

ABSTRACT

Understanding the Impact of Equine-Assisted Learning on Levels of Hope in At-Risk Adolescents

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In this study, the researcher uses an experimental design to investigate the impact of five-week intervention of group Equine-Assisted Learning (EAL) on levels of hope, self-efficacy, and depression in at-risk adolescents. A randomized, longitudinal, repeated measures method is utilized with a treatment group and a control group. Participants in the experimental group participated in a five-week equine-assisted intervention entitled Leading Adolescents to Successful School Outcomes (LASSO) in addition to receiving the regularly provided services of their school. Participants in the control group received only the regularly provided services of their school counselors. Analysis of variance was used to analyze the main effects of the treatment on measurements of hope, self-efficacy, and depression utilizing the *Adolescent Domain-Specific Hope Scale* (Frederick, 2011), the *New Generalized Self-Efficacy Scale* (Chen *et al.*, 2001), and the *Major Depression Inventory* (Bech, 1998; Bech *et al.*, 2001). Data was collected pre- and post-intervention, as well as weekly during the intervention.

Keywords: equine-assisted learning; experiential learning; adolescence; at-risk youth; self-efficacy, depression, hope theory.

Understanding the Impact of Equine-Assisted Learning
on Levels of Hope in At-Risk Adolescents

by

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A Dissertation

Approved by the Department of Educational Psychology

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Submitted to the Graduate Faculty of
Baylor University in Partial Fulfillment of the
Requirements for the Degree
of
Doctor of Philosophy

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Accepted by the Graduate School
August 2012

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TABLE OF CONTENTS

CHAPTER 1—Introduction	1
Nature of the Problem	1
Overview of the Issues	4
Statement of the Problem	5
Purpose of the Study	7
Definitions of Terms	8
Hope	8
Self-efficacy	9
Depression	9
At-Risk	10
Equine-Assisted Learning	10
Significance of the Study	10
CHAPTER 2—A Review of the Literature	13
Overview	13
At-Risk Adolescents	15
Defining “At-Risk”	16
Helping At-Risk Adolescents	18
Equine-Assisted Therapies	18
Differentiation of Philosophies—PATH or EAGALA	19
Characteristics of Equine-Assisted Activities & Therapies	20
Research in Equine-Assisted Activities & Therapies	21
Hope Theory	23
Defining Hope	23
Snyder’s Hope Theory	24
Benefits of Hope	24
Self-Efficacy	25
Depression	26
Domain-Specific Hope Scales	28
Importance of Current Study	29
CHAPTER 3—Research Design & Methodology	30
Method	30
Participants	
Protection of Human Subjects	31
Research Design	33
Independent Variable	33
Measures	34
ADSHS	34

MDI	35
NGSE	36
Procedure	36
Research Questions	37
Data Analysis	38
Chapter Summary	39
CHAPTER 4	40
Results	40
Description of Participants	40
Test-Retest Correlations	42
Testing the Hypotheses	43
Assumptions of the <i>t</i> -test	43
Normality of data	43
Homogeneity of variance	56
Results of the <i>t</i> -tests	57
Analysis of Variance	60
Assumption of sphericity	60
Results of the ANOVA	60
Hope	61
Self-Efficacy	61
Depression	62
Multivariate Tests	64
Results Shown in Figures	65
Non-Parametric Tests	68
CHAPTER 5	72
Discussion	72
Test-Retest Correlations	73
Score Distributions	73
Indications	75
Participant Comments	77
Limitations of the Study	78
Future Research	81
Conclusion	82
APPENDICES	84
A LASSO Curriculum Outline	85
B Participant Release	87
C Parental Informed Consent	88
D Major Depression Inventory (MDI)	90
E Adolescent Domain-Specific Hope Scale (ADSHS) Items	91
F New Generalized Self-Efficacy Scale (NGSE)	93
G Summary of Program Evaluations	94
BIBLIOGRAPHY	98

LIST OF TABLES

Table 1. Data Collection Schedule	34
Table 2. Participant Ages	41
Table 3. Test-Retest Correlation Coefficients of Hope	42
Table 4. Test-Retest Correlation Coefficients of Self-Efficacy	42
Table 5. Test-Retest Correlation Coefficients of Depression	43
Table 6. Normality of Data for Hope	44
Table 7. Normality of Data for Hope-Control Group	44
Table 8. Normality of Data for Hope-Treatment Group	44
Table 9. Normality of Data for Self-Efficacy	45
Table 10. Normality of Data for Self-Efficacy-Control Group	45
Table 11. Normality of Data for Self-Efficacy-Treatment Group	45
Table 12. Normality of Data for Depression	46
Table 13. Normality of Data for Depression-Control Group	46
Table 14. Normality of Data for Depression-Treatment Group	46
Table 15. Shapiro-Wilk Test of Normality Treatment Group-Hope	54
Table 16. Shapiro-Wilk Test of Normality Treatment Group-Self-Efficacy	54
Table 17. Shapiro-Wilk Test of Normality Treatment Group-Depression	54
Table 18. Shapiro-Wilk Test of Normality Control Group-Hope	55
Table 19. Shapiro-Wilk Test of Normality Control Group-Self-Efficacy	55
Table 20. Shapiro-Wilk Test of Normality Control Group-Depression	55
Table 21. Levene's Test of Equality of Error Variances	57

Table 22. Results of Paired Samples <i>t</i> -Tests for Control Group	58
Table 23. Results of Paired Samples <i>t</i> -Tests for Treatment Group	58
Table 24. Paired Samples Statistics for Control Group	59
Table 25. Paired Samples Statistics for Treatment Group	59
Table 26. Mauchly's Test of Sphericity	60
Table 27. Tests of Within-Subject Effects on Hope	62
Table 28. Tests of Within-Subject Effects on Self-Efficacy	63
Table 29. Tests of Within-Subject Effects on Depression	63
Table 30. Tests of Between-Subject Effects on Hope	63
Table 31. Tests of Between-Subjects Effects on Self-Efficacy	64
Table 32. Tests of Between-Subjects Effects on Depression	64
Table 33. Multivariate Tests	64
Table 34. Friedman Test Descriptive Statistics for Hope Scale-Control Group	68
Table 35. Friedman Test Descriptive Statistics for Self-Efficacy-Control Group	69
Table 36. Friedman Test Descriptive Statistics for Depression Scale-Control	69
Table 37. Friedman Test Descriptive Statistics for Hope Scale-Treatment	69
Table 38. Friedman Test Descriptive Statistics for Self-Efficacy Treatment	70
Table 39. Friedman Test Descriptive Statistics for Depression Scale-Treatment	70
Table 40. Results of Friedman's ANOVA for Control Group	70
Table 41. Results of Friedman's ANOVA for Treatment Group	71
Table 42. Treatment Group Depression Score Distributions	74
Table 43. Control Group Depression Score Distributions	74
Table 44. Treatment Group Self-Efficacy Score Distributions	75

Table 45. Control Group Self-Efficacy Score Distributions	75
Table 46. Results of Statistical Comparisons with Corrections Applied	76

LIST OF FIGURES

Figure 1. Power Analysis with Effect Size of .25	31
Figure 2. Hope Totals-Time 1 for Control Group	47
Figure 3. Hope Totals Time 1 for Treatment Group	48
Figure 4. Hope Totals Time 6 for Control Group	48
Figure 5. Hope Totals Time 6 for Treatment Group	49
Figure 6. Self-Efficacy Totals Time 1 for Control Group	49
Figure 7. Self-Efficacy Totals Time 1 for Treatment Group	50
Figure 8. Self-Efficacy Totals Time 6 for Control Group	50
Figure 9. Self-Efficacy Totals Time 6 for Treatment Group	51
Figure 10. Depression Totals Time 1 for Control Group	51
Figure 11. Depression Totals Time 1 for Treatment Group	52
Figure 12. Depression Totals Time 6 for Control Group	52
Figure 13. Depression Totals Time 6 for Treatment Group	53
Figure 14. Estimated Marginal Means of Hope at Points 1 to 6	65
Figure 15. Estimated Marginal Means of Self-Efficacy at Points 1 through 6	66
Figure 16. Estimated Marginal Means of Depression at Points 1 to 6	67

ACKNOWLEDGMENTS

Romans 5:5—Now hope does not disappoint, because the love of God has been poured out in our hearts by the Holy Spirit who was given to us.

This study has combined many of my passions—depending on God, the source of all hope, helping struggling youth, and horses! I am so grateful to God for the pouring out of His love. I pray that He will be honored in this study and in my life.

I would like to acknowledge the incredible support I have received from Julie Ivey Hatz and the members of my committee. Each one has provided support in a variety of ways. Meeting with you to discuss this research project has humbled me—so many great minds all providing wisdom and insight for my study! I thank each and every one of you for your support!

And, my utmost gratitude goes to Jason Osburne, principal at Temple Education Center. After months of knocking on school counselors', principals', and superintendents' doors, you demonstrated your passion for helping students and opened the door. Thank you for your willingness to take a chance and try something new!

Ann Heartfield, you are a most precious jewel. For no compensation, and no perceived benefit, you gave up your Friday afternoons for the study, and your Tuesday evenings during the pilot study. I couldn't have done this without the help of you, and Maxine Trent. Maxine, your role has also been invaluable! You are both a testimony of the passion of the Equine-Assisted Growth and Learning Association, who has trained and certified us all.

My dear friend, Cheryl Simmons. You've been with me through the highs and lows of this study. You drove kids to and from the pilot study and were there as the best prayer warrior/cheerleader a girl could ever have! Thank you so much for your support and friendship!

To Dr.'s Ward, Sulak and Fearon, and others in the program...what would I have done without you? We've shared joys and pains, the accomplishments and frustrations, and we have grown stronger as a result. Thanks for the ways each of you have been there for me. I'm so grateful!

Greg Frederick, you are my love and my best friend! You have been such a wonderful cheerleader, encourager, and supporter. You've proofread what must seem like millions of pages of my writing, taken up the slack around the house, and put up with a lot in getting me through this program.

My heartfelt thanks to my children as well—Bryan, Mireille, Micah, and Caleb—I love you so much! You have never complained about the PBJs and ramen noodle meals, or the mother who was present, but always studying or stressed out! Thanks for the encouraging words, the hugs, and the patience you've offered me.

To all who have helped, prayed, advised, consoled, instructed, or cheered me on. I am humbled and grateful. May each of you never lack hope!

CHAPTER ONE

Introduction

Nature of the Problem

It is difficult to imagine the course of human history without horses playing a role. Horses have plowed our fields, carried soldiers into battle, brought settlers to new lands, transported goods to markets, and given people of every status the ability to travel more quickly to their chosen destinations. Surely, much of human progress would have been slowed without the help of horses. There is little doubt that the history and the well-being of mankind has been profoundly impacted by the horse.

A popular saying among horse-lovers is “There is something about the outside of a horse which is good for the inside of a man” (Self, 1946). What started out as physical therapy for children with cerebral palsy (hippotherapy), has branched out to help many people with a wide range of emotional difficulties. The benefits of equine-assisted counseling (EAC) have been reported in a variety of clinical groups, mostly in the form of observations from the field and participant statements. Lancia (2008) wrote about the powerful effects of EAC in the treatment of war veterans. Tyler (1994) discussed the use of EAC in the treatment of clients with emotional problems, particularly adolescents. McCormick and McCormick (1997) reported on their work implementing EAC with adolescents. Moore, Wagner, and Jeffrey (2009) used EAC with clients attempting to overcome substance abuse. Others have expressed support for the use of EAC with behavioral issues, attention deficit disorder, eating disorders, abuse issues, depression, anxiety, relationship problems, and communication needs (Carpenter, 1997; Katcher &

Wilkins, 1998). A recurrent theme in the literature seems to indicate that the more difficult a client is to work with in traditional counseling, the more likely it is that that client will do well in equine-assisted mental health therapies.

For the past 50 years, the topic of hope and the impact it has on humans has surfaced repeatedly in a variety of fields, including medicine, psychiatry, psychology and education. Hope began to surface in the literature of psychiatry beginning in the late 1950's. Karl Menninger, former president of the American Psychological Association, declared: "...as scientists, we are now duty bound to speak up about the validity of hope in human development," (1959, p. 482). The absence of hope can result in depression and even suicide. Considerable research has been conducted to investigate the impact of hope in several areas of life. Hope has been operationalized in Snyder's hope theory (Snyder, Hoza, Pelham, Rapoff, Ware, & Danovsky, 1997). In hope theory, hope is "...based on a reciprocally derived sense of successful agency (goal-directed determination) and pathways (planning to meet goals)," (Snyder et al., 1991, p. 571). Hope has been found to be positively associated with life satisfaction (Bailey and Snyder, 2007), and negatively associated with depression (Chang, 2003). Bailey, Eng, Frisch, and Snyder (2007) found that hope was generally a better predictor of psychological well-being than optimism.

The intervention in this study targets at-risk adolescents. Adolescence occurs during the second decade of life and involves physical, physiological, emotional, and cognitive changes. Erikson (1959) proposed that an important task of adolescence is to organize these many changes into a new definition of the self. Adolescence is a particularly difficult stage of life with rapid change resulting in increased potential for

both positive and negative outcomes (Eccles, Midgley, Wigfield, Buchanan, Reuman, Flanagan, & Iver, 1993). According to Schmid et al. (2011), “The specific path taken by a youth is impacted by both individual characteristics (e.g., aspirations, hopes, and cognitive and behavioral skills) and by contextual influences found in families, schools, peer groups, communities, and the vicissitudes of their historical era” (p. 45).

Researchers have begun to investigate the importance of hope in adolescence. Findings indicate that high hope in school-age students correlates with self-esteem, optimism, positive social interactions, and academic achievement (Snyder, Cheavens, et al., 1997; Snyder, Hoza et al., 1997). Empirical evidence suggests that hopefulness predicts outcomes related to thriving in adolescence (Schmid, 2010). Damon et al. (2003) suggest a relationship between hope and positive developmental trajectories.

A variety of programs and interventions have been created in order to build hope in young people. One such intervention is equine-assisted learning (EAL). This study investigated how one intervention, which utilized EAL with at-risk adolescents, impacted levels of hope in participants. This study involved participants who are at-risk of not completing high school. While the intervention involved the leadership of either a licensed professional counselor or a licensed clinical social worker, the participants had not necessarily been diagnosed with a specific mental health disorder. Participants met one or more of the criteria of the Texas Education Association’s definition of “at-risk.” In this study, the researcher investigated the impact of EAL on levels of hope, self-efficacy, and depression in at-risk adolescents.

Overview of the Issues

Retention statistics gathered by the Children's Defense Fund (CDF) (2008) are both staggering and discouraging. The CDF has calculated that every second in the United States, a public school student is suspended, and every 11 seconds a high school student drops out (2008). Nationwide, that amounts to 2,261 children dropping out of high school every school day, or 1 of every 4 high school freshmen failing to finish high school in four years in the United States. There were nearly 1.3 million juvenile arrests in 2006, and almost 93,000 juveniles were incarcerated in residential facilities (CDF, 2008). Incarceration is not a cost-effective deterrent. States spend, on average, 2.8 times more to imprison a juvenile than to educate that child in the public school system, with some states spending as much as four to eight times more per prisoner (CDF, 2008). In 2005, 75% of state prison inmates and 59% of federal inmates were high school dropouts (Dallmann-Jones, 2011). Some would have been better off incarcerated because every five hours a child or teen commits suicide, an unnecessary, tragic ending to the immense potential of an adolescent (Dallmann-Jones, 2011).

Many youth grow up in difficult situations including inner-city neighborhoods and poverty. Youth raised in such environments may feel it is futile to plan for the future because they sense the hopelessness of escaping from the present (Bolland, McCallum, Lian, Bailey, & Rowan; 2001). Bolland et al. (2001) found that, although uncertainty about the future was not associated with violence or involvement in risky behaviors, hopelessness was. In general, failure leads to more failure with a negative cycle of failure ensuing. For example, in academics, once a child has failed a course, he or she lacks the foundational skills upon which to build future success and the cycle of failure

begins. Similar negative cycles can begin in the areas of social and family relationships. These negative cycles lead to a lack of hope which Bolland et al. (2001) found to be a contributing factor in the lives of adolescents who become involved in violence or risky behaviors such as dropping out of school, becoming incarcerated, or committing suicide.

Robinson and Rose (2010) established a positive relationship between hope and well-being, and Snyder (2004) found high hope to be related to decreased depression. Irving et al. (2004) found individuals with high hope to report less negative symptoms in psychotherapy. Clearly, to intervene on behalf of at-risk youth by implementing programs that will provide academic and mental health support benefits not only the individual, but also society as a whole. The association between hope and the benefits it produces is justification for investigation into interventions that effectively increase levels of hope in adolescents.

Experiential interventions such as ropes courses, outdoor adventures, wildlife camps, animal assisted therapies and equine-assisted therapies have been found to be effective with at-risk youth (Ewing et al., 2007). These therapies are considered experiential therapies because they prompt discussions of situations in the lives of teens, their responses to these situations, and their analysis of the effectiveness of their responses.

Statement of the Problem

Current literature suggests that hope is closely related to the constructs of self-efficacy and depression (Snyder, 2000). Hope is positively related to self-efficacy and negatively related to depression. For these reasons, self-efficacy and depression were also measured with each administration of the *Adolescent Domain Specific Hope Scale*

(Frederick, 2011). Research suggests that self-efficacy interacts with hope at some level, yet is unique and separate from hope. Self-efficacy is an individual's perception of his or her own ability to "produce designated levels of performance that exercise influence over events that affect their lives" (Bandura, 1994, p. 71).

Viktor Frankl claimed that it was hope that sustained him and some of the other prisoners in Auschwitz during World War II. Frankl noted that when a prisoner lost hope, he or she would inevitably die. Frankl described hope as a resource that could be drawn upon. At the same time, however, he expressed that hope resources are finite, exhaustible, and could possibly be depleted. The loss of hope and courage could be deadly (Frankl, 1959). In a more recent study, hope was found to be positively associated with life satisfaction (Bailey and Snyder, 2007), and negatively associated with depression (Chang, 2003). Such research supports the idea that as hope increases, depression will decrease and vice versa. The main focus of this study was to compare measures of hope, self-efficacy, and depression before and after the equine-assisted learning intervention.

For decades, hope has been recognized as an important factor in several fields. Menninger (1959) suggested that many psychological gains might be attributable to increased hope. Frankl (1959) purported that arousing hope in clients was common in all psychological treatments and essential in the alleviation of suffering. If hope can enable people to endure adverse conditions or situations (Frankl, 1959), then investigations into the construct hope and the effectiveness of programs designed to instill hope are critical in the lives of adolescents. The main focus of this study is to investigate levels of hope in at-risk adolescents both before and after an eight-week intervention utilizing EAL.

Purpose of the Study

The purpose of this study was to examine the impact of equine-assisted learning on levels of hope, self-efficacy, and depression in at-risk adolescents. In this study, participants were randomly assigned to either an experimental group or a control group. Participants in the experimental group participated in a five-week equine-assisted learning (EAL) experience in addition to receiving the usual input and interactions with their school's faculty and staff. Participants in the control group received "treatment as usual" (TAU) which is limited to the usual input and interactions with their school's CIS staff.

