Govender et al., 2016). Hippotherapy improves learning and emotional disabilities by providing a unique relationship between individuals and the horse. Individuals bond with the horse, which causes them to overcome fear or insecurities through engagement (Govender et al., 2016). It allows therapists to let their clients trust themselves when working with such a large animal,

which builds confidence in the participant (Govender et al., 2016). This type of therapy enables individuals to have greater self-esteem through confidence-building and puts their minds in a relaxed state, decreasing stress (Govender et al., 2016).

Communication improves with hippotherapy treatment, as the individual must communicate through voice, hands, and legs (Pyle, 2006). Self-esteem increases due to the ability to communicate appropriately with the animal, improving overall well-being (Pyle, 2006). Hippotherapy increases individual engagement within activities and the physical environment (Pyle, 2006). Furthermore, hippotherapy creates a more personal approach to treatment, where the individual can feel more comfortable in an environment that causes them to bond with the animal (Pyle, 2006). The individual working with the animal experiences a blend of emotions that establishes trust and respect, adoration, and lowering of fear, which inadvertently decreases stress levels (Pyle, 2006).

One study observed occupational students who participated in hippotherapy practice and found positive correlations to problem-solving skills, activity engagement, and tolerance to stress (Murphy et al., 2017). Occupational therapy students displayed a positive change in tolerance to ambiguity for stress after experiencing an equine program and increased engagement in the activities (Murphy et al., 2017). The students improved their problem-solving skills, ability to explore activities, and communication skills; apparent benefits were discovered in the equine activity for occupational therapy students (Murphy et al., 2017). These benefits also come from equine-facilitated psychotherapy (Pyle, 2006).

Equine-Facilitated Psychotherapy

Equine-facilitated psychotherapy is a branch of equine-assisted therapy involving a person with mental health issues working with a therapist and a horse (Mueller & Mccullough, 2017). Equine-facilitated psychotherapy can be a mounted or unmounted therapy (Mueller & Mccullough, 2017). This psychotherapeutic practice uses the natural human-horse interaction with the incorporation of a therapist to offer a therapeutic experience for the individual (Mueller & Mccullough, 2017). This type of therapy causes clients to increase self-awareness, repattern maladaptive behaviors and feelings, and be mindful (Dampsey, 2017; Pyle, 2006).

These benefits come from examining research in affective neuroscience, which includes self-regulation pertaining to the autonomic nervous system (Dampsey, 2017). There is an established correlation between the development of the autonomic nervous system and its ability to regulate emotions while working with horses (Dampsey, 2017). This process includes regulating body and behavioral states and engaging socially affirmatively (Dampsey, 2017). The relaxation of the automatic nervous system successfully self-regulates an individual, and working with horses results in a relaxed state in the people participating in an equine-facilitated psychotherapy (Dampsey, 2017). This relaxed state allows for a more self-efficient, self-aware, emotionally intelligent, and mindful individual (Dampsey, 2017). To continue to achieve these benefits, one must follow and abide by the standards of The Equine Facilitated Mental Health Association (EFMHA) (Pyle, 2006).

The EFMHA is a section of the NARHA that promotes equine-facilitated experiences that enhance psychosocial development, growth, and education (Pyle, 2006). Equine-facilitated psychotherapy includes activities that pertain to equine grooming,

lunging, handling, riding, driving, or vaulting (Pyle, 2006). Moreover, it is always performed by a licensed mental health professional because it is a psychological treatment approach (Pyle, 2006). This type of therapy establishes treatment goals between clients and therapists using an equine (Mueller & Mccullough, 2017). Unlike animal-assisted therapy, which usually occurs indoors, equine-facilitated psychotherapy is usually on a rural farm (Mueller & Mccullough, 2017). Patients sometimes refrain from seeking help due to the stigma and shame of attending a clinic, making the ease of going to a farm more desirable (Acri et al., 2021). The location has many psychological benefits for participants, as they are outdoors and do not feel like a "patient" as they would in an office setting (Mueller & Mccullough, 2017). In a barn setting, equine-facilitated psychotherapy provides tools for increasing self-awareness, self-responsibility, and self-esteem within active participants (Pyle, 2006). These increases are due to the participant's confidence building through communication with the horses and mastery of fear while working with a large animal (Pyle, 2006).

Research in this practice reveals a significant decrease in psychological symptoms in patients experiencing trauma and high-stress levels (Mueller & Mccullough, 2017). It shows greater strength in trust, relatability, self-confidence, self-effects, satisfaction, and improved well-being compared to other treatment methods (Mueller & Mccullough, 2017). Evidence has shown that the physical touch between individuals and horses leads to the emotional healing of the participant (Mueller & Mccullough, 2017). A pilot study intended to explore psychotherapy effectiveness while incorporating equines for undergraduate female college students with stress and anxiety concerns (Berg et al., 2021). The results displayed a significant decrease in stress and noticeably higher

engagement rates in psychotherapy activities incorporating an equine group (Berg et al., 2021).

Equine-facilitated psychotherapy activities influence individuals' experiential stress management and mindfulness (Morgan, 2017). A study with college students active in an equine-facilitated psychotherapy showed reduced stress compared to a group who did not attend the equine-facilitated psychotherapy activity (Morgan, 2017). The students completed obstacles and challenges with the horses and took a separate hike that utilized mindfulness techniques while walking (Morgan, 2017). The equine-facilitated psychotherapy course indicated that stress levels were significantly lower after working 15 weeks with the horses. In addition, researchers found that mindfulness skills improved at the same rate after interaction as the mindfulness hike (Morgan, 2017). These results show that horses can improve mindfulness in participants compared to a separate activity utilizing mindful techniques (Morgan, 2017). However, even though equine therapeutic approaches display positive changes in many categories of participants, animal-assisted activities have shown to be just as effective (Muckle & Lasikiewicz, 2017).

Animal-Assisted Activities

Animals display non-confrontational relationships with individuals and present overall acceptance (Muckle & Lasikiewicz, 2017). Animal-assisted activities are a branch of the previously mentioned animal-assisted therapy that presents similar benefits but does not target a medical condition (Muckle & Lasikiewicz, 2017). This activity also differs from treatment because the activities are “meet and greets” and involve an animal specialist (a professional who cares and attends to animals), not a medically licensed practitioner or doctor (Muckle & Lasikiewicz, 2017). Also, the activities do not need

specific treatment goals, and the visits are not necessarily planned (Muckle & Lasikiewicz, 2017).

Animals provide many emotional, psychological, and social benefits to people and have been shown to motivate students to engage in school activities (Leighton, 2019). Incorporating animals in schools or providing students the opportunity to work with animals outside of the school are confidence boosters for students who are shy or feel unvalued (Leighton, 2019). Another study found that even animal-assisted activities addressed competence, positive student experiences in the school, a greater sense of authenticity, and less anxiety (Muckle & Lasikiewicz, 2017). Animal education has resulted in increased brain activity and competencies in spatial, artistic, and interpersonal skills, thus reducing blood pressure and heart rates from stress in school (Muckle & Lasikiewicz, 2017).

Utilizing animals with students not only allows students and educators to work together due to animals' nonverbal communication, but it can also encourage individuals to look past any differences in one another to reach the goal of successfully working with the animal, which can cause one's focus to not dwell on anxiety (Muckle & Lasikiewicz, 2017). Therefore, animal-assisted activities set the foundation for active engagement in collaborative work, creating a sense of comfort and increasing self-esteem and belongingness between all parties (Muckle & Lasikiewicz, 2017).

Additionally, animal-assisted activities have been shown to be unique during COVID-19 (Kogan et al., 2021). This study found that having companion animals such as dogs and cats helped reduce depression, anxiety, loneliness, and isolation in participants during the pandemic (Kogan et al., 2021). Another study has shown that animal-assisted

activities companion animals can be helpful during times of loneliness (particularly during the COVID-19 pandemic) (Hunjan & Reddy, 2020). Interactions with animals can lead to psychological and physiological benefits, as biochemicals can be released through animal interactions, further boosting immune systems, and enhancing well-being (Hunjan & Reddy, 2020). COVID-19 has shown the strengths of animal-assisted activities and how higher engagement with animals during the pandemic can increase well-being, help boost immunity, and lead to a more positive mindset (Hunjan & Reddy, 2020).

A recent study also observed college students participating in animal-assisted activities near stressful finals week times (Jarolmen & Patel, 2018). In this study, dogs were brought to campus for students to engage with (Jarolmen & Patel, 2018). The results concluded that animal-assisted activities are helpful and practical in reducing stress around exam time for college students and increasing their well-being (Jarolmen & Patel, 2018). Another study incorporating small animal activities in the school system displayed similar results (Fynn & Runacres, 2022). In this study, results found that incorporating canines in an education program has the potential to improve their motivation and engagement in literary and social skills and educational needs (Fynn & Runacres, 2022). Small animals are easily accessible on college campuses and display the benefits of stress relief, engagement, and well-being (Jarolmen & Patel, 2018). However, large animals also show improvements in these categories (Jarolmen & Patel, 2018; Saggers & Strachan, 2016). The most common area for large animal activities is EFLA (Saggers & Strachan, 2016).

Equine-Facilitated Learning Activities (EFLA)

EFLA activities, also interchangeably called equine-assisted activities, are excellent tools that incorporate large animals when seeking a solution to improve student failure rates, increase engagement, and meet social-emotional needs, coping skills, and reliance (Saggers & Strachan, 2016). EFLA refers to activities guided by interactions between people and equids, facilitating positive reactions for human well-being and function (Arrazola & Merkies, 2020). EFLA differs from equine-facilitated psychotherapy as it promotes exploring feelings in an educational format instead of the clinical interpretation of feelings and behaviors (Pyle, 2006).

EFLA may incorporate physical activities or facilitate awareness of personal skills for the individuals performing the activities with horses in a farm setting (Arrazola & Merkies, 2020). Additionally, EFLA is becoming an idealized program for individuals' mental and physical tribulations (Arrazola & Merkies, 2020). EFLAs include equine grooming, petting, longeing (having the horse run on a lead around the handler), handling, riding, driving, or even taking the horse through an obstacle course alone or in a small group setting (Pyle, 2006). By merely working with the horse, the animal can provide the means to cope and self-regulate emotions (Saggers & Strachan, 2016). EFLA is instrumental in building confidence and self-esteem, building trust, and forming healthy attachment styles (Saggers & Strachan, 2016).

During EFLA, participants' confidence, self-regulation, trust, and self-esteem improve in many ways (Latella & Abrams, 2019). During an activity, horses communicate mainly through body language, making participants hypervigilant over their actions (Latella & Abrams, 2019). These attributes are a natural teaching aid because participants relate to the horses’ instinct to seek safety from them, which assists the

participants in learning to trust, be confident, and be self-sufficient (Latella & Abrams, 2019). This interaction can also create practical leadership skills in participants and establish internal motivation (Latella & Abrams, 2019).

Increased internal motivation leads to a greater sense of socio-emotional development, decreased risk of failure, and improved engagement and connection within school systems (Saggers & Strachan, 2016). One qualitative study explored using EFLA with students aged 10 to 13 over eight weeks (Saggers & Strachan, 2016). Each two-hour weekly session utilized a different activity with the horses (Saggers & Strachan, 2016). For example, week one displayed horse safety and rules, week two examined horsemanship, week three taught leading the horse, week four taught communication off the saddle, week five examined saddle fit, and week six communicated trust with the animal (Saggers & Strachan, 2016). Weeks seven and eight had the students work with the horses through obstacles (Saggers & Strachan, 2016). After the study, findings suggested that students improved their engagement, social-emotional development, and connection with their school environment (Saggers & Strachan, 2016). These categories improved because the students felt more confident after working with the animals, which led to better coping skills and communication (Saggers & Strachan, 2016). Therefore, these mechanisms supported student learning and social-emotional well-being (Saggers & Strachan, 2016).

EFLA also displays promising results when branched into a collegiate setting (Chapman, 2017). EFLA can benefit college students and leaders by improving their well-being, mindfulness, and engagement (Chapman, 2017; Earles et al., 2015; Holmes et al., 2012; Latella & Abrams, 2019). The activities within the college setting usually

involve others going through related situations or tribulations that allow for encouragement, cooperation, and the feeling of being included in something (Chapman, 2017). These factors can help individuals' emotional and social health at the collegiate level (Chapman, 2017). If students, faculty, and staff participate in EFLA together, their probability of successfully coping with stress could increase (Chapman, 2017). A study showed promising results when implementing EFLA, where 46 full-time college students attended the program for five hours (Chapman, 2017). The results showed that perceived stress in the students after an EFLA program can be lowered if the program is extended with longer sessions and timeframe (Chapman, 2017). However, the results were not significant (Chapman, 2017).

Additionally, EFLA also benefits from improving mindfulness in people who suffer from stress or anxiety, which are similar obstacles that college students face (Earles et al., 2015). In this study, 16 adults with extreme stress participated in a six-week, two-hour EFLA session. The study found significant improvements in mindfulness skills in participants after the program (Earles et al., 2015). Furthermore, participants viewed the program as a safe coping mechanism strategy (Earles et al., 2015). This study demonstrates that implementing an EFLA program in college can produce promising results.

Summary

Stress is the mental strain or worry caused by trials and tribulations from everyday activities (Baqutayan, 2015). College stress is high in students, which can cause increased anxiety, loneliness, depression, sleep disturbance, lack of engagement, low sense of belongingness, and even negatively affect students' well-being (McIndoo et al.,

2016; O'Donovan & Hughes, 2007; Roberts & Danoff-Burg, 2010; Yu & Luo, 2018; Wright et al., 2022). Incorporating well-being programs in education is advantageous, as they can decrease anxiety in students, increase their sense of belonging, increase confidence to graduate, and improve mindfulness skills (Lane, 2016; Ridner et al., 2016; Wright et al., 2022). Mindfulness is a tool used to enhance the well-being of an individual by being emotionally present and nonjudgmentally paying attention to a task and is also advocated for in college, as it promotes mental health awareness among students and stimulates reflective learning (Altinyelken, 2022; Gutierrez et al., 2020).

Student engagement is the effort and time students give to activities linked to desired college outcomes and what the institution does to entice student participation (Groccia, 2018). Higher engagement reduces loneliness on campus, depression, and overall negative adjustments to the new atmosphere and stress of college coursework (Waldrop et al., 2019). Mindfulness and engagement also play a part in coping strategies to sustain greater well-being (Gutierrez et al., 2020; Schoenmakers et al., 2015). Coping is when individuals change their cognition and behavioral efforts to ease taxing internal and external demands (Schoenmakers et al., 2015). Additionally, animals have been used as a coping strategy through specific programming, interventions, and techniques (Hoagwood et al., 2017; Muckle & Lasikiewicz, 2017; Mueller & Mccullough, 2017; Potvin-Bélanger et al., 2021; Saggers & Strachan, 2016).

These animal programs can include animal-assisted therapy which include the subset animal-assisted activities subset (Hoagwood et al., 2017; Muckle & Lasikiewicz, 2017; Mueller & Mccullough, 2017; Potvin-Bélanger et al., 2021; Saggers & Strachan, 2016). Animal-assisted therapy incorporates medically licensed professionals utilizing

the animal as a tool to treat patients (Hoagwood et al., 2017). The main categories of animal-assisted therapy that utilize horses are equine-assisted therapy, equine-facilitated psychotherapy, and hippotherapy (White-Lewis, 2019). Additionally, animal-assisted activities are a subdivision of the previously mentioned animal-assisted therapy and differ from treatment because the activities are meet and greets, involving an animal specialist, not a medically licensed practitioner or doctor (Muckle & Lasikiewicz, 2017).

Large animals are often present in EFLA (Saggers & Strachan, 2016). EFLA, also interchangeably called equine assisted-activities, are excellent tools for incorporating large animals when finding a solution to improve student failure rates, increase engagement, along with social-emotional needs, coping skills, reliance, well-being, and reduce stress levels (Chapman, 2017; Earles et al., 2015; Holmes et al., 2012; Latella & Abrams, 2019). EFLA differs from equine-facilitated psychotherapy as it promotes exploring feelings in an educational format instead of the clinical interpretation of feelings and behaviors (Pyle, 2006). EFLA is becoming an idealized program for individuals' mental and physical tribulations and can benefit college students and leaders by improving their well-being, mindfulness, and engagement (Arrazola & Merkies, 2020; Chapman, 2017; Earles et al., 2015; Holmes et al., 2012; Latella & Abrams, 2019). This mixed-method study examines how an EFLA program will impact students' well-being, mindfulness, engagement, and sense of belonging at the collegiate level.

Chapter III

Methodology

High-stress levels occur in many college students, and research has shown that college students often reported greater stress levels than people of other age groups (Huberty et al., 2019; Neely et al., 2009). To cope, animal-assisted therapy is an intervention shown to better physical and mental health issues in medical and educational settings (Artz et al., 2021). Furthermore, these animal interventions often branch into larger animal interventions that contribute to student coping mechanisms when observing college students' mindfulness, stress, engagement, and well-being (Chakales et al., 2020). An EFLA may have the potential to benefit college students and leaders by improving their well-being, mindfulness, and engagement (Chapman, 2017; Earles et al., 2015; Holmes et al., 2012; Latella & Abrams, 2019). However, limited research has been done regarding mindfulness and engagement levels in college students interacting with horses during an EFLA, which displays the purpose and need for further research (Wilson et al., 2017).

Research Purpose and Method

The current investigation examined whether incorporating an equine education program for students at Youngstown State University improved their sense of well-being, engagement in life, sense of belonging, and mindfulness skills. Additionally, the current investigation observed if there was a difference between control groups, along with if sustained improvements will be long term. The proposed study demonstrated an efficient way of integrating equine programs with students to enhance their well-being, sense of belonging, engagement, patience, and mindfulness. For the qualitative section of the

current investigation, during the research project, the researcher observed participant interactions with the horses, writing down pre- and post-demeanor, their verbal and non-verbal cues with the horses, and sent a follow-up extended response questionnaire to observe their experiences utilizing the grounded theory (Chun Tie et al., 2019). This theory seeks to build a construct theory from comparative analysis data (Chun Tie et al., 2019). The researcher acquired a field notebook and wrote field notes for each participant. Since this study intended to observe social relationships and behaviors among the participants while participating in the equine program, the grounded theory fits adequately to "ground" the acquired data to draw proper conclusions (Chun Tie et al., 2019).

Survey Instrument Descriptions

The four surveys that were used for quantitative data were the WHO-5, a sample of the Motivation and Engagement Scale (MES), the Mindful Attention Awareness Scale (MAAS), and the Sense of Belonging Scale (SBS). The WHO-5 is a widely used questionnaire observing participants' psychological well-being (Topp et al., 2015). The MES is a multidimensional conceptual framework that represents cognitive and behavioral dimensions relevant to motivation, and the MAAS assesses the frequency of a participant’s attention and awareness at the present moment. Additionally, the SBS assesses the sense of belonging for students in higher education (Imperial College London, 2024; Liem & Martin, 2012; The Human Condition, 2022; Topp et al., 2015).

The WHO-5 scale is five-question index ranked on how participants felt within the last two weeks and is a 6-ranked Likert scale (0 being at no time, 1 being some of the time, 2 being less than half the time, 3 more than half the time, 4 most of the time, and 5

all the time) (WHO-5 Well-Being Index, 1998). Higher total scores from the five questions reflect an increase in a student's overall well-being. The WHO-5 scale demonstrates high clinimetric validity (instrument representing the domain of measurement), and its outcome measuring the balance of unwanted and wanted effects of an intervention is a specific screening tool used to observe well-being (Topp et al., 2015). The WHO-5 scale is also highly applicable in many study fields (Topp et al., 2015). It consists of non-invasive questions and has been tested as an adequate validity scale to screen for depressive symptoms (Topp et al., 2015). A study observing the validity and reliability of the WHO-5 scale showed overall high reliability (Sischka et al., 2020). However, there were no external criteria to assess the sensitivity of the WHO-5 as a depression screening tool (Sischka et al., 2020).

The MES is a multidimensional conceptual framework representing cognitive and behavioral dimensions relevant to motivation (Liem & Martin, 2012). A four-question sample scale will be used from an original 44-item scale (Liem & Martin, 2012). The shortened MES will be used to measure the participants' engagement levels before and after the intervention (Gargallo et al., 2018). This shortened sample Likert scale rates 1- 7 (1 being disagree strongly, 2 being disagree, 3 being disagree somewhat, 4 being neither agree or disagree, 5 being somewhat agree, 6 being agree, and 7 being agree strongly) assessing engagement levels in students (Gargallo et al., 2018). Higher scores reflect greater motivation and engagement among participants.

Due to its substantive psychometric applications, the MES has been proposed as an integrative approach that can be utilized through diverse performance and cultural settings, education levels, and academic subjects (Liem & Martin, 2012). However, a

limitation of the survey is the reliability and stability of the survey scores (Martin, 2009). Longitudinal work must be done to examine the reliability and stability of participants' motivation and engagement scores over time in relation to cognate constructs (Martin, 2009). Future research on this scale should encompass qualitative work amongst university samples that can extrapolate the detailed nature and extent of the motivation and engagement of students throughout their academic life span (Martin, 2009). Additionally, future research can explore class and school-level motivation and engagement climates relative to individual-level variations relevant to developmental construct validity (Martin, 2009).

The MAAS assesses the frequency of a participant's awareness and attention to the present moment (The Human Condition, 2022). This scale consists of 15 questions assessing mindfulness, where each question has a rank from 1 to 6 (1 being almost always, 2 being very frequently, 3 being somewhat frequently, along with 4 somewhat infrequently, 5 being very infrequently, and 6 almost never) (Psychological Scales, n.d.). Higher scores, sum, or averages reflect a higher dispositional mindfulness (Psychological Scales, n.d.). The MAAS is found to be reliable and valid within diverse populations, making it an ideal choice for instrumentation (The Human Condition, 2022).

The SBS was developed by the Imperial College London (Imperial College London, 2024). Further, the SBS was synthesized from the adapted scale of the Harvard-Panorama Student Perception Survey on Sense of Belonging and Yorke's sense of belonging in higher education scale (Imperial College London, 2024). The sense of belonging scale consists of 7 questions rated 1 to 5, with 1 measuring do not feel understood at all, not connected at all, not respected at all, do not matter at all, and not

happy at all with choosing Youngstown State University; 2 is rated understand a little, slightly connected, slightly welcoming, a little bit of respect, matter a little bit, and slightly happy; 3 is rated understand somewhat, somewhat connected, somewhat welcoming, some respect, matter somewhat, and somewhat happy; 4 is rated understand quite a bit, quite connected, quite welcoming, quite a bit of respect, matter quite a bit, quite happy; while the 5 rating measures extremely connected, extremely welcomed, a tremendous amount of respect, matter a tremendous amount, and extremely happy with selecting Youngstown State University (Imperial College London, 2024).

