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## The Effects of Equine-Assisted Activities on the Attachment Security of Abused Women

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THE EFFECTS OF EQUINE-ASSISTED ACTIVITIES ON THE  
ATTACHMENT SECURITY OF ABUSED WOMEN

by

Ilana B. Silver

A Thesis Submitted in Partial Fulfillment  
of the Requirements for a Degree with Honors  
(Psychology)

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Advisory Committee:

Cynthia Erdley, Ph.D., Professor of Psychology, Co-Advisor

Clare Thomas-Pino, Adjunct Professor of Animal and Veterinary Sciences, Co-Advisor

Nico Jenkins, Ph.D., Honors College Preceptor, Assistant Professor at Husson University

Renate Klein, Ph.D., Professor of Human Development and Family Studies

Rebecca Schwartz-Mette, Ph.D., Assistant Professor of Psychology

## **Abstract**

The present study was designed to explore the impact of equine-assisted activities on attachment security among women who have experienced intimate partner violence. Attachment security was assessed at three different time points using the Experiences in Close Relationships Scale (ECR) (Brennan, Clark, & Shaver, 1998), which measures attachment on two separate scales of anxiety and avoidance. Proximity maintenance, one of the components of an attachment figure, was assessed using coded video data of the interaction between horse and participant during their first meeting and goodbye. Five women who self-reported experiencing domestic abuse were recruited for this study, of whom four were within the intended age range of 18-30 years old. Each participant was matched with a women who did not self-report any incidence of domestic abuse based on level of horse experience followed by similarity of age. Likely due to a small sample size, results from this study are not significant. However, a reduction in anxiety observed solely for the women in the abuse group suggests there may be an effect among a larger sample size; this consideration extends into the coded video data as a marginally significant effect is present with women in the abuse group spending a longer period of time meeting the horse than did the women in the matched group. Slight increases in avoidance were observed for both groups, as well as in anxiety levels of the matched group. Overall, the findings of this study hint at the potential use of equine-assisted activities for impacting attachment security in abused women but require further investigation.

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## Introduction

Our lives revolve around intimate, emotional attachments to our closest companions that are, according to Bowlby (1969), shaped by early experiences with caregivers. The expectations, or working models (Bowlby, 1969), regarding attachment are typically reinforced by the manner in which one seeks out and behaves towards his or her partner, but it is possible to alter one's attachment style later in life (Cassidy, 2000). To do so requires the establishment of new attachment patterns that do not reinforce our initial working models, whether positive or negative (Cassidy, 2000). When a woman is subjected to abusive treatment at the hands of her partner, and if she does not already possess an insecure model of attachment, it is likely that she will develop greater attachment insecurity (Cassidy, 2000). The strong association between intimate partner violence (IPV) and insecure attachment reflects either a shift from securely attached to insecurely attached, or an early model of insecurity. This link is demonstrated in a study by Henderson, Bartholomew, and Dutton (1997); of 59 abused women, 55 (93%) possessed an insecure model of attachment. In contrast, a positive relationship with a partner (Cassidy, 2000), therapist (Levy, Ellison, Scott, & Bernecker, 2011), or animal (Rockett & Carr, 2014) may cause an insecurely attached individual to shift her working models to reflect greater security.

For those who have experienced trauma and are particularly inclined to mistrust human beings, animals may be especially effective at reworking patterns of insecurity (Bachi, 2013). In instances such as this, an animal can both serve as an attachment figure and act as a transitional being in the facilitation of attachment with, for example, a therapist (Rockett & Carr, 2014). The present study invited those who have experienced trauma in the form of intimate partner violence, either currently or in the past, to spend time with an animal in the hopes of moving

towards greater attachment security. Shown to be effective in the process of recovering from trauma (Earles, Vernon, & Yetz, 2015; Yorke, Adams, & Coady, 2008), horses were selected for the present study. They have been utilized in a diverse therapeutic format for those with autism, ADHD, schizophrenia, intellectual disabilities, cerebral palsy (Kendall et al., 2015), cancer, and survivors of abuse, among others (Bachi, 2013). The following literature review will discuss in greater detail the underlying mechanisms of attachment, prevalence and treatment of intimate partner violence, and why horses make effective therapeutic partners, especially for victims of abuse.

## **Attachment Theory**

### *Attachment in Infancy*

The roots of attachment theory can be found in the work of Bowlby, who defined attachment behavior as “seeking and maintaining proximity to another individual” (1969, p. 194). Bowlby’s (1969) research focused primarily on infants, and it was noticed that by four months old children exhibited significantly different responses to their mother as opposed to other people. These different responses were deemed to be based on more than simply providing for the child’s basic bodily needs due to the fact that attachment continues into adulthood where it serves more diverse functions. During infancy attachment is seen as a survival mechanism; on one hand it provides an opportunity for survival skills to be learned, but the primary advantage is considered to be protection from predators (Bowlby, 1969). The number of attachment figures in one’s life is not limited to the mother/mother-figure, and although it won’t be apparent as early or consistently as with mother (Bowlby, 1969), there is no indication that having multiple



attachment figures lessens the strength of attachment with the original caretaker. In fact, Schaffer and Emerson (1964) determined that the stronger the initial attachment relationship is, the more likely the individual is to have a greater number of attachment figures in his or her life (as cited in Bowlby, 1969).

Returning to the definition provided by Bowlby (1969), proximity is required for a sense of security on behalf of the child, and in order to achieve and maintain proximity there are two courses of action: signaling behaviors and approach behaviors. Signaling behaviors are those that bring the mother into the proximity of the child and most commonly take the form of crying or smiling; approach behaviors are actions that bring the infant into the proximity of the mother such as following her or clinging on (Bowlby, 1969). This need for proximity counters with a need for distancing, or exploration, that Bowlby (1988) claims is intertwined with attachment. In this respect, the adult becomes a secure base from which the child can explore and then return to (Bowlby, 1969, 1988).