Three instruments were used to measure the constructs under investigation. The *Adolescent Domain-Specific Hope Scale* (ADSHS) (Frederick, 2011), the *New Generalized Self-Efficacy Scale* (NGSE) (Chen et al., 2001), and the *Major Depression Inventory* (MDI) (Bech, 1998; Bech et al., 2001) were used to measure levels of hope, self-efficacy, and depression in at-risk youth at six different time points. Administrations of the instruments occurred once pre-intervention, once post-intervention, and at four points during the intervention. Levels of hope, self-efficacy, and depression in the participants were compared to assess whether participants' levels of hope, self-efficacy, and depression changed after exposure to EAL as compared with the participants in the control group who do not receive EAL.

The quantitative research questions investigated in this study include the following:

1. Does participation in EAL cause an increase in hope in at-risk youth?
2. Does participation in EAL cause an increase in self-efficacy in at-risk youth?

3. Does participation in EAL cause a decrease in depression in at-risk youth?

The research suggests that hope, self-efficacy, and depression are positively impacted by the experience of EAL; therefore, the hypotheses were as follows:

H_1 : Levels of hope will increase following participation in EAL.

H_2 : Levels of self-efficacy will increase following participation in EAL.

H_3 : Levels of depression will decrease following participation in EAL.

The null hypotheses were:

H_{0A} : Levels of hope will remain unchanged following participation in EAC,

H_{0B} : Levels of self-efficacy will remain unchanged following participation in
EAC.

H_{0C} : Levels of depression will remain unchanged following participation in EAC.

Definitions of Terms

Hope: The Collins English Dictionary (2009) defines hope as: “a feeling of desire for something and confidence in the possibility of its fulfillment.” The loss of hope and courage could be deadly, and hope enables people to endure their current adverse situation or circumstances (Frankl, 1959).

For the purposes of this study, hope is seen as a positive motivational construct that is composed of two subconstructs: agency and pathways (Snyder, 2000). Agency is considered to be the motivational component that drives individuals toward their goals. Pathway is considered to be one’s perceived ability to produce routes or methods to achieve goals, especially in the face of challenges. Both agency and pathways must be present for maximization of goal attainment.

Self-Efficacy: Self-efficacy is a construct, which is similar to, yet distinct from hope. Bandura described self-efficacy as an individual's perception of his or her own ability to "produce designated levels of performance that exercise influence over events that affect their lives" (Bandura, 1994, p. 71). Bandura (1977) proposed that expectancy beliefs are associated with behaviors and developed self-efficacy theory. In Hope Theory, self-efficacy is similar to the subconstruct agency (Snyder et al., 2002). Both represent appraisals and perceptions about whether or not one will be successful in obtaining goals.

Depression: The *Diagnostic and Statistical Manual of Mental Disorders* (2000) lists several criteria for a major depressive disorder. A diagnosis of a major depressive episode is assigned when five or more of the symptoms have been present in the same two-week period of time, with at least one of the symptoms being either a depressed mood or a loss of interest or pleasure (APA, 2000). Other symptoms include a) significant weight loss or gain, b) insomnia or hypersomnia; c) psychomotor agitation or retardation; d) fatigue or loss of energy; e) feelings of worthlessness or inappropriate guilt; f) diminished ability to think, concentrate or make decisions; and g) recurrent morbid or suicidal thoughts or ideation. An individual's symptoms must cause significant distress or impairment of functioning at school, work, or in social settings. Depression is a multifactorial mental disorder. Its symptoms and presentation differ greatly from one person to the next. It was not expected that the participants would have been diagnosed with clinically significant levels of depression. This study investigated levels of depression as a means of showing discriminant validity for the ADSHS.

At-Risk: The term, “at-risk” has been used in many contexts with a variety of meanings. Kronick (1997) proposed that youth who experience many risk factors would drop out earlier than others. Morris (2000) describes risk factors as low achievement, retention in grade, behavior problems, poor attendance, low socioeconomic status, and attendance at schools with large numbers of poor students” (p. 4). For the purposes of this study, students who qualify as “at-risk” are students who meet one or more of the Texas Education Association’s 13 criteria that place a student at-risk (TEA, 2009). These criteria are listed in Chapter Two.

Equine-Assisted Learning (EAL): EAL is similar to animal-assisted therapy (AAT) in that humans benefit from the feel of the animal’s warmth and the touch of their fur, however, EAL is distinctly different from AAT. One obvious difference is the size of a horse standing next to a human. The size of the horse elicits respect, which is a quality that is commonly lacked in at-risk children. The challenge of controlling the movement of a creature that weighs over 1,000-pounds can cause clients to concentrate intensely, to be resourceful and creative, and when successful, to feel an amazing sense of accomplishment. Some specific areas in which EAL appears to be helpful include improving self-esteem, personal confidence, communication skills, interpersonal effectiveness, trust, boundaries, limit-setting, and group cohesion (Kersten & Thomas, 2003). A thorough discussion of the terminologies most frequently used in reference to equine-assisted activities can be found in Chapter two, the review of literature.

Significance of the Study

The implications of levels of hope in adolescents are of great importance. How does hope impact the lives of adolescents? Research findings are clear that hope impacts

children and adolescents in a number of areas. In studies of college students, Arnau et al. (2007) found the agency subscale to be a strong predictor of suicidal ideation. In addition, the researchers proposed that their findings provided further evidence for hope as a resiliency or protective factor and reduced the severity of depression symptoms one month later. Research findings have consistently noted that possessing low hope is significantly related to several negative outcomes including psychological distress (Snyder, LaPointe, Crowson, & Early, 1998) and poor academic achievement (Chang & DeSimone, 2001) when compared with individuals reporting higher levels of hope. Snyder (2002) states that the adult Hope Scale can be used to make fairly robust predictions related to academics, athletics, and health.

It is clear that research indicates that higher hope is associated with numerous benefits in areas such as academics, scholastic and social achievement, resilience, life satisfaction, well-being, and athletic ability. Alternatively, a lack of hope is associated with several negative outcomes such as depression, suicidal ideation, anxiety, self-doubt, psychological distress, and an inability to use feedback from failure to improve future performance. Clearly, finding an effective means of improving levels of hope in adolescents will have a profound impact on not just the youth, but society as a whole.

This study is of great significance for a number of reasons. Research has shown that measures of hope are able to predict subsequent adolescent outcomes in areas such as envisioning and utilizing adaptive coping strategies when facing significant life stress (Valle, Huebner, & Suldo, 2006). Furthermore, high hope acts as a psychological strength in adolescence in certain contexts. Valle, Huebner & Suldo (2006) found that teens reporting higher levels of hope may be less at risk for experiencing increased

internalized behavior problems and reductions in life satisfaction when experiencing difficult life events. They conclude that programs designed to develop cognitive-motivational strengths, such as hopeful thinking, may assist youth to cope more effectively with adverse life circumstances. It cannot be assumed, however, that every program is equal in its impact. This study investigated one such program and provided evidence as to the program's impact on levels of hope in at-risk adolescents.

In order to maximize the benefits, and minimize the costs, it is important to understand which programs are effective. It should be noted that EAL is a relatively expensive intervention. If the same results can be achieved without the horses, then the expense of the horses should be spared. Yet, if horses are the key component, then the expense is justified. By providing data as to whether levels of hope increased significantly as a result of EAL, this study assists parents, counselors, and teachers to make an informed decision in making referrals to similar programs.

Much of the available literature on the topic of equine-assisted therapies are qualitative in nature or rely on anecdotal evidence. Due to the limited number of experimental studies on the topic of equine-assisted therapies, this study is of importance because it makes a contribution to the available literature on the topic of EAL.

CHAPTER TWO

A Review of the Literature

Overview

Equine-assisted Learning (EAL) is an experiential, therapeutic modality in which horses are used as a tool for emotional growth and learning (Kersten and Thomas, 2003). Clients learn about themselves through interacting with horses (Trotter et al., 2008). The Equine Assisted Growth and Learning Association (EAGALA) describes Equine Assisted Psychotherapy or Counseling (EAP/EAC) as:

“...a powerful and effective therapeutic approach that has an incredible impact on individuals, youth, families, and groups...(which)...addresses a variety of mental health and human development needs including behavioral issues, attention deficit disorder, substance abuse, eating disorders, abuse issues, depression, anxiety, relationship problems and communication needs” (Thomas, 2009).

Interacting with horses is believed to provide a myriad of benefits. In reviewing the literature, the terms “psychotherapy” and “counseling” are used somewhat interchangeably. It is not within the scope of this study to discuss the differences between the two terms. Because the term, psychotherapy, seems to have some negative connotations, the term “counseling” is used throughout this study. The focus of this study is on learning, thus the term EAL is used throughout.

EAL utilizes horses to facilitate growth and learning. EAL encompasses the benefits of experiential learning while adding interactions with large, live animals. Work with horses breaks through participants’ defensive barriers, causing them to develop fresh insights and perspectives (Tyler, 1994). EAL is an emerging therapeutic modality that is unique in several ways. Thomas (2009) states that the horse has an uncanny ability to

read human body language and mirror human emotion. Kersten & Thomas (2004) posit that the challenge of controlling the movement of a 1,000-pound creature requires concentration, creativity, and resourcefulness and that success in doing so improves self-esteem, confidence, communication skills, trust, and boundaries. While experiential therapies are commonly used with adolescents and children, research specific to EAL is limited, yet the available research is encouraging and indicates that the benefits are significant.

The Texas At-Risk Youth Services Project [TARYSP] (2011) suggests that at-risk youth issues be approached from a global perspective. TARYSP state that children whose circumstances make them more likely to receive government services such as Child Protective Services, Mental Health and Mental Retardation resources, special education services, etc. are more likely to become involved in the juvenile justice system, and subsequently, the adult criminal justice system. Unfortunately, they also report that these services often fail to adequately address the needs of these children. To address the needs of at-risk youth, Ewing et al. (2007) recommend the use of alternative therapies, because, “Many ‘at-risk’ children view therapists, teachers, or adults in general with mistrust or apprehension,” (p. 59-60). Adolescents’ association with deviant peers is a strong social influence on the likelihood of involvement in problem behaviors such as substance use, antisocial behavior, academic failure, and risk sexual behavior (Ary et al., 1999).

A very frightening statistic refers to teen suicide. Suicide is one of the leading causes of death among teenagers (CDC, 2010). The Centers for Disease Control (CDC) report that suicide is the third leading cause of teen deaths, just behind accidents and

homicide. In addition, the CDC states that 60 percent of high school students claim that they have considered committing suicide. Adolescence and young adulthood are the primary periods in human development influencing the formation of identity (Adams et al., 1992). Gillham and Reivich (2004) note that by the end of high school, 20 percent of adolescents will likely have experienced a clinical depressive episode. The Coalition for Juvenile Justice [CJJ] (2000) states that only one-third of youth who need mental health interventions receive them. Untreated mental health problems may lead to poor school performance, school dropout, difficulties with relationships, substance abuse, engaging in risky sexual behaviors and involvement with the child welfare or juvenile justice systems (Kapphahn et al., 2006).

Adolescence and young adulthood are key periods where social support or peer pressure has the greatest influence on identity formation (Hurrelmann & Hamilton, 1996). An adolescent's association with deviant peers may be the strongest social influence on the likelihood of that adolescent engaging in problem behaviors such as substance use, antisocial behavior, academic failure, and risky sexual behavior (Ary et al., 1999).

This chapter explores the literature related to this study and is organized into three major areas: a) at-risk youth, b) equine-assisted therapies, c) hope theory, and d) summary of the literature.

At-Risk Adolescents

A brief historical perspective takes us back to 1905 when the United States Congress established "Carnegie Units" as a means of standardizing state school systems (Dallman-Jones, 2011). The Carnegie Unit amounted to approximately 125 hours of

class time. In this system, a credit of math in one state amounted to the same number of hours in class as in another state. Furthermore, high school diplomas became standardized with a basic number of credits being required for graduation. The label “at-risk” was used to refer to high school juniors who were at risk of dropping out of school before completing the official number of Carnegie Units.

There are certain factors which when present in a child’s life, place that child at an increased risk of failing to succeed in life. Some risk factors considered to hinder success include: poverty, physical handicaps, learning disabilities, victimization, abuse and/or neglect, and parental substance abuse (Autry, 2001). Werner and Smith (1982) found that the number of risk factors in an adolescent’s life has a greater impact than the type of risk factors.

Defining “At-Risk”

This study relies on the Texas Education Agency’s definition of at-risk. According to the Texas Education Agency (2009), a student is identified as at risk of dropping out of school based on state-defined criteria. The TEA (2009) states that, “The statutory criteria for at-risk status include each student who is under 21 years of age and who:

1. was not advanced from one grade level to the next for one or more school years;
2. is in grades 7, 8, 9, 10, 11, or 12 and did not maintain an average equivalent to 70 on a scale of 100 in two or more subjects in the foundation curriculum during a semester in the preceding or current school year or is not maintaining such an average in two or more subjects in the foundation curriculum in the current semester;
3. did not perform satisfactorily on an assessment instrument administered to the student under TEC Subchapter B, Chapter 39, and who has not in the previous or current school year subsequently performed on that instrument or another appropriate instrument at a level equal to at least 110 percent of the level of satisfactory performance on that instrument;

4. is in prekindergarten, kindergarten or grades 1, 2, or 3 and did not perform satisfactorily on a readiness test or assessment instrument administered during the current school year;
5. is pregnant or is a parent;
6. has been placed in an alternative education program in accordance with §TEC 37.006 during the preceding or current school year;
7. has been expelled in accordance with §TEC 37.007 during the preceding or current school year;
8. is currently on parole, probation, deferred prosecution, or other conditional release;
9. was previously reported through the PEIMS to have dropped out of school;
10. is a student of limited English proficiency, as defined by §TEC 29.052;
11. is in the custody or care of the Department of Protective and Regulatory Services or has, during the current school year, been referred to the department by a school official, officer of the juvenile court, or law enforcement official;
12. is homeless, as defined by 42 U.S.C. Section 11302 and its subsequent amendments; or
13. resided in the preceding school year or resides in the current school year in a residential placement facility in the district, including a detention facility, substance abuse treatment facility, emergency shelter, psychiatric hospital, halfway house, or foster group home.”

Adolescents today face many challenges and healthy development can be impacted by a variety of things including parental divorce, teen pregnancy, drug or alcohol abuse, exposure to violence, and poor or nonexistent supervision from adults (Hill, 2007). As a result of these and other potential challenges, a substantial number of children and adolescents in the U.S. are in need of mental health services. Unfortunately, only a small proportion receives the services (Costello et al., 2003). Children who are considered to be at-risk for a number of negative outcomes (dropping out of school, abusing substances, exposure to violence, involvement in unsafe sexual practices, and so on) may be particularly impacted by this lack of services (Buka et al., 2001). Klein (1997) estimates that between 25 to 33 percent of adolescents forgo needed mental health care, and many others lack access. Markey et al. (2011) describe many schools as “pipelines into the juvenile justice system” because school personnel contact law

enforcement when students are disruptive, even when the disruptive behavior is the result of a mental health crisis.

Helping At-Risk Adolescents

Researchers and mental health practitioners have increasingly emphasized the need to focus on the strengths and positive assets rather than focusing on the many stressors and potential negative outcomes (Cowen, 1991; Johnson et al., 1999). Dryfoos (2000) found that successful programs for adolescents and their families emphasize optimism and hope. The construct of hope is believed to be important in understanding how at-risk youth learn to deal with stressors, resist developing problem behaviors, and work productively towards goals (Snyder, 1994). Measures of hope in children correlate positively with self-reported competency, and high hope children report feeling more positively about themselves and less depressed than lower hope children (Leeson et al., 2008; Stark & Boswell, 2001). Research has shown hope to be a protective factor associated with adaptive functioning in at-risk youth (Hagen et al., 2005; Valle et al., 2006).

Equine-Assisted Therapies

No consensus has been reached as to one proper term to be used when equines are involved in mental health treatment. The two main organizations involved in the training and credentialing of practitioners are the Professional Association of Therapeutic Horsemanship, International (PATH) and the Equine Assisted Growth and Learning Association (EAGALA). PATH uses the terms Equine-Facilitated Psychotherapy (EFP)

and Equine-Facilitated Learning (EFL), while EAGALA uses the terms Equine-Assisted Psychotherapy (EAP) and Equine-Assisted Learning (EAL).

Differentiation of Philosophies—PATH or EAGALA

Both EFP and EAP are experiential modalities involving horses. Both models insist upon the presence of an equine specialist in addition to a mental health professional. It is important to note, however, that EFP and EAP are distinctly and philosophically different. The PATH (EFP) model differs from the EAGALA (EAP) model in one crucial way: the EAGALA model utilizes 100% “ground work” with no riding allowed, while the PATH model insists on the benefits of riding and relies heavily on riding. In the EAGALA model, “ground work” can be defined as any activity in which the client interacts with, but does not ride, the horse. Kersten & Thomas (2004) state that ground activities with the horses provide better opportunities for growth. They posit that relationship issues and client issues become more apparent on the ground because riding requires more of an emphasis on the instructions and directions involved in proper riding. In the PATH model, riding is central to the philosophy of change. Practitioners who utilize the PATH model, might argue that the mounted experience provides benefits that are crucial to the therapy and cannot be obtained through groundwork alone.

This review of the literature of equine-assisted or facilitated therapies includes references to therapies both with and without the riding component. A more general term, equine-assisted activities and therapies (EAAT) will be utilized to encompass all modalities in which the presence of a horse is a critical component.

This study involved student learning being assisted by the presence of one or more horses. In descriptions and details that are specific to this study, the term equine-assisted learning (EAL) is used as the participants have not necessarily been diagnosed with a mental health disorder and the experience should be considered to be a learning experience rather than counseling or psychotherapy.

General Characteristics of Equine-Assisted Activities and Therapies

In equine-assisted activities and therapies (EAAT), the horse is highly regarded for a number of reasons. Horses are prey animals that are inherently vulnerable to predators (Karol, 2007). Because horses are prey animals, they have developed effective communication systems that rely on body language. Horses have an uncanny ability to “read” human emotions and intention (Burgon, 2011). Participants in EAAT frequently identify with the horse’s natural fear and need for safety and the horses provide a metaphor for the participants’ own feelings (Karol, 2007).

Horses used in EAAT provide a valuable source of therapeutic metaphors. Horse behaviors, such as biting, kicking, neighing, playing, urinating and defecating, regularly bring up memories of or connections with the behaviors of significant others in the client’s life. For example, a horse walking away from a client may elicit feelings of rejection and the pain associated with that rejection. One horse biting another horse may bring to mind images of parents who nag and push, or memories of being bullied. A wide-eyed horse that is highly alert to danger may make clients recognize their own response to fear. According to Mandrell (2006):

“The horse activities provide a visible metaphor for life experiences and relationships. These metaphors are used to teach people valuable tools for success in life. Participants learn about themselves and others through horse activities and

then have the opportunity to discuss related feelings, behaviors, and patterns immediately with their treatment team,” (p. 23).

The focus of EAAT involves setting up ground activities involving the horses, which will require the client or group to apply certain skills. Non-verbal communication, assertiveness, creative thinking, problem solving, leadership, taking responsibility, teamwork, relationships, confidence, and attitude are several examples of the tools utilized and developed by EAAT. EAAT provides a non-threatening way of addressing the issues and difficulties that clients are facing in their lives. In order to effectively work with horses and achieve the goals of the arena activities, participants must exhibit positive behaviors to which horses will respond favorably. These positive behaviors include calmness, thoughtfulness, fairness, confidence, and leadership. Experience using these behaviors provides opportunities for learning new behaviors and feelings of self-efficacy (Burgon, 2011).