Higher scores on this scale reflect an improvement in students' sense of belonging on campus. Limitations to this survey are from the development survey from Gehlbach and Brinkworth (Gehlbach & Brinkworth, 2011). The original survey acquired data through a smaller sample size, and a pilot test is needed for a larger population to test how the question items function within the scale and determine how they function relative to other measures (Gehlbach & Brinkworth, 2011). Appendix A-D displays the four surveys that will be distributed to students (as all survey scales are included in the Pre-Initial Survey, the Post Intervention Survey, the Post Control Survey, and the 2nd Post Follow-Up survey).

Participants and Recruitment

This study recruited college students from Youngstown State University. Any student over the age of 18 and enrolled in college could join the equine education program and control group regardless of gender, horse experience, major, or collegiate level and were not informed of the study's intent. Equine program flyers were posted throughout Youngstown State University and Youngstown State University Campus

Recreation, which also promoted the flyer on social media. Participants were invited to enroll in the current investigation in the spring semester by being recruited from posted flyers at Youngstown State University (Chun Tie et al., 2019). The flyers had a QR code that took students to the Initial Pre-Survey through the password-protected website of Google Forms (Appendix A). The initial pre-survey consisted of the consent form, creating a pseudonym, and listing their email. The initial survey also asked students if they could confidently commit to all four sessions (select yes or no) and complete the socio-demographic information along with the WHO-5, the sample MES, the MAAS, and SBS as described in Appendix A (Fuchikami et al., 2022).

The intervention sample had a maximum of 10 participants due to logistics, managing the integrity of the group and ensuring that all participants were given equal time working with the horses and adequately observed by the investigator, barn manager, and equine trainer. The control and intervention groups were assigned using cluster random sampling from the responses of the participants who confidently agreed to the commitment to all four weekly sessions. Students who answered no were placed in the control group, and all participants who selected yes pseudonyms were placed in a lottery-based raffle. The first 10 randomly selected participants from the raffle were placed in the intervention group, and the additional participants who selected yes but were not randomly drawn were placed in the control group.

Role of Researcher

The researcher had an internal status in the setting through data collection and by facilitating the EFLA program; therefore, the participants were aware and notified of the researcher's insider role (MeanThat, 2016). When identifying the researcher’s

positionality in the study, the researcher addressed biases to lower the effects regarding the selected participants, the research setting, data collection techniques, and the overall results (YSUID, 2022). Along with identifying biases, strategies to minimize these biases from internal research were considered (YSUID, 2022). Research bias can occur in any researcher's design by influencing his or her assumptions on the sampling strategy and analysis, so the researcher utilized data triangulation to minimize bias, meaning the researcher can compare data collected at different times and places (Merriam & Tisdell, 2016). These different times were used from pre and post-surveys, along with the eight extended response research questions collected from participants with different perspectives (Merriam & Tisdell, 2016).

Study Design and Data Collection

This mixed-method study used a pre- and post-design, utilizing an intervention group and a control group (Harris et al., 2006). All intervention and control groups were given the Initial Pre-Survey through a Google Form before the study began (Appendix A). The survey consisted of the consent form, pseudonym writing, noting if they could confidently commit to all sessions, sociodemographic questions, WHO-5 Scale, MES, MAAS, and SBS. The Post-Control Survey (Appendix B) was given immediately after the four-week program with the same consent form, writing their pseudonym, and the four Likert scales through Google Forms. The Post-Intervention Survey was also given, which included eight qualitative questions through Google Forms (Appendix C). Additionally, the 2nd Post-Intervention Group Survey was sent to the intervention group six weeks after the program ended through Google Forms. This survey contained the

same consent form, pseudonym writing, and the same quantitative surveys of the four scales to observe if any changes were maintained after the program (Appendix D).

For the program, the intervention participants came to the Withers Horse Farm in Greenford, Ohio once a week for an hour and a half (group sessions with alternating handling of the animals) with three horses (a 23-year-old gelding, a 17-year-old gelding, and a two-year-old colt). Participants were asked to come once a week between March and April for the spring semester and work with the barn manager, an equine trainer, and the researcher, who is a horse trainer. Within the 4-week intervention program (an hour and a half for each session minimum), students were expected to attend a minimum of six hours of the equine education program.

Intervention participants were asked to sign in, and a time record was logged. The program ended before finals week to avoid additional stressors that could obscure the program results. As mentioned previously, all students retook the surveys when the program ended to assess their progress. The surveys tested all participant responses before and immediately after the intervention at Withers Farm. For the qualitative portion, extended response survey questions were conducted with each intervention participant after four weeks, utilizing the grounded theory through Google Forms (Chun Tie et al., 2019). The grounded theory approach used the data in this study coming from the extended response questions, observations, and documentary journal materials throughout the study (Merriam & Tisdell, 2016). The researcher compiled a weekly chart throughout the course, recording field notes for each participant (cumulative of four charts total) (Merriam & Tisdell, 2016). The chart included the subject's pseudo-name, verbal and non-verbal cues with the horse, and field notes identifying each participant's

demeanor before and immediately after the activity and was written in a journal. Appendix E lists the four field note data logs for verbal and nonverbal cues (e.g., low, medium, high) and pre-demeanor/ post demeanor (e.g., solemn, normal, active/ excited).

Curriculum Details

During the program, participants learned about equine care, brushing, obstacle courses, and handling. Additionally, participants learned about being mindful and present during encounters with the horses (versus being distracted and rushed) and learned to notice and respond to nonverbal cues from the animals. Participants learned about observing behavior as communication and how to problem-solve if a horse behaves undesirably (responding productively, respecting boundaries, and using compassion, patience, and assertive energy for leadership). A different activity about horse exercises was displayed each week, with each group doing another station or exercise. There was an emphasis on mindfulness and being present in the moment. Educational activities were created to let the participants engage in the following concepts, similar to the standards of Equine-Assisted Growth and Learning Association (EAGLA) programs and the study by Saggers & Strachan (EAGALA, 2018; Saggers & Strachan, 2016):

Week 1 – Basic Equine Facility Rules & Horsemanship: Catching and Leading Horses

- Barn and safety rules around horses
- Recognize, comprehend, and read horse behaviors and emotions and respond accordingly.
- Understanding care and respect for horses' needs.
- Engage in catching through haltering and leading, grooming the horses.

Week 2 – Horse Communication on the Ground (Off the Saddle): Showmanship Skills and Getting Familiar with Tack: Equipment Care

- Lunging, wand usage, and liberty training.
- Team challenge of working and putting together a bridle, saddle sitting off the horse, and communicating with the horse.
- Practice saddling and bridling on horses during the session.

Week 3 – Communication with the Horses/Saddling and Bridling: Trail in Hand Education

- Relaxation and stress management qualities that support student and horse stress.
- Trail in-hand seminar education.

Week 4 – Obstacle Courses: Teamwork with the Horses: Each Team Will Compete in Showmanship and Trail Courses at the Barn.

- Working as a team to achieve goals with the horses and develop social-emotional education skills from working with the teammates and horses.

Data Analysis

The researcher collected and analyzed data, coded, created themes through the-acquired data, filled in research gaps, clarified uncertainties, and tested interpretations in the study (Chun Tie et al., 2019). All quantitative surveys, qualitative data, consent forms, and data collection were given through Google Forms, and the data was held secure and will be destroyed after three years. The investigator calculated the total sum scores for each scale, which was collected from the rankings on each question within the scales. This was used to compare pre- and post-score results amongst the control and treatment groups and the six-week follow-up scores. From the pre and post-scores of the

intervention and control group, a Pearson zero-order correlation was conducted between the four factors. A factorial ANOVA was also conducted based on the assumptions of the Pearson's zero-order correlation. A paired sample t-test analysis was utilized for the treatment group with pre-, post, and post-six-week follow-up surveys to see any differences between the surveys (mindfulness, well-being, engagement level, and sense of belonging surveys) (Trochim et al., 2016).

Qualitative data was collected through eight questions asking students about their experiences through Google Forms. These questions were at the end of the intervention group's post-survey. The researcher also analyzed themes from the weekly journals, observing verbal, nonverbal, and demeanor before and after the exercises. The responses to the eight questions were transcribed and coded by the researcher using a grounded theory approach (Merriam & Tisdell, 2016). Through this approach, the researcher identified "themes" that helped describe, comprehend, and translate the individual responses to questions posed in the extended response survey. The researcher utilized six thematic coding steps to generate themes from the qualitative responses (Terry et al., 2017). The six steps began with familiarizing the data, code generation through an inductive coding approach from the qualitative data and constructing themes, theme reviewing, defining the themes, and producing the final report for all eight questions asked (Terry et al., 2017). The qualitative portion was given to participants at the end of the study through Google Forms, where participants could answer the questions within 15 to 20 minutes after the fourth session (Appendix C).

Ethical Considerations

The Institutional Review Board (IRB) at Youngstown State University reviewed and approved this study's methodology. The student participants signed consent and liability forms before entering the equine location. The invitation email and flyers were intentionally vague to minimize self-selection bias. To promote honest responses, anonymity was frequently emphasized in all communications.

Summary

Utilizing grounded theory and cluster random sampling was sufficient for this study, as it is a social-behavioral study observing themes for mindfulness, sense of belonging, improved well-being, and student engagement (Chun Tie et al., 2019). A pre- and post-design was also sufficient, as it gives numerical values to support the themes. A mixed-methods design is the strongest study because both criteria can counteract validity threats. Additionally, the researcher triangulated data and developed, initiated, and expanded conclusions (Schoonenboom & Johnson, 2017). It is appropriate to use qualitative research techniques to get participants' data through constructivism, post-structuralist-critical views, and developing themes to answer the main research questions (Schoonenboom & Johnson, 2017). Quantitative data can show significant differences in addressing the research questions when comparing results numerically (Schoonenboom & Johnson, 2017). Thus, combining qualitative and quantitative data allowed the researcher to utilize both equally, which added insight into all research questions (Schoonenboom & Johnson, 2017).

Chapter IV

Results

The current investigation utilized a pre- and post-design with a pre-survey, intervention, and post-survey with a control group (Trochim et al., 2016). Quantitative data was gathered through four Likert survey scales (WHO-5, MAAS, MES, SBS) before the study, one at the end, and a six-week follow-up (six-week follow-up for the treatment group). Weekly journals were also obtained, observing pre-demeanor and post-demeanor, as well as verbal and non-verbal cues during the activities by the researcher. The survey obtained qualitative data through eight open-response questions, which provided more detailed insights. The quantitative and qualitative findings of the current investigation are intended to answer the following research questions:

1. Will a four-week EFLA program improve mindfulness levels in college students and significantly differ from a control group? (RQ 1)
2. Will a four-week EFLA program improve the well-being of college students and significantly differ from a control group? (RQ 2)
3. Will a four-week EFLA program improve engagement skills in college students and significantly differ from a control group? (RQ 3)
4. Will a four-week EFLA program improve a sense of belonging in college students and significantly differ from a control group? (RQ 4)
5. Will any improvements be sustained after the six-week follow-up? (RQ 5)

The results of this section respond to the listed research questions by utilizing quantitative and qualitative data to expand the treatment group's experiences during and after the study.

Descriptive Statistics

The Initial Pre-Survey sent through Google Forms consisted of the four Likert scales (WHO-5, MES, SBS, MAAS) and asked participants to write a pseudonym if they can confidently commit to all sessions, along with sociodemographic information (Appendix A). In total, 40 students (30 control and 10 treatment) completed the initial pre-survey. However, eight control participants did not complete the post-survey. Also, one treatment participant never attended the intervention. The qualitative data does not include responses from this participant who did not attend any of the intervention activities. However, this participant did provide pre-post and the six-week follow-up data that was used. Also, two treatment participants were absent for one of the four sessions (Participants 7 and 2). The frequency statistics of the categorial variables of the group are computed in Table 1.

Table 1

Group: Control & Treatment

	Frequency	Percent
Control	30	75.00%
Treatment	10	25.00%

Table 1 indicates that $n = 30$ (75%) were control participants, and $n = 10$ (25%) were treatment participants. Table 2 computes the frequency statistics of the categorial variables of gender.

Table 2

Participant Gender

		Frequency	Percent
Treatment	Female	8	80.00%
	Male	2	20.00%
Control	Female	22	73.00%
	Male	8	27.00%

As indicated above, the proportion of females in both groups is greater, with the treatment group having a larger proportion of females than the proportion of females in the control participants. The frequency statistics of the categorial variables of age are computed in Table 3.

Table 3

Participant Age

	Age (Years)	Frequency	Percent
Control	18	2	6.67%
	19	4	13.33%
	20	9	30.00%
	21	5	16.67%
	22	4	13.33%
	23	3	10.00%
	24	2	6.67%
	30	1	3.33%
	39	0	0.00%
Treatment	18	0	0.00%
	19	1	10.00%
	20	2	20.00%
	21	2	20.00%
	22	3	30.00%
	23	0	0.00%
	24	1	10.00%
	30	0	0.00%
	39	1	10.00%

As indicated above, the highest percentages for the control group for age were students in their early 20s, with 20 years of age being the highest percentage of $n = 20$ (30%), and

the lowest 30 years of age being $n = 1$ (3.33%). Similarly, the highest percentile of students in the treatment group was 22 years of age $n = 3$, (30%), with the lowest percentile being 39 years of age $n = 1$ (10%). When comparing the treatment and control, both have the highest percentiles in the ages of early 20s and lowest for participants in their 30s. The statistics of the categorial variables for graduate-level status are computed in Table 4.

Table 4

Graduate Level: Undergraduate/Graduate

	Graduate Level	Frequency	Percent
Treatment	Undergrad	8	80.00%
	Graduate	2	20.00%
Control	Undergrad	22	73.33%
	Graduate	8	26.67%

As listed above, the treatment and control groups have a higher percentage of undergraduate participants than graduate participants. However, the percentage of undergraduate students within the treatment group is slightly higher than that of the control group. The control group has a somewhat higher percentage of graduate students than the treatment group. The frequency statistics of the categorial variables of field experiences with horses are computed in Table 5.

Table 5

Field Experiences with Horses

	Horse Experience	Frequency	Percent
Control	Advanced	1	3.33%
	Intermediate	4	13.33%
	Beginner	25	83.33%
Treatment	Advanced	1	10.00%
	Intermediate	1	10.00%
	Beginner	8	80.00%

As indicated above, both the treatment group $n = 8$ (80%) and the control group $n = 25$ (83.33%) have the highest percentages of horse experience being beginner. The control group's intermediate experience with horses is slightly higher than the treatment group. Similarly, both groups had one participant who labeled themselves as advanced for horse experience. Frequency statistics of the categorial variables of school credit hours are computed in Table 6.

Table 6

School Credit Hours: Full or Part-Time

	Credit Hours	Frequency	Percent
Control	Full-Time	28	93.33%
	NA	1	3.33%
	Part-Time	1	3.33%
Treatment	Full-Time	8	80.00%
	NA	0	0.00%
	Part-Time	2	20.00%

As indicated above, the highest percentage of both groups is a full-time student. The control group had more full-time students, $n = 28$ (93.33%), than the treatment group, $n = 8$ (80 %). The treatment had one additional participant being part-time compared to the control group. The control group also had one participant who did not mention their credit hour level. The frequency statistics of the categorial variables of work hours are computed in Table 7.

Table 7

Work Hours

	Work Hours	Frequency	Percent
Control	Full-Time	2	7.00%
	NA	10	33.00%
	Part-Time	18	60.00%
Treatment	Full-Time	1	10.00%
	NA	0	0.00%
	Part-Time	9	90.00%

As listed in Table 7, the greatest percentages of work hours for both control and treatment were part-time students. The treatment group had more part-time students $n = 9$ (90%) than the control group $n = 18$ (60%). However, both control and treatment had similar percentages of full-time students. Additionally, the control had higher percentages of students who did not list their work hours.

Data Analysis

Quantitative Findings

All students provided feedback ($n = 40$) on the pre-survey. After the pre-survey, item responses were summed for each participant to compute their WHO-5, MAAS, MES, and SBS, along with the post-survey scores ($n = 32$). Eight participants did not complete the post-survey. The combined cumulative control and treatment group scores for each pre- and post-scale are provided below in Table 8.

Table 8

Average Group Scores

	N	Mean	Std. Deviation	Skewness	Kurtosis
WHO-5	40	15.13	4.53	-0.66	2.08
WHO-5 2	32	16.00	4.51	-1.36	2.82
Sense of Belonging	40	25.42	4.16	0.40	-0.22
Sense of Belonging2	32	25.38	4.58	-0.51	0.23
Motivation and Engagement	40	24.05	2.99	-1.92	6.22
Motivation and Engagement2	32	23.72	2.64	-0.72	1.55
MAAS	40	59.33	14.12	0.29	-0.48
MAAS2	32	57.00	14.12	0.41	-0.39

As mentioned in Table 8, the values for the pre-WHO-5 scale showed that the entire group reported an average Well-Being of $M = 15.13$ ($sd = 4.53$) and a normal level of skewness (-.066) and kurtosis (2.08) based on a sample of $n = 40$. The post WHO-5 2 showed that the entire group reported an average Well-Being of $M = 16.00$ ($sd = 4.51$) and a normal level of skewness (-1.36) and kurtosis (2.82) based on a sample of $n =$ 32.00. The statistics for the pre-SBS showed that the entire group reported an average of $M = 24.42$ ($sd = 4.16$) and a normal level of skewness (0.40) and kurtosis (-0.22) based on a sample of $n = 40.00$. The post-SBS showed that the entire group reported an average of $M = 25.38$ ($sd = 4.58$) and a normal level of skewness (-0.51) and kurtosis (0.23) based on a sample of $n = 32$. The statistics for the pre-MES scale showed that the entire group reported an average of $M =24.05$ ($sd = 2.99$) and a normal level of skewness (-1.92) and kurtosis (6.22) based on a sample of $n = 40$. The post-scale showed that the entire group

reported an average of $M = 23.72$ ($sd = 2.64$) and a normal level of skewness (-0.72) and kurtosis (1.55) based on a sample of $n = 32$. Lastly, the statistics for the pre-MAAS scale showed that the entire group reported an average of $M = 59.33$ ($sd = 14.12$) and a normal level of skewness (0.29) and kurtosis (-0.48) based on a sample of $n = 40$. The post-scale showed that the entire group reported an average of $M = 57.00$ ($sd = 14.12$) and a normal level of skewness (0.41) and kurtosis (-0.39) based on a sample of $n = 32$. Table 9 provides the individual control and treatment pre- and post-scores of the WHO-5, Motivation and Engagement, MAAS, and Sense of Belonging.

Table 9

Descriptive Breakdown of WHO-5, Motivation and Engagement, MAAS, & Sense of Belonging

	Group	Mean	Std. Deviation	N
WHO-5	Treatment	15.60	3.34	10
	Control	15.32	3.73	22
WHO-5 2	Treatment	18.20	2.86	10
	Control	15.00	4.81	22
Motivation and Engagement	Treatment	24.00	3.02	10
	Control	24.27	2.07	22
Motivation and Engagement2	Treatment	24.40	2.01	10
	Control	23.41	2.87	22
MAAS	Treatment	54.60	16.37	10
	Control	57.55	10.25	22
MAAS2	Treatment	62.00	18.06	10
	Control	54.73	11.72	22
Sense of Belonging	Treatment	24.80	3.05	10
	Control	25.27	3.69	22

Sense of Belonging2	Treatment	26.20	3.66	10
	Control	25.00	4.97	22

As stated in Table 9, students did not fill out the post-survey, so a total of $n = 32$ was used for the descriptive analysis of the pre-and post-survey scores for WHO-5, Motivation and Engagement, MAAS, and Sense of Belonging. For WHO-5, the treatment group reported an average pre-scale WHO-5 of $M = 15.60$ ($sd = 3.34$) based on a sample of $n = 10$ participants, while the control group reported $M = 15.32$ ($sd = 3.73$) based on a sample of $n = 22$ participants. The treatment group reported an average post-scale WHO-5 2 of $M = 18.20$ ($sd = 2.86$) based on a sample of $n = 10$ participants, while the control group reported $M = 15.00$ ($sd = 4.81$) based on a sample of $n = 22$ participants.

For Motivation and Engagement, the treatment group reported an average pre-scale of $M = 24.00$ ($sd = 3.02$) based on a sample of $n = 10$ participants. In contrast, the control group reported $M = 24.27$ ($sd = 2.07$) based on a sample of $n = 22$ participants. The treatment group reported an average Motivation and Engagement 2 post scale of $M = 24.40$ ($sd = 2.01$) based on a sample of $n = 10$ participants, while the control group reported $M = 23.41$ ($sd = 2.87$) based on a sample of $n = 22$ participants. For MAAS, the treatment group reported an average pre-scale of $M = 54.60$ ($sd = 16.37$) based on a sample of $n = 10$ participants, while the control group $M = 57.55$ ($sd = 10.25$) based on a sample of $n = 22$ participants. The treatment group reported an average MAAS 2 post scale of $M = 62.00$ ($sd = 18.06$) based on a sample of $n = 10$ participants, while the control group reported $M = 54.73$ ($sd = 11.72$) based on a sample of $n = 22$ participants. Lastly, for Sense of Belonging, the treatment group reported an average pre-scale of $M = 24.68$ ($sd = 3.05$) based on a sample of $n = 10$ participants. In contrast, the control group

reported $M = 25.27$ ($sd = 3.46$) based on a sample of $n = 22$ participants. The treatment group reported an average Sense of Belonging 2 post scale of $M = 26.20$ ($sd = 4.97$) based on a sample of $n = 10$ participants, while the control group $M = 25.00$ ($sd = 4.58$) based on a sample of $n = 22$ participants.

Statistical Assumptions

A Pearson's Zero-Order correlation was used to observe the data regarding multi-collinearity and the association of each dependent variable to the predictor variable. The results are presented in Table 10.