In her research with infants, Ainsworth (1967) observed there is often a great deal of variability in the expression of attachment behaviors, but this is most intensified when the child feels his or her security is threatened (as cited in Bowlby, 1969). In a continuation of Bowlby's research, Ainsworth (1979) developed the Strange Situation experiment wherein 1-year old children are briefly separated from their secure base (mother) and then reunited; based on their responses, infants are then classified into one of three attachment styles: secure, anxious-ambivalent, or avoidant. When looking at how the mothers interacted with their babies in a home setting, it was determined that securely attached infants had mothers who were more responsive than the mothers of the two insecurely attached groups of babies (Ainsworth, 1979). The

sensitive, responsive style of these mothers results in infants who have greater confidence in their parent as a secure base and because of that feeling of protection are more apt to make bolder explorations (Bowlby, 1988). In Ainsworth's (1979) experiment, the securely attached infant is likely to explore before separation, appear distressed during separation, and quickly resume proximity and be comforted when reunited. Those mothers of the anxious-ambivalent might less sensitively or less consistently respond to the needs of their infants, and Ainsworth (1979) noted that the child might be one that was difficult since birth. This leads to an infant who shows anxiety before separation in the Strange Situation, is very distressed by the separation, but upon reunion is ambivalent towards the mother - both wanting contact while resisting interaction. In the case of avoidant infants, it is observed that mothers were less likely to engage in close contact, as well as more apt to act in a rejecting or angry manner. This results in infants who were not distressed during separation from the mother and avoided the mother figure when reunited (Ainsworth, 1979). The behavior of the mother in response to the infant sets about a pattern of expectations that reflect attachment quality; this is described as one's internal working model of attachment (Bowlby, 1969).

### *Stability of Attachment*

Until the end of the third year, attachment behavior is strongly displayed towards the caretaker, after which point it grows weaker into adolescence and adulthood as other adults and peers become of increasing importance; finally, attachment behaviors may be directed towards the younger generation upon reaching older age (Bowlby, 1969). The stability of one's attachment style through life has been questioned without a conclusive answer (Bartholomew, 1994). Campos et al.'s (1983) research indicated that American infants typically classify as 62%

secure, 23% avoidant, and 15% anxious-ambivalent (as cited in Hazan & Shaver, 1987). It was proposed by Hazan and Shaver (1987) that romantic love be considered an attachment process in a comparative manner to infants with their caretaker, and perhaps a continuation of the working models developed early in life. When using self-report data, and applying Ainsworth's classification system devised for infants, American adults categorized as approximately 56% secure, 25% avoidant, and 19% anxious-ambivalent (Hazan & Shaver, 1987, 1990). This might indicate that attachment styles are fairly consistent from childhood to adulthood. However, an unpublished longitudinal study by Steele et al. (1998) reported a correlation of .17 between attachment security at age 1 and attachment security in adult romantic relationships (as cited in Fraley & Shaver, 2000). In a separate longitudinal study by Egeland and Farber (1984), 74% of securely attached children are reported to maintain status as securely attached from Time 1 (12 months) to Time 2 (18 months) whereas only 45% of anxious-ambivalent infants and 37% of avoidant infants maintain their respective attachment classification; thus indicating that attachment style is not fixed at an early age. In Hazan and Shaver's (1987) research, using self-report measures, they found that securely attached adults reported their childhood relationship with their parents as being warmer and more caring. However, these self-report data do not prove consistency of attachment style, and may be heavily biased by the individual's current degree of security (Bartholomew, 1994). Bartholomew (1994) warns of similar biases in assessments using interviews, but some studies have attempted to study attachment stability from infancy to adulthood by interviewing an adult with two separate measures: the Adult Attachment Interview (AAI) and Current Relationship Interview (CRI). Owens et al. (1995) found a correlation of .29 between security with parent and security with partner; a correlation of .30 was found by Fraley

and Shaver (1999) using similar methods (as cited in Fraley, 2002). Such studies indicate there is overlap between one's attachment security as a child and one's attachment security as an adult, but that attachment style is not a fixed characteristic of an individual.

### *Assessment Concerns*

It is worthwhile noting a few differences in the assessment of attachment during infancy versus adulthood. Going back to the work of Bowlby (1969) and Ainsworth (1979), to be considered an attachment figure one must serve as a safe haven, a secure base, a target of proximity maintenance, and produce separation distress - this is considered relevant at any developmental stage. When assessing attachment in young children, the focus is on behavioral observation. Observations of children's behavior in paradigms such as Ainsworth's (1979) Strange Situations Test provide insights into the quality of the child's attachment with a caregiver. As individuals become more cognitively and linguistically advanced, questionnaires or interviews are used to gain insights into their cognitive representations of their attachment experiences.

When looking at adult attachment through the perspective of romantic love (Hazan & Shaver, 1987), there are additional behavioral forces at play. In accordance, the relationship as a whole integrates attachment, caregiving, and sex (Fraley & Shaver, 2000). To briefly expand upon the latter two components, Fisher (1992) discusses that sexual behaviors are most active in the beginning of a relationship (as cited in Dumas, Pearson, Elgin, & McKinley, 2008), which may assist the couple in staying together long enough to form an attachment (Dumas et al., 2008). Meanwhile, caregiving behaviors remain valuable throughout in order to increase the partner's chances of survival and wellbeing, in so doing, allowing for reciprocal caregiving and

assisting in the protection of mutual offspring (Cassidy, 2000; Collins & Feeney, 2000; Fraley & Shaver, 2000). A second consideration raised by Fraley and Shaver (2000) when assessing attachment via adult love relationships is that it cannot be assumed that all couples are attached to one another; a study by Fraley and Davis (1997) deduced that two years was the average length of time for romantic attachment to develop (as cited in Fraley & Shaver, 2000). A third variation when assessing attachment in adults is that most data come from self-report measures, a source of bias as previously mentioned (Bartholomew, 1994), as opposed to observation of behavior as done with infants (Pietromonaco & Feldman Barrett, 2000). Enough differences exist that assigning adults to one of the three attachment categories (secure, anxious-ambivalent, or avoidant) proposed by Ainsworth (1979) limits the specificity with which adult attachment can be explored, and most research now utilizes the four-group model of attachment styles in adulthood (Bartholomew & Horowitz, 1991).