Research in EAAT

Research indicates that therapy involving horses may yield a variety of psychotherapeutic benefits, including the following: self-confidence, self-efficacy, self-concept, communication, trust, perspective, anxiety reduction, decreased isolation, self-acceptance, impulse modulation, assertiveness, boundaries, creative freedom, and spiritual growth (Marx & Cumella, 2003; Ewing, MacDonald, Taylor, & Bowers, 2007; Trotter, Chandler, Goodwin-Bond, & Casey, 2008; Bass, Duchowny, & Llabre, 2009). EAAT has been used with special populations and individuals with diagnoses such as autism (Bass, Duchowny, & Llabre, 2009), at-risk youth (Trotter et al., 2008), emotional disorders (Ewing, MacDonald, Taylor, & Bowers, 2007), delinquent girls (Foley, 2008),

and children who have experienced intra-family violence (Schultz, Remick-Barlow, & Robbins, 2007). Karol (2007) best sums up the efficacy of EAAT for children by stating: “The joy the child or adolescent experiences in being with the horse can help him or her attend and participate fully in the therapy even when facing the most painful of therapeutic issues,” (p. 89).

The available research is limited, yet indicates several benefits of equine-assisted therapies. Chandler (2005) utilized EAAT with male and female juvenile offenders and found that the participants displayed increases in positive behaviors such as communication skills, support and encouragement for others, and increased desire to complete a task. She also noted a reduction or elimination of negative behaviors such as fear and manipulation. Other benefits seen by Chandler included greater courage, stress management, and anxiety-reduction skills.

Trotter et al. (2008) investigated the efficacy of group EAAT with at-risk adolescents and found that at-risk youth who received EAAT showed statistically significant improvement in seventeen behavior areas whereas students who received classroom-based counseling showed improvement in only five areas. More research is clearly needed to confirm the effectiveness of equine-assisted interventions, but their usefulness has some documentation.

Bowers and MacDonald (2001) found statistically significant decreases in levels of depression following an EAAT intervention. Participants experienced improved life skills and communication as well as, honesty, respect, and awareness of power.

Hope Theory

Positive psychology is “...the scientific study of strengths and virtues that enable individuals and communities to thrive” (Seligman, 2007). Positive psychology has placed an increased emphasis on identifying psychological strengths and competencies that foster healthy development (Seligman & Csikszentmihalyi, 2000). The further development of positive psychology has included the identification and classification of important psychological strengths. An important foundation of positive psychology is that measurable positive traits serve to protect individuals from the adverse effects of risk factors (Valle et al., 2006). Hope is a promising positive trait. It is a cognitive-motivational construct that has been the focus of recent research with children (Snyder, Lopez, & Shorey, 2003).

Defining Hope

Developmental psychologist, Erik Erikson (1964) proposed that hope is part of infant development as part of the psychosocial survival process. He saw hope as being coded in the human evolutionary framework and key to survival of the species. For Erikson, hope is socially situated and requires interaction with others in order to be replenished and maintained.

Snyder (2000) states that optimism, self-efficacy, motivation, and goal expectations may correlate or interact with hope at some level yet should be considered to be unique and separate from hope. Because this study utilized instruments that measure the constructs of self-efficacy, depression, and hope, this section defines and distinguishes these constructs. In addition, this section contains a thorough review of the literature relating to hope theory.

Snyder's Hope Theory

In Snyder's hope theory, hope is conceptualized as an individual difference variable that reflects relatively enduring, subjective appraisals of goal-related capabilities (Snyder, 2000). Research has shown hope to be dispositional in nature though changes have been found to occur over time with interventions such as counseling and education (Valle et al., 2006). Snyder's theory contains three major components of hope: goals, agency, and pathways. Goals may be short-term or long-term and may vary greatly in importance and probability of attainment (Snyder, 2000). The pathways component represents one's perceived ability to generate functional routes to one's goals (Snyder, Rand, & Sigmon, 2002). The agency component reflects one's willpower or determination to meet one's goals (Snyder et al., 2003). Additive, reciprocal, and positive relationships exist between pathways and agency thinking that are not synonymous (Edwards, Rand, Lopez, & Snyder, 2007). Neither component alone defines hope.

Benefits of Hope

Over two decades of research have established the positive relationship between hope and well-being. High levels of hope in school-age students were found to be correlated with positive social interactions, self-esteem, optimism, and academic achievement (Snyder, Cheavens et al., 1997). Valle, Huebner, and Suldo (2004) found hope to be positively correlated with adolescents' life satisfaction and inversely correlated with internalizing and externalizing behaviors. In considering students with low hope, it has been found that such students generally experience high anxiety in test-taking situations. Onwuegbuzie (1998) as well as Onwuegbuzie and Snyder (2000),

suggest that such anxiety may reflect the fact that low hope individuals frequently do not utilize their experience with failure as a resource for improving future performance. Instead, as a result of such failures, low hope students become prone to self-doubt and negative self-talk. Low hope is also correlated negatively with social competence (Barnum, Snyder, Rapoff, Mani, & Thompson, 1998).

Higher hope, on the other hand, is related to greater reported scholastic and social competence, as well as to elevated creativity (Onwuegbuzie, 1999). It is also positively correlated with better problem-solving abilities and actual academic achievements (Chang, 1998; Snyder et al., 1997). Higher-hope high school (Snyder et al., 1991) and beginning college students (Chang, 1998) have higher overall grade point averages, and increased retention rates (Worrell & Hale, 2001). Higher hope has correlated positively with social competence (Barnum, Snyder, Rapoff, Mani, & Thompson, 1998). When hopeful thinking is impeded, interpersonal struggles may result (Snyder et al., 2003).

In studies of the Children's Hope Scale, Snyder et al. (1997) found that grade school children who report higher hope have better scores on achievement tests. Similarly, Snyder (2004) found that in addition to predicting academic achievement, the CHS scores augmented the predictions of perceived competency and locus of control.

Self-Efficacy

The agency and pathways components of Snyder's hope theory share features with Bandura's notion of self-efficacy. Bandura (1977) developed self-efficacy theory and proposed that expectancy beliefs are associated with behaviors. In self-efficacy theory, individuals hold two types of goal expectancies: a self-efficacy expectancy and an outcome expectancy. The self-efficacy expectancy is the belief an individual holds as to

whether he or she is capable of performing a behavior. Both theories see goals as central (Bronk, Hill, Lapsley, Talib, & Finch, 2009). Bandura (1977) describes a cycle in which individuals with high self-efficacy expectations are more likely to attempt new behaviors, persist in them, meet with success, and thereby increase their self-efficacy expectations. Bandura felt that self-efficacy has greater influence on an individual's initiation of a behavior than outcome expectancy. In essence, hope is characterized as being relatively stable and cross-situational, while self-efficacy is generally characterized as being targeted to specific abilities in particular domains (Arnau, Rosen, Finch, Rhudy, & Fortunato, 2007).

Depression

Depression is a mood disorder that has been carefully defined in the *Diagnostic and Statistical Manual of Mental Disorders* (APA, 2000). Depression is associated with significant functional impairment and reduced quality of life. These disruptions may occur both generally and in specific areas such as school, work, interpersonal relationships, and intellectual functioning (Greer, Kurian, & Trivedi, 2010). Bjarehed, Sarkohi, and Andersson (2010) state that people suffering from depression frequently have a pessimistic view of their personal future. The researchers state that, "Perceptions of the future can be viewed as one aspect of the concept of hopelessness, which, in turn, is a salient feature of different mental health problems and linked with suicidal ideation," (p. 37). The criteria for major depressive disorder in youths include a combination of prolonged dissatisfaction, anxiety, restlessness, or irritability along with other symptoms such as irregularity of sleep patterns, eating, motor behavior, thought, and self-esteem. Depression is also frequently present at levels that are subclinical. Harrington and Clark

(1998) propose that it may be better to consider depression as a continuum. They state that it is not clear how much depression can be considered “normal,” and even mild depression is associated with problems in functioning.

Little research exists on the topic of depression prevention. Early studies documented that lecturing to large groups of adolescents about depression prevention had minimal effects (Clarke, Hawkins, Murphy, & Sheeber, 1993). Benefits have been observed with more focused and intensive prevention programs that targeted youth with elevated depressive symptoms (Clarke, 1999). Gillham and Reivich (1999) investigated a 12-week cognitive-behavioral depression prevention program, “Penn Resiliency,” for school-aged youth. This program was found to reduce self-reported depressive symptoms with follow-up studies documenting continued depressive symptom reduction, improved classroom behavior, and more optimistic explanatory styles (Gillham & Reivich, 1999; Gillham, Reivich, Jaycox, & Seligman, 1995). Research shows that some intervention programs show promise. Small-group interventions that actively relate skill-building to personal experience appear to be more effective than large-group lecture-type programs (Miller, 2007).

Hope has been shown to have positive effects on depression. Research has shown a significant inverse relationship between hope and depression: as hope increases, depression decreases (Ashby, Dickinson, Gnilka, & Noble, 2011). In a study by Arnau et al. (2007) hope was found to be a protective factor that had at least a small effect in reducing the severity of depression symptoms. This study also found that severity of depression symptoms did not have any effect on future levels of hope. In a study by

Carifio and Rhodes (2002), scores on Snyder's Hope Scale were found to correlate inversely with scores on Beck's Depression Inventory ($r = -0.51$).

Domain-Specific Hope Scales

Hope was originally described as a dispositional construct that applies across different domains of life (Snyder, 2002). However, research has also examined measures of hope in specific life domains (Campbell & Kwon, 2001; Kwon, 2002). Domain-specific hope theory proposes that there are different areas of life, such as academic, social, spiritual, work, and leisure in which people develop different hopeful thought patterns (Lopez, Ciarlelli, et al., 2000). Campbell and Kwon (2001) concluded it is useful to consider these different domains of hope perceptions when measuring goal-directed thinking. Chang (1998) agrees that context is very important when drawing conclusions about hopeful thinking.

While hope theory's agency and Bandura's self-efficacy are considered to be theoretically similar (Snyder et al., 2002), self-efficacy is considered to be task-specific (Pintrich & Schunk, 2002). Differentiated measures of domain-specific self-efficacy have been developed in a number of domains, including academic, academic domain, sport achievement, social, and occupational domains. Lackaye and Margalit (2006) investigated the relationships among self-efficacy, hope, mood, effort investment, and academic achievement. They found that some students who were failing all subjects sometimes still produced high hope scores. One possible explanation is that students report hopefulness based on other life domains and not on academics. Robinson and Rose (2010) suggest that domain-specific measures could provide additional insight not

gathered by general measures of hope. For this reason, an instrument specific to adolescents and the domains of most importance to them was chosen for this study.

Importance of Current Study

It is clear that a rather large number of youth in America fit the description of “at-risk.” These young people frequently have psychological needs that are not being met by the current educational or mental health systems. For a wide variety of reasons ranging from financial to ethical, it behooves society to make all possible efforts to fully educate, encourage, and prepare these young people for a successful future. While these students may not be the easiest to work with, alternative interventions seem to be more effective than more traditional interventions. EAL is such an alternative that has not been well researched and substantiated as an effective intervention. This study adds to the limited body of available research on the topic of equine-assisted interventions. This study adds to the research on the topic of hope and its impact on adolescents.

Hope has been found to be a protective factor that increases resiliency in adolescents. Adolescents clearly need hope. Viktor Frankl (1959) stated that hope could enable people to endure adverse conditions or situations. This study provides much-needed investigation into EAL and its impact on the constructs of domain-specific hope, self-efficacy, and depression.

CHAPTER THREE

Research Design & Methodology

Method

This study uses an experimental design to investigate the impact of equine-assisted learning (EAL) on at-risk adolescents. A randomized, longitudinal, repeated measures method was implemented with a treatment group and a control group.

Participants

The participants in this study were middle or high school students in Central Texas who meet one or more of the Texas Education Agency's criteria that place a student "at-risk" for not completing high school. Participants all attended Temple Education Center in Temple, Texas.

Participation was restricted to students whose parents or guardians were willing to grant permission for their child's participation in this study. An attempt was made to ensure a balanced representation of both sexes. Participants were randomly assigned to either the experimental or control conditions. In order to avoid any disappointment which may impact results, and in fairness to all participants, those who were assigned to the control conditions, have the opportunity to participate in EAL the following semester.

Twenty-six participants were enrolled in the program. Participants included nine males and 17 females. The mean age of the sample was 13.62 with the youngest being eleven years old and the oldest being seventeen. Participant self-identification of ethnicity indicated eleven white students (42%), seven black (27%), two Hispanic (8%), zero Asians, and six (23%) students who identified themselves as "other."

A power analysis was conducted with an alpha level of .05 and an effect size of .25. With a sample size of 26, two groups, six measurements, and a correlation among repeated measures of 0.50, power was calculated as 0.749. Figure 1, below, shows the plot obtained with this power analysis. According to Faul et al. (2007), an effect size of .25 is a medium effect size.

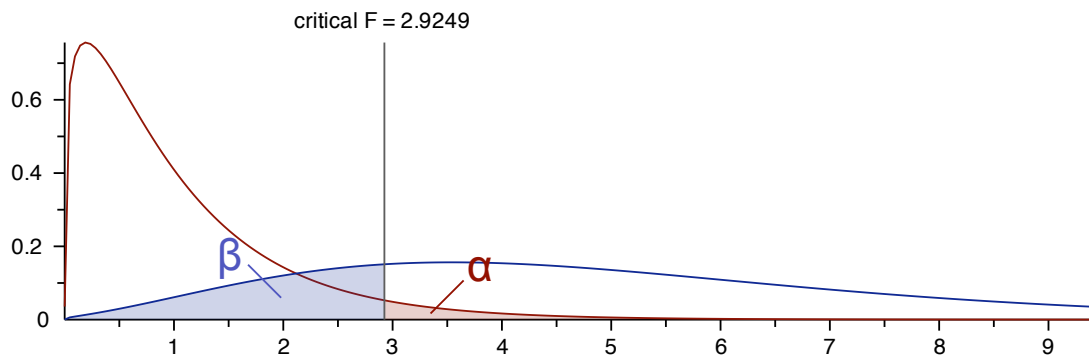


Figure 1. Power Analysis with Effect Size of .25

Protection of Human Subjects

All appropriate consents and Institutional Review Board approvals were obtained (see Appendices). Because the participants are minors, risks involved in participation were clearly stated and parental permissions were obtained for all participants. Because participants were in danger of not completing their high school education, they were considered to be a vulnerable population. In addition to the precarious nature of their educational success, participants were considered vulnerable because the intervention took place in an arena in the presence of horses. Potential risks when working with horses include being kicked, bitten, or stepped on by the horse. While well-trained horses are generally docile, obedient, and affectionate (Thomas, 2009), they are

unpredictable animals that will react to perceived threats in ways that may endanger anyone in the vicinity.

Precautions were taken to protect participants as much as possible. Several steps were taken to minimize risks to participants. Limiting all activities to the ground minimized risks—no mounting or riding of horses was allowed during the EAL interventions. An equine professional, who is EAGALA-trained and familiar with horse behaviors, was present during all EAL sessions. The equine professional was both a facilitator and an observer. As a participant, the equine professional selected and clearly explained activities that are relatively risk-free as well as being age and participant appropriate. As an observer, the equine professional observed behaviors of the participants and the horses, watching closely for participant behaviors that might be considered potentially risky or dangerous. In addition, the equine professional monitored the horses' behaviors for possible warning signs that might indicate that a horse was feeling threatened or irritated. When avoidable danger was noticed, either the equine professional or the mental health professional took action to ensure the safety of both the participants and the horses. Parental release forms were necessary for participation in this study (see Appendices B and C).

Another potential risk was the possibility of emotional discomfort, which may occur as a result of the therapeutic intervention, interviews, or questionnaires. This discomfort was comparable to the discomfort, which might be experienced in any form of counseling or activity that enhances self-awareness. Participants were fully aware of their right to remove themselves from this study at any point should their discomfort become such that they feel they cannot or should not continue in the study.

Another concern of the researcher was the protection of the horses involved in the treatment. The equine professionals involved in the treatment were responsible for the safety and well-being of all horses involved. The mental health professional, having been trained by EAGALA was also concerned for the horse's welfare and took measures to ensure that all horses used in the treatment were healthy and well cared for and kept in sanitary, safe conditions.

Research Design

A longitudinal, repeated measures, experimental research design was used in this study. Participants were randomly assigned to either the treatment group or the control group. Random assignment to the treatment or control group can help control for individual characteristics such as age or intelligence that vary from one individual to another.

The Independent Variable

The independent variable is the type of treatment—either equine-assisted learning (EAL), or no intervention, also known as “treatment as usual” (TAU). The treatment group participated in a five-week intervention of equine-assisted learning entitled Leading Adolescents to Successful School Outcomes (LASSO) in addition to the regularly provided services of their school staff. The control group received only the regularly provided services of their school staff, hereby referred to as “treatment as usual” (TAU).

The intervention took place on school property of Temple Education Center in central Texas. An outdoor arena was constructed using temporary, electric fencing.

Within this arena, participants and horses had freedom of movement and interaction. The fact that the arena was outdoors suggests some advantages and some disadvantages. Advantages included the beauty and healing power of nature itself. Students seemed grateful to spend time outside of the classroom. The disadvantages included the potential for exposure to high temperatures, inclement weather, mud, and other inconveniences. Fortunately, all sessions occurred as scheduled.

Measures

The variables observed and measured were levels of hope, self-efficacy, and depression in participants as measured by the *Adolescent Domain-Specific Hope Scale* (ADSHS; Frederick, 2011), the *New Generalized Self-Efficacy Scale* (NGSE; Chen et al., 2001), and the *Major Depression Inventory* (MDI; Bech, 1998). Measurements were taken both pre- and post-intervention as well as each week during the intervention. Table 1, below, shows the schedule of intervention and data collection points.

Table 1

Data Collection Schedule

Pre-EAL	Wk 1	Wk 2	Wk 3	Wk 4	Post-EAL
April 16	April 23	April 30	May 7	May 14	May 21
DC #1	DC #2	DC #3	DC #4	DC #5	DC #5

ADSHS. The ADSHS (Frederick, 2011) is a 37-item self-report measure of hope in four domains—Social Relationships, Academics, Outside School Activities, and Family Relationships. Snyder, Harris et al. (1991), defined hope as “a positive motivational state that is based on an interactively derived sense of successful (a) agency

(goal-directed energy) and (b) pathways (planning to meet goals)” (p. 570). In accordance with Snyder and colleagues’ definition, the ADSHS measures hope as a bidimensional construct of personal agency and pathways. The ADSHS is a four-point scale with the following choices: 1=Definitely False, 2=Somewhat False; 3=Somewhat True; and 4=Definitely True. Analysis of the ADSHS items produced a Cronbach’s alpha of 0.93 for the overall scale in a pilot study. The domain-specific subscales produced the following reliability statistics: a.) Social Relationships Agency=.865; Pathways=.837; b) Academic Agency=.807; Pathways=.727; c) Outside School Agency=.816; Pathways=.783; d) Family Relationships Agency=.896; Pathways=.868

MDI. The MDI (Bech, 1998) is a 12-item self-report measure of the presence and severity of depressive-type symptoms. The MDI consists of a six-point scale for each item. The items of the MDI correspond to ten symptoms of depression identified in the DSM-IV major depression symptoms, with the exception of self-esteem. Individual items measure how frequently the symptoms have been present (0 being not at all, and 5 being all the time) in the past two weeks. The reliability and validity of MDI scores have been demonstrated in a number of studies described by Bech (1998) and Bech et al. (2001), and Olsen et al. (2003). One benefit of the MDI is that it can be used in two ways: 1) It can be used as a continuous scale to indicate the level of depression, and 2) it has an algorithm that allows clinicians to identify the presence of Major Depressive Disorder (MDD) according to the diagnostic criteria of the DSM-IV (Cuijpers et al., 2007). Konstantinidis, Martiny, Bech, & Kasper (2011) found the MDI to be superior to the Beck Depression Inventory (BDI) because the BDI’s clinical validity is limited in addressing the DSM-IV symptoms of depression.