Table 10

Pearson's Correlation Analysis

	WHO-5	Motivation and Engagement	MAAS	Sense of Belonging
WHO-5	1	.141	.132	.353**
Motivation and Engagement		1	-.067	.289*
MAAS			1	.278*
Sense of Belonging				1

**. Significant correlation at the 0.01 level (2-tailed).
*. Significant correlation at the 0.05 level (2-tailed).

As listed in Table 9, WHO-5 is positively associated with Motivation and Engagement, MAAS, and significantly positively associated with Sense of Belonging. Motivation and Engagement were negatively associated with MAAS and significantly associated with Senese of Belonging. Lastly, MAAS displayed a significant positive correlation to a sense

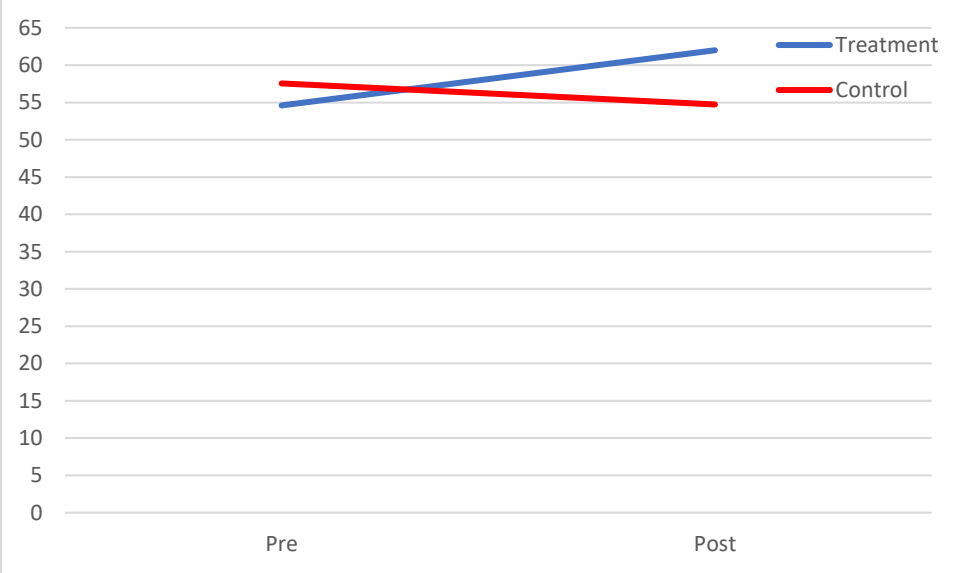
of belonging. Results indicated that all factors were correlated with Sense of Belonging. From this information, a factorial ANOVA was conducted.

Quantitative Results

The factorial ANOVA examining MAAS and group and test administration was conducted. The Levene's variance homogeneity test was tenable, F (1,30) =3.67, p =.065. Box's M was also tenable F (3,6253) =2.36, p =0.690. Therefore, the assumptions for the factorial ANOVA are satisfied. The factorial ANOVA results suggest significant differences from pre- to post-administration across two groups, on MAAS, F (1,30) =5.83, p =.022 (Hotellings Trace). This is graphically illustrated in Figure 1.

Figure 1

Treatment and Control of MAAS

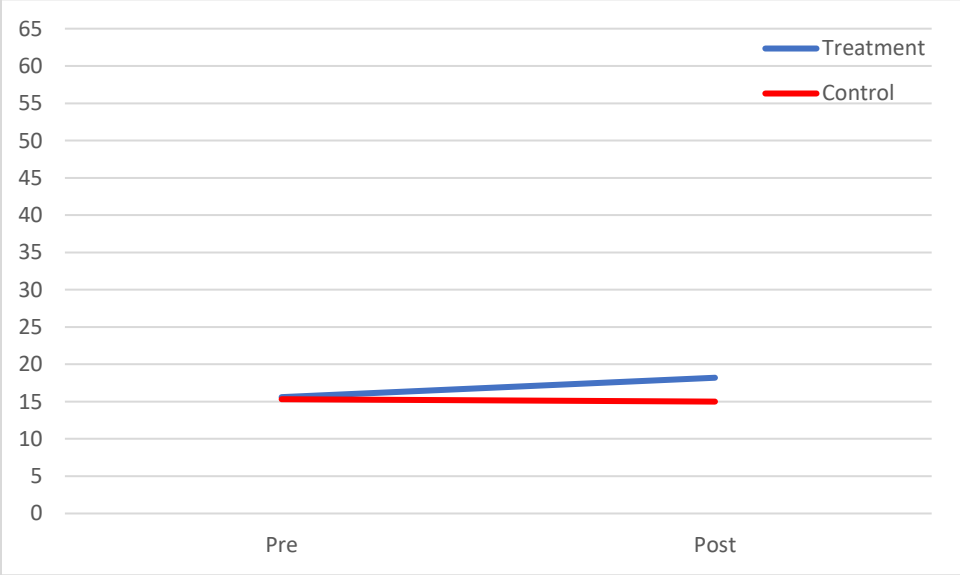


As illustrated above, the two groups suggested significant differences between pre-and post-administration. From pre- to post-survey, the treatment group increased from before the program and immediately after the four weeks. Also shown in the figure, the control group decreased from pre- to post-survey administration over the month.

The factorial ANOVA examining WHO-5 and group and test administration was conducted. The Levene's variance homogeneity test resulted in tenable, F (1,30) =.067, p =.798. Box's M was also tenable F (3,6253) =1.065, p =0.690. Therefore, the assumptions for the factorial ANOVA are satisfied. The results of the factorial ANOVA suggested there are significant differences from pre- to post-administration across two groups, on WHO-5, F (1,30) =4.21, p =.049 (Sphericity Assumed, Greenhouse-Geisser, Huynh-Feldt, Lower-bound). Figure 2 displays the suggested significant results.

Figure 2

Treatment and Control of WHO-5



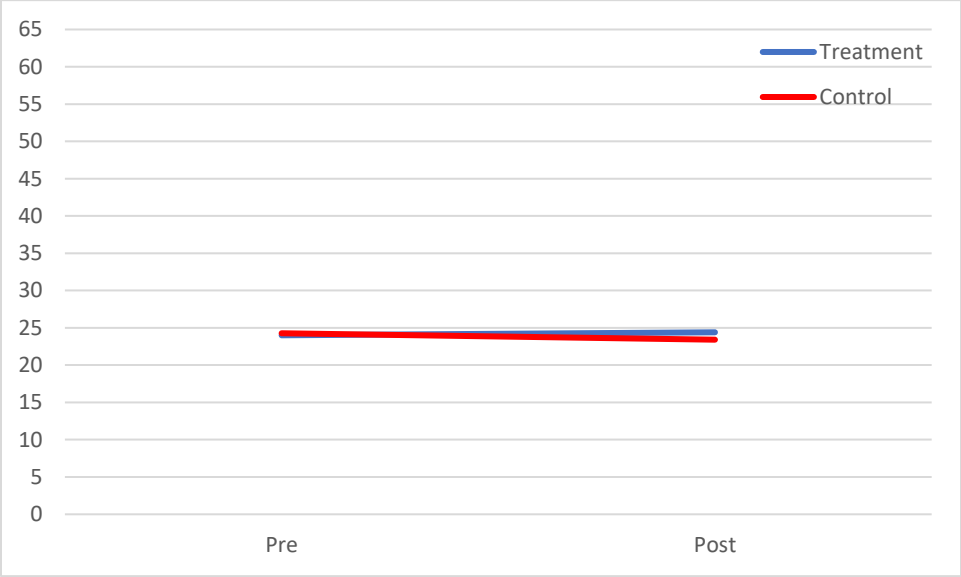
As illustrated above, significant differences are suggested between the two groups from pre- to post-administration, with the treatment group increasing from pre- to post-administration and the control group revealing a slight decline.

The factorial ANOVA examining Motivation and Engagement and group and test administration was conducted. The Levene's test of homogeneity of variance displayed tenable, F (1,30) =1.28, p =.267. Additionally, Box's M was tenable F (3,6253) =2.15, p

=0.92. Therefore, the assumptions for the factorial ANOVA are satisfied. The factorial ANOVA suggested no significant differences from pre- to post-administration, across two groups, on Motivation and Engagement, F (1,30) =.874, p =.357 (Sphericity Assumed, Greenhouse-Geisser, Huynh-Feldt, Lower-bound). Figure 3 displays the results of the sample Motivation and Engagement scales.

Figure 3

Treatment and Control on Motivation and Engagement



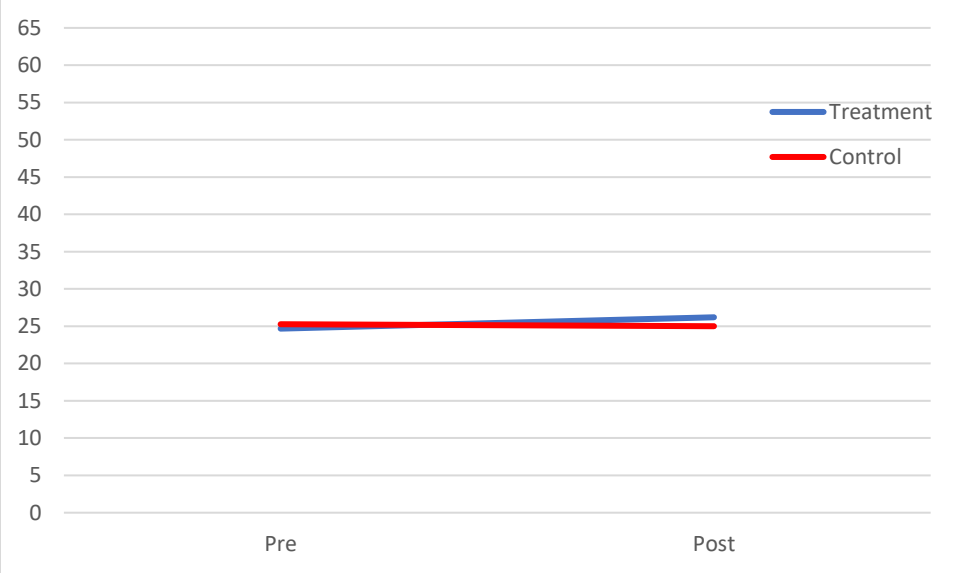
As illustrated above, no significant differences are suggested between the two groups regarding pre- and post-administration. However, despite no significant differences, the treatment group slightly increased pre-to-post scores. In contrast, the control group had a decrease.

The factorial ANOVA examining the Sense of Belonging and group and test administration was also conducted. The Levene's test of homogeneity of variance displayed tenable, F (1,30) =.654, p =.425. Box's M was also tenable F (3,6253) =.368, p =0.776. Therefore, the assumptions for the Factorial ANOVA are satisfied. The results of

the factorial ANOVA suggested no significant differences from pre to post administration, across two groups, on Sense of Belonging, F (1,30) =1.92, p =.176 (Sphericity Assumed, Greenhouse-Geisser, Huynh-Feldt, Lower-bound). Figure 4 displays the results of the Sense of Belonging scales.

Figure 4

Treatment and Control of Sense of Belonging



As illustrated above, the two groups suggested no significant differences from pre- to post-administration. Since the p-value is higher than .05 (p =.176), the results demonstrated no significant differences regarding the pre-and post-survey of the sense of belonging between the two groups. However, there was a slight rise in the sense of belonging scales within the treatment group compared to the control group.

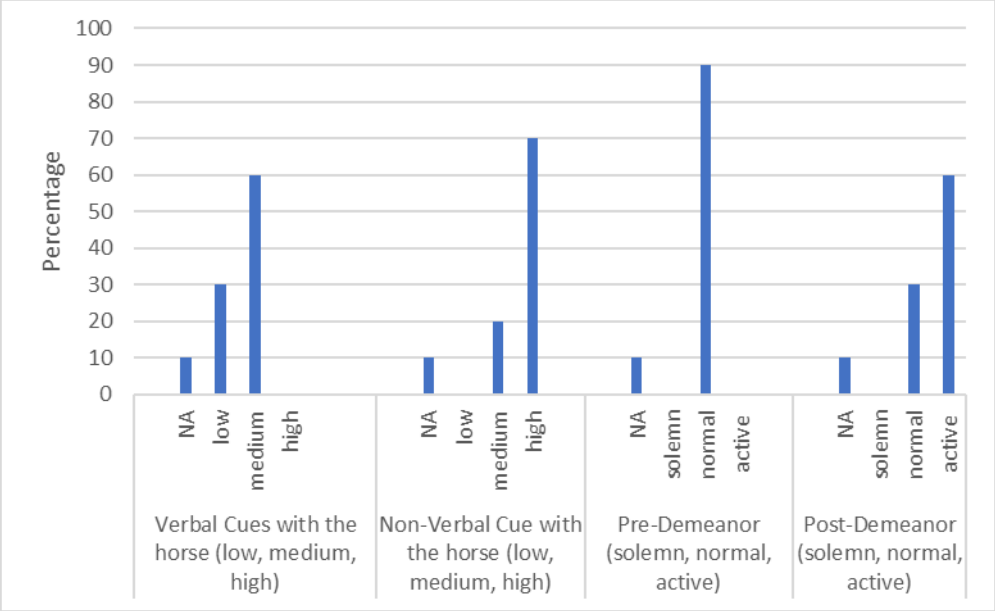
Qualitative Findings

The qualitative analysis utilized a weekly journal to observe any emotion (pre- and post-demeanor of participants). Weekly notes observing the participant's verbal and non-verbal interactions with the horses and each other were recorded by the researcher. If

a participant did not attend that week's session, each table recorded a "Not Applicable" (NA), as there was nothing to observe. One participant never attended the program from the four weekly journals, and two only attended three sessions. Participants 7 and 2 both attended 3 out of the 4 sessions, which was considered when collecting data for the weekly journals. Participants also completed eight written qualitative responses after the program, listed at the end of the post-survey. A six-step thematic coding process was used to analyze each participant when answering the eight questions (Terry et al., 2017). The frequency statistics for Week 1's journal log are computed in Figure 5.

Figure 5

Week 1 Journal Log: Relative frequencies of nonverbal, verbal, pre-demeanor, and post-demeanor of the ten participants

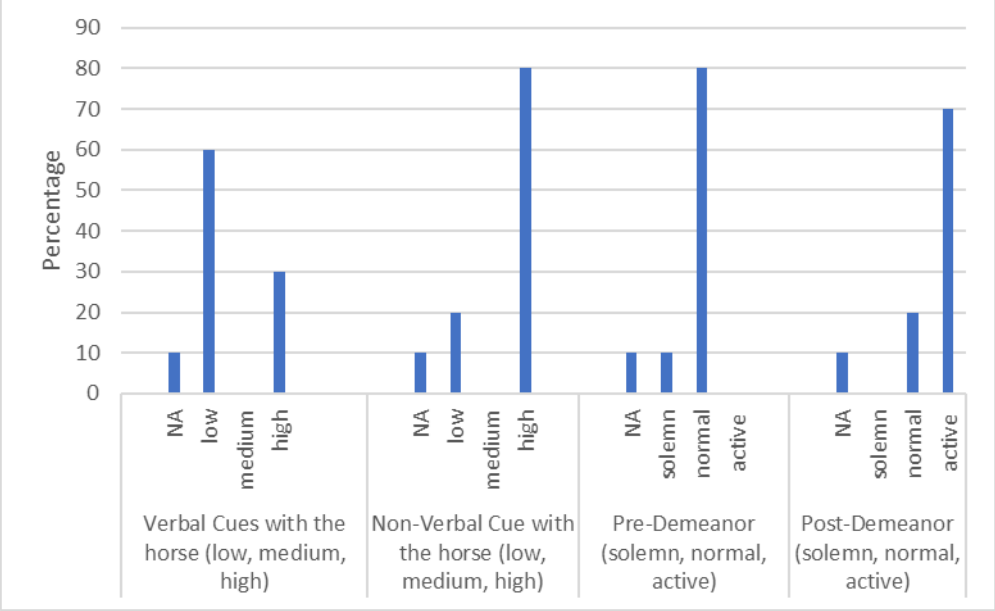


From the figure listed above, verbal cues during Week 1 displayed $n = 1$ (10%) for NA (due to absence), $n = 3$ (30%) for low verbal cues, $n = 6$ (60%) for medium verbal cues, and $n = 0$ (0%) for high verbal cues. Non-verbal cues during Week 1 displayed $n =$

1 (10.00%) for NA (due to absence), *n* = 0 (0%) for low non-verbal cues, *n* = 2 (20%) for medium non-verbal cues, and *n* = 7 (70%) for high non-verbal cues. Pre-demeanor displayed *n* = 1 (10%) for NA, *n* = 0 (0%) for solemn, *n* = 9 (90%) for normal, and *n* = 0 (0%) for active. Lastly, post-demeanor displayed *n* = 1 (10%) for NA, *n* = 0 (0%) for solemn, *n* =3 (30%) for normal, and *n* = 6 (60%) for active. The frequency statistics for Week 2's journal log is computed in Figure 6.

Figure 6

Week 2 Journal Log: Relative frequencies of verbal, nonverbal, pre-demeanor, and post-demeanor of the ten participants

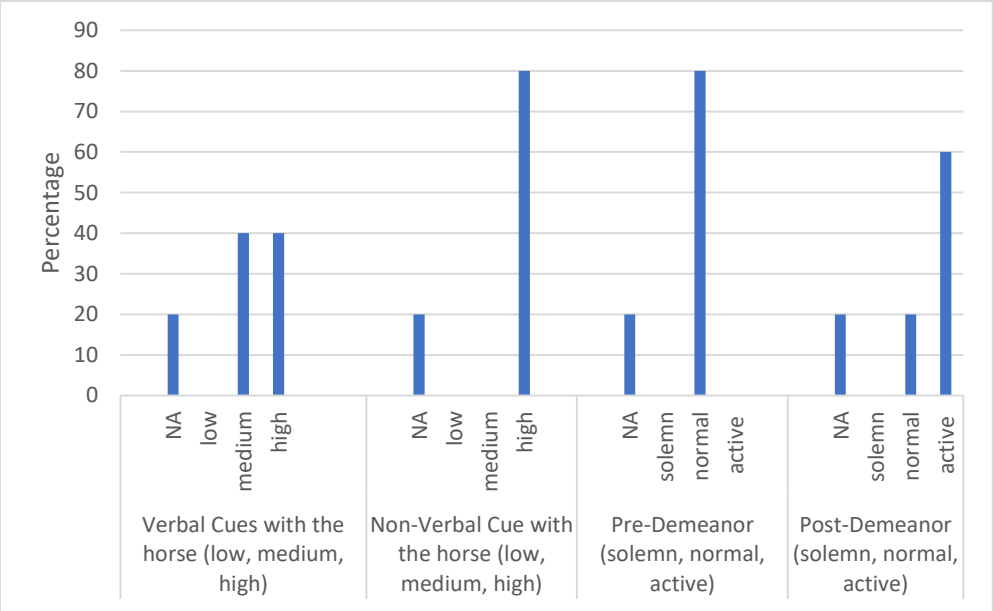


As shown above, verbal cues during Week 2 displayed *n* = 1 (10%) for NA (due to absence), *n* = 6 (60%) for low verbal cues, *n* = 0 (0%) for medium verbal cues, and *n* = 3 (30%) for high verbal cues. Non-verbal cues during Week 2 displayed *n* = 1 (10%) for NA (due to absence), *n* = 2 (20 %) for low non-verbal cues, *n* = 0 (0%) for medium non-verbal cues, and *n* = 8 (80%) for high non-verbal cues. Pre-demeanor displayed *n* = 1

(10%) for NA, *n* = 1 (10%) for solemn, *n* = 8 (80%) for normal and *n* = 0 (0%) for active. Lastly, post-demeanor displayed *n* = 1 (10%) for NA, *n* = 0 (0%) for solemn, *n* =2 (20%) for normal, and *n* = 7 (70%) for active. The frequency statistics for Week 3's journal log are computed in Figure 7.

Figure 7

Week 3 Journal Log: Relative frequencies of verbal, nonverbal, pre-demeanor, and post-demeanor of the ten participants

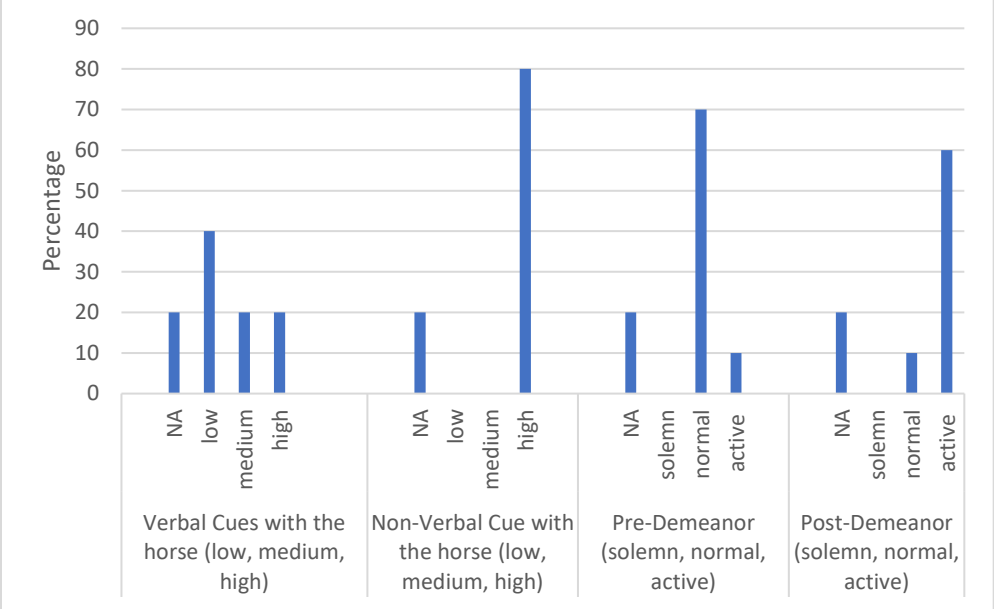


For Week 3, verbal cues during week 3 displayed *n* = 2 (20%) for NA (due to absence), *n* = 0 (0%) for low verbal cues, *n* = 4 (40%) for medium verbal cues, and *n* = 4 (40%) for high verbal cues. Non-verbal cues during Week 3 displayed *n* = 2 (20%) for NA (due to absence), *n* = 0 (0 %) for low non-verbal cues, *n* = 0 (0%) for medium non-verbal cues, and *n* = 8 (80%) for high non-verbal cues. Pre-demeanor displayed *n* = 2 (20%) for NA, *n* = 0 (0%) for solemn, *n* = 8 (80%) for normal, and *n* = 0 (0%) for active. Lastly, post-demeanor displayed *n* = 2 (20%) for NA, *n* = 0 (0%) for solemn, *n* =2 (20%) for normal,

and *n* = 6 (60%) for active. The frequency statistics for Week 4's journal log is computed in Figure 8.