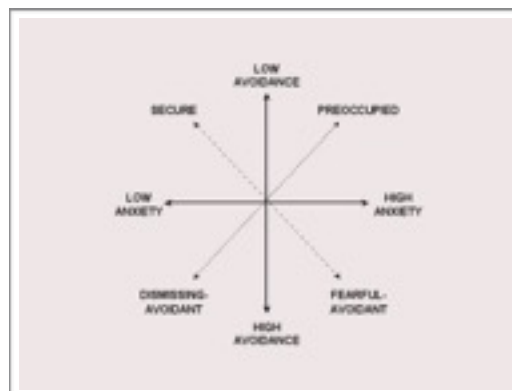
However, a final concern addresses the use of categories rather than dimensions of attachment style. Taxometric analyses by Fraley and Spieker (2003) found no consistent evidence that a categorical model of attachment successfully represents one's attachment pattern. They suggest that the typical categories of attachment proposed initially by Ainsworth (1979) reflect true underlying attachment behaviors, but fail to take into account the dimensionality that exists within each style. Fraley (2012) reiterates these concerns in conjunction with analyzing results of the Experiences in Close Relationships Adult Attachment Questionnaire (ECR) (Brennan et al., 1998), the measure of attachment quality used in the present study. This 36-question assessment measures anxiety in the first 18 questions and avoidance in the latter half, with respondents rating items on 1 ("disagree strongly") to 7 ("agree strongly") scale.

With the reversal of a few specific items, a higher score on each half indicates a higher level of anxiety or avoidance (See ‘Methodology’ for more information). By plotting the two scores against one another, an individual’s attachment style can be described with greater specificity as opposed to the overlying categories that oversimplify and offer a less informative view of an individual’s level of security.

### *Adult Attachment and Adjustment*

Bartholomew and Horowitz (1991) designed the four-group model by charting one’s model of the self (positive or negative) against one’s model of others (positive or negative). These axes can also be labeled as anxiety graphed against avoidance (see Figure 1), in which case anxiety correlates with one’s model of the self and avoidance matches with one’s model of others (Fraley, 2012). A positive view of the self (low anxiety) and a positive view of others (low avoidance) constitutes secure attachment; a negative view of the self (high anxiety) but positive views of others (low avoidance) indicates preoccupied attachment; a positive view of the self (low anxiety) and negative view of others (high avoidance) is considered dismissing; a negative view of the self (high anxiety) and a negative view of others (high avoidance) is a fearful attachment.

Figure 1. *Attachment Style: Anxiety vs. Avoidance (as cited in Fraley, 2012)*



In a study by Bylsma, Cozzarelli, and Sumer (1997), 539 college undergraduates were categorized using self-report data as 45% (242) secure, 28% (154) fearful, 13% (70) preoccupied, and 14% (73) dismissing. Each student also completed a measure of global self-esteem and a measure of perceived competence across various domains. Those who had a positive model of the self (secure and dismissing) reported higher self-esteem and higher levels of competence in the social, romantic, physical attractiveness, and sports domains as compared to those with a negative model of the self (fearful and preoccupied). A separate study by Dozier (1990), looking at 40 young adults requiring treatment for severe psychopathological disorders, described securely attached individuals as open, compliant, committed, and proactive in treatment; dismissing individuals were noted as resistant to treatment, had difficulty asking for help, and retreated from help that was offered; preoccupied individuals were eager to discuss their concerns, and though they presented themselves as needy they were just as noncompliant as dismissing patients; no information was provided on fearfully attached clients (as cited in Levy et al., 2011). The four-group method devised by Bartholomew and Horowitz (1991) allows for greater insight into one's internal working model of attachment, and with that some commonalities of adjustment associated with each style.

### *Internal Working Models of Attachment*

As defined earlier, one's internal working model is formulated at a young age based on the consistency of experiences a child has and the expectations these create (Bowlby, 1969). This model then contributes to one's thoughts and behaviors towards others, which elicit a typical range of behaviors, in turn reinforcing the working model one has (Cassidy, 2000). These

working models, or cognitive representations of close relationships, are believed to be more relationship-oriented than a factor of the individual, meaning that one could act securely with one attachment figure while behaving in an avoidant or anxious-ambivalent manner with another (Pietromonaco & Feldman Barrett, 2000).

Engaging in new relationships and forming new attachments can bring about changes in one's working model if a partner acts in ways that do not fit, and eventually override, ingrained expectations (Cassidy, 2000). Cassidy (2000) notes that this can be either positive or negative; an insecure individual could become more securely attached if well treated by his or her partner. This also comes into play during treatment; a positive therapeutic alliance is correlated with patients' attachment security and early findings suggest it may be a cornerstone in changing a client's attachment style towards greater security (Levy et al., 2011). However, if a securely attached individual engages in a relationship with a hostile or violent partner, that person is likely to develop negative working models and greater insecurity both in present and future relationships (Cassidy, 2000). This scenario is considered more likely, according to Cassidy (2000), as insecurely attached individuals typically behave in ways that reinforce their negative working models and bring themselves into proximity of unfavorable partners; in fact, insecure adult attachment style is considered a risk factor for intimate partner violence (Dumas et al., 2008). Several studies link insecure attachment with both acting violently and receiving violence in one's relationship; in its association with attachment theory, engaging in violence is interpreted as a means of regulating personal security in the relationship (Dumas et al., 2008). Holtzworth-Munroe and Anglin (1991) add that one is more likely to act violently towards his or



her partner when fearing abandonment (as cited in Oka, Sandberg, Bradford, & Brown, 2014).

The following section discusses intimate partner violence in greater detail.