NGSE. The most recent measure of generalized self-efficacy is the NGSE (Chen et al., 2001). The NGSE is an eight-item instrument that was created to assess a general sense of perceived self-efficacy. These eight items are rated on a 5-point scale with the anchors “strongly disagree” and “strongly agree.” Higher scores on this measure indicate higher levels of GSE. Psychometric evidence for this measure is encouraging with internal consistency of responses ranging from .85 to .90. Stability coefficients have ranged from $r = .60$ to $r = .65$ (Chen et al., 2001).

Procedure

Participants of the experimental groups received five weeks of EAL in addition to the regularly provided services of their school staff, while participants of the control group received treatment as usual (TAU), which was limited to the regularly provided services of their school staff. All participants in the control group will also be offered five weeks of EAL after the experimental group has completed their course of treatment. This purpose of allowing the control group to participate in the intervention after the study is to prevent negative feelings of exclusion or disappointment to impact their responses. Access to the treatment for all participants is also an ethical responsibility should the treatment be found to be effective. The curriculum used in the intervention is titled Project L.A.S.S.O. (Leading Adolescents to Successful School Outcomes). A detailed outline can be found in Appendix A.

Present at each session were a mental health professional, an equine professional, the participants, and one or more horses. The principle investigator in this study served as mental health professional. Qualifications include valid, current school counselor certification and certification by the Equine-Assisted Growth and Learning Association

(EAGALA). The mental health professional facilitated the activities and group processing.

The equine professional was also certified by EAGALA to do equine-assisted growth and learning activities. The equine professional was responsible for monitoring the horse's behavior and responses to the participants as well as keeping the focus on the horse's behavior. She also worked to keep the horse actively engaged and an integral part of the therapy. The horse's responsibility in the activities was to interact with the human participants. It is generally accepted that horses mirror the feelings and emotions of the participants. Horses also tend to cause the participants to analyze their own behaviors and intentions. When the focus remains on the horses, the participants do not feel judged. Participants in EAL generally welcome the opportunity to focus on the horses, only later realizing that the horse was mirroring what they were experiencing.

Research Questions

Quantitative measures are most effective in establishing any changes in levels of hope. Quantitative data analysis was, therefore, used to substantiate the changes in levels of hope, as well as in the related constructs of self-efficacy and depression. The quantitative research questions investigated in this study are:

1. Does participation in EAL cause an increase in hope in at-risk youth?
2. Does participation in EAL cause an increase in self-efficacy in at-risk youth?
3. Does participation in EAL cause a decrease in depression in at-risk youth EAL?

The research suggests that hope, self-efficacy, and depression will be positively impacted by the experience of EAL; therefore, the hypotheses are:

H_1 : Levels of hope will increase following participation in EAL.

H_2 : Levels of self-efficacy will increase following participation in EAL.

H_3 : Levels of depression will decrease following participation in EAL.

The null hypotheses are:

H_{0A} : Levels of hope will remain unchanged following participation in EAL,

H_{0B} : Levels of self-efficacy will remain unchanged following participation in EAL.

H_{0C} : Levels of depression will remain unchanged following participation in EAL.

Data Analysis

The research instruments were administered six times during the study. The assumptions of normality, homogeneity of variance, and sphericity were examined. Analysis of variance (ANOVA) was used to look for main effects of the treatment on levels of hope, generalized self-efficacy, and depression using the ADSHS, the NGSE, and the MDI. The pretest and posttest scores as well as the mid-intervention scores of both the treatment and the control groups were compared to determine if any significant differences in levels emerged as a result of participation in the LASSO project. Interactions within and between groups were examined as well as measures of effect size using generalized eta squared. Bakemann (2005) describes generalized eta squared as an appropriate measure of effect size in repeated measures designs.

The statistical analyses and descriptive statistics were analyzed and reported using SPSS (v. 19). To ensure confidentiality of participants, names were not associated with scores at any time during the data collection or analysis.

Chapter Summary

As a result of this study, further insight is gained into how a brief EAL intervention impacts levels of hope, self-efficacy, and depression in adolescents. It is important to know if similar results could be achieved via less expensive means such as TAU or if the expense is justified in the speed and solution-focused orientation of the intervention. Chapter four discusses the results of the data collection and analysis.

CHAPTER FOUR

Results

The purpose of this study was to determine if a brief, targeted intervention of equine-assisted learning (EAL) would cause a change in the attitudes of at-risk youth, particularly levels of hope, self-efficacy, and depression. The research questions answered are as follows:

1. Does participation in EAL cause an increase in hope in at-risk youth?
2. Does participation in EAL cause an increase in self-efficacy in at-risk youth?
3. Does participation in EAL cause a decrease in depression in at-risk youth
EAL?

This chapter provides a) a description of the participants and methods used to assign participants to either the treatment or control group; b) a brief discussion of the reliability of the scales used; c) description of the tests run in the analysis of the data and the assumptions of each; and d) a discussion of the final determination as to whether to accept or reject the null hypotheses.

Description of Participants

Participants were solicited with the help of the faculty and administration of Temple Education Center, a charter school in Temple, Texas. Students whose parents or guardians were willing to allow participation and sign all release and information forms were enrolled in the study. All participants were in grades 6 to 12 at Temple Education Center (TEC). TEC is a public charter school. They are selective in who they accept as students. They will not admit students who have been expelled, convicted or adjudicated.

A total of 26 youth participated in six administrations of the *Adolescent Domain-Specific Hope Scale* (ADSHS; Frederick, 2011), the *New Generalized Self-Efficacy Scale* (NGSE; Chen et al., 2001), and the *Major Depression Inventory* (MDI; Bech, 1998). Distribution of participant ages can be seen in Table 2 below.

Table 2: *Participant Ages*

Age	Number in Treatment	Number in Control
11	1	0
12	3	2
13	3	4
14	3	3
15	2*	3
16	1	0
17	1	0

Participant ethnicity included eleven white participants (42%), seven black participants (27%), two Hispanic participants (8%), and six participants (23%) who identified “Other” as their ethnicity. Participants in the treatment group included 10 females (71%) and 4 males (29%). Participants in the control group included 7 females (58%) and 5 males (42%). One 15-year old male who had been assigned to the treatment group dropped out of the school after the first data collection. His scores are included in the data analysis. Random assignment was used to place participants in either the treatment group, which participated in a 5-week intervention of EAL, or the control group, which received treatment as usual.

Absenteeism was a problem on Friday, May 4. On that date, four students were absent from the high school group, and two students were absent from the middle school group. Absenteeism was not a problem after that point.

Test-Retest Correlations

In chapter three, scale reliabilities were reported based upon published information about the scales. Test-Retest Correlations at each data collection point in this study have been calculated. All correlations are reported using a Pearson's *r*. The correlation coefficients obtained for each scale at each data collection point are reported in Table 3 through 5 below.

Table 3

Test-Retest Correlation Coefficients of Hope

Category	Time 1	Time 2	Time 3	Time 4	Time 5	Time 6
Time 1	1.000	.879**	.690**	.698**	.606**	.591**
Time 2	.879**	1.000	.771**	.808**	.689**	.733**
Time 3	.690**	.771**	1.000	.901**	.887**	.865**
Time 4	.698**	.808**	.901**	1.000	.952**	.941**
Time 5	.606**	.689**	.887**	.952**	1.000	.932**
Time 6	.591**	.733**	.865**	.941**	.932**	1.000

* $p < .05$, ** $p < .01$

Table 4

Test-Retest Correlation Coefficients of Self-Efficacy

Category	Time 1	Time 2	Time 3	Time 4	Time 5	Time 6
Time 1	1.000	.764**	.643**	.460*	.333	.303
Time 2	.764**	1.000	.794**	.571**	.396*	.467*
Time 3	.643**	.794**	1.000	.783**	.350	.704**
Time 4	.460*	.571**	.783**	1.000	.761**	.839**
Time 5	.333	.396*	.350	.761**	1.000	.668**
Time 6	.303	.467*	.704**	.839**	.668**	1.000

* $p < .05$, ** $p < .01$

Table 5

Test-Retest Correlation Coefficients of Depression

Category	Time 1	Time 2	Time 3	Time 4	Time 5	Time 6
Time 1	1.000	.871**	.881**	.884**	.633**	.723**
Time 2	.871**	1.000	.825**	.895**	.838**	.899**
Time 3	.881**	.825**	1.000	.882**	.631**	.716**
Time 4	.884**	.895**	.882**	1.000	.858**	.896**
Time 5	.633**	.838**	.631**	.858**	1.000	.982**
Time 6	.723**	.899**	.716**	.896**	.982**	1.000

* $p < .05$, ** $p < .01$

Testing the Hypotheses

In order to test the project’s hypotheses, the researcher first examined the differences in scores at time points one (the pre-test) and six (the post-test) using a *t*-test. Since this study randomly assigned participants to either the treatment or control group, any changes should theoretically be a result of the intervention.

Assumptions of the t-test

A *t*-test is a statistical procedure that has some basic assumptions. These assumptions include the following: a) normal distribution of data, b) homogeneity of variance, c) interval data, and d) independence. The data in this study are interval data and meet the assumption of independence. This leaves the assumptions of normality and homogeneity of variance to be investigated.

Normality of data. Descriptive data of normality at all data collection points for each scale are presented in Tables 6 through 14 below.

Table 6

Normality of Data for Hope

	N	Std	Mean	Skewness		Kurtosis	
	Statistic	Deviation	Statistic	Statistic	Std Error	Statistic	Std Error
HopeTot1	26	12.264	124.35	-.426	.456	-.539	.887
HopeTot2	25	11.802	130.04	-.707	.464	-.524	.902
HopeTot3	25	13.024	128.72	-.326	.464	-.973	.902
HopeTot4	25	15.236	130.04	-.863	.472	-.120	.918
HopeTot5	25	16.452	131.56	-.710	.464	-.917	.902
HopeTot6	25	16.832	131.68	-1.218	.464	-.734	.902

**The ADSHS has 38 questions answered with 1 through 4 (score range=38 through 152), with lower scores indicating lower levels of hope.*

Table 7

Normality of Data for Hope (Control Group)

	N	Std	Mean	Skewness		Kurtosis	
	Statistic	Deviation	Statistic	Statistic	Std Error	Statistic	Std Error
HopeTot1	12	10.604	122.08	-.131	.637	-1.035	1.232
HopeTot2	12	11.217	128.00	.172	.637	-1.467	1.232
HopeTot3	12	13.180	127.42	-.154	.637	-1.009	1.232
HopeTot4	12	16.283	126.67	-.814	.637	-.007	1.232
HopeTot5	12	18.714	128.75	-.464	.637	-1.476	1.232
HopeTot6	12	20.454	128.00	-.808	.637	-.376	1.232

Table 8

Normality of Data for Hope (Treatment Group)

	N	Std	Mean	Skewness		Kurtosis	
	Statistic	Deviation	Statistic	Statistic	Std Error	Statistic	Std Error
HopeTot1	14	13.612	126.29	-.793	.497	.069	1.154
HopeTot2	13	12.460	131.92	-1.524	.616	1.560	1.191
HopeTot3	13	13.294	129.92	-.538	.616	-.660	1.191
HopeTot4	12	13.977	133.42	-.975	.637	-.292	1.232
HopeTot5	13	14.323	134.15	-.958	.616	-.230	1.191
HopeTot6	13	12.533	135.08	-1.662	.616	2.606	1.191

Table 9

Normality of Data for Self-Efficacy

	N Statistic	Std Deviation	Mean Statistic	Skewness		Kurtosis	
				Statistic	Std Error	Statistic	Std Error
SE Tot 1	26	6.661	33.15	-.921	.456	.164	.887
SE Tot 2	25	7.270	34.24	-1.642	.464	2.082	.902
SE Tot 3	25	8.352	33.56	-1.849	.464	3.225	.902
SE Tot 4	25	5.531	35.38	-1.224	.472	.712	.918
SE Tot 5	25	5.037	36.96	-2.137	.464	4.683	.902
SE Tot 6	25	4.933	37.40	-2.004	.464	3.020	.902

**The NGSE has 8 questions answered with 1 through 5 (score range=8 through 40), with lower scores indicating lower levels of self-efficacy.*

Table 10

Normality of Data for Self-Efficacy (Control Group)

	N Statistic	Std Deviation	Mean Statistic	Skewness		Kurtosis	
				Statistic	Std Error	Statistic	Std Error
SE Tot 1	12	5.854	31.92	-.325	.637	-.660	1.232
SE Tot 2	12	6.800	33.67	-1.028	.637	.002	1.232
SE Tot 3	12	8.795	31.58	-1.850	.637	4.514	1.232
SE Tot 4	12	5.502	34.50	-.595	.637	-.937	1.232
SE Tot 5	12	4.680	36.42	-1.044	.637	-.282	1.232
SE Tot 6	12	5.323	36.17	-1.392	.637	1.086	1.232

Table 11

Normality of Data for Self-Efficacy (Treatment Group)

	N Statistic	Std Deviation	Mean Statistic	Skewness		Kurtosis	
				Statistic	Std Error	Statistic	Std Error
SE Tot 1	14	7.329	34.21	-1.482	.597	1.634	1.154
SE Tot 2	13	7.918	34.77	-2.240	.616	4.738	1.191
SE Tot 3	13	7.816	35.38	-2.310	.616	4.741	1.191
SE Tot 4	12	5.659	36.25	-2.111	.637	4.673	1.232
SE Tot 5	13	5.487	37.46	-3.100	.616	10.270	1.191
SE Tot 6	13	4.446	38.54	-3.409	.616	11.854	1.191

Table 12

Normality of Data for Depression

	N Statistic	Std Deviation	Mean Statistic	Skewness		Kurtosis	
				Statistic	Std Error	Statistic	Std Error
Dep Tot1	26	13.288	11.42	1.970	.456	4.297	.887
Dep Tot2	25	13.754	11.56	1.535	.464	2.262	.902
Dep Tot3	25	12.368	9.32	1.994	.464	4.744	.902
Dep Tot4	25	12.743	10.13	1.842	.472	4.315	.918
Dep Tot5	25	16.116	10.72	2.121	.464	4.107	.902
Dep Tot6	25	15.081	9.24	2.108	.464	4.116	.902

**The MDI has 12 questions answered with 0 through 5 (score range=0 through 60), with higher scores indicating higher levels of depression.*

Table 13

Normality of Data for Depression (Control Group)

	N Statistic	Std Deviation	Mean Statistic	Skewness		Kurtosis	
				Statistic	Std Error	Statistic	Std Error
Dep Tot1	12	5.707	11.75	.403	.637	-1.302	1.232
Dep Tot2	12	11.427	13.75	.371	.637	-1.691	1.232
Dep Tot3	12	9.109	9.33	.692	.637	-1.098	1.232
Dep Tot4	12	8.764	11.58	.125	.637	-1.567	1.232
Dep Tot5	12	17.390	14.33	1.910	.637	3.882	1.232
Dep Tot6	12	14.391	12.25	1.577	.637	2.513	1.232

Table 14

Normality of Data for Depression (Treatment Group)

	N Statistic	Std Deviation	Mean Statistic	Skewness		Kurtosis	
				Statistic	Std Error	Statistic	Std Error
Dep Tot1	14	17.659	11.14	1.777	.597	2.221	1.154
Dep Tot2	13	15.794	9.54	2.296	.616	5.215	1.191
Dep Tot3	13	15.162	9.31	2.220	.616	5.054	1.191
Dep Tot4	12	16.064	8.67	2.324	.637	5.408	1.232
Dep Tot5	13	14.734	7.38	2.888	.616	8.849	1.191
Dep Tot6	13	15.735	6.46	3.051	.616	9.691	1.191

In a normal distribution, the values of skewness and kurtosis should be zero. Positive values of skewness indicate a greater number of scores on the left of the distribution, while negative values indicate more scores on the right of the distribution. As for kurtosis, positive values indicate a somewhat pointed distribution, and negative values are indicative of a flatter distribution. The further the value is from zero, the greater the indication that the data are not normally distributed.

In order to aid in visualizing the data's normality (or lack thereof), Figures 2 through 13 below show the histograms of the pre- and post-intervention z-scores.