Figure 8

Week 4 Journal Log: Relative frequencies of verbal, nonverbal, pre-demeanor, and post-demeanor of the ten participants



As shown above, verbal cues during Week 4 displayed *n* = 2 (20%) for NA (due to absence), *n* = 4 (40%) for low verbal cues, *n* = 2 (20%) for medium verbal cues, and *n* = 2 (20%) for high verbal cues. Non-verbal cues during Week 4 displayed *n* = 2 (20%) for NA (due to absence), *n* = 0 (0%) for low non-verbal cues, *n* = 0 (0%) for medium non-verbal cues, and *n* = 8 (80%) for high non-verbal cues. Pre-demeanor displayed *n* = 2 (20%) for NA, *n* = 0 (0%) for solemn, *n* = 7 (70%) for normal and *n* = 1 (10%) for active. Lastly, post-demeanor displayed *n* = 2 (20%) for NA, *n* = 0 (0%) for solemn, *n* =1 (10%) for normal, and *n* = 7 (70%) for active.

Overall, there were multiple trends across the four weeks when observing the participants' verbal and nonverbal cues, pre-demeanor and post-demeanor. For the

qualitative data, each weekly journal report typically improved in pre-demeanor compared to post-demeanor. Prior to every session, students seemed to be quiet and unsure. However, when the participants started working through the activities, their post-demeanors became more engaged. After every session, participants' post-demeanor seemed to increase, and they were observed as being more alert and active. For example, for Week 1, 0% of the participants were rated active, and at the end of the session, 60% were rated active. Similarly, for Week 2, 0% of participants were rated active before the session, and 70% were rated active at the end. The same results were applied to Week 3, where 0% were rated active prior, 60% were rated after, and Week 4 had a pre-active rating of 10% to 70% post-active.

A similar pattern occurred when pertaining to verbal cues and nonverbal cues. Generally, the overall percentages within the non-verbal cues were higher every week when compared to the verbal cues. Participants seemed to be working with the horses more through body language and non-verbal communication, rating them typically higher each week when doing the activities. For example, for Week 1, high verbal cues were rated at 0%, while non-verbal cues were rated as 70%. Similarly, Week 2 had a high verbal cue percentage of 30% compared to non-verbal cues of 80%. Week 3 had a high verbal cue percentage of 40%, when compared to non-verbal cues of 80%, and Week 4 had a high verbal cue percentage of 20%, when compared to non-verbal cues of 80%, and Week 4

After the program, the researcher sent the post-survey to the treatment group consisting of the 8 extended response questions to collect qualitative data using the 6 steps to thematic coping. The steps are data familiarization, creating codes, forming and

looking at themes, labeling and naming the themes, and creating the final chart (Terry et al., 2017). The researcher became accustomed to the data provided by the nine participants from the eight questions provided. The researcher noted the phrases from the questions listed. After the questions were completed, codes and themes were created within the questions by observing the mentioned words and phrases. The eight questions focused on mindfulness, well-being, sense of belonging, motivation, engagement, improvements to the program, and personal opinions. A method of inductive coding was utilized to recognize repeating themes from the responses. A listing of the recognized codes is shown in Table 11.

Table 11

Identified Codes from the Eight Extended Response Data.

Codes	
Nervous prior	Improved happiness
Curiosity prior	Felt safe
Excited prior	Positive impact on well-being
Mindful during program	Affordability and beneficial experience
Grateful during the program	Increased support and sense of belonging
Comfortable during program	Least favorite activity haltering
High interest during program	Least favorite activity saddling
Excitement during	Least favorite activity was grooming
Nervous during program	Least favorite activity was showmanship
Felt better after sessions	No least favorite activity
Sad when over	Least favorite was backing up the horse
Comfortable after program	Favorite activity grooming
Sense of clarity after	Favorite activities were patterns
Better awareness	Favorite activity was guiding the horse

Improved self-awareness and attention to detail	Favorite activities were learning horse behaviors
Eager to learn	Improve program by making it longer
Increased engagement	Improve program by increasing stations
Disciplined	Improve program by riding
Stepping out of comfort zone	No improvements need to be made
Increased trying new things	

As listed above, the codes were created to generate groupings, leading to the next step of creating themes. The questions evaluated on emotions before, during, and after the intervention, well-being, mindfulness, sense of belonging, opinions on activities, improvements, and motivation and engagement. Table 12 shows the themes based on these attributes.

Table 12

Codes with Potential Themes Based on Extended Response Characteristics

Themes	Key terms used by participants
Emotions before, during, after program	Nervous prior
	Curiosity prior
	Excited prior
	Mindful during program
	Grateful during the program
	Comfortable during program
	High interest during program
	Excitement during
	Nervous during program
	Felt better after sessions
	Sad when over
	Comfortable after program
	Sense of clarity after
Mindfulness	Better awareness
	Improved self-awareness and attention to detail
Motivation and Engagement	Eager to learn
	Increased engagement
	Disciplined

	Stepping out of comfort zone
	Increased trying new things
Well-being	Improved happiness
	Felt safe
	Positive impact on well-being
	Affordability and beneficial experience
Sense of belonging	Increased support and sense of belonging
Least Favorite Activities	Least favorite activity haltering
	Least favorite activity saddling
	Least favorite activity was grooming
	Least favorite activity was showmanship
	No least favorite activity
	Least favorite was backing up the horse
Favorite Activities	Favorite activity grooming
	Favorite activities were patterns
	Favorite activity was guiding the horse
	Favorite activities were learning horse behaviors
Improvements	Improve program by making it longer
	Improve program by increasing stations
	Improve program by riding
	No improvements need to be made

After this, data was arranged into themes constructed by material from the literature review. Each theme was evaluated to ensure it was sufficiently associated with accounts from the post-survey extended response and research questions. Table 13 shows the correlation among the codes and themes in relation to the study's research questions.

Table 13

Defining and Naming Themes

Thematic Category	Research Questions
Emotions before, during, after program Mindfulness	RQ1
Emotions before, during, after program Well-being	RQ2
Emotions before, during, after program Motivation and Engagement Least Favorite Activities Favorite Activities Improvements	RQ 3
Sense of belonging	RQ 4

As shown above, themes were defined and named once sufficient support data was found. The eight themes are Emotions before, during, and after the program (RQ1, RQ 2, RQ3),

Mindfulness (RQ 1), Well-being (RQ 2), Motivation and Engagement (RQ 3), Sense of Belonging (RQ 4), Least Favorite Activities (RQ 3), Favorite Activities (RQ 3), and Improvements (RQ3).

The final step is producing a figure using the themes. The information coded and used for the research question themes was recorded in a figure. The construction incorporates numerous occurrences in codes from participants' responses collected from the extended responses distributed in the post-survey. All themes and the number of responses each participant reported from each code are in a figure seen in Appendix F.

Qualitative Response Results

Initial qualitative responses were inspected to observe themes utilizing groups and codes. From this, each theme was listed, along with further explanations of participant responses and their relatability to the research questions. Themes are listed below with further qualitative findings, responses, and association with the research questions.

Emotions before, during, and after the program (RQ 1, RQ2, RQ 3). The emotions before, during, and after the program consisted of 13 codes termed nervous prior, curiosity prior, excited prior, mindful during the program, grateful during the program, comfortable during the program, high interest during the program, excitement during the program, nervous during the program, felt better after the sessions, sad when over, comfortable after program, and sense of clarity after. For prior emotions, 7 participants were coded with nervous prior, 2 curiosities prior, and 1 excited prior. For emotions during the program, 1 participant was coded mindful during the program, 1 grateful during the program, 1 comfortable during the program, 1 high interest during the program, 3 excitement during, and 1 nervous during. For after-program emotions, 3

participants were coded for felt better after sessions, 1 sad when over, 1 comfortable after program, and 1 sense of clarity after. The figure can be seen in Appendix F.

For prior emotions, the reoccurring theme of the participants was students being nervous prior, curious about the program, and even excited. For example, Participant 1 stated they were stressed to begin the program but were excited to come to the farm every week. Participant 3 even stated, *"Before, I was a little nervous but got comfortable during each visit."* Participant 5 also stated they were nervous before the session but were sad when the program ended. However, Participant 4 responded that they were curious prior to the program. Lastly, for prior experiences, Participant 7 stated, *"Before the program, I did not know what to expect, but I was excited to experience it."*

During the program, the reoccurring theme was excitement, being mindful, being grateful, comfortable, and showing high interest. However, one participant displayed being nervous during the program and activities. Participant 1 explained that during the program, *"I think this taught me to be very aware with the horses, you always have to pay attention and watch their body language so that you or the horses don't get injured. I think I'm very more aware and connected to what's going on around me."* Participant 1 also explained being grateful for what they learned during the program. Participant 3 felt at ease and comfortable working with the horses during the sessions, and Participants 4,5 and 6 explained the excitement they felt during the program sessions. However, Participant 7 did explain that they were nervous during the session as they had never worked with horses before.

After the program, the reoccurring emotions displayed were feeling better after the sessions, sad when the sessions were over, comfortable after the sessions, and getting

a better sense of clarity after the sessions. Participant 3 felt comfortable after the sessions and stated, *"Towards the end I was alright with doing every task."* Participants 3, 4 and 8 felt better after the program sessions, as well. For example, Participant 3 stated, *"It's always nice to work with animals so I personally feel better overall after working with them."* Participant 4 also stated, *"I would go home more relaxed, and I would be more productive the hours after and the next day."* Participant 8 also stated *"Happy that I got to learn a lot about the horses, I engaged in all the activities that took place."*

The emotions before, during, and after program key theme gave valuable information to RQ 1 (pertaining mindfulness in participants), RQ 2 (pertaining to well-being) and RQ 3 (pertaining to motivation and engagement). Overall, this key theme seemed to display improvements in these areas of interest in the treatment group. As mentioned in the previous paragraph on this key theme, Participant 1 showed improvements in being mindful and aware stating, *"I think this taught me to be very aware with the horses, you always have to pay attention and watch their body language so that you or the horses don't get injured. I think I'm very more aware and connected to what's going on around me."* Well-being also seemed to improve in this key theme as most participants seemed to be excited and happy before, during and after the program, and even stated sadness about the program ending. To support a better sense of well-being, Participant 6 even stated, *"These sessions have positively impacted my overall sense of well-being. The horses at the barn where I usually ride have been in quarantine for the last couple months, so it was really nice to be around horses again. I would recommend this program because it was fun while also providing interesting knowledge that not everyone knows."* Motivation and engagement also seemed to be high in

emotions before, after, and during. For example, Participant 2 stated high engagement (along with mindfulness) in the program, and stated, *"Engagement was positive overall. I was working with a lot of new people, but we were all supportive. I think I was getting used to being aware of my own actions as well as the horse's. It was important to be able to complete my task and also lead the horse."*

Mindfulness (RQ 1). The mindfulness key theme consisted of two key terms used by participants. The two terms were better awareness, and improved self-awareness and attention to detail. Five participants were coded for better awareness (Participants, 2,3,4,5,6), and four participants were coded for improved self-awareness and attention to detail (Participants 1,4,8,9), which can be seen in Appendix F. Pertaining to RQ 1 (associated with mindfulness in participants), participants seemed to have an increased sense of mindfulness and awareness. For example, Participant 1 explained how they are aware and mindful of their own action, along with the horses. Participant 3 even mentioned being mindful and aware of the animals, stating*, "I was able to notice subtle signs in the animal's behavior."* Participant 4 similarly stated *"Work with horses requires a lot of attention. Sometimes I don't pay attention to the little details while doing things on my daily life. I think after the sessions it has improved my awareness."* Participant 5 also explained how they learned to be aware of body language through the interactions. Participant 6 also gave valuable information, stating, *"The activity made me aware of my surroundings because we had to make sure to be attentive to the horse's body language as well as outside factors that might affect the horse."*

Similarly, mindfulness and awareness seemed to give positive insight when pertaining to attention to detail and self-awareness. Participants 1, 4, 8, and 9 were used

for the key terms of improved self-awareness and attention to detail. Participant 1 explained how they were more connected and aware of the program and how it teaches students to be more disciplined. Participant 4 also explained how their attention to detail improved within the program. Additionally, Participant 8 explained how working with horses made them more aware of their emotions, and Participant 9 stated, *"My awareness has heightened since starting the program because when you are dealing with horses you must be hyper aware."*

Motivation and Engagement (RQ 3). This key theme used the terms of eager to learn, increased engagement, disciplined, stepping out of comfort zone, and increased trying new things. RQ 3 (pertaining to motivation in participants) results seemed to have an increase in motivation and engagement from the participant responses, along with participants being motivated to step out of comfort zones and trying new things. Participants 1, 6 and 7 were used for the key term of eager to learn, Participants 1, 2, 4,5,6,7,8, and 9 displayed increased engagement for a key term, Participant 2 used the key term of stepping out of comfort zone, and Participant 2 and 3 used the key term of trying new things (Appendix F). Participant 1 explained their high engagement in the program and expressed their willingness to learn. Participant 7 even stated regarding horses *"I really enjoyed learning about the way they operate."* Almost all participants were used for the key term of increased engagement.

Participant 1 stated directly *"I became very engaged and volunteered a lot by the end"* and Participant 2 expressed how engagement was positive overall and was working a lot with other participants. Participant 3 also stated *"We were all actively participating, and it was easy to grasp everything."* To further the improved participation claims during

the study, Participant 4 also stated *"I honestly think we were all willing to participate, learn and have fun."* Furthermore, students also expressed their interest in working in groups. Participant 7 expressed engagement with unfamiliar people, stating *"This activity has allowed me to connect with new people."* Similarly, participants also expressed the motivation to branch out of comfort zones and try new things. Participant 2 expressed that sessions were a nice way to *"try something new" and "step out of my comfort zone,"* and Participant 3 expressed their experience as being fun to try something new.

Well-Being (RQ2). This key theme used the terms of improved happiness, felt safe, positive impact of well-being, affordability, and beneficial experience. RQ 2 (pertaining to well-being in participants) results seemed to display an improvement in well-being from the participant responses. Participants 4 and 9 displayed the key terms of improved happiness, Participant 7 displayed the key term of felt safe, Participant 6 displayed the key term of positive impact on well-being, and Participants 2 and 6 displayed the key terms of affordability and beneficial experiences (Appendix F). Participant 4 stated *"it was very fun and it helped to not worry about school."* Participant 9 also stated it improved their happiness and sense of clarity in life. Participant 7 also felt very safe during the activities and enjoyed the weekly sessions. Participant 6 directly stated, *"These sessions have positively impacted my overall sense of well-being."* Another factor that seemed to improve participant well-being was the free horse education lessons. Participants wrote how they were appreciative of the free lessons, as horses are expensive. Participant 2 expressed their happiness with the program, stating, *"I think a lot of people are curious about horses, but they just cannot afford to have one of their own. This would allow students to take an elective they are actually interested."*

Least Favorite Activities (RQ 3). This key theme used the terms of least favorite activity haltering, least favorite activity saddling, least favorite activity was grooming, least favorite activity was showmanship, no least favorite activity, and least favorite was backing up the horse. RQ 3 (pertaining to motivation and engagement in participants) results seemed to have an increase in motivation and engagement of participants to engage and give feedback on their experiences and responses, even if they are not positive. Participant 1 displayed the key term of least favorite activity haltering, Participant 2 displayed the key term of least favorite activity saddling, Participants 3 and 4 displayed the key term of least favorite activity was grooming, Participant 5 displayed the key term of least favorite activity was showmanship, Participant 6 and 7 displayed the key term of no least favorite activity, and Participant 8 displayed the key term of least favorite activity was backing up the horse (Appendix F).

Participant 1 expressed how they were actively engaged in the session; however, they did not enjoy haltering the horse. Participant 2 stated they enjoyed engaging in the activities and stated, *"I had fun with all the activities, but the least fun was probably saddling because it seemed to bother our horse."* Participants 3 and 4 had high engagement with grooming the horses, but it was their least favorite activity. Participant 5 expressed how they engaged in the sessions, but that their least favorite activity was the showmanship patterns. Participants 6 and 7 expressed how they enjoyed engaging in all activities and did not have a least favorite activity. Participant 8 enjoyed engaging in the activities however stated, *"Trying to get Gunner to back up, just because it was difficult, but it wasn't bad at all."*

Favorite Activities (RQ 3) This key theme used the key terms of favorite activity grooming, favorite activities were patterns, favorite activity was guiding the horse, and favorite activities were learning horse behaviors. RQ 3 (pertaining to motivation and engagement in participants) results seemed to have an increase in motivation and engagement of participants to engage and give feedback of their experiences and responses through positive experiences from the sessions. Participants 1 and 5 displayed the key term of favorite activity grooming, Participants 2,4,6, and 8 displayed the key term of favorite activities were patterns, Participant 3 displayed the key term of favorite activity was guiding the horse, and Participant 7 displayed the key term of favorite activities were learning horse behaviors (Appendix F).

Participant 1 mentioned how engaging with grooming was their favorite activity, and Participant 5 mentioned how engaging in grooming was enjoyable and that their favorite activity was *"Petting the horses."* Participant 3 mentioned how they enjoyed engaging the horse by guiding them. Participant 2 expressed their eagerness to engage in the horse pattern activities, and Participant 4 expressed, *"I really enjoyed all the activities, but patterns were fun."* Participant 6 was also motivated and engaged by the patterns and stated, *"I enjoyed learning about the horsemanship patterns and different ways to maneuver the horses."* Similarly, Participant 8 expressed how it was enjoyable to engage in patterns and said, *"it was very fun to participate in, educational, and overall and very nice experience."* Lastly, Participant 7 expressed their engagement in their favorite activity being *"Learning about horse behavior tendencies and what their point of view is like, compared to ours as humans."*

Improvements (RQ 3) This key theme used the key terms of improve program by making it longer, improve program by increasing stations, improve program by riding and no improvements need to be made. RQ 3 (pertaining to motivation and engagement in participants) results seemed to have an increase in motivation and engagement of participants to engage and give feedback on their responses on how they engaged in the program and what they feel needs to be improved. Participants 1 and 4 displayed the key term of improve program by making it longer, Participants 2 and 6 displayed the key term of improve program by increasing stations, Participants 3, 5, 7 displayed the key term of improve program by riding, and Participant 8 displayed the key term of no improvements need to be made (Appendix F).

Participant 1 and 4 expressed their interest in engaging in a longer program, which also displays great motivation and commitment to the program. Participant 4 stated, *"I wish it would have been longer."* Participant 2 expressed their interest in engaging in more stations working with the horses, with Participant 6 expressing a similar statement. Also, Participants 3, 5, and 7 displayed greater motivation by wanting to engage in riding for improvement recommendations for the program. Lastly, Participant 8 did not feel improvement needed to be made to the program.

Sense of Belonging (RQ 4). This key theme used the term of increased support and sense of belonging. RQ 4 (pertaining to the sense of belonging in participants) showed an increase in the sense of belonging in a few participants regarding their responses in how they engaged in the program. Participants 1, 2 and 7 displayed the key terms of increased support and sense of belonging (Appendix F). Participant 1 felt a great sense of belonging by stating *"At first I felt very disconnected from the others, then by*

week 4 I felt very comfortable to try new things with them. I even felt proud of the others when they did something well, I became very engaged and volunteered a lot by the end." Similarly, Participant 2 stated, *"I was working with a lot of new people, but we were all supportive."* Lastly, Participant 7 expressed improvement in sense of belonging by expressing *"This activity has allowed me to connect with new people, spend more time with other people who are familiar, and teach me how to give attention to "unspoken behaviors" with animals and people" and "the instructors were very inclusive and paid a lot of attention to the horses and participants. They also made sure we felt safe and were informed about the animals' behaviors and tendencies."* These responses support that certain participants experienced a higher sense of belonging in the program.

Second Post-Measure Scores of Treatment Group

A second post-measurement was conducted six weeks after the intervention to observe how the participant groups' scores changed over time (Appendix D). Due to the treatment group's sample size, a paired t-test was conducted with an alpha level of <.10 for the post-1 and post-2 scores for WHO-5, MES, SBS, and MAAS. Nine out of the 10 participants completed the second post-survey. The results are listed below in Table 14.

Table 14

Paired T-test Post 1 and Post 2 Scores

	t	df	Significance Two-Sided p
WHO-5 Post 1 - Post 2	1.26	8	0.245
Motivation and Engagement Post 1 - Post 2	0.51	8	0.621
Sense of Belonging Post 1 - Post 2	-2.17	8	0.062
MAAS Post 1 - Post 2	0.83	8	0.431

Based on a sample of $n = 9$, the paired t-test suggests no significant differences amongst the Post 1 and 2 scores of the WHO-5, MES, and MAAS. However, SBS demonstrates statistical significance, with $p = 0.062$ based on an alpha<.10. Table 15 demonstrates the scores between the four scales' pre-, post-1, and post-2.

Table 15

Pre, Post 1, and Post 2 Treatment Scores

	Pre	Post 1	Post 2
WHO-5	15.60	18.20	15.78
Motivation and Engagement	24.00	24.40	23.00
MAAS	54.60	62.00	60.67
Sense of Belonging	24.80	26.20	27.67

As listed above, WHO-5, MES, MAAS, and SBS improved from pre- to post-1 survey distribution. Similarly, WHO-5, MES, and MAAS seemed to decrease from post-1 to

post-2 distribution. However, a SBS continued to increase from pre-, post-1, and post-2 survey distribution. Figure 9 represents a graphical illustration of the treatment participants' pre-, post-1, and post-2 scores.

Figure 9

Graph Illustration of Pre, Post 1, and Post 2 Treatment Scores

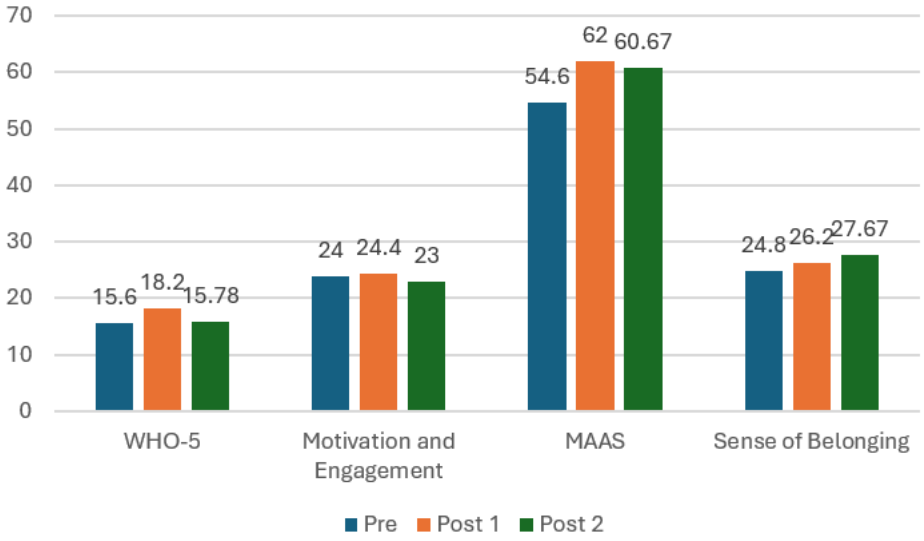


Figure 9 suggests that the WHO-5, MES, and SBS scores all seemed to increase from pre- to post-1 survey distribution amongst the treatment group. Additionally, all scores for the WHO-5, the MES, and MAAS seemed to decrease slightly from the post-1 to post-2 survey distribution over six weeks. However, the SBS scores slightly increased from pre- to post-2 survey distribution.