## **Intimate Partner Violence**

### *Prevalence*

Domestic or intimate partner violence (IPV) is defined as threats or acts of physical, sexual, or emotional violence including rape, physical injury, stalking, harassment, intimidation, and other psychological abuse (Family Violence Prevention Fund [FVPPF], 2004). In a national survey conducted from November 1995 to May 1996 it was found that 51.9% of women and 66.4% of men reported being physically assaulted as a child (Tjaden & Thoennes, 2000). Most incidences of rape also occurred at younger ages; of the 17.6% of women reporting as victims of rape, one-fifth were younger than the age of 12 years and one-third were between the ages of 12 and 17 years (Tjaden & Thoennes, 2000). This same survey found a relationship between those who were victimized as a minor and future occurrences of domestic violence; women who were raped or physically assaulted as minors were twice as likely to face re-occurring incidents as adults, and those who reported being stalked as a minor were seven times more likely to report being stalked as an adult. Of the reported incidences of violence, most were received from one's intimate partner, and women were more frequently victimized than men (Tjaden & Thoennes, 2000). The concluding numbers from Tjaden and Thoennes (2000) state that every year approximately 1.3 million women and 835,000 men are physically assaulted by their intimate partner, and over the course of one's lifetime it is estimated that 25% of women and 7.6% of men in the United States will be the victim of IPV.

According to Straus, Gelles, and Steinmetz (2009) it is quite likely that these numbers underestimate the true number of occurrences of IPV due to underreporting (as cited in Lewis, Henriksen, & Watts, 2015). Besides underreporting occurrences of IPV, the gender ratio of female and male perpetrators and victims may be skewed as several studies show that women commit equal if not higher levels of aggression towards their partner than do men (Archer, 2004; Katz, Duffel, & Coblenz, 2002). However, women sustain a significantly higher number of injuries as a result of IPV than do men (Caldwell, Swan, & Woodbrown, 2012; Tjaden & Thoennes, 2000). In a comparison of female vs. male victims of IPV, 31.5% of women reported being injured during their most recent rape compared to 16.1% of male rape victims, and 39% of women sustained injury during their most recent physical assault compared to 24.8% men in a corresponding situation (Tjaden & Thoennes, 2000). According to the Domestic Violence Resource Center (2011), on any given day within the United States there are approximately three female victims of intimate partner homicide compared to one male victim (as cited in Caldwell et al., 2012). Due to these statistics and the nature of the present study, we will primarily focus on the victimization of women.

#### *Attachment Style and IPV*

Looking at those who commit violent acts against their partners, a study by Babcock, Jacobson, Gotten, and Yerington (2000) determined that male offenders more commonly have a preoccupied or dismissing attachment style. Meanwhile, a study by Henderson, Bartholomew, and Dutton (1997) found that women abused by male perpetrators typically fit the preoccupied or fearful styles (as cited in Dumas et al., 2008). Studies looking at victimized women indicate that of those two styles, fearfully attached women have more trouble separating from abusive

partners and preoccupied women are more likely to return to their abusers (Henderson, Bartholomew, Trinke, & Kwong, 2005). In a separate study, previous female victims of IPV were assessed for their risk for revictimization (Kuijpers, van der Knaap, & Winkel, 2012). It was found that being of anxious attachment style bore no relation to risk of revictimization, however avoidant attachment style was a predictor for reoccurrences of both physical and psychological IPV (Kuijpers et al., 2012). As referenced in the prior section, violence in a relationship is seen as a means of regulating closeness with a partner (Doumas et al., 2008), especially when fearing abandonment (Oka et al., 2014). The results from Kuijpers and colleagues (2012) are consistent with this hypothesis as those with an avoidant attachment style are more inclined to withdraw from closeness, which may elicit a violent response in an attempt to keep the partner close.

### *Longstanding Effects*

Intimate partner violence has numerous consequences for the victim beyond initial injuries sustained during abusive episodes. Resulting health concerns can include arthritis, chronic neck or back pain, chronic pelvic pain, migraines, sexually transmitted infections, peptic ulcers, chronic irritable bowel syndrome, indigestion, diarrhea, or constipation (Coker, Smith, Bethea, King, & McKeown, 2000). Furthermore, victims of IPV are more likely to experience depression, suffer from PTSD, engage in substance abuse, and/or attempt suicide (Bergman & Brismar, 1991). Due to the impacts on both personal health and emotional health, victims of family, domestic, or intimate partner violence engage with their physicians approximately twice as often as non-victims during the span of one year (American Academy of Family Physicians [AAFP], 2016).

Not only are the direct victims of IPV endangered, but any children are also put at risk of developing psychological and physical health concerns (FVPF, 2004). It is estimated that between 3.3 million to 10 million children are annually exposed to IPV (Edleson, 1999), of which approximately 30-60% are recipients of abuse (FVPF, 2004). Children who witness IPV are particularly vulnerable for developing PTSD; in a study of 20 children who witnessed IPV, only one did not qualify for a diagnosis of PTSD, and of the remaining 19, 17 demonstrated moderate to severe symptoms (Kilpatrick & Williams, 1997). Altogether, the amassed costs of intimate partner violence are estimated annually to exceed \$5.8 billion, of which \$4.1 billion goes directly towards medical and mental health services (National Center for Injury Prevention and Control, 2003).

#### *Assessment and Intervention*

In order for there to be effective interventions available to victims of IPV, there must first be identification of the occurrence. Oftentimes it is the family physician who plays a critical role in identifying incidences of abuse (AAFP, 2016), and according to Feder and colleagues (2006) the patient does not usually broach the subject but prefers that her health care practitioner make inquiries in a supportive and confidential manner (as cited in Cronholm, Fogarty, Ambuel, & Harrison, 2011). Making routine inquiries gives physicians a better chance of identifying IPV in their patients' lives and also provides information regarding the local prevalence of domestic violence (Cronholm et al., 2011). In order to identify and assess intimate partner violence, questions are designed to identify current violence (Do you feel safe in your current relationship?), assess history of violence (Have you even been physically hurt by anyone or forced to do something sexual you did not want to?), assess general signs and symptoms of

distress (Are there any sources of stress in your personal life, family life, or at work?), and assess specific signs and symptoms of violence (Is anyone hurting you or frightening you?). If a patient denies suspected abuse, physicians are instructed to not confront or challenge the patient, but rather explain available resources and offer to follow up (Ambuel, Hamberger, & Lahti, 1998).