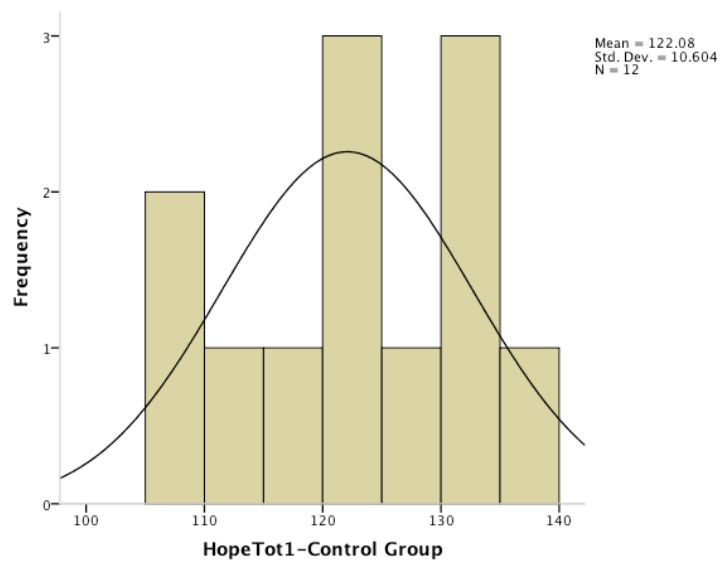


Figure 2. Hope Totals—Time 1 for Control Group

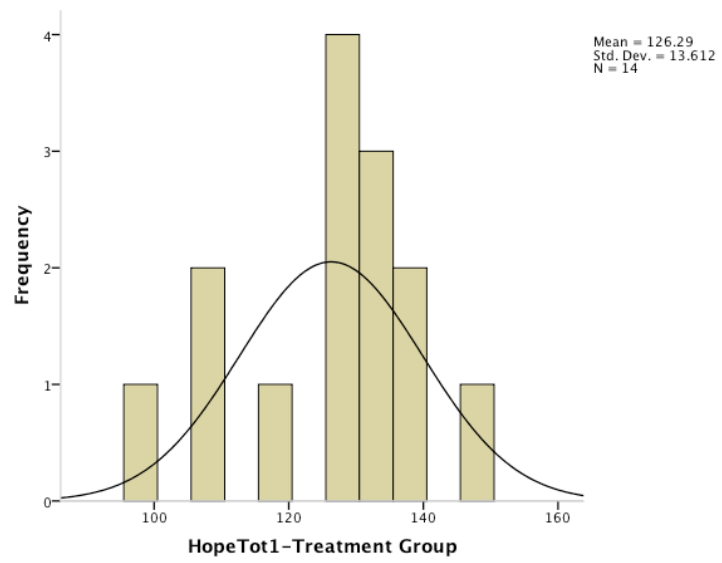


Figure 3. Hope Totals—Time 1 for Treatment Group

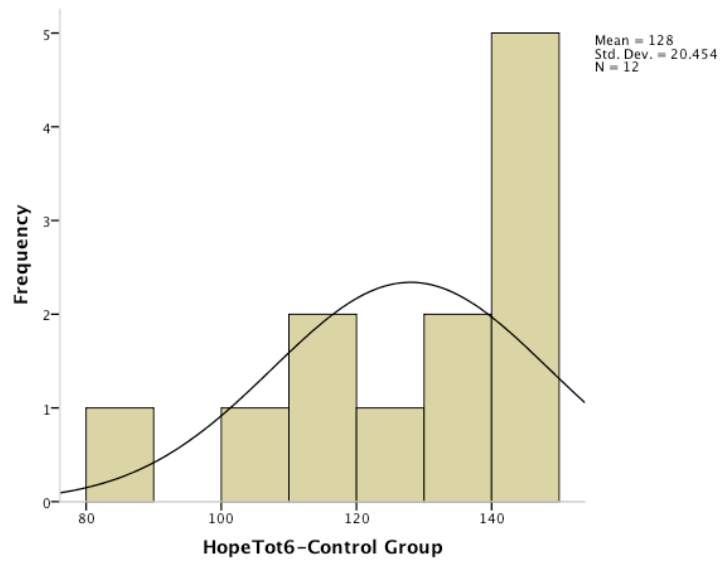


Figure 4. Hope Totals—Time 6 for Control Group

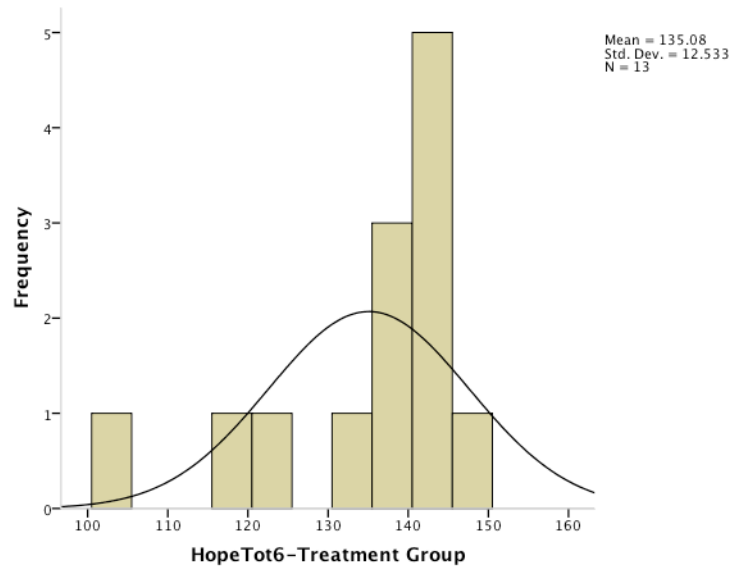


Figure 5. Hope Totals—Time 6 for Treatment Group

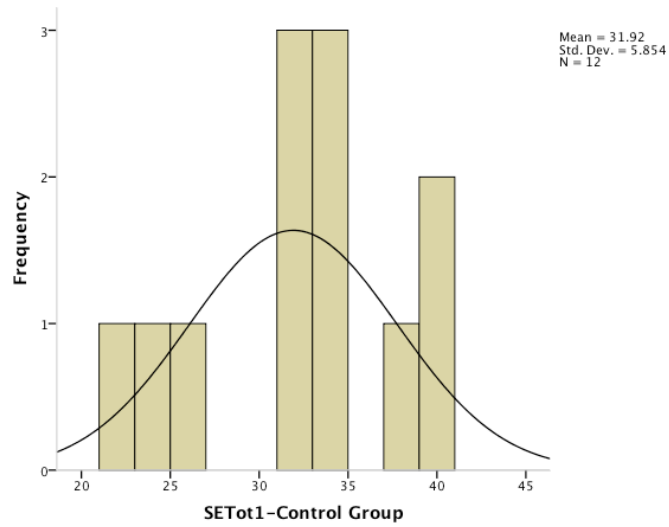


Figure 6. Self-Efficacy Totals—Time 1 for Control Group

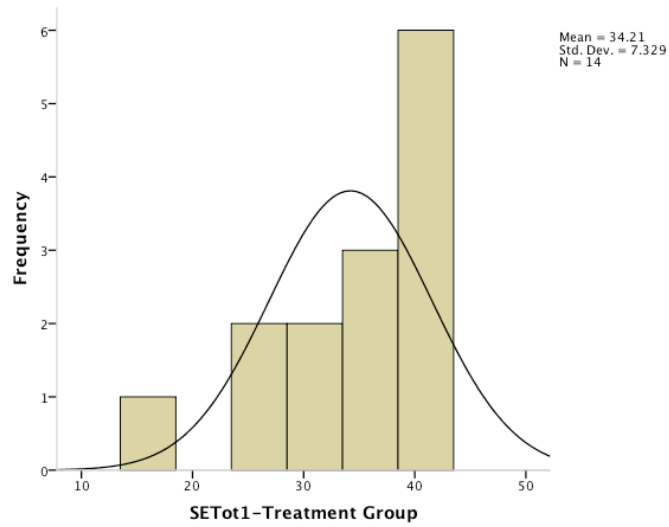


Figure 7. Self-Efficacy Totals—Time 1 for Treatment Group

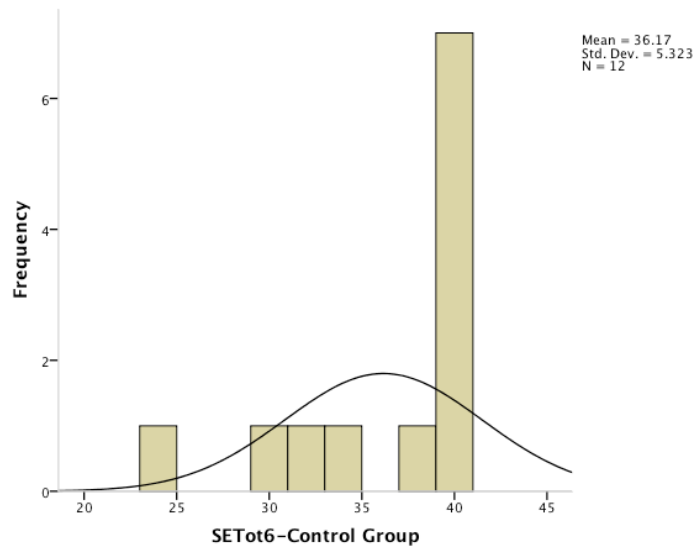


Figure 8. Self-Efficacy Totals—Time 6 for Control Group

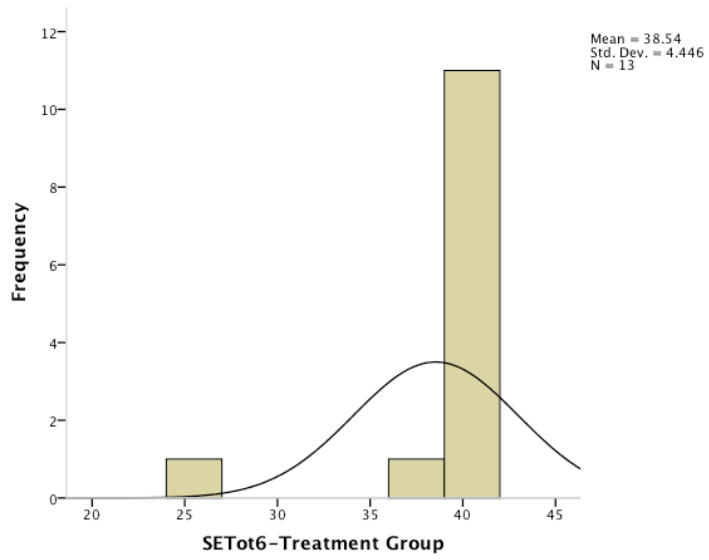


Figure 9. Self-Efficacy Totals—Time 6 for Treatment Group

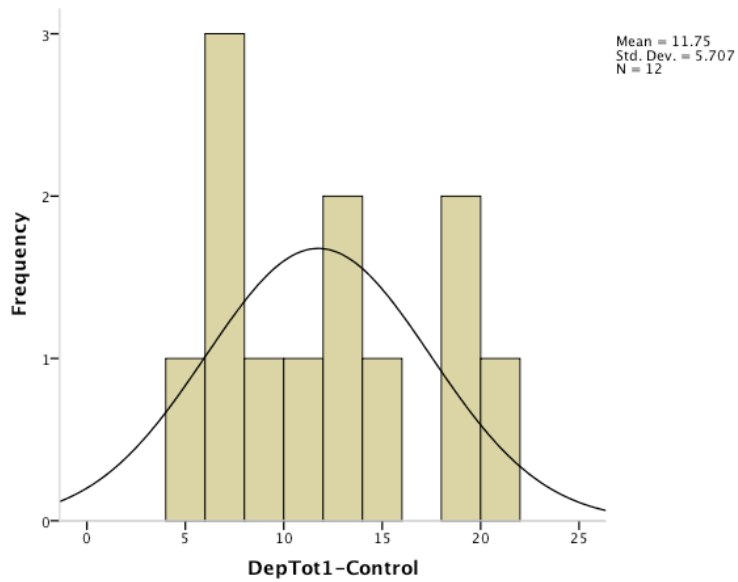


Figure 10. Depression Totals—Time 1 for Control Group

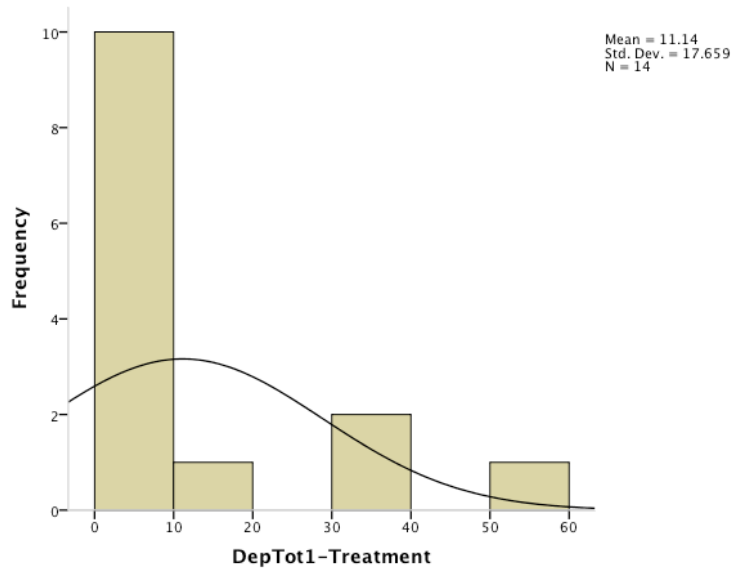


Figure 11. Depression Totals—Time 1 for Treatment Group

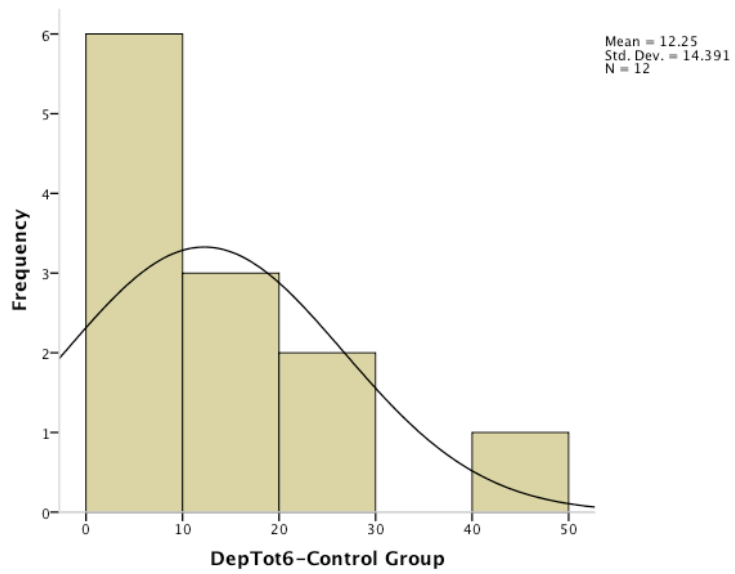


Figure 12. Depression Totals—Time 6 for Control Group

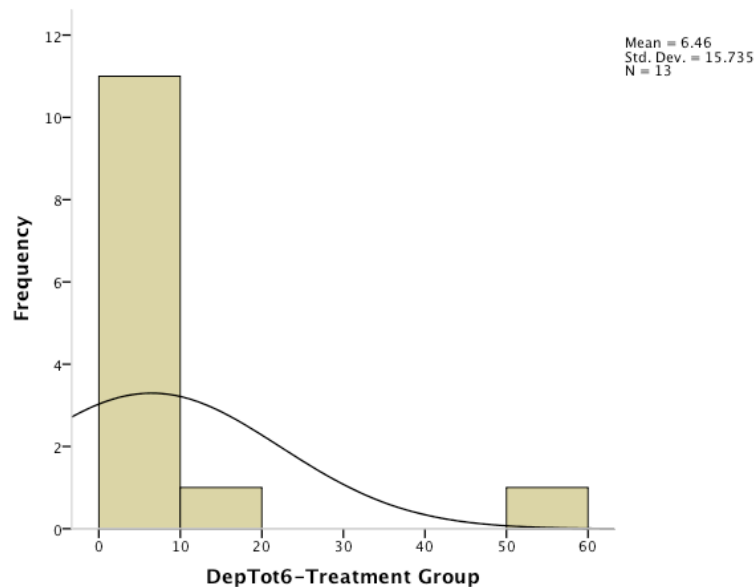


Figure 13. Depression Totals—Time 6 for Treatment Group

It can be seen in Figures 2 through 13 above, that the data for Hope, Self-Efficacy, and Depression do not appear to be normally distributed. In order to further investigate the normality of the data, a Shapiro-Wilk test was completed on each data collection point. For samples of less than 30 participants, Glass & Hopkins (1996) state that normality is best evaluated using the Shapiro-Wilk (SW) statistic. Tables 15 through 20 below show the results of the SW tests for this study.

It can be seen that the treatment group regularly shows significance, with the exception of Hope Totals at collection points 1 and 3. This again indicates that the assumption of normality has been violated. After determining the violation of the assumption of normality, various statistical techniques were utilized for further analysis of the data. These techniques are described as they are utilized.

Table 15

Shapiro-Wilk Test of Normality for the Treatment Group-Hope

	Shapiro-Wilk		
	Statistic	df	Sig.
HopeTot1	.904	12	.177
HopeTot2	.805	12	.011*
HopeTot3	.912	12	.225
HopeTot4	.858	12	.046*
HopeTot5	.839	12	.027*
HopeTot6	.830	12	.021*

* $p < .05$

Table 16

Shapiro-Wilk Test of Normality for the Treatment Group-Self-Efficacy

	Shapiro-Wilk		
	Statistic	df	Sig.
SETot1	.711	12	.001*
SETot2	.681	12	.001*
SETot3	.619	12	.000*
SETot4	.715	12	.001*
SETot5	.493	12	.000*
SETot6	.405	12	.000*

* $p < .05$

Table 17

Shapiro-Wilk Test of Normality for the Treatment Group-Depression

	Shapiro-Wilk		
	Statistic	df	Sig.
DepTot1	.613	12	.000*
DepTot2	.680	12	.001*
DepTot3	.682	12	.001*
DepTot4	.625	12	.000*
DepTot5	.573	12	.000*
DepTot6	.512	12	.000*

* $p < .05$

Table 18

Shapiro-Wilk Test of Normality for the Control Group-Hope

	Shapiro-Wilk		
	Statistic	df	Sig.
HopeTot1	.959	12	.763
HopeTot2	.925	12	.326
HopeTot3	.975	12	.955
HopeTot4	.934	12	.419
HopeTot5	.873	12	.071
HopeTot6	.889	12	.113

* $p < .05$

Table 19

Shapiro-Wilk Test of Normality for the Control Group-Self-Efficacy

	Shapiro-Wilk		
	Statistic	df	Sig.
SETot1	.935	12	.437
SETot2	.864	12	.054
SETot3	.822	12	.017*
SETot4	.875	12	.077
SETot5	.788	12	.007*
SETot6	.773	12	.005*

* $p < .05$

Table 20

Shapiro-Wilk Test of Normality for the Control Group-Depression

	Shapiro-Wilk		
	Statistic	df	Sig.
DepTot1	.904	12	.176
DepTot2	.879	12	.086
DepTot3	.870	12	.065
DepTot4	.908	12	.203
DepTot5	.776	12	.005*
DepTot6	.829	12	.020*

* $p < .05$

Homogeneity of variance. The data analysis continued with investigation of another assumption of a *t*-test, homogeneity of variance. Homogeneity of variance was tested using Levene's test with each scale. This tests the hypothesis that variances in different groups are equal. A significant result indicates that the variances are significantly different which would indicate a violation of the assumption. None of the scales used had significant results on Levene's test indicating that there was no violation of this assumption. Results are shown in Table 21 below.

Table 21

Levene's Test of Equality of Error Variances

Scale	F	df1	df2	Significance
Hope Tot1	.224	1	22	.640
Hope Tot2	.017	1	22	.896
Hope Tot3	.003	1	22	.955
Hope Tot4	.188	1	22	.669
Hope Tot5	1.797	1	22	.194
Hope Tot6	3.386	1	22	.079
Dep Tot1	4.048	1	22	.057
Dep Tot2	.116	1	22	.737
Dep Tot3	1.397	1	22	.250
Dep Tot4	1.278	1	22	.270
Dep Tot5	.337	1	22	.560
Dep Tot6	.022	1	22	.883
SE Tot1	.244	1	22	.626
SE Tot2	.003	1	22	.957
SE Tot3	.028	1	22	.870
SE Tot4	.466	1	22	.502
SE Tot5	.139	1	22	.712
SE Tot6	1.456	1	22	.240

* $p < .05$

Results of the t-tests. Paired samples *t*-tests using split data were run to determine any differences between the pre- and post-treatment scores on Hope, Self-Efficacy, and

Depression in either the treatment or control groups. Due to the violation of the assumption of normality, bootstrapping was utilized. According to Berkovitz, Hancock, & Nevitt (2000), when violations of both normality and sphericity occur, the bootstrap method seems to be the most robust alternative, even with small samples. The scores can be seen below in Tables 22 and 23.