Summary

This mixed method study utilized grounded theory and cluster random sampling to observe quantitative scale data and qualitative themes for mindfulness, sense of belonging, improved well-being, and student engagement for students at Youngstown State University. The study employed surveys with Likert scales (for treatment and

control) and eight online extended-response questions (for the treatment after the program). For the quantitative data, the factorial ANOVA results suggested significant differences between WHO-5 and MAAS amongst the two groups, pre- and post-surveys. The mean data suggested improvement in well-being and mindfulness for the treatment group and a slight decrease for the control group. These results address RQ 1 and RQ 2 to determine whether there would be significant differences between the pre-and post-scales of the treatment and control group and whether there will be improvements in well-being and mindfulness. No significant differences seemed to be revealed between the MES and the SBS. These results pertain to RQ 3 and RQ 4, addressing whether a four-week EFLA program improves engagement skills and a sense of belonging in college students and whether there will be a significant difference between groups. Even though the sense of belonging motivation and engagement seemed to display no significant differences, the treatment group reported a slight improvement in the MES, along with the SBS.

For the qualitative data, participants' post-demeanor seemed to increase, and they were observed as being more alert and active. Generally, the overall percentages within the nonverbal cues were higher weekly than the verbal cues. After identifying the program's codes and themes, a figure report was created using the six-step coding and theme procedure (Terry et al., 2017). From the coding procedure of the eight extended response questions, eight key themes emerged: Emotions Before, During, and After the Program: Mindfulness, Well-being, Motivation and Engagement, Sense of Belonging, Least Favorite Activities, Favorite Activities, and Improvements. These themes will be discussed in how they coordinate with the quantitative data in Chapter 5. Lastly, the paired t-test suggested no significant differences amongst the post-1 and 2 scores of the

WHO-5, MES, and MAAS. However, SBS demonstrated statistical significance. All survey scores seemed to increase from pre- to post-1 survey distribution and decreased slightly (aside from the SBS scores, which increased slightly) from post-1 to post-2 survey distribution over six weeks.

Chapter V

Discussion

This mixed-method pre and post-design utilized a control and intervention group with a pre-and post-survey recruiting Youngstown State University college students. Additionally, the intervention group received a six-week follow-up survey after the last day of the program to observe if any changes in the pre- and post-surveys were sustained even after a prolonged period. The WHO-5, MES, SBS, and MAAS Likert scale surveys were distributed to control and treatment groups, and these four categories were sent through Google Forms. Field notes were collected during the activities, and qualitative eight-extended response questions were given to the treatment group at the end of the study through Google Forms (Harris et al., 2006). The four field note data logs identified the intervention participants' verbal and nonverbal cues (e.g., low, medium, high) and pre-demeanor/ post demeanor (e.g., solemn, normal, active/ excited). Overall, this study observed if a four-week EFLA program will improve college students' mindfulness, well-being, sense of belonging, motivation, and engagement. Summaries, interpretations, context findings, implications of findings, limitations, and future research for each research question are extrapolated below.

Research Questions One

Will a four-week EFLA program improve mindfulness levels in college students and significantly differ from a control group?

Summary of Findings

From pre- to post-survey, the treatment group seemed to increase from before the program and immediately after the four weeks of mindfulness, awareness, and attention.

In the qualitative data, many participants reported better and improved self-awareness, mindfulness, and awareness skills through their responses and coded themes. Quantitative and qualitative data coincided to support the idea that an EFLA course could improve mindfulness skills in students at the collegiate level over four weeks.

Interpretations of Findings

A pre-posttest using a factorial ANOVA suggested significant differences between the two groups (p=.022). When examining the total scores between the pre-and post-survey, the averages of the post-survey increased compared to the survey sent prior to the intervention. The interpretation of the quantitative results demonstrates that students were more mindful after the four-week intervention than when they started the program. Qualitative student data demonstrates an EFLA's impact on mindfulness, as students mentioned their experiences from the program. When asked about mindfulness Participant 3 mentioned being mindful and aware of the animals, stating, *"I was able to notice subtle signs in the animal's behavior."* Additionally, Participant 4 stated *"Work with horses requires a lot of attention. Sometimes I don't pay attention to the little details while doing things on my daily life. I think after the sessions it has improved my awareness."* Participant 5 also explained how they learned to be aware of body language through the interactions. Similarly, Participant 6 stated, *"The activity made me aware of my surroundings because we had to make sure to be attentive to the horse's body language as well as outside factors that might affect the horse."*

Context of Findings

A better sense of mindfulness is encouraged in college, as it promotes mental health awareness amongst universities and can create reflective learning (Altinyelken,

2022). Previous literature displays that participants can feel more relaxed and mindful when working with horses (Dampsey, 2017). The EFLA program suggested significant differences between both groups regarding pre- and post-survey distributions. The results add to the literature on mindfulness when working with horses and aligns with similar research that further studied participants being more mindful and relaxed while interacting with horses (Dampsey, 2017; Earles et al., 2015). The current investigation also extends previous research by having qualitative accounts from participants, along with a six-week follow-up survey assessing if the improvements were sustained. These findings can be used and applied in academia, as an EFLA program displayed significant results measuring mindfulness levels and gave further clarity with qualitative responses.

Qualitative data also revealed themes of participants improving their mindfulness skills through the themes and codes generated from their responses. The data gave valuable insight into how the program can influence college students' mindfulness, attention, and awareness skills during their college experience. The qualitative responses also allowed participants to express their opinions on the programming, furthering the strength of why significant differences were present and adding additional methodology techniques to future EFLA program studies. For example, Participant 4 even stated, *"I think after the sessions it has improved my awareness on what's around me and pay attention to the little details,"* which gives insight into that qualitative reports further extend the reasoning as to why there were suggested significant differences quantitatively.

Implications of Findings

The current study indicates that an EFLA program can lead to mindfulness growth, aligning with the idea that equine activities provide tools for increasing self-awareness, self-responsibility, and self-esteem among active participants (Pyle, 2006). The current investigation displayed implications for the findings of an EFLA program on college students and its influences on mindfulness, well-being, motivation and engagement, and sense of belonging. These results supported the idea that horses could improve mindfulness in participants (Morgan, 2017). These findings also support existing theories observing the effects of an EFLA program benefiting college students and leaders by improving their well-being, mindfulness, and engagement (Chapman, 2017; Earles et al., 2015; Holmes et al., 2012; Latella & Abrams, 2019).

The mindfulness results were consistent with the PERMA framework of well-being, which represents positive emotion (being present and mindful), engagement, relationships, meaning, and achievement (sense of belonging) (Kern et al., 2015). The current investigation's findings relate to the framework, as research question one results suggested significant differences in the distribution of the control and treatment surveys regarding well-being and mindfulness in the participants. As a participant's well-being improves, mindfulness levels are likely to improve, as they are amongst the pillars of well-being (Kern et al., 2015).

From merely four sessions in a month, students' mindfulness, attention, and awareness suggested significant differences from the pre- and post-survey distribution compared to the control group. This increase in the MAAS scale suggests that this type of program is valuable to college students and displays short-term positive results for mindfulness in students. It adds insight that a short-term program can be as beneficial as a

long-term one. The study helps advance research methodology about the time and length, showing that future studies can implement a small-scale program and still observe significant differences in mindfulness skills before and after the intervention. The study also suggests EFLA may provide benefits similar to psychotherapy treatment with equines. However, more research needs to be done to strengthen that claim due to the limited research regarding EFLA and observing mindfulness in current literature.

These findings can encourage universities, researchers, or mental health professionals to use an EFLA program to better mindfulness of students of their students. The findings can also be used to promote this type of program for university students to increase their mindfulness levels, motivation, and engagement, helping them achieve a better sense of belonging within the university. This program can be an innovative way to lessen the daily stressors of college life in students and motivate them to try something new and feel like the university cares by providing them with education-based activities.

Research Questions Two

Will a four-week EFLA program improve the well-being of college students and significantly differ from a control group?

Summary of Findings

Across two groups, the treatment group increased from pre- to post-distribution, with the control group decreasing slightly from pre- to post-survey distribution for WHO-5. For the qualitative data, the results seemed to show an improvement in well-being from the participant responses, along with the themes in which the participants were coded. Participants were reported to have greater happiness from the program, having a greater sense of well-being, an affordable and beneficial experience, and feeling safe. The

weekly journals also displayed improvement from pre-demeanor and post-demeanor for every session. Prior to every session, students seemed to be quiet and unsure. After every session, participants' post-demeanor seemed to increase, and they were observed as being more alert, active, and happy.

Interpretations of Findings

The pre-and post-surveys factorial ANOVA suggested statistically significant differences from pre- to post-administration across the two groups (p=.049). The average pre- and post-scores indicate that the treatment groups' well-being increased after the four-week intervention. Additionally, the control groups' pre- and post-scores decreased over four weeks. Qualitative student data demonstrates the EFLA program's impact on student well-being. Participant 4 stated, *"it was very fun and it helped to not worry about school."* Additionally, Participant 6 stated, *"These sessions have positively impacted my overall sense of well-being."* The qualitative data shows that the students explained how the program improved their well-being. Additionally, the weekly journals interpreted an over-sense of active post demeanor compared to a normal pre-demeanor.

Context of Findings

Current literature suggests that equine activities can significantly improve stress in participants who are enrolled in this type of program (Morgan, 2017). Quantified data suggests that an EFLA program offered to colleges can improve well-being levels in students and significantly differ from a control group from pre- and post-administration. The current investigation supports the idea and findings that a longer-termed EFLA program for college students can significantly improve stress management (Morgan, 2017). It also aligns with previous literature suggesting that an equestrian program can

show improvements over time among participants, even if not significant improvements (Chapman, 2017). The current investigation demonstrated that a short-term program could suggest significant results. Regarding well-being, the results add insight that a four-week program improves this category as effectively as a long-term program, which also displayed improvements. The current investigation opposes previous short-term equine program literature, which suggests that no significant differences in stress levels can be due to shorter times and session lengths (Chapman, 2017). The current investigation extends previous literature as a control group was added in the short-term program, along with qualitative reports and weekly journal logs.

Additionally, qualitative themes also displayed improvements in well-being levels from participant responses, and the weekly journals showed a more active demeanor after each session for the group. The results of this question gave valuable insight into how the program affected the groups' well-being and how the program may be a valuable tool to improve well-being levels for college students. It also clarified more strengths of the improvements among the participants, with Participant 8 giving an example, stating, *"I think it made me overall less stressed throughout the past 4 weeks."* It also allowed participants to explain their experiences further and add qualitative accounts to the current body of literature.

Implications of Findings

The current study indicates that an EFLA program can lead to well-being growth, aligning with the idea that horses can become an idealized program for individuals' mental and physical tribulations (Arrazola & Merkies, 2020). The results are consistent with the idea that equine activities can lower stress levels in students and create better

coping strategies for depression and anxiety, self-regulation, and be an ideal well-being education program for vulnerable groups susceptible to low well-being (Morgan, 2017; Ridner et al., 2016; Saggers & Strachan, 2016; Wilson et al., 2017). The PERMA framework provides a great understanding of the effect of the EFLA program and its general well-being benefits to students at the collegiate level. The current study's findings relate to the framework, as research question two suggested a significant difference in the distribution of the control and treatment surveys regarding well-being. As well-being improves in a participant, all other categories should follow within the framework after a period of time (Kern et al., 2015).

From four sessions within a month, students' well-being significantly differed from the pre-and post-survey distribution compared to the control group. This increase in well-being suggests that this type of program is valuable to college students and displays short-term positive results for well-being in students. It adds insight that a short-term program can be as beneficial as a long-term one. For example, after interacting with horses during a two-month EAT course, previous literature displayed improved perceived stress in college students, significantly improving perceived stress, depression, and anxiety (Chakales et al., 2020). However, prior literature, using merely five hours of an equine program, utilizing equine-assisted activities and therapy, displayed no significant results regarding decreased stress levels (Chapman, 2017). The current investigation combats the literature regarding small-scale equine-assisted activity and therapy program results, as the current small-scale EFLA programs suggested significant differences among the control and treatment groups' well-being levels. Furthermore, the current

investigation advances researchers by demonstrating that EFLA can be just as beneficial in terms of psychological benefits as equine psychotherapy activities.

These findings can encourage universities, mental health practitioners, or educators to use an EFLA program to better the well-being of their students. The findings can also be used to promote this type of program for university students to increase their well-being levels in students across campuses. The results of the current investigation should be noted, as a short-term EFLA program suggested significant results amongst the treatment and control groups compared to long-term treatment. Notably, it also shows that an EFLA can provide the same benefits as an equine-facilitated psychotherapy. However, more research needs to be done amongst college students to validate if such a program can continue to offer benefits to well-being in the short term, along with comparisons between equine psychotherapy and therapy.

Research Questions Three

Will a four-week EFLA program improve engagement skills in college students and significantly differ from a control group?

Summary of Findings

Quantitative results suggested that the factorial ANOVA suggested no significant differences between pre- and post-administration across the two groups regarding motivation and engagement. However, despite no suggested significant differences between the pre-and post-survey administration, the treatment group slightly increased pre-to-post scores. In contrast, the control group had a decrease. For the qualitative data, the results seemed to show an improvement in motivation and engagement from the participant responses and developed themes. Participants stated they wanted to engage in

a longer program, suggesting what they would like added to the program if it were offered again. Participants gave a general overall theme of being actively engaged from their responses, actively gave their viewpoints on their favorite and least activities and expressed their opinions on improvements for the program. For engagement, overall percentages within the non-verbal cues were higher weekly than those within the verbal cues.

Interpretations of Findings

The factorial ANOVA suggested no significant differences between pre-and post-administration in the two groups (p= .357). However, when examining the pre- and post-scores, the treatment group slightly increased, while the control group slightly decreased when observing the pre-and post-surveys. The non-significant results can be interpreted due to many variables that could have made participants feel unengaged or motivated to perform tasks. Firstly, the program included three horses with which all students had equal time. However, it is possible that certain people did not enjoy working with one of the horses or felt one horse was more engaging than the other. The suggested non-significant differences could also have come from group work activities. It is possible that certain students were more engaged with working with the horses during an assigned activity, while other group members were not as active or forthcoming. Another factor that might have played a part in non-significant results was the programming, which was only four weeks, along with the shortened sample scale being used to assess motivation and engagement.

However, students' qualitative responses demonstrates the impact the EFLA program had on student motivation and engagement, supporting a theme of improved

engagement. When asked about motivation and engagement, Participant 1 stated *"I became very engaged and volunteered a lot by the end."* Similarly, Participant 3 also stated *"We were all actively participating, and it was easy to grasp everything."* To further interpretation of improved motivation and engagement, Participant 4 also stated *"I honestly think we were all willing to participate, learn and have fun."* Additionally, Participant 2 expressed, *"sessions were a great way to try something new and step out of my comfort zone."* Aside from qualitative reports, the weekly journals interpreted an overall increase in non-verbal cues when compared to verbal cues when working with the horses, displaying a higher engagement within students during the program.

Context of Findings

Research has shown that an EFLA can display improved quantitative engagement in participants, establishing internal motivation and leadership skills (Latella & Abrams, 2019). However, the quantitative results suggested no significant differences among the groups concerning pre- and post-survey distribution. The quantitative results oppose certain literature as they suggest non-significant results that could have been due to the length of the program. The main difference and discrepancies between the current investigation and previous literature were the length and time of the studies. However, the qualitative data responses add valuable insight within the current body of literature; displaying an EFLA could improve participant motivation and engagement. For example, Participant 1 supports this claim: *"I became very engaged and volunteered a lot by the end."* The qualitative responses not only oppose the quantitative results in the current investigation but also display that the treatment participants expressed an improvement in engagement through their responses, expressions through favorite and least favorite

activities, improvement recommendations, and their high non-verbal cue ratings through the weekly journals. The qualitative results and weekly journals also add to the existing body of literature, expanding any observations of motivation and engagement past quantitative reports.

Implications of Findings

The current study indicates that an EFLA program can lead to motivation growth from qualitative accounts; however, quantitively, the treatment and control groups seemed to be not significantly different. Even though this study's results seemed to be not significant quantitatively, the slight increase in the pre-and post-survey of the treatment groups' scores and qualitative data further imply that an EFLA program can positively influence students' motivation and engagement at the collegiate level, aligning with the idea that horses can become an idealized program for individuals' lacking motivation and engagement (Latella & Abrams, 2019). The study's results are consistent with past research that suggested an EFLA or EAT program can build confidence when working with horses, build trust, be self-sufficient, be motivated in self-compassion, and improve attendance rates in everyday activities (Berg et al., 2021; Latella & Abrams, 2019). Thus, even though quantitative results implied non-significant outcomes, qualitative results from the current investigation imply that incorporating horses into an activity-based program may increase the motivation and engagement of participants over time.

Even though PERMA represents positive emotion associated with engagement, the motivation and engagement category did not imply significant differences when aligning with the framework quantitatively (Kern et al., 2015). Additionally, although the PERMA framework of well-being aligned with a statistical difference when observing

well-being and mindfulness, motivation and engagement did not show strong improvements quantitatively but showed qualitative strength. However, there was an increase in pre- and post-distribution assessing motivation and engagement for the treatment group (even though not significant from the control group), which aligns with the framework.

It can be suggested that student engagement might need more time to show significant differences, and the program may need to be extended and require more hours. In terms of motivation and engagement, quantitatively, previous literature suggests that having longer and greater sessions within a greater number can motivate individuals to have a greater sense of compassion within themselves and increase attendance rates (Berg et al., 2021). This suggests that if the current investigation extended the program length and sample size then there may have been significant differences between pre-and post-administration groups when comparing control and treatment groups. Additionally, research suggests that there may be better engagement levels with a longer program time and larger sample size (Berg et al., 2021; Fynn & Runacres, 2022).

The potential for a longer program time frame could support why no significant differences in motivation and engagement were suggested for the current quantitative investigation. Thus, the current investigation adds valuable insight, as it displayed that having a shorter EFLA program and a smaller sample size may not be beneficial to individuals' motivation and engagement compared to a larger EFLA program quantitatively. The results benefit any educational institution or researcher, as they suggest that a larger sample size and an extended program may show promising quantitative results when assessing motivation and engagement for future research. The

current investigation is also beneficial for future researchers as it gives valuable and positive insight into weekly journal logs and qualitative reports supporting the idea that an EFLA course improves participant motivation and engagement.

Research Question Four

Will a four-week EFLA program improve college students' sense of belonging and significantly differ from a control group?

Summary of Findings

The quantitative results for research question four demonstrated no significant differences between pre-and post-administration regarding the sense of belonging across the two groups. However, there was a slight trend increase in the sense of belonging scales compared to the control group. Pertaining to the sense of belonging in participants, the qualitative questions suggested a greater sense of belonging in a few participants regarding their responses in how they engaged in the program. In particular, students felt safe and enjoyed working in groups with other participants where they felt accepted. Even though no significant differences were suggested quantitatively, qualitative responses suggest increased supportiveness and a sense of belonging amongst participants, indicating they felt the program improved their sense of belonging while doing the activities.

Interpretations of Findings

The factorial ANOVA suggested no significant differences between the pre-and post-survey distributions across the two groups. However, when observing the average pre- and post-survey scores, the treatment group slightly increased the scale, while the control group decreased within four weeks. The non-significant results could have come

from students feeling nervous about working with horses for the first time, as the treatment population was mainly beginners. Participants could have felt out of place being with horses for the first time and needed more time to get acquainted with the equestrian farm setting. Also, the length of the program could have played a role in non-significant results, as participants could have needed a longer program to achieve a better sense of belonging around horses and other participants.

However, qualitative data demonstrates the EFLA program's impact on students' sense of belonging, as mentioned, making them feel safe and connected with other participants. As mentioned previously, Participant 1 felt a great sense of belonging by stating *"At first I felt very disconnected from the others**,** then by week 4 I felt very comfortable to try new things with them. I even felt proud of the others when they did something well, I became very engaged and volunteered a lot by the end."* Additionally, Participant 2 stated, *"I was working with a lot of new people, but we were all supportive."* Participant 7 expressed a similar theme stating, *"This activity has allowed me to connect with new people, spend more time with other people who are familiar, and teach me how to give attention to "unspoken behaviors" with animals and people"* and *"the instructors were very inclusive and paid a lot of attention to the horses and participants. They also made sure we felt safe and were informed about the animals' behaviors and tendencies."*

Context of Findings

Equine activities have been suggested to improve confidence and sense of self, which can relate to a better sense of self and belonging within individuals (Muckle & Lasikiewicz, 2017). However, no significant differences were quantitively suggested

among the groups with the pre-and post-survey distribution, which contradicts previous research observing a sense of belonging within an equine program. The treatment group slightly increased in this scale, and the control group decreased slightly over the month. The current investigation results give insight into how a four-week program affects students' sense of belonging compared to longer-length studies and adds further value methodologically pertaining to qualitative reports. The qualitative responses seemed to diverge in a different direction from the results of the quantitative data, which adds value to the current literature and further clarifies the necessity for qualitative responses in addition to quantitative.

Qualitative responses displayed that the treatment participants improved their sense of belonging while working as a team with other participants on the horses through their responses and thematic coding. For example, Participant 4 extrapolated further about a better sense of belonging by stating, *"I felt everyone was participating equally and everyone was treated equally. I honestly think we were all willing to participate, learn and have fun."* The discrepancies between the quantitative and qualitative data might have occurred due to the possibility that a student's sense of belonging takes more time to improve, requiring a longer program length. However, the qualitative responses clarify that the program was indeed helpful in making students feel like they belonged more, which should be noted for future methodological approaches.

Implications of Findings

Results from the current study imply that an EFLA program can lead to a greater sense of belonging from qualitative accounts. Quantitively, the treatment and control groups suggested no significant difference. Even though this study's results seemed non-

significant quantitatively, there was a slight increase in the pre-and post-survey of the treatment groups' scores. This further implies that an EFLA program can positively influence students' sense of belonging at the college level, aligning with the idea that horses can become an idealized program for individuals' sense of belonging (Mueller & Mccullough, 2017).

Even though PERMA represents positive emotion (being present and mindful), engagement, relationships, meaning, and achievement (sense of belonging), the sense of belonging results did not imply significant differences when aligning with the framework quantitatively (Kern et al., 2015). Additionally, although the PERMA framework of well-being aligned with a suggested statistical difference when observing well-being and mindfulness, the sense of belonging category did not suggest a significant improvement from the control and treatment. However, the study showed promising qualitative accounts from participant responses. The slight increase in the sense of belonging scale of the treatment group from pre- to post-administration aligns with the framework.