Providing treatment for survivors of IPV can be impeded by several factors; women are potentially dealing with the legal system, financial instability, lack of time, or insufficient childcare (Warshaw, Sullivan, & Rivera, 2013). With consideration of these factors, cognitive behavioral therapy (CBT), defined as “a broad term that encompasses a variety of short-term treatments that include both cognitive techniques (such as learning to think about something differently) and behavioral components (education and skill-building to put new thoughts into practice),” has been modified and applied to victims of partner violence (Warshaw et al., 2013, p. 6). One such clinical trial was conducted by Kubany and colleagues (2003) with a treatment they titled ‘Cognitive Trauma Therapy for Battered Women’ (CTT-BW). This intervention is designed for women who are at least 30 days post-victimization, have a diagnosis of partner-abuse-related PTSD, experience moderate-high abuse-related guilt, are not engaging in substance abuse, and do not have a diagnosis of schizophrenia or bipolar disorder. This treatment takes place in eight to eleven 90-minute individual sessions. It is personalized for female survivors of IPV by the inclusion of components regarding trauma-related guilt, past traumatic experiences, managing ongoing contact with the abuser, specifically to do with shared children, and strategies for identifying and avoiding revictimization by the original or potential perpetrators. The initial study showed reduction of PTSD symptoms post-treatment that were maintained for three

months, and a larger follow up study by Kubany and colleagues (2004) resulted in 87% of women who completed treatment no longer qualifying for a diagnosis of PTSD.

As CTT-BW is designed for those with at least one month's gap since experiencing IPV, a different treatment was created for those who recently experienced violence: 'Helping to Overcome PTSD through Empowerment' (HOPE) (Johnson, Zlotnick, & Perez, 2011). This intervention targets sheltered IPV victims who were suffering from symptoms of PTSD with nine to twelve 60-90 minute individual sessions twice a week for up to eight weeks. The women who qualified for HOPE had no diagnosis of bipolar disorder or psychosis, had no changes in psychotropic medication within the past 30 days, were not in individual therapy, and were not at significant suicide risk. The program aimed to emphasize the women's safety needs, and focused on empowerment as well as managing PTSD symptoms and triggers. At six months after leaving the shelter, those who went through the HOPE program were less likely to be experiencing abuse, and had significant reduction in depression as well as significant increase in empowerment and social support.

Taking into consideration potential other concerns facing survivors of IPV, many varieties of interventions have evolved taking into account cultural factors or specific health concerns. The increased risk of substance abuse (Bergman & Brismar, 1991) led to the Relapse Prevention and Relationship Safety (RPRS) program (Gilbert et al., 2006), an approach entailing 11 two-hour group sessions and one individual session over the course of six weeks. The goals of RPRS are decreased symptoms of PTSD and depression, reduction of drug use, and increased relationship safety either within or outside of the abusive relationship. The results of a small clinical trial showed overall reduced drug use with the exceptions of marijuana and heroin,

significantly fewer depressive symptoms, a non-significant decrease in experiencing abuse, and an improvement in avoidance as a factor of PTSD, but no change in hyperarousal or re-experiencing symptoms. Another CBT treatment directed specifically at low SES, suicidal African American victims of previous or ongoing IPV is Grady Nia (Kaslow et al., 2010). This 10-session intervention (requiring a minimum attendance of seven sessions) intends to increase self-efficacy, decrease suicidal ideation, and provide a sense of community and support for women, complete with access to comprehensive mental health care, through gender and culturally-focused practices. Though attrition rate was high, women who completed the minimum seven sessions had greater symptom reduction than those women in the control group, and those changes were consistent one year later. An assortment of other therapeutic approaches include Mindfulness Based Stress Reduction, acupuncture, and body-oriented therapy (Warshaw et al., 2013). The aforementioned treatments show promise as effective interventions, but larger sample sizes as well as further trials are required to provide greater credence. Furthermore, it is worth noting certain approaches are oriented more towards symptom reduction rather than trauma recovery (Warshaw et al., 2013).

An alternative approach to, or in addition of, traditional therapies for trauma victims is animal-assisted therapy. Evidence exists that for some individuals, expressing their thoughts and emotions to pets is done more easily than with humans or a therapist. This indicates the potential therapeutic value of animals (Zilcha-Mano, Mikulincer, & Shaver, 2011) - an idea to be explored more closely in the following section.

## **Equine-Assisted Activities**

### *Animals in Therapy*

According to the 2015-2016 National Pet Owners Survey, approximately 65% of households in the United States, or close to 80 million families, own at least one pet (American Pet Products Association [APPA]). Evidence of pet ownership goes back as early as 10,000 BCE from when archaeologists have discovered remains of a dog buried with a human, and other fossil examples dot history showing the close relationship between humankind and animals (Hajar, 2015). Owning a pet has been linked with several health benefits such as a reduced risk for cardiovascular disease, the leading cause of the death in the United States (American Heart Association [AHA], 2013). The American Heart Association (2013) also noted the potential for reduced obesity in pet owners who regularly engage in physical activity with their animals, specifically referencing dogs. A separate study found that following a positive human-dog interaction there was a decrease in blood pressure and the stress-hormone cortisol, and an increase in positive hormones b-endorphin, oxytocin, prolactin, phenyl acetic acid, and dopamine in both species, with the exception of an insignificant increase in cortisol levels in dogs (Odendaal & Menthés, 2003).