Table 22

Results of Paired Samples t-Tests for Control Group

Scale	<i>t</i>	<i>df</i> ₂	Sig.	Effect size Hedge's <i>g</i>	Std. Error
Hope Tot1-Tot 6	-1.203	11	.254	.35	4.92
<i>Hope Tot1-Tot6</i>			.275		4.64
SE Tot1-Tot 6	-2.006	11	.070	.73	2.12
<i>SE Tot1-Tot6</i>			.072		2.06
Dep Tot1-Tot6	- .121	11	.906	.04	4.14
<i>Dep Tot1-Tot6</i>			.899		3.90

Indented, italicized lines indicate results from Bootstrapping.
**p* < .05

Table 23

Results of Paired Samples t-Tests for Treatment Group

Scale	<i>t</i>	<i>df</i> ₂	Sig.	Effect size (Hedge's <i>g</i>)	Std. Error
Hope Tot1-Tot 6	-2.536	12	.026	.56	2.91
<i>Hope Tot1-Tot6</i>			.037*		2.80
SE Tot1-Tot 6	-1.896	12	.082	.59	1.87
<i>SE Tot1-Tot6</i>			.216		1.85
Dep Tot1-Tot6	1.827	12	.093	.16	1.47
<i>Dep Tot1-Tot6</i>			.108		1.43

Indented, italicized lines indicate results from Bootstrapping.
**p* < .05

In comparing the pre and post-intervention hope scores in the treatment and control groups, scores of participants in the treatment group showed a greater increase

than the control group after experiencing the 5-week program of EAL. This difference was statistically significant $t(12) = -2.536, p < .05, g = 0.56$. Based on Cohen (1988, 1992), this represents a medium effect size.

In comparing pre- and post-intervention self-efficacy scores in the treatment and control groups, scores of participants in the treatment group showed a greater increase than the control group after experiencing the 5-week program of EAL. This difference was not statistically significant, $t(12) = -1.896, p > .05$. It should be noted, however, that an effect size of $g = .59$ indicates a medium effect size.

Pre- and post-intervention depression scores were examined in both the treatment and control group. Scores of participants in the treatment group showed a greater change (decrease) in depression scores, $t(12) = 1.827, p > .05$. A small effect size of $g = .16$ was found. Effect sizes are shown as a Hedge's g statistic and were calculated according to the formula found in Durlak (2009).

Tables 24 and 25 below show the descriptive statistics comparing the treatment and control groups at pre and post-intervention data collections for all three instruments.

Table 24

Paired Samples Statistics for Control Group

Scale / #	<i>N</i>	Mean	Std. Dev.	Std. Error Mean
Hope 1	12	122.08	10.604	3.061
Hope 6	12	128.00	20.454	5.905
SE 1	12	31.92	5.854	1.690
SE 6	12	36.17	5.323	1.537
Dep 1	12	11.75	5.707	1.647
Dep 6	12	12.25	14.391	4.154

Table 25

Paired Samples Statistics for Treatment Group

Scale / #	<i>N</i>	Mean	Std. Dev.	Std. Error Mean
Hope 1	13	127.69	13.066	3.624
Hope 6	13	135.08	12.533	3.476
SE 1	13	35.00	6.988	1.938
SE 6	13	38.54	4.446	1.233
Dep 1	13	9.15	16.668	4.623
Dep 6	13	6.46	15.735	4.364

Analysis of Variance

The *t*-tests described above show pre- and post-intervention differences. In order to examine the differences at each of the time points, an analysis of variance (ANOVA) was completed. In addition to the assumptions investigated earlier in this chapter, an ANOVA has an additional assumption of sphericity.

Assumption of sphericity. In order to test the assumption of sphericity, a Mauchly's test was run on each scale. The results can be seen in Table 26 below.

Table 26

Mauchly's Test of Sphericity

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	<i>df</i>	Sig.	Epsilon Greenhouse-Geisser	Epsilon Huynh-Feldt	Lower-Bound
Hope	.037	66.505	14	.000	.376	.429	.200
Depression	.006	101.779	14	.000	.350	.395	.200
Self-Eff	.038	65.472	14	.000	.522	.626	.200

**p* < .05

Significance in the results of a Mauchly's indicate that the assumption of sphericity has not been met and an appropriate correction must be applied to the degrees

of freedom of the *F-ratio*. All scales showed violation of the assumption of sphericity. The corrected tests (Greenhouse-Guisser and Huynh-Feldt) are shown in Table 26 as well.

Results of the ANOVA

Investigation of the assumptions indicates that the data violate two of the assumptions of ANOVA, the assumption of normality and the assumption of sphericity. A repeated-measures ANOVA was run first. Corrections to these violations are shown after the results of the ANOVA. The *F-ratio* produced in an ANOVA compares the size of the variation caused by the treatment to the size of the variation caused by random factors.

Hope. The results show that levels of hope were not significantly impacted, $F(1.881, 41.388) = 3.071, p = .060, \eta^2 = .122$, using the Greenhouse-Geisser correction. Based on Cohen's (1988) definition of an η^2 of .02 as small, of .13 as medium, and of .26 as large, this is approaching a medium effect size. Mauchly's test indicated that the assumption of sphericity had been violated $X^2(14) = 66.51, p < .05$, therefore multivariate tests are also reported. Multivariate analysis of variance does not require sphericity. Vasey & Thayer (1987) state that, "under normal conditions of use, one can consider the multivariate test 'exact' for repeated measures designs while the univariate approach can only be considered 'approximate' due to the additional assumption of sphericity it carries" (p. 483). The results of the multivariate tests show that hope scores were significantly affected by the treatment. Pillai's Trace produced a $V = .511, F(5, 18) = 3.76, p = .017$.

Self-Efficacy. In examining within-subjects levels of self-efficacy, the data show that levels of self-efficacy were significantly impacted, $F(2.61, 57.45) = 3.837, p = .018, \eta^2 = .149$. This indicates a medium effect size. The Greenhouse-Geisser correction was utilized. Because Mauchly's test indicated a violation of the assumption of sphericity, $X^2(14) = 65.47, p < .05$, multivariate tests are reported. The results of the multivariate tests show that self-efficacy scores were not significantly affected by the treatment. Pillai's Trace statistic produced a $V = .386, F(5, 18) = 2.262, p = .092$.

Depression. Within-subjects levels of depression were examined. The data show that levels of depression were not significantly impacted, $F(1.75, 38.52) = .581, p = .542, \eta^2 = .026$. This indicates a small effect size. Because Mauchly's test indicated a violation of the assumption of sphericity, $X^2(14) = 101.78, p < .05$, multivariate tests are reported. The results of the multivariate tests show that depression scores were significantly impacted by the treatment. Pillai's Trace statistic produced a $V = .471, F(5, 18) = 3.20, p = .031$. All effect sizes were calculated using the generalized eta squared formula recommended by Bakeman (2005).

Table 27

Tests of Within-Subject Effects on Hope

Scale / Correction	Sum of Squares	df	F	η^2	Sig.
Hope	705.396	5	3.071	.122	.012*
Greenhouse-Geisser	705.396	1.881	3.071	.122	.060
Hope*TreatmtContrl	89.681	5	.390	.017	.855
Greenhouse-Geisser	89.681	1.881	.390	.017	.667
Error	5052.486	110			
Error GG	5052.486	41.388			

* $p < .05$

Table 28

Tests of Within-Subject Effects on Self-Efficacy

Scale / Correction	Sum of Squares	<i>df</i>	<i>F</i>	η^2	Sig.
Self-Efficacy	354.785	5	3.837	.149	.003*
Greenhouse-Geisser	354.785	2.611	3.837	.149	.018*
SE*TreatmtControl	38.285	5	.414	.018	.838
Greenhouse-Geisser	38.285	2.611	.414	.018	.716
Error	2034.097	110			
Error GG	2034.097	57.445			

**p* < .05

Table 29

Tests of Within-Subject Effects on Depression

Scale / Correction	Sum of Squares	<i>df</i>	<i>F</i>	η^2	Sig.
Depression	104.785	5	.581	.026	.715
Greenhouse-Geisser	104.785	1.751	.581	.026	.542
SE*TreatmtControl	38.285	5	.996	.043	.424
Greenhouse-Geisser	38.285	1.751	.996	.043	.369
Error	3970.596	110			
Error GG	3970.597	38.518			

**p* < .05

Table 30

Tests of Between-Subjects Effects on Hope

Scale	<i>df</i>	Mean Square	<i>F</i>	Sig.	η^2
Hope	1	2409480.06	2279.912	.000*	.10
TreatmtContrl	1	925.174	.875	.360	.04
Error	22	1056.830			

**p* < .05

Table 31

Tests of Between-Subject Effects on Self-Efficacy

Scale	<i>df</i>	Mean Square	F	Sig.	η^2
Self-Efficacy	1	177592.007	1089.222	.000*	.09
TreatmtContrl	1	166.840	1.023	.323	.04
Error	22	163.045			

**p* < .05

Table 32

Tests of Between-Subject Effects on Depression

Scale	<i>df</i>	Mean Square	F	Sig.	η^2
Group	1	15771.174	15.403	.001*	.12
TreatmtContrl	1	416.840	.407	.530	.02
Error	22	1023.901			

**p* < .05*Multivariate Tests*

In the event of a violation of the assumption of sphericity, Hassmen (1997) recommends the use of multivariate analysis of variance, which does not require sphericity. Results of the multivariate analyses are shown below in Table 33.

Table 33

Multivariate Tests

Scale	Pillai's Trace Value	<i>F</i>	Sig.
Hope	.196	5.620	.027*
Hope *TC	.003	.068	.796
Self-Efficacy	.386	2.262	.092
SE*TC	.199	.896	.505
Depression	.471	3.200	.031*
Depr*TC	.126	.518	.759

**p* < .05

Results Shown in Figures

To aid in visualizing the various scores at the different time points, figures are provided. The figures below show the estimated marginal means of Hope, Self-Efficacy, and Depression between the treatment and control groups.

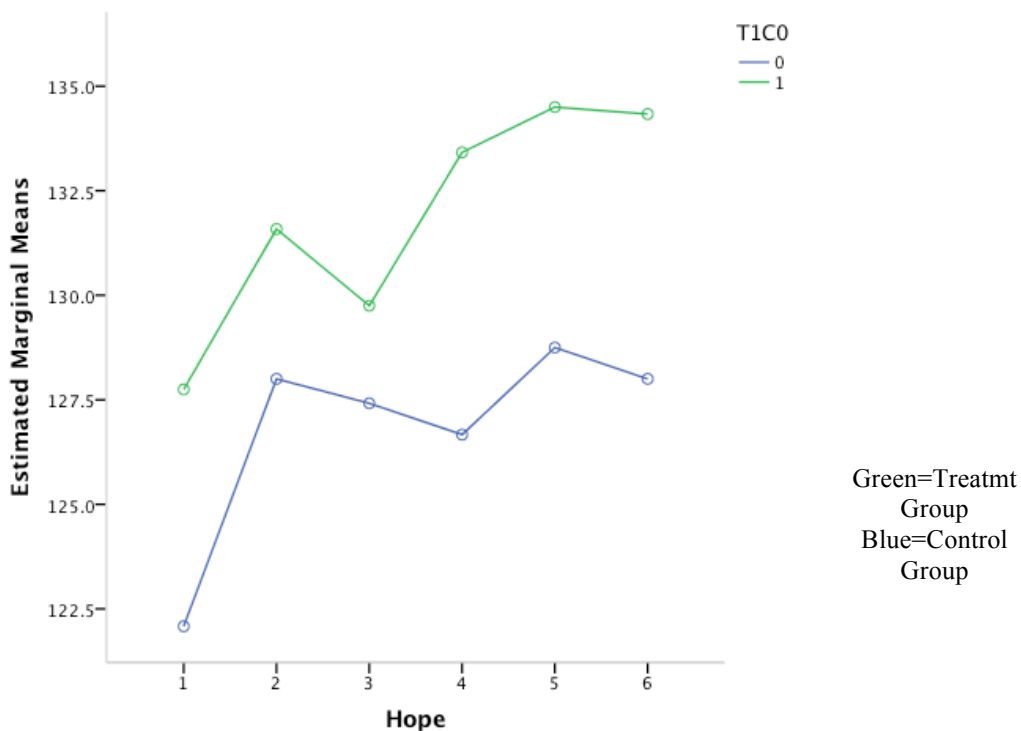


Figure 14. Estimated Marginal Means of Hope at Points 1 to 6

In Figure 14, we see that the means of hope increased in both the treatment and the control groups. The increase in the treatment group seems to level off at the latest time points, while the control group's hope scores decreased at the last time point. The effect size reported earlier indicates very near to a medium effect size ($\eta^2 = .128$).

Figure 15 below shows levels of self-efficacy at all six time points.

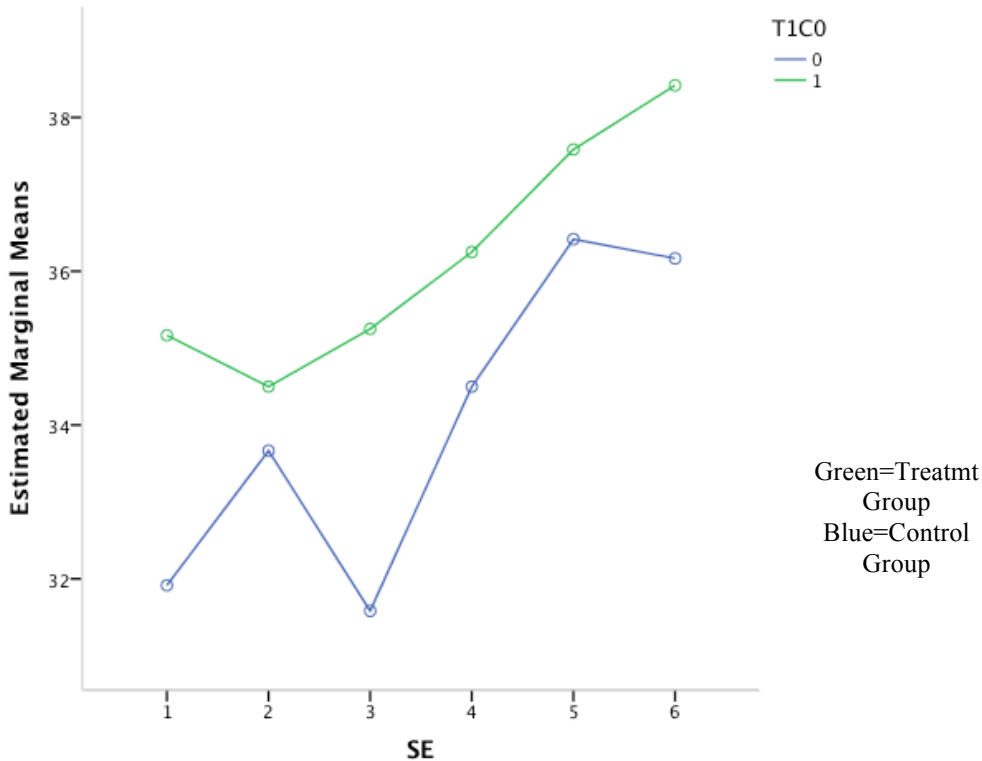


Figure 15. Estimated Marginal Means of Self-Efficacy at Points 1 through 6

After a brief drop in self-efficacy levels at point 2, the treatment group shows consistent improvement in Self-Efficacy scores. Interestingly, the control group shows erratic rising and falling of Self-Efficacy scores. After rising sharply at point 2, followed by a dramatic drop at point 3, and then two points of strong increases, the Self-efficacy scores of the control group level off or decrease at point 6, while the self-efficacy scores of the treatment group continue to climb. The effect size reported earlier is small, but approaching medium effect size ($\eta^2 = .108$)

Figure 16 below, shows levels of depression over the six data collection points.

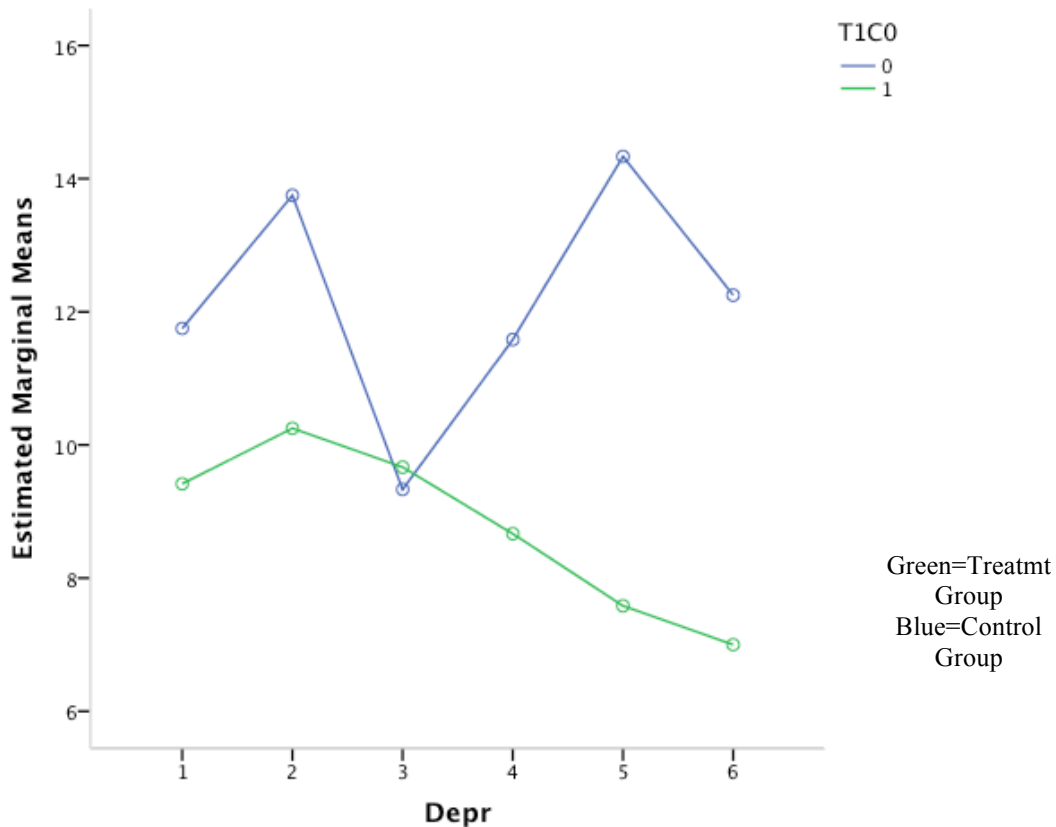


Figure 16. Estimated Marginal Means of Depression at Points 1 to 6

It is interesting to note that the treatment group's levels of depression dropped consistently after a small initial rise, while the control group fluctuated somewhat wildly but begin and end at nearly the same point. A small effect was noted for depression ($\eta^2 = .082$).

Violations of some of the assumptions of the statistical procedures cause the researcher to be cautious in the interpretations of the data. The paired samples *t*-tests indicated that Hope scores improved significantly from pre- to post-intervention, with a medium effect size of $r = .59$. The univariate analyses of variance found statistically significant changes in levels of self-efficacy only, while the multivariate analyses found

statistically significant changes in levels of depression and hope. Bergh (1995) suggests that if the assumption of sphericity is met, then conventional univariate methods are the most powerful and robust, while if this assumption is violated, then multivariate models should be utilized. He cautions that the multivariate approach is less powerful than univariate techniques and may yield type II statistical errors.