Even though the results quantitatively did not show significant differences, participant responses qualitatively implied that participants felt a greater sense of belonging and closeness to the animals and other participants. While the cause for the sense of belonging not being significant is not apparent, it can be suggested that the program may take longer to observe significant quantitative effects in this area of interest or increase the sample size. Even though the quantitative results did not display similar findings, the qualitative results seemed to show improvements in the sense of belonging amongst participants. The current investigation adds uniqueness to existing literature displaying qualitative accounts when observing a sense of belonging.

In the short term, participants qualitatively displayed a better sense of belonging within the program's length. The current investigation gives valuable information to the methodology for an EFLA, which suggests extending the program to view if the sense of belonging needs more time to display significant changes. Longer sessions and times may be instrumental in building confidence and self-esteem, building trust, forming healthy attachment styles, and finding a better sense of self (Saggers & Strachan, 2016). Previous literature suggests that the current investigation could have had non-significant outcomes due to the program length (Saggers & Strachan, 2016). The results benefit any educational institution or researcher, as they suggest using a larger sample size and an extended program may show any promising results quantitatively when assessing a sense of belonging for future research. The current investigation also tells future investigators that adding qualitative accounts can provide better insight into any improvements regarding a sense of belonging with a short-term program.

Research Questions Five

Will any improvements be sustained after the six-week follow-up?

Summary of Findings

The WHO-5, MES, MAAS, and SBS seemed to increase from pre- to post-1 survey distribution. However, from post-1 to post-2 survey distribution after six weeks, the WHO-5, MES, and MAAS scales slightly decreased, with the SBS scale being the only one that continued to increase. Therefore, findings suggest that the program suggested improvement in all scale scores before and after the program. The results also suggest that scores decreased gradually over six weeks after the program, aside from sense of belonging scores.

Interpretations of Findings

No significant differences were suggested amongst the post-1 and post-2 scores of the WHO-5, MES, and MAAS scales. However, SBS demonstrated statistical significance. Also, the WHO-5, MES, and MAAS seemed to increase from pre- to post-1 survey distribution and decreased slightly from post-1 to post-2 survey distribution over six weeks. The results from the pre-to post-1 and post-2 surveys suggest that the program showed improvement in mindfulness, motivation, engagement, and well-being from before and immediately after the program, demonstrating that an EFLA program can be beneficial when of these scales. The slight drop in levels could also suggest that students' well-being, motivation, engagement, and mindfulness naturally lowered, which is predicted without the intervention.

The results suggested that the program's effects slightly declined within these scales, and no significant decrease or change occurred six weeks after the EFLA program. This could have been due to participants not attending the intervention anymore or feeling slightly sad over time not being able to work with the horses. For example, when asked about how the participant felt after the program, Participant 5 stated *"A little sad after cause it's over."* However, the sense of belonging increased even six weeks after the program. A possible reason for the sense of belonging outcome is that participants could gain valuable friendships with co-participants, which could suggest a continual feeling of belongingness. Furthermore, qualitative data suggests that participants built relationships and friendships with fellow participants over time. Participant 7 expressed, *"This activity has allowed me to connect with new people, spend more time with other people who are*

familiar," supporting the idea that the program created a positive sense of belonging and possible friendships among certain participants.

Context of Findings

Previous literature has suggested that equine activities and therapies can benefit participants of various sociodemographic backgrounds by improving their well-being, mindfulness, and engagement (Chapman, 2017; Earles et al., 2015; Holmes et al., 2012; Latella & Abrams, 2019). Similarly, equine activities have been suggested to improve confidence, sense of self, and belonging within individuals (Muckle & Lasikiewicz, 2017). The findings suggest that the EFLA program improved well-being, motivation, engagement, and mindfulness, with an expansion of the six-week follow-up displaying a slight decrease after the program. The current investigation agrees with the existing literature on an EFLA program, suggesting improvement in these categories. However, the current investigation adds a uniqueness to the literature as it provides a six-week follow-up compared to existing literature, predominately providing quantitative pre- and post-methodological designs or qualitative research. The six-week follow-up expands existing literature, giving insight into any changes that may occur. The main expansion is the slight decrease in well-being, motivation, engagement, and mindfulness six weeks after the program. This suggests that a natural level drop can occur over time without intervention. Additionally, the current investigation expands the literature by providing unique details regarding the sense of belonging's pre-, post-1, and post-2 results. Research has shown that equine activities may be instrumental in building confidence and self-esteem, building trust, forming healthy attachment styles, and finding a better sense of self (Saggers & Strachan, 2016). However, existing literature seems to lack follow-up

surveys over some time to observe changes after an intervention. The current investigation displayed the continual improvement of a sense of belonging six weeks after the program, suggesting continual possible relationship building among participants. To further this claim from qualitative reports, Participant 1 showed increased engagement with co-participants, stating, *"I felt very comfortable to try new things with them I even felt proud of the others when they did something well,"* suggesting a stronger relationship bond.

Implications of Findings

The six-week follow-up surveys demonstrated the expansion of current literature about what changes can occur immediately after the intervention and for a longer period of time. Further, the six-week follow-up offers a unique change in the literature's understanding of the potential long-term effects of an EFLA program on college students. The findings seem in agreement with research suggesting larger animal interventions that contribute to student coping mechanisms when improving college students' mindfulness, stress, engagement, and well-being due to the slight increase in all pre- to post-survey scales from the current investigation (Chakales et al., 2020). Furthermore, it advances existing methodological approaches by adding a six-week follow-up survey, giving insight that positive effects may lower over time without consistent treatment utilizing an EFLA.

The current investigation also expands on the potential idea that students may acquire a better sense of belonging by utilizing friendships and bonds through interactions with treatment group members. Additionally, the results align with the PERMA framework because they represent emotional positivity, relationships,

engagement, meaning, and achievement as intertwined, which seem to play a role in the current investigation's results (Kern et al., 2015). Similarly, most of the scales increased from pre-post-1 scales, along with a slight decrease from post-1 to post-2, aside from the sense of belonging. This theme of increasing and decreasing together suggests how all factors can be intertwined in improving or decreasing one another's scores. The results may benefit any educational institution or researcher, as they demonstrate an innovative way to observe differences in scale scores over time after an EFLA program. The current investigation also tells future investigators that adding a second post-survey can provide better insight into whether the program had long-term effects on participants and whether the effects regressed or improved over time without the intervention.

Limitations of the Study

Multiple limitations could have played a role in the results of this study. The participant's personal life may explain any limitations in the study from personal life stress, along with majors or graduate levels. These could alter the well-being scale, mindfulness, sense of belonging, motivation, and engagement levels. For example, a student who works full time and is a full-time student may have lower well-being levels, mindfulness skills, low sense of belonging, and motivation due to everyday stress from school and personal workload. Also, most participants were full-time students, which may have altered the greatest potential of improvements in well-being, motivation, mindfulness, and a sense of belonging due to the stress of a full-time course load. Finally, very little is known about the control group participants' experiences during the intervention period, which could have some impact on their survey responses.

The current investigation's EFLA program was open to any gender, age, horse experience, and major, which could also be a limitation due to certain majors being more challenging than others, along with moderate or advanced horse participants not feeling the full effect of working with horses due to prior experience. Also, most students were beginners, which may have made them feel less motivated to engage with the horse or feel like they did not belong due to inexperience. Using multiple horses and trainers could account for confounding variables, as participants may have enjoyed one trainer or horse more than another, affecting survey results.

Also, environmental factors, bias from students self-enrolling from the QR code, social desirability bias in responses, self-reporting, location of taking surveys, attendance, and students having different stressors than other participants may have affected the results of the current investigation (Trochim et al., 2016). Another potential limitation was that two participants completed only three program sessions, and one did not attend entirely. However, all three took the pre-and post-surveys, which may have skewed the data results. Also, eight participants did not fill out the post-survey, lowering the overall number of participants in the study. The sample size could also be a limitation, as a larger sample size displays more power in a study. Additionally, the current investigation had limited interactions with the control group. Greater interaction with the control group would have given a greater sense of what the group was experiencing throughout the study. Finally, social-desirability bias is a likely issue with the intervention group since they enjoyed the intervention activities.

There are potential validity and reliability issues with the qualitative data because the researcher collected the data. The researcher is biased about the potential impact that

working with horses can have on individuals because of the researcher's extensive knowledge, passion, and history of working with horses. The qualitative data was collected by one person, which is a limitation regarding the reliability of the data. Since this was observational data, the researcher's biases may have been in play. The researcher's interpretations of reality were accessed directly through observations and field notes (Merriam & Tisdell, 2016). The researcher took field notes for each participant's pre- and post-demeanor and verbal and nonverbal cues. Additionally, the researcher conducted the thematic coding stages and generated the codes and themes for each participant. Coding was completed by the researcher, which might compromise the reliability and interpretations of that data (Merriam & Tisdell, 2016). The length of the program can also be a limitation, as the literature explains how longer sessions and timeframes potentially have a greater impact when compared to shorter ones. Participant fatigue can be a limiting factor for participants in the program. Lastly, the small intervention sample size was limited due to managing the integrity and logistics of the intervention group, in which the intervention group was randomly selected from all available participants.

Recommendations for Future Research

These findings suggest that incorporating a four-week EFLA program for students on campus could benefit their mindfulness, well-being, motivation, engagement, and sense of belonging. However, motivation, engagement, and a sense of belonging were not significantly related to the survey administration between the two groups. The participant's responses seemed positive about improvements in all categories, and the average scores for each scale were higher from pre- to post-survey administration for the

treatment group. However, another recommendation would be to extend the program to observe if significant changes could be sustained or become significant if the program added additional weeks. Similarly, a qualitative portion should be added within the six-week follow-up to extrapolate any further decreases or increases in the second post-scales. The six-week qualitative follow-up could explain further why certain scales improved after the program without treatment. For the current investigation's six-week results, qualitative portions could further explain why students' sense of belonging scales increase over time (potentially from creating friendships with co-participants in which they continued to increase their sense of belonging).

Another recommendation would be to have multiple researchers create weekly journals and compare them at the end of each session to lower any bias to journal results. Future studies should also consider having participants write their weekly journals to get a better representation of their demeanors. Also, more horses should be incorporated to have a larger sample size of participants. This would allow more people to work with horses and increase the sample size to increase the study's overall power. Additionally, a larger sample size with similar demographics, majors, and horse experience would be ideal to observe if the program improves well-being, engagement, mindfulness, and sense of belonging. This would lower any threats that may alter survey results due to the similarity of future cohorts enrolled in an EFLA program.

Conclusion

This study aimed to observe college students' well-being levels, mindfulness, sense of belonging, and engagement skills. Additionally, the goal of this investigation was to observe any significant differences compared to a control group and evaluate if

any improvements were sustained after a six-week follow-up with the treatment group. This mixed-method study utilized grounded theory and cluster random sampling to observe quantitative scale data and qualitative themes for mindfulness, sense of belonging, improved well-being, and student engagement for students at Youngstown State University, along with a six-week follow-up survey for the treatment group. The EFLA program suggested significant differences between both groups regarding pre- and post-survey distributions amongst the WHO-5 and MAAS scales. Similar qualitative data also revealed participants improving these skills through the themes and codes generated from their responses. Additionally, the qualitative themes also displayed improvements in well-being levels from participant responses, and the weekly journals showed a more active demeanor after each session for the group.

No significant differences were suggested between the groups with the pre-and post-survey distribution for the MES and the SBS. However, the treatment group slightly increased in these scales, and the control group slightly decreased. The qualitative data of the two scales gave valuable insight into how the program improved participant's engagement and sense of belonging. The six-week follow-up survey displayed more information on how the program increased in all scales from pre- to post-survey distribution, along with the steady decline in scores from post-one post-two survey distribution (aside from the sense of belonging scores). This suggests that the program seemed effective in slightly improving the treatment groups' scale scores, with scores decreasing slightly after six weeks of not having the intervention. The current investigation results are crucial for understanding college students' daily stressors to

better their well-being, as this is an ongoing issue for college students (McIndoo et al., 2016; O'Donovan & Hughes, 2007; Roberts & Danoff-Burg, 2010).

Finding innovative ways to incorporate programs to increase well-being, mindfulness, motivation, engagement, and a sense of belonging could be highly beneficial for helping them succeed in life before, during, and after graduation (Altinyelken, 2022; Desai, 2023; Waldrop et al., 2019; Waters, 2011; Wright et al., 2022). The current investigation observing EFLA activities seemed beneficial for Youngstown State University students. This study may open the door for future education-based practice programs to be incorporated at the university level, particularly incorporating horses. The investigation's current results demonstrated that an EFLA can improve well-being, mindfulness, engagement, and sense of belonging by incorporating qualitative, quantitative, and follow-up survey data, and should be considered for future educational practices.

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Appendix A

Initial Pre-Survey

1. **Research Consent Form** *

Dear Participant:

Hello, my name is Dalton Campana, and I am pursuing a Doctor of Education at Youngstown State University. I am a researcher at Youngstown State University, and I am interested in examining the impact of an equine education program on students at YSU. This research aims to provide vital information on whether to implement this equine program for future students. I invite you to participate in a 4-week, once-a-week (1.5-hour session) study and education program at the Withers Farm in Salem, Ohio, beginning in April. You will receive free horse education lessons with three horses and do weekly groundwork activities. However, there is a possibility of being signed into a control group. All participants must be 18 years or older. I am asking intervention and control participants to complete online surveys and data recording through a secure password-protected website called Google Forms. There will be two surveys at two points during the 2024 academic year (before and after the program), socio-demographic data collection, and one qualitative survey (for the intervention group). Additionally, a second post-survey follow-up will be emailed to the intervention group six weeks after the program ends (mid-June). The pre and post-surveys will take around ten minutes, and a twenty-minute qualitative study will follow the program, all of which will be sent through a secure Google Forms survey email. You will also be asked to provide an email for future contact. After all participants complete the initial pre-surveys, I will contact the intervention group to establish the first session and ensure attendance. I will also contact and send the post-survey distribution for the intervention and control groups by the end of April. Emails will be safely stored in a password-protected Google Forms survey for access to schedule program dates and survey distribution effectively and will not be used to identify the participants when collecting and analyzing data; only pseudonyms will be used as identifiers for strict confidentiality purposes. All data will be safely stored on password-protected platforms for confidentiality purposes. The researcher will destroy all study data after three years. All intervention participants must complete a liability form at the Withers Farm before the first week of activity, which will take five to ten minutes to complete. This is due to the possible risk of working with large animals and the potential for experiencing physical or mental harm. However, the likelihood of being harmed is minimized because I am an experienced horse handler and trainer, and two other horse professionals will be there to supervise. Your responses will remain confidential, and if, for any reason, you do not want to participate in this study or choose to withdraw from the study at any time, you have the right

to do so. Remember that answers are confidential; you will create and provide the same pseudo-name for every survey and questionnaire. You can decide not to answer questions. Other than working with horses and getting free education lessons, there are no direct benefits to participating in this study. If you have any questions about this research, contact Dr. Karen Larwin (khlarwin@ysu.edu ; 330-941-2231). If you have questions about your rights as a participant in a research project, you may contact the Office Research Services at YSU (330-941-2377) or at YSUIRB@ysu.edu

Please select yes below if you understand this letter and want to participate in this study. If yes, please continue to create a pseudonym with the last four digits of your phone number followed by your street name and complete the surveys. This will be used to protect your identity and confidentiality.

Mark only one oval.

- ◯ yes
- ◯ no

2. Please write the same prior pseudonym (last four digits of your phone number and street name: example: 7706harvey) *

3. Please write your email address *

4. Are you confidently committing to attend all four equine education sessions? *

Mark only one oval.

- Yes
- No

5. Age *

6. Gender *

7. Undergraduate/ Graduate & Major *

8. Field experiences with horses (beginner, intermediate, advanced) *

9. School credit hours (full or part-time with credit hours listed) *

10. Work hours: (full or part-time with weekly hours listed) *

11. Instructions: Please respond to each item by marking one box per row, regarding how you felt in the last two weeks *

Mark only one oval per row.

	0 At no time	1 Some of the time	2 Less than half of the time	3 More than half of the time	4 Most of the time	5 All the time
I have felt cheerful in good spirits						
I have felt calm and relaxed						
I have felt active and vigorous						
I woke up feeling fresh and rested						

My daily life has been filled with things that interest me						

12. Instructions: Please rate each statement using the following 1-7 scale *

Mark only one oval per row.

	1 Strongly disagree	2 Disagree	3 Diasgree somewhat	4 agree or disagree	5 Agree somewhat	6 Agree	7 Agree strongly
If I can't understand my university/college work at first, I keep going over it until I do							
I feel very pleased with myself when I really understand what I'm taught at university/college							
When I study, I usually study in places where I can concentrate							
I'm able to use some of the things I learn at university/college in other parts of my life							

13. Instructions: Below is a collection of statements about your everyday experience. Using the 1-6 scale below, please indicate how frequently or infrequently you currently have each experience. Please answer accordingly to what really reflects your experience rather than what you think your experience should be. Please answer each item separately from other item *

Mark only one oval per row.

	6 Almost never	5 Very infrequently	4 Somewhat infrequently	3 Somewhat frequently	2 Very frequently	1 Always
I could be experiencing some emotion and not be conscious of it until sometime later						
I break or spill things because of carelessness, not paying attention, or thinking of something else						
I find it difficult to stay focused on what's						

happening in the present						
I tend to walk quickly to get where I'm going without paying attention to what I experience along the way						
I tend to not notice feelings of physical tension or discomfort until they really grab my attention						
I forget a person's name almost as soon as I've been told it for the first time						
It seems I am "running on automatic" without much						

awareness of what I am doing						
I rush through						

I rush through activities without being really attentive to them						
I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there						
I do jobs or tasks automatically, without being aware of what I'm doing						
I find myself listening to someone with one ear,						

while doing somewhat else at the same time						
I drive places on "automatic pilot" and then wonder why I went there						
I find myself preoccupied with the future or the past						
I find myself doing things without paying attention						
I snack without being aware I'm eating						

14. Instructions: When you respond to the questions below, think about yourself as a student at Youngstown State University. On a scale of 1-5 please rate your experiences. *

Mark only one oval per row.

	5 Completely understand	4 Understand quite a bit	3 Understand somewhat	2 Understand a little	1 Do not understand at all
How well do people at Youngstown State University understand you as a person?					

15. Instructions: When you respond to the questions below, think about yourself as a student at Youngstown State University. On a scale of 1-5 please rate your experiences. *

Mark only one oval per row.

	5 Extremely connected	4 Quite connected	3 Somewhat connected	2 Slightly connected	1 Not at all connected
How connected do you feel to the university staff at Youngstown State University?					

16. Instructions: When you respond to the questions below, think about yourself as a student at Youngstown State University. On a scale of 1-5 please rate your experiences. *

Mark only one oval per row.

	5 Extremely welcoming	4 Quite welcoming	3 Somewhat welcoming	2 Slightly welcoming	1 Not at all welcoming
How welcoming have you found Youngstown State to be?					

17. Instructions: When you respond to the questions below, think about yourself as a student at Youngstown State * University. On a scale of 1-5 please rate your experiences.

Mark only one oval per row.

	5 A tremendous amount of respect	4 Quite a bit of respect	3 Some respect	2 A little bit of respect	1 No respect at all
How much respect do other students at Youngstown State University show toward you?					
How much respect do members of staff at Youngstown State University show toward you?					

18. Instructions: When you respond to the questions below, think about yourself as a student at Youngstown State * University. On a scale of 1-5 please rate your experiences.

Mark only one oval per row.

	5 Matter a tremendeous amount	4 Matter quite a bit	3 Matter somewhat	2 Matter a little bit	1 Do not matter at all
How much do you matter to others at Youngstown State University?					

19. Instructions: When you respond to the questions below, think about yourself as a student at Youngstown State * University. On a scale of 1-5 please rate your experiences.

Mark only one oval per row.

	5 Extremely happy	4 Quite happy	3 Somewhat happy	2 Slightly happy	1 Not happy at all
How happy are you with your choice to be a student at Youngstown State University?					

Appendix B

Post-Survey Control Group

1. **Research Consent Form** *

Dear Participant:

Hello, my name is Dalton Campana, and I am pursuing a Doctor of Education at Youngstown State University. I am a researcher at Youngstown State University, and I am interested in examining the impact of an equine education program on students at YSU. This research aims to provide vital information on whether to implement this equine program for future students. I invite you to participate in a 4-week, once-a-week (1.5-hour session) study and education program at the Withers Farm in Salem, Ohio, beginning in April. You will receive free horse education lessons with three horses and do weekly groundwork activities. However, there is a possibility of being signed into a control group. All participants must be 18 years or older. I am asking intervention and control participants to complete online surveys and data recording through a secure password-protected website called Google Forms. There will be two surveys at two points during the 2024 academic year (before and after the program), socio-demographic data collection, and one qualitative survey (for the intervention group). Additionally, a second post-survey follow-up will be emailed to the intervention group six weeks after the program ends (mid-June). The pre and post-surveys will take around ten minutes, and a twenty-minute qualitative study will follow the program, all of which will be sent through a secure Google Forms survey email. You will also be asked to provide an email for future contact. After all participants complete the initial pre-surveys, I will contact the intervention group to establish the first session and ensure attendance. I will also contact and send the post-survey distribution for the intervention and control groups by the end of April. Emails will be safely stored in a password-protected Google Forms survey for access to schedule program dates and survey distribution effectively and will not be used to identify the participants when collecting and analyzing data; only pseudonyms will be used as identifiers for strict confidentiality purposes. All data will be safely stored on password-protected platforms for confidentiality purposes. The researcher will destroy all study data after three years. All intervention participants must complete a liability form at the Withers Farm before the first week of activity, which will take five to ten minutes to complete. This is due to the possible risk of working with large animals and the potential for experiencing physical or mental harm. However, the likelihood of being harmed is minimized because I am an experienced horse handler and trainer, and two other horse professionals will be there to supervise. Your responses will remain confidential, and if, for any reason, you do not want to participate in this study or choose to withdraw from the study at any time, you have the right

to do so. Remember that answers are confidential; you will create and provide the same pseudo-name for every survey and questionnaire. You can decide not to answer questions. Other than working with horses and getting free education lessons, there are no direct benefits to participating in this study. If you have any questions about this research, contact Dr. Karen Larwin (khlarwin@ysu.edu ; 330-941-2231). If you have questions about your rights as a participant in a research project, you may contact the Office Research Services at YSU (330-941-2377) or at YSUIRB@ysu.edu

Please select yes below if you understand this letter and want to participate in this study. If yes, please continue to create a pseudonym with the last four digits of your phone number followed by your street name and complete the surveys. This will be used to protect your identity and confidentiality.