In a study by Raina, Bonnett, and Waltner-Toews (1998) the positive physical and mental health effects of pet ownership among seniors were compounded by a self-reported close attachment to the pet (as cited in Headey, Na, & Zheng, 2007). Attachment to animals has been examined on the same premise as attachment to humans; often one's relationship to a pet meets the same four requirements detailed in human attachment relationships: proximity seeking, safe haven, secure base, and separation distress (Zilcha-Mano et al., 2011). Just as not every adult



romantic relationship fulfills the attachment criteria (Fraley & Shaver, 2000), the same is true of relationships between humans and their pets (Kurdek, 2009). In an Internet-based survey of adult dog owners conducted by Kurdek (2009), it was found that participants were more likely to turn to their dog as a safe haven in comparison to their mothers, fathers, siblings, best friends, children, and in some cases, as impacted by gender and marital status, romantic partners. With the acceptance that animals can fulfill the role of an attachment figure for humans (Rockett & Carr, 2014), an important distinction appears in the lack of correlation between human-human and human-pet attachment bonds. Zilcha-Mano and colleagues (2011) found that those who received a high score of avoidance on the ECR did not necessarily form avoidant relationships with pets, and, in fact, had greater likelihood of pet-related attachment anxiety. This result implies that those with avoidant tendencies in close human relationships may find greater accessibility in expressing their worries and anxieties to pets (Zilcha-Mano et al., 2011), and, as referenced earlier, this constitutes some of the therapeutic value of animals.

Animal-assisted therapy (AAT), a goal-directed intervention involving a trained animal and therapist (American Veterinary Medical Foundation [AVMF], n.d.), is increasingly employed to elicit positive physiological (Odendaal & Meintjes, 2003) and social responses in a variety of ailments, including dementia and Alzheimer's, schizophrenia, and trauma, including sexual abuse (Hardiman, 2010). It is also proposed that the addition of animals in a traditional therapy setting may facilitate the therapist-client alliance (Rockett & Carr, 2014), a researched predictor of therapeutic change (Levy et al., 2011). A client can begin to rework his or her internal working models regarding the therapist with assistance from an animal's presence - the client puts him or herself in the position of the animal and notes the therapist's responses to the animal (Noonan,

2008). While research with dogs has primarily been referenced up to this point, a variety of animals are utilized in AAT including horses, cats, guinea pigs, fish, robotic animals (Matchock, 2015), rabbits, llamas, dolphins, and other animals (“What Is Animal Assisted Therapy,” n.d.). The present study focused on the use of horses for therapeutic purposes.

### *Therapeutic Applications of the Horse*

The connection between humankind and horses dates back approximately 6,000 years ago when horses were kept primarily as a source of meat (Budiansky, 1998 as cited in Berg & Causey, 2014). The relationship has since evolved into one of partnership, with the belief that horses were domesticated and initially used for riding beginning around 2500 BC, though potentially as early as 4000 BC based on south-east European artwork (Brown & Anthony, 1998). The use of horses for therapeutic purposes has been noted in the writings of physicians since the 1500s, and in the early 1900s they were utilized in the physical healing process of soldiers wounded during World War I (Berg & Causey, 2014). Still, the therapeutic value of horses was not widely recognized until 1952 at the Olympic games in Helsinki, Finland; equestrian Lis Hartel won the silver medal in the sport of dressage despite paralysis from the knee down due to polio (Berg & Causey, 2014; Kendall, Maujean, Pepping, & Wright, 2014; Lessick, Shinaver, Post, Rivera, & Lemon, 2004). Organizations employing equine assisted activities and therapies (EAAT) began to operate around the world following Hartel’s success (Kendall et al., 2014); the first centers in North America opened in 1969 along with the formation of the North American Riding for the Handicapped Association (NARHA), now known as the Professional Association of Therapeutic Horsemanship International (PATH Intl.) (PATH Intl., 2016a).

PATH Intl. initially focused on individuals with physical disabilities, such as cerebral palsy, muscular dystrophy, amputations, and brain injuries (Masini, 2010). Of the multitude of names that exist for different therapeutic applications of the horse, the two that specifically pertain to mounted activities are therapeutic riding, defined by PATH Intl. (2016b, para. 8) as “an equine-assisted activity for the purpose of contributing positively to the cognitive, physical, emotional and social well-being of individuals with special needs,” and hippotherapy, “a physical, occupational or speech therapy treatment strategy that utilizes equine movement....refers to the use of the movement of the horse as a treatment strategy by physical therapists, occupational therapists and speech/language pathologists to address impairments, functional limitations and disabilities in patients with neuromotor and sensory dysfunction” (para. 5). The physical benefit associated with mounted horseback activities is the replication of the human stride; the movement of the horse provides the same rotation and side-to-side movement of the rider’s pelvis as would walking (Lessick et al., 2004). Potential benefits to the rider include improved balance, coordination, strength, flexibility, and confidence (Borzo, 2002).

The therapeutic application of horses evolved to address mental health concerns in what is most commonly referred to as equine-assisted psychotherapy (EAP), “an interactive process in which a licensed mental health professional working with or as an appropriately credentialed equine professional, partners with suitable equine(s) to address psychotherapy goals set forth by the mental health professional and the client” (PATH Intl., 2016b, para. 4). EAP has been utilized for those with autism, ADHD, schizophrenia, at risk youth (Kendall et al., 2015), war veterans (Masini, 2010), individuals with eating disorders (Koch, 2008), and those recovering from

trauma (Yorke et al., 2008). The Equine Assisted Growth and Learning Association (EAGALA), an association for professionals using equine therapy for mental health needs, founded in 1999, claims the value of horses comes from their size and power, creating an opportunity for one to overcome fear and develop confidence, coupled with their sensitivity to humans and mirroring of human body language (2010, para. 4). In a study comparing the effectiveness of canine-assisted psychotherapy, equine-assisted psychotherapy, and two standard treatment interventions on reducing violent behavior in long-term psychiatric patients, the only significant decrease occurred in the equine group (Nurenberg et al., 2015). Results such as this are encouraging, but EAAT remains an under-researched field with too heavy a reliance upon qualitative data (Kendall et al., 2014; Kendall et al., 2015).