Non-Parametric Tests

Bootstrapping is an effective way to correct for violations of the assumptions of normality and sphericity (Berkovitz, Hancock, & Nevitt, 2000). Unfortunately, SPSS does not offer the option of bootstrapping with repeated measures ANOVA. Therefore, non-parametric tests were run. Non-parametric tests do not have an assumption of normality. A Friedman’s ANOVA is a non-parametric test which tests for differences between related groups. The data is split into treatment and control groups and then an ANOVA is completed. Descriptive Statistics for the Friedman Test for the control group are shown in Tables 34 to 36, while the descriptive statistics for the treatment group are shown in Tables 37 to 39.

Table 34

Friedman Test Descriptive Statistics For Hope Scale-Control Group

Scale / #	N	Mean	Std. Deviation	Ranks
Hope Tot1	12	122.08	10.604	2.38
Hope Tot2	12	128.00	11.217	3.92
Hope Tot3	12	127.42	13.180	3.63
Hope Tot4	12	126.67	16.283	3.67
Hope Tot5	12	128.75	18.714	3.88
Hope Tot6	12	128.00	20.454	3.54

Table 35

Friedman Test Descriptive Statistics For Self-Efficacy Scale-Control Group

Scale / #	N	Mean	Std. Deviation	Ranks
SE Tot1	12	31.92	5.854	2.63
SE Tot2	12	33.67	6.800	3.46
SE Tot3	12	31.58	8.795	2.58
SE Tot4	12	34.50	5.502	3.42
SE Tot5	12	36.42	4.680	4.38
SE Tot6	12	36.17	5.323	4.54

Table 36

Friedman Test Descriptive Statistics for Depression Scale-Control Group

Scale / #	N	Mean	Std. Deviation	Ranks
Dep Tot1	12	11.75	5.707	4.25
Dep Tot2	12	13.75	11.427	4.17
Dep Tot3	12	9.33	9.109	3.29
Dep Tot4	12	11.58	8.764	3.29
Dep Tot5	12	14.33	17.390	3.50
Dep Tot6	12	12.25	14.391	2.50

Table 37

Friedman Test Descriptive Statistics For Hope Scale-Treatment Group

Scale / #	N	Mean	Std. Deviation	Ranks
Hope Tot1	12	127.75	13.646	2.21
Hope Tot2	12	131.58	12.951	2.88
Hope Tot3	12	129.75	13.870	2.83
Hope Tot4	12	133.42	13.977	4.33
Hope Tot5	12	134.50	14.903	4.46
Hope Tot6	12	134.33	12.787	4.29

Table 38

Friedman Test Descriptive Statistics For Self-Efficacy Scale-Treatment Group

Scale / #	N	Mean	Std. Deviation	Ranks
SE Tot1	12	35.17	7.272	3.04
SE Tot2	12	34.50	8.208	2.58
SE Tot3	12	35.25	8.148	3.00
SE Tot4	12	36.25	5.659	3.38
SE Tot5	12	37.58	5.712	4.13
SE Tot6	12	38.42	4.621	4.88

Table 39

Friedman Test Descriptive Statistics For Depression Scale-Treatment Group

Scale / #	N	Mean	Std. Deviation	Ranks
Dep Tot1	12	9.42	17.381	3.88
Dep Tot2	12	10.25	16.277	4.50
Dep Tot3	12	9.67	15.779	3.92
Dep Tot4	12	8.67	16.064	3.25
Dep Tot5	12	7.58	15.371	2.92
Dep Tot6	12	7.00	16.310	2.54

The Friedman's ANOVA produces a chi-square statistic. The results of the Friedman's ANOVA for both the control and the treatment groups are shown in Tables 40 and 41 below.

Table 40

Results of Friedman's ANOVA for Control Group

Scale	N	χ^2	df	Significance
Hope	12	5.764	5	.330
Self-Efficacy	12	14.896	5	.011*
Depression	12	7.913	5	.161

* $p < .05$

Table 41

Results of Friedman's ANOVA for Treatment Group

Scale	N	χ^2	df	Significance
Hope	12	16.538	5	.005*
Self-Efficacy	12	17.096	5	.004*
Depression	12	14.004	5	.016*

* $p < .05$

Because significance was found in all scales in the treatment group and in Self-Efficacy in the control group, *Post hoc* tests for Friedman's ANOVA were performed. It was necessary to correct for the number of tests, similar to the Bonferroni correction. The significance level was .05, therefore .05 was divided by the number of comparisons (6). Therefore, rather than use .05 as the critical level of significance, .05/6 was used, which is .0083. With this correction, none of the scales showed significance in the Control group, while Hope and Self-Efficacy remain significant in the Treatment group.

The results of the tests run are somewhat inconsistent in showing significance levels. Caution must be used in interpretations made. Results are discussed further in Chapter Five.

CHAPTER FIVE

Discussion

This study investigated the effects of a five-week intervention of equine-assisted learning (EAL) on levels of hope, depression, and self-efficacy on at-risk youth. The literature indicates that EAL has positive effects on youth, particularly in youth who are considered to be at-risk. The existing studies have all utilized eight to twelve week interventions of EAL. The intervention in this study was limited to five weeks.

The EAL activities varied each week. A sample activity is called “Life’s Little Obstacles.” In this activity, participants were instructed to utilize the props in the arena to build an obstacle course which they would then take the horses through. Props included plastic barrels, wooden cavalettis, plastic pipes, and tarps. Participants created as many obstacles as they desired and labeled them with the names of some of the obstacles that they were currently facing in their lives. One student named one of the obstacles, “grief” because she was dealing with the loss of her father. One group put barrels in a row for the horses to zig-zag around and labeled the barrels the grades through which they needed to pass in order to graduate from high school. Another obstacle created was a row of cavalettis that the horses needed to step over—participants labeled this obstacle “drama” or mean kids. Participants had to get the horses to go through/over/around each of the obstacles without touching the horses or bribing the horses, which can be very difficult indeed. All activities used in the intervention were intended to be somewhat difficult in order to cause participants to think creatively and problem-solve. Discussion then followed in which participants shared what the experience was like for them, what

worked, what didn't work, and how they can apply the learning to the obstacles they face in life. A detailed outline of the LASSO curriculum and activities can be found in Appendix A.

Test-Retest Correlations

In examining the test-retest correlations, all scales had adequate correlations. The correlations of the ADSHS ranged from a low of .591 to a high of .952 with all probabilities being significant, $p < .01$. The MDI Depression Scale also performed well with correlations ranging from a low of .631 to a high of .982, with all correlations showing probabilities of $p < .01$. The NGSE Self-Efficacy scale did not perform quite as consistently with a range from .303 to .839. Several of the correlations did not indicate statistical significance, however, the majority did.

Score Distributions

In examining levels of hope, the scores for each item of the ADSHS hope scale scores were totaled. Certain items required reverse coding due to negative phrasing of the question. The ADSHS has 38 questions with answers ranging from 1 to 4 with higher scores indicating higher hope. Total hope scores ranged from 38 to 152, with 38 being extremely low hope and 152 being extremely high hope.

The Major Depression Inventory (MDI) examines 10 symptoms of depression with 12 questions answered with 0 through 5 with higher scores indicating greater levels of depression. No items required reverse coding. Scores on each item were totaled. Possible scores range from 0 to 60. MDI total scores between 0 and 19 indicate no depression; between 20 and 24 indicate mild depression; between 25 and 29 indicates

moderate depression; and a total score of 30 or more indicates severe depression (Bech *et al*, 2001). Tables 42 and 43 show the depression scores by categories (No, Mild, Moderate, and Severe).

Table 42
Treatment Group Depression Score Distributions

Category	Time 1	Time 2	Time 3	Time 4	Time 5	Time 6
No Dep	11	11	10	10	12	12
Mild Dep	0	0	1	0	0	0
Moderate	0	0	1	1	0	0
Severe	3	2	1	1	1	1

Table 43
Control Group Depression Score Distributions

Category	Time 1	Time 2	Time 3	Time 4	Time 5	Time 6
No Dep	11	7	9	9	9	9
Mild Dep	1	1	2	3	1	1
Moderate	0	3	1	0	0	1
Severe	0	1	0	0	2	1

As presented in Tables 42 and 43, the majority of students indicated no feelings of depression throughout the study, with very few students experiencing moderate to severe feelings of depression. However, it is interesting to note that in the treatment group, the number of participants experiencing severe symptoms of depression decreased from three to one between time one and time 3, and remained consistent through the end of the study. The control group, however, showed greater volatility with an increase in the number of participants experiencing depression symptoms at time five versus time 1.

The New General Self-Efficacy Scale (NGSE) contains 8 questions with answers ranging between 1 and 5, with higher scores being indicative of greater generalized self-

efficacy. No items required reverse coding. Self-efficacy scores at the pre-intervention data collection ranged from 16 to 40 with a large proportion (20 of 26) of scores being between 30 and 40. This trend of high self-efficacy stayed consistent throughout the study, however, the control group consistently had fewer participants reporting self-efficacy above 35. Comparisons of the distributions of Self-Efficacy scores can be seen in Tables 44 and 45 below.

Table 44

Treatment Group Self-Efficacy Score Distributions

Range	Time 1	Time 2	Time 3	Time 4	Time 5	Time 6
35-40	9	11	11	10	12	12
30-34	2	0	0	1	0	0
25-29	1	0	0	0	0	0
20-24	1	1	1	1	1	1
15-20	1	0	0	0	0	0
<15	0	1	1	0	0	0

Table 45

Control Group Self-Efficacy Score Distributions

Range	Time 1	Time 2	Time 3	Time 4	Time 5	Time 6
35-40	3	7	5	7	9	8
30-34	6	2	3	2	2	2
25-29	1	1	3	2	1	1
20-24	2	2	0	1	0	1
15-20	0	0	0	0	0	0
<15	0	0	1	0	0	0

Indications

While changes in pre- and post-intervention scores may not have shown consistent statistical significance, it is clear that the participants in the treatment group showed improvements across all three constructs of hope, self-efficacy, and depression

after the five-week treatment as compared with the control group. A summary of the results of all the data analyses run can be seen in Table 46 below.

Table 46

Results of Statistical Comparisons With Corrections Applied

Test / Scale	Statistic	Significance	Effect Size
<i>t</i> -test / Hope 1-6 Control	-1.203	.275	$g = .35$
<i>t</i> -test / SE 1-6 Control	-2.006	.072	$g = .73$
<i>t</i> -test / Dep 1-6 Control	- .121	.899	$g = .04$
<i>t</i> -test / Hope 1-6 Trtmt	-2.536	.037*	$g = .56$
<i>t</i> -test / SE 1-6 Trtmt	-1.896	.216	$g = .59$
<i>t</i> -test Dep 1-6 Trtmt	1.827	.108	$g = .16$
ANOVA Hope	3.071	.060	$\eta^2 = .122$
ANOVA SE	3.837	.018*	$\eta^2 = .149$
ANOVA Dep	.581	.542	$\eta^2 = .026$
Multivariate Hope	3.760	.027*	$\eta^2 = .51$
Multivariate SE	2.262	.092	$\eta^2 = .39$
Multivariate Dep	3.200	.031*	$\eta^2 = .47$
Friedman's Hope Control	5.764	.330	$r = .27$
Friedman's SE Control	14.896	.011*	$r = .37$
Friedman's Dep Control	7.913	.161	$r = .19$
Friedman's Hope Trtmt	16.538	.005*	$r = .40$
Friedman's SE Trtmt	17.096	.004*	$r = .42$
Friedman's Dep Trtmt	14.004	.016*	$r = .32$

* $p < .05$

The treatment clearly has positive effects on participants with improvements in mean scores being greater in the treatment group. While the lack of consistency in the statistical significance of the results speaks of the need for caution in interpretation, the focus should remain on the trends presented in Figures 14 through 16 in Chapter 4, and on the effect sizes shown in Table 46 above. While none of the above effect sizes may be

described as large, several of them indicate a medium-sized effect. When considering positive psychological constructs such as hope and self-efficacy, especially with at-risk youth, it is important to consider the potential impact of even small increments of improvement. Even the smallest amounts of hope or self-efficacy could potentially propel a student into renewed efforts and positive outcomes. It is important in studying psychological constructs to consider practical significance along with statistical significance.

Participant Comments

Following the intervention, twelve participants returned a program evaluation form with open-ended questions. It is interesting to note that the comments made by participants on a program evaluation form may indicate that in addition to improvements in hope, self-efficacy, and depression levels, other attitudes or character qualities may have changed. For example, when asked, “What did you learn,” student responses included comments such as “patience,” and “persistence.” When asked how their attitudes changed, three students mentioned getting along better with family members and peers. Other comments described changes in not getting frustrated or mad as easily, and overcoming fear. The full compilation of participant comments can be found in Appendix F. The overall consensus in the comments seemed to be that the students were very aware of how the metaphors discussed in the intervention applied to their lives, and felt braver, more confident, and more-equipped to deal with life’s obstacles as a result of having participated in EAL.

Limitations of the Study

As with all studies, this study has limitations. The lack of normality of the data complicated the statistical analysis. One reason for the data's lack of normality may be due to the limitation of self-report data. The students' hope and self-efficacy scores began at a very high level and the depression scores began at a generally low level, with only a few students reporting symptoms of depression, or low hope or self-efficacy. Perhaps the need for a future study is indicated by the somewhat unrealistic levels of hope and self-efficacy seen in the participants of this study.

Another limitation is the small sample size. Several factors contributed to the small sample size. Perhaps the greatest difficulty that limited enrollment of participants was school district lack of familiarity with the modality and fear of litigation. The principle investigator spent over three months contacting seven school districts, four organizations that provide youth services, a residential foster home for children, as well as two government agencies which provide mental health services to youth. In general, the previously mentioned districts and agencies were resistant to providing access to the children they serve. Reasons given include fear of litigation and student privacy concerns.

Of all of these contacts, only two school districts were willing to distribute information about the opportunity to participate in the research study. No participants were enrolled from the letters sent to home addresses. District personnel indicated that there are many possible barriers, including lack of transportation, lack of familial support, lack of interest on the part of the youth, and lack of understanding of what exactly transpires in the LASSO sessions.

Some of the factors that define a student as being “at-risk,” according to the Texas Education Agency definition, are the very factors that make them hard to access. During this study, difficulties encountered included absenteeism, lack of cooperation, and attrition (one student dropped out of school after the first data collection).

Another limitation of this study is the use of convenience sampling. Participations were recruited from a single school. While the majority of students at the school meet the definition of at-risk, the principal is selective and will not admit any students who have a record of violent crime or serious behavior problems. The small, convenience sample does not allow for generalization. Replication of this study should try to include a broader range of participants.

The fact that this study relies on participants’ truthful answers to the self-report measures is another limitation. Attempts were made to encourage truthful answers. Because the questionnaires were distributed and collected by teachers, attempts were made to ensure privacy. Student questionnaires had identification numbers on them. A removable note with the student’s name was placed over the ID number. After completing the questionnaire, the student was instructed to remove their name and put their questionnaire in a sealable envelope in order to ensure privacy. Students were also assured that their answers would not be shared with anyone at the school.

Participant characteristics may be another limitation. Participants involved are those who were interested and volunteered to take part in the study. Such volunteers may differ from adolescents who did not volunteer in ways that impact the outcome of the intervention. For example, adolescents who volunteer to participate, may, by nature, be braver and more willing to take risks in life. They may also be more committed to

making improvements in their lives. Adolescents who avoid participating may be more intimidated by the difficulties of life and thus unwilling to take risks.

Home or support characteristics seem to be an important limitation. The fact that a parent or guardian's permission and signed release forms are required may also indicate that the participants may also have a more supportive home environment which may have a significant impact on the constructs being considered in this study (hope, self-efficacy, and depression). It must also be considered that parents and/or guardians are responsible for absenteeism and participation. Absenteeism was a limiting factor in this study.

The timing of the study may have been a factor impacting results. The last session occurred on a Friday when the students had less than two weeks of school remaining. It is possible that positive feelings and attitudes are growing in the hearts of students as a result of the upcoming summer vacation and end of the school year.

This study investigated changes in levels of hope, depression, and self-efficacy over a brief, five-week time period. The brevity of the intervention may also be a limitation. Five weeks may be inadequate for stimulating significant change considering that student social, familial, and/or academic difficulties have been ongoing for years. However, it is important to find the smallest number of sessions possible that will still result in positive changes in attitudes.

Two of the instruments (the NGSE and the MDI) were worded positively and had no questions that required reverse coding. It should be noted that this is a potential limitation. Students might not have read all of the items as carefully as they did the questions of the ADSHS, which had negatively-phrased questions that required reverse coding.

While the repeated measures design is an appealing choice due to its numerous advantages, one must be aware of the potential impact of practice effects. Practice effects can be positive (such as improvement due to increased awareness of the constructs being evaluated) or negative (such as boredom or fatigue). One participant in this study clearly tired of the repeated measures and on the last three measures chose one number per page and circled that number on the entire page.

It is also important to note that this study does not include analysis of longevity of any changes after completion of the intervention. Whether any changes are maintained beyond the time period investigated has not been addressed in this study. These changes will be addressed in the Fall semester, 2012.

Future Research

This study intended to investigate a population that is at-risk of not graduating from high school. The small and somewhat homogeneous sample was a limitation. Future research should include a larger, more diverse sample. In addition, the program was shortened due to the fact that the end of the school year was imminent. Five weeks is very likely too short. Due to the costs involved in running programs that involve horses, it is important to determine the optimal number of sessions. Future research should vary the number of sessions and investigate how many sessions are necessary in order to see results. An attempt to maximize the number of participants and minimize the number of repeated measures may serve to minimize the limitations of practice effects while retaining the necessary power.

The ADSHS seems to be a promising instrument. Future studies should further investigate the four domains as well as the three components (goals, agency, and pathways) described by Snyder (2000).

Future research should also investigate changes using other measures such as classroom behaviors as observed by teachers or behaviors in the home as observed by parents and guardians.

Conclusion

To date, no studies have investigated changes in levels of hope that result from interventions of EAL. Studies have investigated the impact of EAL on special populations such as at-risk youth, persons with autism spectrum disorders, emotional disorders, delinquency, victims of intra-family violence, and veterans of war. The existing literature on the effects of EAL with at-risk youth investigates behavioral outcomes utilizing the Behavior Assessment System for Children-2 (BASC-2). This study investigates the attitudes that may motivate those behaviors observe in other studies. The current study indicates that significant, positive changes in levels of hope, self-efficacy, and depression are seen in at-risk youth who have experienced a five-week intervention of EAL.

The qualitative information provided by the students also provides valuable insight. The students who participated in EAL were very enthusiastic about the intervention. They expressed in words that they felt stronger, braver, and more capable. They stated that they felt better equipped to face the problems of life. These words reflect what can be seen in the scores on the scales administered.

Adolescence is a particularly difficult stage of life. The many rapid changes create potential for both positive and negative outcomes. The choices made by youth are impacted by individual characteristics such as levels of hope, self-efficacy, and depression. Clearly, interventions that increase levels of hope and self-efficacy while decreasing levels of depression are of value. This study supports the existing literature that indicates that EAL has a positive impact on at-risk youth.

APPENDICES

APPENDIX A

Curriculum Outline



Project L.A.S.S.O.