Mark only one oval.

- ◯ yes
- ◯ no

2. Please write the same prior pseudonym (last four digits of your phone number and street name: example: 7706harvey) *

3. Instructions: Please respond to each item by marking one box per row, regarding how you felt in the last two weeks *

Mark only one oval per row.

	0 At no time	1 Some of the time	2 Less than half of the time	3 More than half of the time	4 Most of the time	5 All the time
I have felt cheerful in good spirits						
I have felt calm and relaxed						
I have felt active and vigorous						
I woke up feeling fresh and rested						

My daily life has been filled with things that interest me						

4. Instructions: Please rate each statement using the following 1-7 scale *

Mark only one oval per row.

	1 Strongly disagree	2 Disagree	3 Diasgree somewhat	4 agree or disagree	5 Agree somewhat	6 Agree	7 Agree strongly
If I can't understand my university/college work at first, I keep going over it until I do							
I feel very pleased with myself when I really understand what I'm taught at university/college							
When I study, I usually study in places where I can concentrate							
I'm able to use some of the things I learn at university/college in other parts of my life							

5. Instructions: Below is a collection of statements about your everyday experience. Using the 1-6 scale below, please indicate how frequently or infrequently you currently have each experience. Please answer accordingly to what really reflects your experience rather than what you think your experience should be. Please answer each item separately from other item *

Mark only one oval per row.

	6 Almost never	5 Very infrequently	4 Somewhat infrequently	3 Somewhat frequently	2 Very frequently	1 Always
I could be experiencing some emotion and not be conscious of it until sometime later						
I break or spill things because of carelessness, not paying attention, or thinking of something else						
I find it difficult to stay focused on what's happening in the present						
I tend to walk quickly to get where I'm going without paying attention to what I experience along the way						
I tend to not notice feelings of physical tension or discomfort until they really grab my attention						
I forget a person's name almost as soon as I've been told it for the first time						
It seems I am "running on automatic" without much awareness of what I am doing						

17 6/29/2024, 10:02
Survey Control Group https://docs.google.com/forms/d/1Q0NScb7GLXEqQmvmCRGhVn_mnJJ7_h1jrQPRr92hsa

I rush through activities without being really attentive to them						
I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there						
I do jobs or tasks automatically, without being aware of what I'm doing						
I find myself listening to someone with one ear,						

while doing somewhat else at the same time						
I drive places on "automatic pilot" and then wonder why I went there						
I find myself preoccupied with the future or the past						
I find myself doing things without paying attention						
I snack without being aware I'm eating						

6. Instructions: When you respond to the questions below, think about yourself as a student at Youngstown State University. On a scale of 1-5 please rate your experiences. *

Mark only one oval per row.

	5 Completely understand	4 Understand quite a bit	3 Understand somewhat	2 Understand a little	1 Do not understand at all
How well do people at Youngstown State University understand you as a person?					

7. Instructions: When you respond to the questions below, think about yourself as a student at Youngstown State University. On a scale of 1-5 please rate your experiences. *

Mark only one oval per row.

	5 Extremely connected	4 Quite connected	3 Somewhat connected	2 Slightly connected	1 Not at all connected
How connected do you feel to the university staff at Youngstown State University?					

8. Instructions: When you respond to the questions below, think about yourself as a student at Youngstown State University. On a scale of 1-5 please rate your experiences. *

Mark only one oval per row.

	5 Extremely welcoming	4 Quite welcoming	3 Somewhat welcoming	2 Slightly welcoming	1 Not at all welcoming
How welcoming have you found Youngstown State to be?					

9. Instructions: When you respond to the questions below, think about yourself as a student at Youngstown State University. On a scale of 1-5 please rate your experiences. *

Mark only one oval per row.

	5 A tremendous amount of respect	4 Quite a bit of respect	3 Some respect	2 A little bit of respect	1 No respect at all
How much respect do other students at Youngstown State University show toward you?					
How much respect do members of staff at Youngstown State University show toward you?					

10. Instructions: When you respond to the questions below, think about yourself as a student at Youngstown State University. On a scale of 1-5 please rate your experiences. *

Mark only one oval per row.

	5 Matter a tremendeous amount	4 Matter quite a bit	3 Matter somewhat	2 Matter a little bit	1 Do not matter at all
How much do you matter to others at Youngstown State University?					

11. Instructions: When you respond to the questions below, think about yourself as a student at Youngstown State University. On a scale of 1-5 please rate your experiences. *

Mark only one oval per row.

	5 Extremely happy	4 Quite happy	3 Somewhat happy	2 Slightly happy	1 Not happy at all
How happy are you with your choice to be a student at Youngstown State University?					

Appendix C

Post-Survey Intervention Group

1. **Research Consent Form** *

Dear Participant:

Hello, my name is Dalton Campana, and I am pursuing a Doctor of Education at Youngstown State University. I am a researcher at Youngstown State University, and I am interested in examining the impact of an equine education program on students at YSU. This research aims to provide vital information on whether to implement this equine program for future students. I invite you to participate in a 4-week, once-a-week (1.5-hour session) study and education program at the Withers Farm in Salem, Ohio, beginning in April. You will receive free horse education lessons with three horses and do weekly groundwork activities. However, there is a possibility of being signed into a control group. All participants must be 18 years or older. I am asking intervention and control participants to complete online surveys and data recording through a secure password-protected website called Google Forms. There will be two surveys at two points during the 2024 academic year (before and after the program), socio-demographic data collection, and one qualitative survey (for the intervention group). Additionally, a second post-survey follow-up will be emailed to the intervention group six weeks after the program ends (mid-June). The pre and post-surveys will take around ten minutes, and a twenty-minute qualitative study will follow the program, all of which will be sent through a secure Google Forms survey email. You will also be asked to provide an email for future contact. After all participants complete the initial pre-surveys, I will contact the intervention group to establish the first session and ensure attendance. I will also contact and send the post-survey distribution for the intervention and control groups by the end of April. Emails will be safely stored in a password-protected Google Forms survey for access to schedule program dates and survey distribution effectively and will not be used to identify the participants when collecting and analyzing data; only pseudonyms will be used as identifiers for strict confidentiality purposes. All data will be safely stored on password-protected platforms for confidentiality purposes. The researcher will destroy all study data after three years. All intervention participants must complete a liability form at the Withers Farm before the first week of activity, which will take five to ten minutes to complete. This is due to the possible risk of working with large animals and the potential for experiencing physical or mental harm. However, the likelihood of being harmed is minimized because I am an experienced horse handler and trainer, and two other horse professionals will be there to supervise. Your responses will remain confidential, and if, for any reason, you do not want to participate in this study or choose to withdraw from the study at any time, you have the right

to do so. Remember that answers are confidential; you will create and provide the same pseudo-name for every survey and questionnaire. You can decide not to answer questions. Other than working with horses and getting free education lessons, there are no direct benefits to participating in this study. If you have any questions about this research, contact Dr. Karen Larwin (khlarwin@ysu.edu ; 330-941-2231). If you have questions about your rights as a participant in a research project, you may contact the Office Research Services at YSU (330-941-2377) or at YSUIRB@ysu.edu

Please select yes below if you understand this letter and want to participate in this study. If yes, please continue to create a pseudonym with the last four digits of your phone number followed by your street name and complete the surveys. This will be used to protect your identity and confidentiality.

Mark only one oval.

- ◯ yes
- ◯ no

2. Please write the same prior pseudonym (last four digits of your phone number and street name: example: 7706harvey) *

_____

3. Instructions: Please respond to each item by marking one box per row, regarding how you felt in the last two weeks *

Mark only one oval per row.

	0 At no time	1 Some of the time	2 Less than half of the time	3 More than half of the time	4 Most of the time	5 All the time
I have felt cheerful in good spirits						
I have felt calm and relaxed						
I have felt active and vigorous						
I woke up feeling fresh and rested						

My daily life has been filled with things that interest me						

4. Instructions: Please rate each statement using the following 1-7 scale *

Mark only one oval per row.

	1 Strongly disagree	2 Disagree	3 Diasgree somewhat	4 agree or disagree	5 Agree somewhat	6 Agree	7 Agree strongly
If I can't understand my university/college work at first, I keep going over it until I do							
I feel very pleased with myself when I really understand what I'm taught at university/college							
When I study, I usually study in places where I can concentrate							
I'm able to use some of the things I learn at university/college in other parts of my life							

5. Instructions: Below is a collection of statements about your everyday experience. Using the 1-6 scale below, please indicate how frequently or infrequently you currently have each experience. Please answer accordingly to what really reflects your experience rather than what you think your experience should be. Please answer each item separately from other item *

Mark only one oval per row.

	6 Almost never	5 Very infrequently	4 Somewhat infrequently	3 Somewhat frequently	2 Very frequently	1 Always
I could be experiencing some emotion and not be conscious of it until sometime later						
I break or spill things because of carelessness, not paying attention, or thinking of something else						
I find it difficult to stay focused on what's happening in the present						
I tend to walk quickly to get where I'm going without paying attention to what I experience along the way						
I tend to not notice feelings of physical tension or discomfort until they really grab my attention						
I forget a person's name almost as soon as I've been told it for the first time						
It seems I am "running on automatic" without much awareness of what I am doing						

I rush through activities without being really attentive to them						
I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there						
I do jobs or tasks automatically, without being aware of what I'm doing						
I find myself listening to someone with one ear,						

while doing somewhat else at the same time						
I drive places on "automatic pilot" and then wonder why I went there						
I find myself preoccupied with the future or the past						
I find myself doing things without paying attention						
I snack without being aware I'm eating						

6. Instructions: When you respond to the questions below, think about yourself as a student at Youngstown State University. On a scale of 1-5 please rate your experiences. *

Mark only one oval per row.

	5 Completely understand	4 Understand quite a bit	3 Understand somewhat	2 Understand a little	1 Do not understand at all
How well do people at Youngstown State University understand you as a person?					

7. Instructions: When you respond to the questions below, think about yourself as a student at Youngstown State University. On a scale of 1-5 please rate your experiences. *

Mark only one oval per row.

	5 Extremely connected	4 Quite connected	3 Somewhat connected	2 Slightly connected	1 Not at all connected
How connected do you feel to the university staff at Youngstown State University?					

8. Instructions: When you respond to the questions below, think about yourself as a student at Youngstown State University. On a scale of 1-5 please rate your experiences. *

Mark only one oval per row.

	5 Extremely welcoming	4 Quite welcoming	3 Somewhat welcoming	2 Slightly welcoming	1 Not at all welcoming
How welcoming have you found Youngstown State to be?					

9. Instructions: When you respond to the questions below, think about yourself as a student at Youngstown State University. On a scale of 1-5 please rate your experiences. *

Mark only one oval per row.

	5 A tremendous amount of respect	4 Quite a bit of respect	3 Some respect	2 A little bit of respect	1 No respect at all
How much respect do other students at Youngstown State University show toward you?					
How much respect do members of staff at Youngstown State University show toward you?					

10. Instructions: When you respond to the questions below, think about yourself as a student at Youngstown State University. On a scale of 1-5 please rate your experiences. *

Mark only one oval per row.

	5 Matter a tremendeous amount	4 Matter quite a bit	3 Matter somewhat	2 Matter a little bit	1 Do not matter at all
How much do you matter to others at Youngstown State University?					

11. Instructions: When you respond to the questions below, think about yourself as a student at Youngstown State University. On a scale of 1-5 please rate your experiences. *

Mark only one oval per row.

	5 Extremely happy	4 Quite happy	3 Somewhat happy	2 Slightly happy	1 Not happy at all
How happy are you with your choice to be a student at Youngstown State University?					

12. How were you feeling before, during and after the equine program? *

13. How would you describe your engagement during the learning activity, and with others participating? *

14. What impacts has your activity had on your awareness? How so? *

15. Do you thinking participating in these four sessions has affected your overall sense of well-being? *

16. Would you recommend this program to other students on campus as an elective course? If so, why? *

17. What was your favorite activity during the program? *

18. What was your least favorite activity during the program? *

19. What suggestions can be improved from the program? *

Appendix D

2nd Post-Intervention Group Survey

1. **Research Consent Form** *

Dear Participant:

Hello, my name is Dalton Campana, and I am pursuing a Doctor of Education at Youngstown State University. I am a researcher at Youngstown State University, and I am interested in examining the impact of an equine education program on students at YSU. This research aims to provide vital information on whether to implement this equine program for future students. I invite you to participate in a 4-week, once-a-week (1.5-hour session) study and education program at the Withers Farm in Salem, Ohio, beginning in April. You will receive free horse education lessons with three horses and do weekly groundwork activities. However, there is a possibility of being signed into a control group. All participants must be 18 years or older. I am asking intervention and control participants to complete online surveys and data recording through a secure password-protected website called Google Forms. There will be two surveys at two points during the 2024 academic year (before and after the program), socio-demographic data collection, and one qualitative survey (for the intervention group). Additionally, a second post-survey follow-up will be emailed to the intervention group six weeks after the program ends (mid-June). The pre and post-surveys will take around ten minutes, and a twenty-minute qualitative study will follow the program, all of which will be sent through a secure Google Forms survey email. You will also be asked to provide an email for future contact. After all participants complete the initial pre-surveys, I will contact the intervention group to establish the first session and ensure attendance. I will also contact and send the post-survey distribution for the intervention and control groups by the end of April. Emails will be safely stored in a password-protected Google Forms survey for access to schedule program dates and survey distribution effectively and will not be used to identify the participants when collecting and analyzing data; only pseudonyms will be used as identifiers for strict confidentiality purposes. All data will be safely stored on password-protected platforms for confidentiality purposes. The researcher will destroy all study data after three years. All intervention participants must complete a liability form at the Withers Farm before the first week of activity, which will take five to ten minutes to complete. This is due to the possible risk of working with large animals and the potential for experiencing physical or mental harm. However, the likelihood of being harmed is minimized because I am an experienced horse handler and trainer, and two other horse professionals will be there to supervise. Your responses will remain confidential, and if, for any reason, you do not want to participate in this study or choose to withdraw from the study at any time, you have the right

to do so. Remember that answers are confidential; you will create and provide the same pseudo-name for every survey and questionnaire. You can decide not to answer questions. Other than working with horses and getting free education lessons, there are no direct benefits to participating in this study. If you have any questions about this research, contact Dr. Karen Larwin (khlarwin@ysu.edu ; 330-941-2231). If you have questions about your rights as a participant in a research project, you may contact the Office Research Services at YSU (330-941-2377) or at YSUIRB@ysu.edu

Please select yes below if you understand this letter and want to participate in this study. If yes, please continue to create a pseudonym with the last four digits of your phone number followed by your street name and complete the surveys. This will be used to protect your identity and confidentiality.

Mark only one oval.

- ◯ yes
- ◯ no

2. Please write the same prior pseudonym (last four digits of your phone number and street name: example: 7706harvey) *

3. Instructions: Please respond to each item by marking one box per row, regarding how you felt in the last two weeks *

Mark only one oval per row.

	0 At no time	1 Some of the time	2 Less than half of the time	3 More than half of the time	4 Most of the time	5 All the time
I have felt cheerful in good spirits						
I have felt calm and relaxed						
I have felt active and vigorous						
I woke up feeling fresh and rested						

My daily life has been filled with things that interest me						

4. Instructions: Please rate each statement using the following 1-7 scale *

Mark only one oval per row.

	1 Strongly disagree	2 Disagree	3 Diasgree somewhat	4 agree or disagree	5 Agree somewhat	6 Agree	7 Agree strongly
If I can't understand my university/college work at first, I keep going over it until I do							
I feel very pleased with myself when I really understand what I'm taught at university/college							
When I study, I usually study in places where I can concentrate							
I'm able to use some of the things I learn at university/college in other parts of my life							

5. Instructions: Below is a collection of statements about your everyday experience. Using the 1-6 scale below, please indicate how frequently or infrequently you currently have each experience. Please answer accordingly to what really reflects your experience rather than what you think your experience should be. Please answer each item separately from other item *

Mark only one oval per row.

	6 Almost never	5 Very infrequently	4 Somewhat infrequently	3 Somewhat frequently	2 Very frequently	1 Always
I could be experiencing some emotion and not be conscious of it until sometime later						
I break or spill things because of carelessness, not paying attention, or thinking of something else						
I find it difficult to stay focused on what's happening in the present						
I tend to walk quickly to get where I'm going without paying attention to what I experience along the way						
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I forget a person's name almost as soon as I've been told it for the first time						
It seems I am "running on automatic" without much awareness of what I am doing						

7 6/29/2024, 10:02
Survey Control Group https://docs.google.com/forms/d/1Q0NScb7GLXEqQmvmCRGhVn_mnJJ7_h1jrQPRr92hsa

I rush through activities without being really attentive to them						
I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there						
I do jobs or tasks automatically, without being aware of what I'm doing						
I find myself listening to someone with one ear,						

while doing somewhat else at the same time						
I drive places on "automatic pilot" and then wonder why I went there						
I find myself preoccupied with the future or the past						
I find myself doing things without paying attention						
I snack without being aware I'm eating						

6. Instructions: When you respond to the questions below, think about yourself as a student at Youngstown State University. On a scale of 1-5 please rate your experiences. *

Mark only one oval per row.

	5 Completely understand	4 Understand quite a bit	3 Understand somewhat	2 Understand a little	1 Do not understand at all
How well do people at Youngstown State University understand you as a person?					

7. Instructions: When you respond to the questions below, think about yourself as a student at Youngstown State University. On a scale of 1-5 please rate your experiences. *

Mark only one oval per row.

	5 Extremely connected	4 Quite connected	3 Somewhat connected	2 Slightly connected	1 Not at all connected
How connected do you feel to the university staff at Youngstown State University?					

8. Instructions: When you respond to the questions below, think about yourself as a student at Youngstown State University. On a scale of 1-5 please rate your experiences. *

Mark only one oval per row.

	5 Extremely welcoming	4 Quite welcoming	3 Somewhat welcoming	2 Slightly welcoming	1 Not at all welcoming
How welcoming have you found Youngstown State to be?					

9. Instructions: When you respond to the questions below, think about yourself as a student at Youngstown State University. On a scale of 1-5 please rate your experiences. *

Mark only one oval per row.

	5 A tremendous amount of respect	4 Quite a bit of respect	3 Some respect	2 A little bit of respect	1 No respect at all
How much respect do other students at Youngstown State University show toward you?					
How much respect do members of staff at Youngstown State University show toward you?					

10. Instructions: When you respond to the questions below, think about yourself as a student at Youngstown State University. On a scale of 1-5 please rate your experiences. *

Mark only one oval per row.

	5 Matter a tremendeous amount	4 Matter quite a bit	3 Matter somewhat	2 Matter a little bit	1 Do not matter at all
How much do you matter to others at Youngstown State University?					

11. Instructions: When you respond to the questions below, think about yourself as a student at Youngstown State University. On a scale of 1-5 please rate your experiences. *

Mark only one oval per row.

	5 Extremely happy	4 Quite happy	3 Somewhat happy	2 Slightly happy	1 Not happy at all
How happy are you with your choice to be a student at Youngstown State University?					