#### *Equine-Assisted Activities (Unmounted)*

The majority of research on EAAT looks at the effects of horseback riding and mounted interactions (Berg & Causey, 2014), but unmounted activities as simple as grooming are thought to have a therapeutic benefit (Kendall et al., 2014). Sanders (2003) reported a reduced heart rate in those spending time scratching and grooming a horse (as cited in Koch, 2008). Furthermore, staff and volunteers unintentionally benefit from assisting during therapeutic riding sessions as shown by reduced stress and burnout rates (Koch, 2008). A range of activities with the horse are still available without the act of riding; an example of an EAGALA activity involves asking a group of individuals to get a horse to jump over a board in the center of an arena while following the following five rules: 1. No touching the horse; 2. No bribing the horse; 3. No using anything outside the arena; 4. No using ropes or halters; 5. No talking to other team members (as cited in Tramutt, 2003). Other activities simply involve interacting with an individual horse or a group of

horses and responding to emergent emotional states with the assistance of a licensed mental health professional (Tramutt, 2003). Meeting a large animal for the first time may induce fear or anxiety, and as such should be done through a fence the first time, but with instruction from the counselor to address their concerns to the horse, the initial anxiety can be overcome and a bond of trust created (Froeschle, 2009). Especially for those leaving negative or abusive relationships, the opportunity to create a positive, trust-based relationship shows the client the possibility of positive relationships (Froeschle, 2009).

Working with horses on the ground has further notable benefits in that not every population is deemed suitable for mounted interventions. Tramutt (2003) points out that individuals who have a dissociative disorder, PTSD, or a history of violence should be screened before engaging with horses in any format, let alone before beginning horseback riding. This is intended for the safety of the horse and the client, as an individual who dissociates is at risk of putting either or both parties in harm's way and counteracting any therapeutic effect, and an individual with PTSD and/or history of violence could be triggered by the potential reactivity or sudden movements made by a horse (Tramutt, 2003). This is reiterated by Levine (1994) and Tyler (1994) with specificity to those who have been the victim of intimate partner violence; as the sensation of horseback riding could induce flashbacks to the original incidents of abuse, it is wisest to avoid equine-assisted interventions that require riding (as cited in Koch, 2008). With consideration to the population in the present study, as well as the suitability of the selected horse, only unmounted activities including petting, grooming, and leading were instructed.

## **The Present Study**

The present study employed horses to affect change in women who likely maintain an insecure attachment model in conjunction with their experience of IPV. Horses are herd and prey animals, and because of that have a keen awareness of their environment and its inhabitants (Bachi, 2013). This plays out in the horse's mirroring of human emotion, a feature considered central to the human-horse bond (McCormick & McCormick, 1997 as cited in Bachi, 2013). In conjunction with affect mirroring, horses desire emotional congruency; meaning that if a fearful individual were to act as if she were unafraid, the horse would pick up on the discrepancy and express unease at the incongruence (Tramutt, 2003). Interacting with a horse provides an opportunity for one to learn that expressing emotion genuinely facilitates a trusting and healthy relationship (Tramutt, 2003); furthermore, one's emotions are received without judgment on behalf of the horse, which promotes trust and feelings of acceptance (Bachi, 2013). At the same time, the horse fulfills the role of a safe haven and secure base - two of the components of an attachment figure (Bachi, 2013).

The measure of attachment utilized by this study, the Experiences in Close Relationships Scale (ECR; Brennan et al., 1998), examines anxiety and avoidance separately in order to determine one's level of security; a low score on both factors indicates a securely attached individual (Fraley, 2012). Studies show that horses can effectively reduce anxiety in trauma survivors (Earles et al., 2015; Froeschle, 2009; Holmes, Goodwin, Redhead, Goymour, 2012), but current research does not exist regarding the effect of equine-assisted activities and therapies on one's level of avoidance, or overall attachment security. Not only is there an absence of research concerning horses and their effect on human beings' attachment styles, but also research

is limited in the entire field of equine-assisted activities (Kendall et al., 2014; Kendall et al., 2015). The number of studies on the effects of unmounted work (i.e., interacting with a horse without riding it) is even fewer (Berg & Causey, 2014), and due to the high cost of therapeutic riding or any therapeutic work with horses it is necessary that more qualitative data be produced on the subject (Kendall et al., 2014).

This study is unique in that, not only is the work with the horses unmounted, but also it is a one-time intervention for a short duration of time (15-45minutes). Furthermore, the instructor is not a licensed mental health professional. The non-formality of the experimental session is an unexplored area of research, and a positive effect would implicate a more cost-effective manner of engaging in equine-assisted therapy. Due to the collaboration among four undergraduate capstone students, one honors thesis student, and one faculty advisor using this project as partial fulfillment of her doctoral degree, there was a range of data collected and not all participants were victims of domestic abuse. This allowed the present study to pair the women in the ‘abuse’ group with women in the ‘matched’ group for comparison of two different populations. This comparison allowed observation of potentially differing impacts of the intervention in conjunction with one’s security in relationships. Both matching groups of participants and looking at the effectiveness of a brief interaction with a horse on attachment style are unique to this study and will contribute and be relevant to the growing body of research on equine-assisted therapy.

## Hypotheses

The first hypothesis of this study is that those women who have experienced domestic abuse will have a higher level of insecure attachment compared to those who have not experienced domestic abuse.

The second hypothesis holds that after going through the intervention, all participants will report a positive effect on anxiety and avoidance, thus reflecting a move towards greater attachment security, but a larger effect will be reported for those women who previously experienced domestic abuse.

A third hypothesis states that video footage of the intervention will indicate a difference in proximity maintenance, a facet of attachment, between the two groups of women and the horse. Specifically, it is expected that compared to women who have not experienced domestic abuse, those who have experienced abuse will be likely to spend greater time in proximity to the horse.