Leading Adolescents to Successful School Outcomes

“The outside of a horse is good for the inside of a man.” Winston Churchill

CURRICULUM OUTLINE:

- Week 1: Topic—SAFETY & THE POWER OF OBSERVATION
Activity—Catch and Halter.
Students first observe the horses and voice their impressions and observations...the possible relationships between the horses...the why's of their interactions...what communication horses use. Students then choose a horse to catch and bring back to the leader.
- How to stay safe.
 - What do you see? Impressions of the nature of horses.
 - What works/doesn't work when trying to catch & halter the horse?
- Week 2: Topic—MOTIVATION
Activities—Ground Tie and Lunge
Ground Tie: Catch and halter a horse. Attach a lead rope. Drop the lead rope and walk away. The horse should stay put and not leave the place to which you 'ground tied' it.
Lunge: Catch and halter a horse. Attach a long lunge line. Make the horse start going around you in a circle while you stand in the center holding the rope.
- What was it like trying to get the horse to stand still?
 - What made it difficult? What helped?
 - What was it like trying to get the horse to go around you in a circle?

- What made it difficult? What helped?
- How do we get people to do things they don't want to do?

Week 3: Topic—ATTITUDE

Activity—Life's Obstacles

Students create an obstacle course and label each obstacle with the name of an obstacle that they must face in their life. Students then get the horse to go over all of the hurdles in the arena. Rules: 1) No touching the horse, 2) No using a halter or rope, 3) No coaxing with food or treats.

- Which 'hurdle' did the horse not want to go over? Why do you suppose that is?
- What did you do to help him over the hurdle?
- What hurdles in your life have you not wanted to go over?
- What would change your attitude and make you want to go over it?

Week 4: Topic--VULNERABILITIES

Activity—Sandman

(A 25-foot man is drawn in the sand of the arena. The sandman represents the client. Buckets of feed are placed at the hands, feet, stomach and head. Buckets represent vulnerabilities. Participants label each horse with the name of a problem in their life (i.e. drugs, alcohol, sex, violence, friends, etc.). The participant represents willpower and must keep the horses (problems) away from their vulnerable areas.

- So, you had to protect your vulnerabilities from the problems in your life. How did that go? What did you do?
- Looking back, was that a good way to go about it? Did you get tired? Did you stay safe? Did you ask for help?
- How does this relate to the way you handle problems in your life?

Week 5: Topic—GOALS

Activity—Equine Soccer

Two goals are set up at opposite ends of the field. Students are split into two groups and placed at opposite ends of the arena. To score, participants must send horses through the goals. Observe to see if students work cooperatively or competitively.

- What was it like trying to get an animal with a mind of its own into the goal?
- Did you all compete or cooperate? Why?
- If you competed, did you ever consider cooperating? (Same question with cooperating)
- Do you sometimes make your life more difficult by assuming rules or expectations that may not exist? (i.e. the competition aspect)
- What are your goals in life? Do you think they'll be harder or easier than getting a horse into a goal?
- This is our last session, tell me how you're going to achieve those goals.
- What are your strengths?
- Where might you need help?
- What resources do you have that could help you achieve those goals?

APPENDIX B

Participant Release

Project LASSO

**PARTICIPANT RELEASE
AND INDEMNITY AGREEMENT**

Participant: _____ Telephone: _____
Parent/Guardian _____ Phone: _____
Address: _____ Cell Phone: _____

**WARNING
UNDER TEXAS LAW (CHAPTER 87, CIVIL PRACTICE AND REMEDIES CODE),
AN EQUINE PROFESSIONAL IS NOT LIABLE FOR AN INJURY TO OR THE
DEATH OF A PARTICIPANT IN EQUINE ACTIVITIES RESULTING FROM THE
INHERENT RISKS OF EQUINE ACTIVITIES.**

RELEASE AND INDEMNITY AGREEMENT

In order to participate in activities sponsored by Project LASSO, whether located on school property, or elsewhere, the Undersigned agrees to the following:

I hereby RELEASE, WAIVE AND DISCHARGE, BAYLOR UNIVERSITY, Project LASSO staff, Communities in Schools, my specific school or my school district, and all representatives, contractors and employees of and from all liability, and any and all possible causes of action in law or in equity that may arise from an injury to me, my minor child, or a minor child in my care.

I further agree to INDEMNIFY AND HOLD HARMLESS Project LASSO, Communities in School, Temple High School and Temple ISD, and its representatives, contractors and employees for damages, attorney fees and expense resulting from an injury to me, my minor child, or a minor child in my care.

I have read and understand the above release and indemnity agreement.

Signature of participant: _____ Date: _____

Signature of Parent/Guardian (For participants under 18) Date: _____

APPENDIX C

Parental Informed Consent

Parental Informed Consent for Participation in a Research Project

This form asks for your consent for your child to participate in a research study designed to assess levels of hope, self-efficacy, and depression in individuals participating in the Leading Adolescents to Successful School Outcomes (LASSO) Program. This study is designed to increase understanding about how participation in equine-assisted learning activities may assist adolescent attitudes. By participating your child will contribute to this valuable research, and will experience first-hand how such research is conducted. You may desire to share this information with your minor child. While only you as a parent or legal guardian are capable under the law to consent to your child's participation in this study, it is preferable that your child be made aware (consistent with your child's age and level of understanding) that they are part of a study. If you discern that your child is not comfortable with participating in the study, you may consider (as a parent or legal guardian) not consenting to your child's participation in the study.

Participants in this study will be asked to complete questionnaires at either 5 or 9 points in time throughout the study that should take no more than 30 minutes each time. Following all initial assessments, participants will engage in an eight-week group equine-assisted program. No riding is involved in this program. Participants remain on the ground at all times. Participants will be divided into an experimental group and a control group. The experimental group will be the first group to begin the LASSO equine-assisted intervention. The control group will complete the questionnaires at the same time as the experimental group. After the experimental group completes the LASSO intervention, the control group will begin the LASSO intervention. The total expected duration of the study is 16 to 20 weeks (allowing for delays due to weather, etc.)

During the LASSO intervention, students are expected to participate fully in all activities and discussions. There will be eight weeks of lessons. Each lesson is expected to last approximately an hour and a half to two hours. Your child should try to be present for each lesson. Each week will have a theme. Themes include: safety, the power of observation, trust, motivation, attitude, goals, frustration, vulnerabilities, and self-preservation. A sample of some of the equine-assisted activities includes the following:

- Observing, haltering, and grooming the horses.
- Picking the horses' hooves
- Getting and stopping movement
- Creating an obstacle course which the horse will go through
- Equine billiards
- Sandman
- Equine soccer

Participation in this study entails some risk. Some foreseeable risks include: physical risks from participating in activities with horses and emotional risks of dealing with feelings and emotions that surface during the intervention. While horses are unpredictable and potentially dangerous, the

physical risks from participating in this study should be less than horseback riding activities. All staff handling the horses are trained through the Equine Assisted Growth and Learning Association (EAGALA) and are well versed on safety measures specific for this type of activity. To protect your privacy, data collected from your participation will be referenced using a numerical identification code known only to the research team.

Another potential risk is the possibility of emotional discomfort, which may occur as a result of the therapeutic intervention or questionnaires. This discomfort will be comparable to the discomfort, which might be experienced in any form of counseling or self-reflection. All participants have the right to remove themselves from this study at any point should their discomfort become such that they feel they cannot or should not continue in the study.

In order to assure the safety and well-being of the horses utilized in this study, the research team and all personnel involved will follow the guidelines outlined in the Baylor University Animal Care and Use Training Handbook.

Participation in this study also provides benefits, which may be many. Your child has the opportunity to participate in a program specifically designed to improve adolescent attitudes and academic outcomes. Your child may or may not be experiencing any difficulties with the attitudes being measured in this study. However, it is hoped that levels of hope and self-efficacy will increase while levels of depression decrease. It is also hoped that participants' academic performance will improve.

Your child's participation in this study is completely voluntary. Participants in this study will receive no compensation. If you choose to not participate, there will be no penalty or loss of benefits to which your child is entitled. If at any time you wish to withdraw your child from the study you may do so without penalty. You are invited to request a copy of this consent form.

The Principal Investigator of this study is Karen Frederick, doctoral candidate, Baylor University Department of Educational Psychology, One Bear Place #97301, Waco, Texas 76798. If you have further questions or comments about this study you may contact Karen Frederick by phone (254) 931-6182, or email Karen_Frederick@baylor.edu. For questions regarding your rights as a participant, or any other aspect of the research as it relates to you as a participant, please contact the Baylor University Committee for Protection of Human Subjects, Dr. Michael Sherr, School of Social Work, One Bear Place #97320, Waco, Texas 76798-7320, phone number 254-710-4483.

Participant's Name (Printed)

Parent/Guardian's Name (Printed)

Signature of Parent or Guardian

Date

APPENDIX D

Major Depression Inventory

Major Depression Inventory (MDI) Psychiatric Research Unit, Hillerod

The following questions ask about how you've been feeling over the *past two weeks*. Please circle the number in the box which best describes how you have been feeling.

How much of the time...	All the time	Most of the time	Just over half the time	Just less than half the time	Some of the time	At no time
1. Have you felt low in spirits or sad?	5	4	3	2	1	0
2. Have you lost interest in your daily activities?	5	4	3	2	1	0
3. Have you felt lacking in energy & strength?	5	4	3	2	1	0
4. Have you felt less self-confident?	5	4	3	2	1	0
5. Have you had a bad conscience or feelings of guilt?	5	4	3	2	1	0
6. Have you felt that life wasn't worth living?	5	4	3	2	1	0
7. Have you had difficulty in concentrating, e.g. when reading the newspaper or watching TV?	5	4	3	2	1	0
8.a. Have you felt very restless?	5	4	3	2	1	0
8b. Have you felt subdued or slowed down?	5	4	3	2	1	0
9. Have you had trouble sleeping at night?	5	4	3	2	1	0
10a. Have you suffered from reduced appetite?	5	4	3	2	1	0
10b. Have you suffered from increased appetite?	5	4	3	2	1	0

APPENDIX E

Adolescent Domain-Specific Hope Scale Items

FINAL ADSHS ITEMS

Social Relationships Agency

Cronbach=.865

- 2-Making friends is easy for me.
- 3-I work hard to make my friendships.
- 6-I'm just not good at making friends.
- 7-Making friends is difficult for me.
- 8-I don't put much effort into making friendships.

Social Relationships Pathways

Cronbach=.837 Total SR

Cronbach=.923

- 1-I find lots of ways to make friends
 - 2-I easily find ways to start conversations
 - 3-I figure out ways to make my friends happy
 - 5-I'm not sure how to make friends
 - 6-It's hard to start conversations
-

Academic Agency

Cronbach=.807

- 2-School is easy for me
- 3-I work hard to get good grades at school.
- 5-I set goals for myself at school.
- 7-School is difficult for me.
- 8-I don't care if I do well in school or not.

Academic Pathways

Cronbach=.727 Total AC

Cronbach=.872

- 1-I figure out ways to know what teachers want.
 - 3-Even in tough classes, I can find a way to get a good grade.
 - 4-If I miss a question on a test, I learn from my mistakes.
 - 6-I can't figure out what teachers want.
 - 9-If I miss a question on a test, I don't care.
 - 10-When I don't understand, I quit.
-

Outside School Agency

Cronbach=.816

- 1-I'm good at my outside school activities.
- 6-I'm not very good at much of anything.
- 8-I don't put much effort into any outside school stuff.
- 9-Outside school things aren't worth the effort.

Outside School Pathways

Cronbach=.783 Total OS

Cronbach=.846

- 1-I can think of lots of things to do outside of school.
 - 5-I find ways to get involved in new activities.
 - 6-I don't know how to get involved in things outside of school.
 - 10-I'm afraid to try new things.
-

Family Relationships Agency

Cronbach=.896

- 1-I'm good at working out problems
- 3-I work hard to have a happy family.
- 4-I make time for my family members.
- 9-I don't put much effort into family relationships.

Family Relationships Pathways

Cronbach = .868 Total FR

Cronbach=.939

- 2-I think of lots of ways to maintain my family relationships.
 - 3-I can find ways to keep happy family relationships even when it's hard.
 - 4-I think of ways to make family members feel valued.
 - 6-It's pointless to work at family relationships.
-

1=Definitely False; 2=Somewhat False; 3=Somewhat True; 4=Definitely True.

APPENDIX F

New Generalized Self-Efficacy Scale, Chen et al. (2001)

New Generalized Self-Efficacy Scale (NGSE)

1. I will be able to achieve most of the goals that I have set for myself.
2. When facing difficult tasks, I am certain that I will accomplish them.
3. In general, I think that I can obtain outcomes that are important to me.
4. I believe I can succeed at most any endeavor to which I set my mind.
5. I will be able to successfully overcome many challenges.
6. I am confident that I can perform effectively on many different tasks.
7. Compared to other people, I can do most tasks very well.
8. Even when things are tough, I can perform quite well.

Score on a 5-point Likert scale from 1=Strongly Disagree to 5=Strongly Agree

APPENDIX G

Project LASSO Summary of Program Evaluations May, 2012, Temple Education Center

**These comments are unedited, as students wrote them.*

1. What did you learn?
 - How to have patience. Not everything will go your way. Things may not be as easy as they look.
 - To have patience and getting over things.
 - That life has many challenges and you have to learn how to get through them.
 - That the stuff we did are just like the bumps in life.
 - Patience
 - I learned and realized how I should deal with different situations. I remember once even thinking, “Oh, that’s how I should have handled it.”
 - I learned how to deal with our problems in our lives.
 - That if you walk somewhere, they will follow you.
 - Teamwork
 - A lot about horses
 - I learned that you are going to have obstacles that you have to overcome. Also that you face challenges in life that are going to be difficult.
 - That don’t be afraid to try something new.

2. How did your attitudes change as a result of participating in these activities?
 - They got better. I don’t get as frustrated as easy.
 - Learn how to get along better.
 - Well, it change good because I had a fear and I got over it really fast.
 - I didn’t sass my mom any more. I felt like I had someone to lean on.
 - I don’t get frustrated as quickly.
 - Starting LASSO in the beginning, I was a little frightened of the horses and I didn’t get along with some of the other kids. Now I have learned about horses and I get along with others very well.
 - I started taking more time on my work and I started acting better to my family members.
 - It got better being around the horses.
 - I got along with peers better.
 - Already had a positive attitude.
 - Well, it changed in a way that even when tasks were hard, I didn’t get mad when we couldn’t do it or get an aggressive attitude. It changed because we were a team.
 - They got better.

3. Which activities did you feel were the most fun?
 - I liked all of the activities.
 - Soccer, trying to get them, and keeping them from getting the food.
 - Roping the horses and running with them.
 - Soccer
 - The soccer game.
 - My favorite activity was the obstacle course. For the most part, we were successful. I was really happy and excited when we got the biggest and laziest horse to go over the jumps.
 - The one where we had to get the horses through the obstacles and the allyway one.
 - When we made our own track.
 - Guiding and walking horses.
 - Obsteal course.
 - Playing soccer with the horses and not letting them eat their food. Also when we got to rope them and run with them.
 - The obstacles

4. Which activity/activities were the most useful to you personally?
 - The ones where we had to get the horses over the obstacles.
 - Ally of life
 - The one with so many obstacles
 - They were all good.
 - Obstacle course
 - We did an activity where we had to protect our head and heart (horse food) from bad outside things (i.e. bullies) Horses. I learned that it is very important to protect yourself. No fighting for me ☺
 - The activity with the allyway
 - Catch Dashe; making the course.
 - I don't know
 - Obsteal course
 - The most useful activity was when we had to take the horses through obstacle like a pathway of our life and to see how challenging it could be.
 - The obstacles.

5. Choose one of the activities and tell how it helped you personally.
 - The soccer one. Showed pacientes, and how to do teamwork.
 - The ally of life helped me to understand how to get thru life
 - Well, the one roping the horse. And I had to be brave and get over my fear so the horse wouldn't have fear.
 - One were we had to make are own opsticles, that school isn't suppose to be always be fun!
 - Obstacle course. Because it helped me be more creative when facing a problem.

- Horse soccer was helpful. Say the soccer ball (horse) is the challenges, the goal is what your going for. Even though it's challenging, you have to conquer those challenges and problems and reach for the goal. Never giving up is what this activity taught me.
 - The one where we got to make obstacles because it helped me avoid bullying more.
 - Catching the horses; it got easy and easier ever time.
 - I'm not sure.
 - Obstacle course. It help come obstacle course my life.
 - However when we had to catch the horses and pull them to the corner helped me get rid of my fear knowing that they weren't going to hurt me. Also feeding them from the palms of my hand.
 - The one where you had to guard the human being. It felt like you can guard yourself from bullies and any other things.
6. Which activities did you not enjoy or feel were not useful?
- There weren't any.
 - None
 - Well, none. They were all useful and I enjoy.
 - Bonding with the horses.
 - None
 - All of the activities we did were useful. Each activity taught us how to deal with situations. If it didn't teach us that, we learned something new about the horses.
 - The one where we played soccer with the horses.
 - Keeping them in the hallway.
 - No. 5. Made me upset of failing.
 - Soccer
 - None, they were all helpful. The quality of life was really good.
 - Where you looked at the horses, and said the first thing in mind.
7. How could we improve the program to make it more helpful?
- I'm not sure.
 - It was great. More horses.
 - Well, nothing, because everything that yall did was helpful.
 - Make time a little bit longer, like 11:00 to 3:00
 - More activities
 - I can't really think of a way to improve it. I would to let us ride the horses, but I can't really think of a way that teaches us to face challenges.
 - By having more horses and by making the tasks more tricky.
 - Pick up their food. Put it close to them and they will stay in the hallway.
 - I don't know.
 - You couldn't
 - I think that if we have more challenges that are useful, or I really don't know.

- By doing more fun activities and then sitting down with the group and talking to them about their life.
8. Did you have a favorite horse? If so, which one? Why?
- I liked all of them.
 - No! I loved them all!
 - Cinamin because she wasn't afraid of me so it help me to let go of my fear of her.
 - I liked all of the horses but if I had a favorite it would be big Mac.
 - Big Mac; because he is calm, cool, and is a nice hugger.
 - I love all of them. Big Mac is super lazy...like me. Dash is quick and most of the time outsmarts us; Fluffy is layed back and sweet-she wouldn't hurt a fly.
 - My favorite horse was Big Mac because he was so calm and comforting.
 - Fluffy: because she was nice; she was easy to catch, and she followed us wherever we went.
 - Freedom. She reminded me of myself.
 - They were all the same.
 - Jake-because he would come to us and let pet him and brush him and I got to fix his hair. Jake was really smart. He new how to knock over stuff to get what he wanted.
 - Fluffy, aka Shaggy because she was cute and didn't get scared often.
9. How would you answer someone who asked why you should get out of class to go "play with horses"?
- Builds character and is fun.
 - Because its better than staying in class and you will learn a lot.
 - Because they taught as a lesson that we should no to never give up and that life has tuff obstacles and they can be hard to get thru.
 - To go have fun
 - Because it is hard work, but also fun, and you learn a lot.
 - We aren't playing with horses, we are understanding them, and they are understanding us. We also learn how to face challenges.
 - Yes, because I love horses and I love learning about them.
 - It was for her classes.
 - "I'm two grades ahead. I'm not going to miss much."
 - Because it is fun.
 - I would actually say, well I learn when I go out their. Its just like a class but you just have fun and associate with others like a team.
 - So you can not do work any more and so you can have fun.
10. Would you recommend this program to a friend?
- 12 yes 0 no
 - I would because I learned a lot and I think they would too.
 - My friend is coming next year. I already told her she has to do it.

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