Appendix E

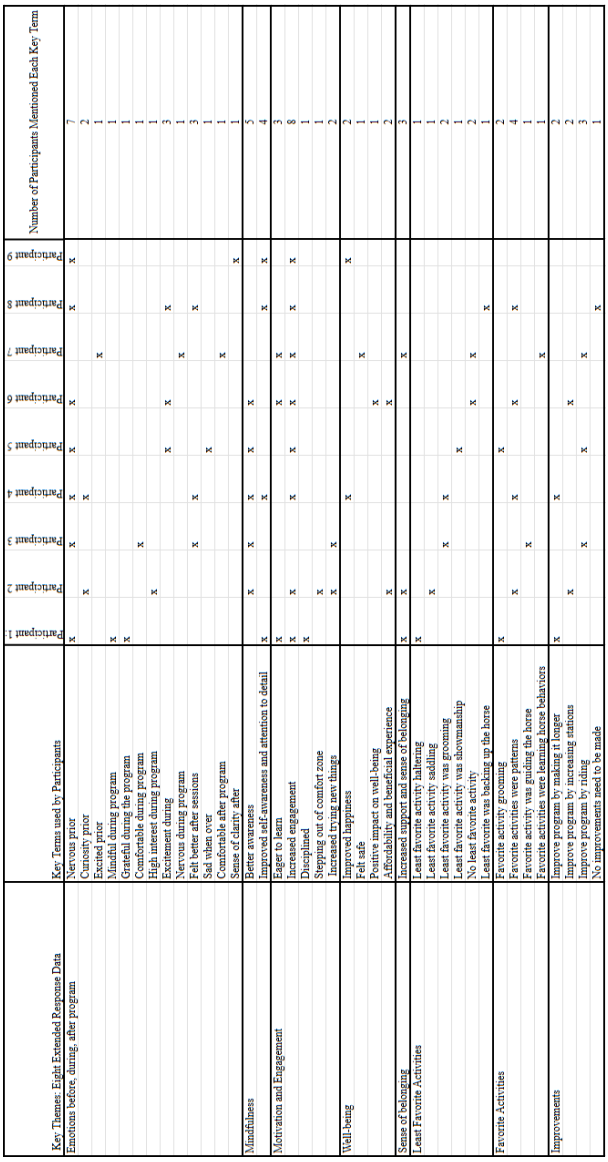
Weeks 1-4 Field Note Data

Data Log: Week 1-4

Participant	Verbal Cues with the horse (low, medium, high)	Nonverbal cue with the horse (low, medium, high).	Pre- Demeanor (Solemn, normal, active)	Post Demeanor (Solemn, normal, active)
Participant 1				
Participant 2				
Participant 3				
Participant 4				
Participant 5				
Participant 6				
Participant 7				
Participant 8				
Participant 9				
Participant 10				

Appendix F

Thematic Coding Figure



Key Themes: Eight Extended Response Data	Key Terms used by Participants	Participant 1	Participant 2	Participant 3	Participant 4	Participant 5	Participant 6	Participant 7	Participant 8	Participant 9	Number of Participants Mentioned Each Key Term
Emotions before, during, after program	Nervous prior	x		x	x	x	x		x	x	7
	Curiosity prior		x		x						2
	Excited prior							x			1
	Mindful during program	x									1
	Grateful during the program	x									1
	Comfortable during program			x							1
	High interest during program		x								1
	Excitement during					x	x		x		3
	Nervous during program							x			1
	Felt better after sessions			x	x			x	x		3
	Sad when over					x					1
	Comfortable after program							x			1
	Sense of clarity after									x	1
Mindfulness	Better awareness		x	x	x	x	x				5
	Improved self-awareness and attention to detail	x			x				x	x	4
Motivation and Engagement	Eager to learn	x					x	x			3
	Increased engagement	x	x		x	x	x	x	x	x	8
	Disciplined	x									1
	Stepping out of comfort zone		x								1
	Increased trying new things		x	x							2
Well-being	Improved happiness				x						2
	Felt safe							x		x	1
	Positive impact on well-being						x				1
	Affordability and beneficial experience		x				x				2
Sense of belonging	Increased support and sense of belonging	x	x					x			3
Least Favorite Activities	Least favorite activity haltering	x									1
	Least favorite activity saddling		x								1
	Least favorite activity was grooming			x	x						2
	Least favorite activity was showmanship					x					1
	No least favorite activity						x	x			2
	Least favorite was backing up the horse								x		1
Favorite Activities	Favorite activity grooming	x				x					2
	Favorite activities were patterns		x		x		x		x		4
	Favorite activity was guiding the horse			x							1
	Favorite activities were learning horse behaviors							x			1
Improvements	Improve program by making it longer	x			x						2
	Improve program by increasing stations		x				x				2
	Improve program by riding			x		x		x			3
	No improvements need to be made								x		1

Appendix G

Results

Total Group Frequencies

Age

	N	%
18	2	5.0%
19	5	12.5%
20	11	27.5%
21	7	17.5%
22	7	17.5%
23	3	7.5%
24	3	7.5%
30	1	2.5%
39	1	2.5%

Gender

	N	%
Female	30	75.0%
Male	10	25.0%

Undergraduate

	N	%
Graduate	6	15.0%
Undergraduate	34	85.0%

Field experiences with horses (beginner, intermediate, advanced)

	N	%
Advanced	2	5.0%
Beginner	33	82.5%
Intermediate	5	12.5%

School credit hours

	N	%
Full-time	36	90.0%

NA	1	2.5%
Part-time	3	7.5%

Work hours

	N	%
Full-time	3	7.5%
N/A	10	25.0%
Part-Time	27	67.5%

Control Group Frequencies

Age

	N	%
18	2	6.7%
19	4	13.3%
20	9	30.0%
21	5	16.7%
22	4	13.3%
23	3	10.0%
24	2	6.7%
30	1	3.3%

Gender

	N	%
Female	22	73.3%
Male	8	26.7%

Undergraduate

	N	%
Graduate	4	13.3%
Undergraduate	26	86.7%

Field experiences with horses

	N	%
Advanced	1	3.3%
Beginner	25	83.3%
Intermediate	4	13.3%

School credit hours

	N	%
Full-time	28	93.3%
NA	1	3.3%
Part-time	1	3.3%

Work hours

	N	%
Full-time	2	6.7%
N/A	10	33.3%
Part-Time	18	60.0%

Treatment Group Frequencies

Age

	N	%
19	1	10.0%
20	2	20.0%
21	2	20.0%
22	3	30.0%
24	1	10.0%
39	1	10.0%

Gender

	N	%
Female	8	80.0%
Male	2	20.0%

Undergraduate

	N	%
Graduate	2	20.0%
Undergraduate	8	80.0%

Field experiences with horses

	N	%
Advanced	1	10.0%
Beginner	8	80.0%
Intermediate	1	10.0%

School credit hours

	N	%
Full-time	8	80.0%
Part-time	2	20.0%

Work hours

	N	%
Full-time	1	10.0%
Part-Time	9	90.0%

Total Group Descriptive Statistics

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
WHO-5	40	0	25	15.13	4.525	-.656	.374	2.078	.733
Sense of Belonging2	32	14	35	25.38	4.577	-.508	.414	.229	.809
Motivation and Engagement	40	12	28	24.05	2.987	-1.917	.374	6.222	.733

MAAS	40	37	90	59.33	14.119	.292	.374	-.479	.733
Sense of Belonging	40	18	35	25.42	4.156	.404	.374	-.223	.733
WHO-5 2	32	3	24	16.00	4.508	-1.363	.414	2.818	.809
Motivation and Engagement 2	32	16	28	23.72	2.643	-.715	.414	1.550	.809
MAAS2	32	32	88	57.00	14.122	.407	.414	-.393	.809
Valid N (listwise)	32								

Correlations

		WHO-5	Motivation and Engagement	MAAS	Sense of Belonging
WHO-5	Pearson Correlation	1	.141	.132	.353**
	Sig. (2-tailed)		.237	.270	.002
	N	72	72	72	72
Motivation and Engagement	Pearson Correlation	.141	1	-.067	.289*
	Sig. (2-tailed)	.237		.578	.014
	N	72	72	72	72
MAAS	Pearson Correlation	.132	-.067	1	.278*
	Sig. (2-tailed)	.270	.578		.018
	N	72	72	72	72
Sense of Belonging	Pearson Correlation	.353**	.289*	.278*	1
	Sig. (2-tailed)	.002	.014	.018	
	N	72	72	72	72

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

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

Descriptive Statistics

	Group	Mean	Std. Deviation	N
MAAS	1	54.60	16.372	10
	2	57.55	10.248	22
	Total	56.63	12.284	32
MAAS2	1	62.00	18.062	10
	2	54.73	11.716	22
	Total	57.00	14.122	32

Box's Test of Equality of Covariance Matrices[a]

Box's M	7.794
F	2.361
df1	3
df2	6253.737
Sig.	.069

Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.

a. Design: Intercept + Group
Within Subjects Design: Prepost

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.
Prepost	Pillai's Trace	.038	1.172[b]	1.000	30.000	.288
	Wilks' Lambda	.962	1.172[b]	1.000	30.000	.288
	Hotelling's Trace	.039	1.172[b]	1.000	30.000	.288

	Roy's Largest Root	.039	1.172[b]	1.000	30.000	.288
Prepost * Group	Pillai's Trace	.163	5.827[b]	1.000	30.000	.022
	Wilks' Lambda	.837	5.827[b]	1.000	30.000	.022
	Hotelling's Trace	.194	5.827[b]	1.000	30.000	.022
	Roy's Largest Root	.194	5.827[b]	1.000	30.000	.022

a. Design: Intercept + Group
Within Subjects Design: Prepost
b. Exact statistic

Tests of Within-Subjects Effects
Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Prepost	Sphericity Assumed	72.164	1	72.164	1.172	.288
	Greenhouse-Geisser	72.164	1.000	72.164	1.172	.288
	Huynh-Feldt	72.164	1.000	72.164	1.172	.288
	Lower-bound	72.164	1.000	72.164	1.172	.288
Prepost * Group	Sphericity Assumed	358.914	1	358.914	5.827	.022
	Greenhouse-Geisser	358.914	1.000	358.914	5.827	.022
	Huynh-Feldt	358.914	1.000	358.914	5.827	.022
	Lower-bound	358.914	1.000	358.914	5.827	.022
Error(Prepost)	Sphericity Assumed	1847.836	30	61.595		
	Greenhouse-Geisser	1847.836	30.000	61.595		
	Huynh-Feldt	1847.836	30.000	61.595		
	Lower-bound	1847.836	30.000	61.595		

Tests of Within-Subjects Contrasts
Measure: MEASURE_1

Source	Prepost	Type III Sum of Squares	df	Mean Square	F	Sig.
Prepost	Linear	72.164	1	72.164	1.172	.288
Prepost * Group	Linear	358.914	1	358.914	5.827	.022
Error(Prepost)	Linear	1847.836	30	61.595		

Levene's Test of Equality of Error Variances[a]

		Levene Statistic	df1	df2	Sig.
MAAS	Based on Mean	3.671	1	30	.065
	Based on Median	1.974	1	30	.170
	Based on Median and with adjusted df	1.974	1	18.374	.177
	Based on trimmed mean	3.204	1	30	.084
MAAS2	Based on Mean	4.555	1	30	.041
	Based on Median	2.236	1	30	.145
	Based on Median and with adjusted df	2.236	1	22.806	.149
	Based on trimmed mean	4.304	1	30	.047

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Group
Within Subjects Design: Prepost

Descriptive Statistics

	Group	Mean	Std. Deviation	N
Motivation and Engagement	1	24.00	3.018	10
	2	24.27	2.074	22
	Total	24.19	2.361	32
Motivation and Engagement2	1	24.40	2.011	10
	2	23.41	2.873	22
	Total	23.72	2.643	32

Box's Test of Equality of Covariance Matrices[a]

Box's M	7.079
F	2.145
df1	3
df2	6253.737
Sig.	.092

Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.

a. Design: Intercept + Group
Within Subjects Design: Prepost

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.
Prepost	Pillai's Trace	.004	.118[b]	1.000	30.000	.734
	Wilks' Lambda	.996	.118[b]	1.000	30.000	.734
	Hotelling's Trace	.004	.118[b]	1.000	30.000	.734
	Roy's Largest Root	.004	.118[b]	1.000	30.000	.734
Prepost * Group	Pillai's Trace	.028	.874[b]	1.000	30.000	.357
	Wilks' Lambda	.972	.874[b]	1.000	30.000	.357
	Hotelling's Trace	.029	.874[b]	1.000	30.000	.357
	Roy's Largest Root	.029	.874[b]	1.000	30.000	.357

a. Design: Intercept + Group
Within Subjects Design: Prepost

b. Exact statistic

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Prepost	Sphericity Assumed	.739	1	.739	.118	.734
	Greenhouse-Geisser	.739	1.000	.739	.118	.734
	Huynh-Feldt	.739	1.000	.739	.118	.734
	Lower-bound	.739	1.000	.739	.118	.734
Prepost * Group	Sphericity Assumed	5.489	1	5.489	.874	.357
	Greenhouse-Geisser	5.489	1.000	5.489	.874	.357
	Huynh-Feldt	5.489	1.000	5.489	.874	.357
	Lower-bound	5.489	1.000	5.489	.874	.357
Error(Prepost)	Sphericity Assumed	188.495	30	6.283		
	Greenhouse-Geisser	188.495	30.000	6.283		
	Huynh-Feldt	188.495	30.000	6.283		
	Lower-bound	188.495	30.000	6.283		

Tests of Within-Subjects Contrasts

Measure: MEASURE_1

Source	Prepost	Type III Sum of Squares	df	Mean Square	F	Sig.
Prepost	Linear	.739	1	.739	.118	.734
Prepost * Group	Linear	5.489	1	5.489	.874	.357
Error(Prepost)	Linear	188.495	30	6.283		

Levene's Test of Equality of Error Variances[a]

	Levene Statistic	df1	df2	Sig.
Based on Mean	1.281	1	30	.267

Motivation and Engagement	Based on Median	.630	1	30	.434
	Based on Median and with adjusted df	.630	1	23.813	.435
	Based on trimmed mean	1.112	1	30	.300
Motivation and Engagement2	Based on Mean	.590	1	30	.449
	Based on Median	.410	1	30	.527
	Based on Median and with adjusted df	.410	1	25.566	.528
	Based on trimmed mean	.548	1	30	.465

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Group
Within Subjects Design: Prepost

Descriptive Statistics

	Group	Mean	Std. Deviation	N
WHO-5	1	15.60	3.340	10
	2	15.32	3.734	22
	Total	15.41	3.564	32
WHO-5 2	1	18.20	2.860	10
	2	15.00	4.811	22
	Total	16.00	4.508	32

Box's Test of Equality of Covariance Matrices[a]

Box's M	3.517
F	1.065
df1	3
df2	6253.737
Sig.	.362

Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.
a. Design: Intercept + Group
Within Subjects Design: Prepost

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.
Prepost	Pillai's Trace	.079	2.574[b]	1.000	30.000	.119
	Wilks' Lambda	.921	2.574[b]	1.000	30.000	.119
	Hotelling's Trace	.086	2.574[b]	1.000	30.000	.119
	Roy's Largest Root	.086	2.574[b]	1.000	30.000	.119
Prepost * Group	Pillai's Trace	.123	4.210[b]	1.000	30.000	.049
	Wilks' Lambda	.877	4.210[b]	1.000	30.000	.049
	Hotelling's Trace	.140	4.210[b]	1.000	30.000	.049
	Roy's Largest Root	.140	4.210[b]	1.000	30.000	.049

a. Design: Intercept + Group
Within Subjects Design: Prepost
b. Exact statistic

Tests of Within-Subjects Effects
Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Prepost	Sphericity Assumed	17.898	1	17.898	2.574	.119
	Greenhouse-Geisser	17.898	1.000	17.898	2.574	.119
	Huynh-Feldt	17.898	1.000	17.898	2.574	.119

	Lower-bound	17.898	1.000	17.898	2.574	.119
Prepost * Group	Sphericity Assumed	29.273	1	29.273	4.210	.049
	Greenhouse-Geisser	29.273	1.000	29.273	4.210	.049
	Huynh-Feldt	29.273	1.000	29.273	4.210	.049
	Lower-bound	29.273	1.000	29.273	4.210	.049
Error(Prepost)	Sphericity Assumed	208.586	30	6.953		
	Greenhouse-Geisser	208.586	30.000	6.953		
	Huynh-Feldt	208.586	30.000	6.953		
	Lower-bound	208.586	30.000	6.953		

Tests of Within-Subjects Contrasts

Measure: MEASURE_1

Source	Prepost	Type III Sum of Squares	df	Mean Square	F	Sig.
Prepost	Linear	17.898	1	17.898	2.574	.119
Prepost * Group	Linear	29.273	1	29.273	4.210	.049
Error(Prepost)	Linear	208.586	30	6.953		

Levene's Test of Equality of Error Variances[a]

		Levene Statistic	df1	df2	Sig.
WHO-5	Based on Mean	.067	1	30	.798
	Based on Median	.090	1	30	.766
	Based on Median and with adjusted df	.090	1	29.296	.766
	Based on trimmed mean	.063	1	30	.804
WHO-5 2	Based on Mean	.848	1	30	.364
	Based on Median	1.063	1	30	.311
	Based on Median and with adjusted df	1.063	1	26.998	.312
	Based on trimmed mean	.981	1	30	.330

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.
a. Design: Intercept + Group
Within Subjects Design: Prepost

Descriptive Statistics

	Group	Mean	Std. Deviation	N
Sense of Belonging	1	24.80	3.048	10
	2	25.27	3.693	22
	Total	25.12	3.462	32
Sense of Belonging2	1	26.20	3.676	10
	2	25.00	4.967	22
	Total	25.38	4.577	32

Box's Test of Equality of Covariance Matrices[a]

Box's M	1.216
F	.368
df1	3
df2	6253.737
Sig.	.776

Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.
a. Design: Intercept + Group
Within Subjects Design: Prepost

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.
Prepost	Pillai's Trace	.028	.871[b]	1.000	30.000	.358
	Wilks' Lambda	.972	.871[b]	1.000	30.000	.358
	Hotelling's Trace	.029	.871[b]	1.000	30.000	.358
	Roy's Largest Root	.029	.871[b]	1.000	30.000	.358
Prepost * Group	Pillai's Trace	.060	1.919[b]	1.000	30.000	.176
	Wilks' Lambda	.940	1.919[b]	1.000	30.000	.176
	Hotelling's Trace	.064	1.919[b]	1.000	30.000	.176
	Roy's Largest Root	.064	1.919[b]	1.000	30.000	.176

a. Design: Intercept + Group
Within Subjects Design: Prepost
b. Exact statistic

Tests of Within-Subjects Effects
Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Prepost	Sphericity Assumed	4.368	1	4.368	.871	.358
	Greenhouse-Geisser	4.368	1.000	4.368	.871	.358
	Huynh-Feldt	4.368	1.000	4.368	.871	.358
	Lower-bound	4.368	1.000	4.368	.871	.358
Prepost * Group	Sphericity Assumed	9.618	1	9.618	1.919	.176
	Greenhouse-Geisser	9.618	1.000	9.618	1.919	.176
	Huynh-Feldt	9.618	1.000	9.618	1.919	.176
	Lower-bound	9.618	1.000	9.618	1.919	.176
Error(Prepost)	Sphericity Assumed	150.382	30	5.013		
	Greenhouse-Geisser	150.382	30.000	5.013		

	Huynh-Feldt	150.382	30.000	5.013
	Lower-bound	150.382	30.000	5.013

Tests of Within-Subjects Contrasts

Measure: MEASURE_1

Source	Prepost	Type III Sum of Squares	df	Mean Square	F	Sig.
Prepost	Linear	4.368	1	4.368	.871	.358
Prepost * Group	Linear	9.618	1	9.618	1.919	.176
Error(Prepost)	Linear	150.382	30	5.013		

Levene's Test of Equality of Error Variances[a]

		Levene Statistic	df1	df2	Sig.
Sense of Belonging	Based on Mean	.654	1	30	.425
	Based on Median	.528	1	30	.473
	Based on Median and with adjusted df	.528	1	29.522	.473
	Based on trimmed mean	.619	1	30	.438
Sense of Belonging2	Based on Mean	.408	1	30	.528
	Based on Median	.386	1	30	.539
	Based on Median and with adjusted df	.386	1	27.812	.540
	Based on trimmed mean	.417	1	30	.524

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Group
Within Subjects Design: Prepost

Verbal Cues with the horse (low, medium, high)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	low	3	30.0	30.0	30.0
	medium	6	60.0	60.0	90.0
	NA	1	10.0	10.0	100.0

	Total	10	100.0	100.0	

Nonverbal cue with the horse

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	high	7	70.0	70.0	70.0
	medium	2	20.0	20.0	90.0
	NA	1	10.0	10.0	100.0
	Total	10	100.0	100.0	

Pre- Demeanor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NA	1	10.0	10.0	10.0
	normal	9	90.0	90.0	100.0
	Total	10	100.0	100.0	

Post Demeanor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	active	6	60.0	60.0	60.0
	NA	1	10.0	10.0	70.0
	normal	3	30.0	30.0	100.0
	Total	10	100.0	100.0	

Verbal Cues with the horse (low, medium, high)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	high	3	30.0	30.0	30.0
	low	6	60.0	60.0	90.0
	NA	1	10.0	10.0	100.0
	Total	10	100.0	100.0	

Nonverbal cue with the horse

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	high	8	80.0	80.0	80.0
	low	1	10.0	10.0	90.0
	NA	1	10.0	10.0	100.0
	Total	10	100.0	100.0	

Pre- Demeanor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NA	1	10.0	10.0	10.0
	normal	8	80.0	80.0	90.0
	solemn	1	10.0	10.0	100.0
	Total	10	100.0	100.0	

Post Demeanor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	active	7	70.0	70.0	70.0
	NA	1	10.0	10.0	80.0
	normal	2	20.0	20.0	100.0
	Total	10	100.0	100.0	

Verbal Cues with the horse (low, medium, high)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	high	4	40.0	40.0	40.0
	medium	4	40.0	40.0	80.0
	NA	2	20.0	20.0	100.0
	Total	10	100.0	100.0	

Nonverbal cue with the horse

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	high	8	80.0	80.0	80.0
	NA	2	20.0	20.0	100.0
	Total	10	100.0	100.0	

Pre- Demeanor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NA	2	20.0	20.0	20.0
	normal	8	80.0	80.0	100.0
	Total	10	100.0	100.0	

Post Demeanor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	active	6	60.0	60.0	60.0
	NA	2	20.0	20.0	80.0
	normal	2	20.0	20.0	100.0
	Total	10	100.0	100.0	

Verbal Cues with the horse (low, medium, high)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	high	2	20.0	20.0	20.0
	low	4	40.0	40.0	60.0
	medium	2	20.0	20.0	80.0
	NA	2	20.0	20.0	100.0
	Total	10	100.0	100.0	

Nonverbal cue with the horse

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	high	8	80.0	80.0	80.0

	NA	2	20.0	20.0	100.0
	Total	10	100.0	100.0	

Pre- Demeanor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	active	1	10.0	10.0	10.0
	NA	2	20.0	20.0	30.0
	normal	7	70.0	70.0	100.0
	Total	10	100.0	100.0	

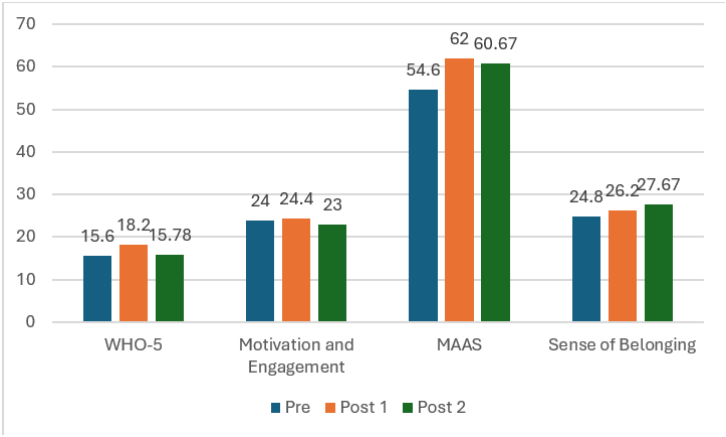
Post Demeanor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	active	7	70.0	70.0	70.0
	NA	2	20.0	20.0	90.0
	normal	1	10.0	10.0	100.0
	Total	10	100.0	100.0	

Paired Samples Test

		Paired Differences							Significance	
					95% Confidence Interval of the Difference					
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	One-Sided p	Two-Sided p
Pair 1	WHO-5 2 - WHO-5 3	2.222	5.310	1.770	-1.859	6.304	1.256	8	.122	.245

Pair 2	Motivation and Engagement 2 - Motivation and Engagement 3	1.111	6.489	2.163	-3.877	6.099	.514	8	.311	.621
Pair 3	Sense of Belonging 2 - Sense of Belonging 3	-1.111	1.537	.512	-2.292	.070	-2.169	8	.031	.062
Pair 4	MAAS 2 - MAAS 3	4.667	16.889	5.630	-8.316	17.649	.829	8	.216	.431



Appendix H

Letter of Exempt Status from the Youngstown State University Institutional Review Board

Mar 20, 2024 2:07:08 PM EDT

Karen Larwin
Teacher Ed and Leadership St

Re: Modification - 2024-89 Impacts of an Equine-Facilitated Learning Program on College Students

Dear Dr. Karen Larwin:

Youngstown State University Human Subjects Review Board has rendered the decision below for Impacts of an Equine-Facilitated Learning Program on College Students

Decision: Exempt

Any changes in your research activity should be promptly reported to the Institutional Review Board and may not be initiated without IRB approval except where necessary to eliminate hazard to human subjects. Any unanticipated problems involving risks to subjects should also be promptly reported to the IRB.

The IRB would like to extend its best wishes to you in the conduct of this study.

Sincerely,
Youngstown State University Human Subjects Review Board