## Method

### Participants and Recruitment

#### *Human Participants*

The experimental population consisted of four females between the ages of 18 and 30 years ( $M = 21.5$ ,  $SD = 4.04$ ) recruited from the University of Maine using the First Class email system and posters (see Appendix A). Further recruitment attempts involved distributing posters, with permission, to local domestic abuse support groups: Spruce Run-Womancare Alliance in Bangor, Maine and Dover-Foxcroft, Maine (see Appendix B) as well as local therapists' offices



(see Appendix C) with the additional incentive of a \$20 gas card as well as a t-shirt. The support group in Dover-Foxcroft also allowed researchers to visit a support group and briefly introduce the study. Recruitment attempts outside of the University of Maine campus resulted in the interest of one additional participant who was allowed to partake despite being outside of our age range (45 years old).

Recruitment of women outside of the experimental group resulted in 18 females between the ages of 18 and 30 years ( $M = 21.78$ ,  $SD = 2.69$ ), of whom four ( $M = 21.25$ ,  $SD = 4.03$ ) were matched with the experimental population on level of experience with horses, followed by similarity of age. Recruitment was done solely on the University of Maine campus using First Class and a variation of the experimental recruitment poster (see Appendix D) with a t-shirt offered as incentive. As there was no participant in this group that adequately resembled the 45-year-old experimental female in terms of age, a 22-year-old female was matched with her based on similarity of horse experience. An application explaining this project was presented to and approved by the Institutional Review Board (IRB) before commencing recruitment or experimentation.

### *Animal Participant*

One retired Standardbred mare was used in the study: Long Wick (Wicky), a 25-year old, bay mare located at the J. Franklin Witter Teaching and Research Center in Orono, Maine. She was deemed suitable after evaluation of the resident mares based on their behavior over the course of one week during morning chores (feeding, haltering, approaching stall, leading outside), evening chores (approaching paddock, leading inside, taking halter off, feeding), and, if

applicable, training sessions (Schramm, 2014). Wicky is considered one of the safest horses at the farm and is often used for examples and demonstrations because of her patience and reliability. Furthermore, she showed a tendency to respond to each participant a little differently whereas some of the other horses evaluated to be suitable were less effective at connecting with inexperienced and unfamiliar handlers. An application explaining this project was presented to and approved by the Institutional Animal Care and Use Committee (IACUC) before beginning research.

## Measures

### *Attachment*

Experiences in Close Relationship Scale (ECR; Brennan, Clark, & Shaver, 1998) (see Appendix E) was employed to evaluate adult attachment on two-dimensions: attachment-related anxiety and attachment-related avoidance. There are 36 questions of which 1-18 comprise the anxiety measure and 19-36 make up the avoidance measure; participants were informed that the items could be applied to any relationship of their choosing. An example of an item concerning anxiety would be: “I often worry that my partner will not want to stay with me,” and an example from the latter half on avoidance is: “I prefer not to show a partner how I feel deep down.” Participants recorded their responses on a scale from 1-7 in which 1 is “strongly disagree” and 7 is “strongly agree.” The internal consistency reliability of the ECR is calculated to be .90 or higher (Fraley, 2012).

To score each questionnaire the responses to the first half are averaged, with exceptions for items 9 and 11 that must be reverse keyed, to yield a score of anxiety and the responses to the

second half are averaged after reverse keying items 20, 22, 26, 27, 28, 29, 30, 31, 33, 34, 35, 36 to yield a score of avoidance. A higher score indicates a higher level of anxiety or avoidance, respectively. The two dimensions are intended to remain continuous variables, however security can be loosely assessed by an anxiety score that is less than the median score for anxiety (MANX) and an avoidance score that is less than the median score for avoidance (MAVOID) (Fraley, 2012).

## Procedure

### *Prescreening*

Every subject met for prescreening at a location outside of J. Franklin Witter Teaching and Research Center between 1-4 weeks before participation in the experiment. Prescreening required informed consent (see Appendix F) before completing a questionnaire to determine if the subject qualified (see Appendix G). Qualifications included a lack of experience with horses, defined as five or fewer times having contact with, touching, leading, or grooming a horse, or up to two occasions of riding or driving a horse, and never having participated previously in an equine-assisted activity or therapy, and, for those in our experimental condition, a self-reported current or past history of domestic violence and/or sexual abuse. Those who self-reported medical or mental health concerns beyond a minimal level, animal abuse concerns, a history of fire setting, or other issues preventing interaction with horses were declined and provided with a list of local counseling resources (see Appendix H).

Those who qualified for the study were given a second informed consent (see Appendix I) explaining the experiment before completing a participant information sheet (see Appendix J)

and the ECR Scale questionnaire for the first of three times. They were provided with a list of counseling resources in the area before departing (see Appendix K).

### *Experimental Setting*

The J. Franklin Witter Teaching and Research Center operates as a student run co-op with horses, cows, and sheep. Participants were asked to drive around to the back of the barn and enter through the classroom as to avoid contact with the horses before beginning the experiment. During the time the participant interacted with the horse, the barn was subject to noise interruption from barn personnel, other animals, or weather conditions. The utilized portion of the barn has three aisles, twenty-five stalls, and an arena. Set-up included securing the arena gates open, placing Wicky in her stall with hay and water, and placing Wicky's pasture mate in a nearby stall with hay and water so as not to be the only horse in the barn. Three experimenters were required per one participant: one horse handler, one videographer, and one videographer/instructor.

### *Activities*

#### Initial meeting:

Participants were asked to greet Wicky from outside her stall. The window in the stall bars was opened allowing contact with her face and neck. Greeting lasted as long as the participant chose; the experimental group ( $M = 148.00$ ,  $SD = 69.00$ ) had a marginally significant ( $p = .09$ ) higher average length of greeting (in seconds) than the matched group ( $M = 69.00$ ,  $SD = 39.34$ ).

### Grooming:

The participant was given a helmet to wear, meanwhile the horse handler led Wicky out of her stall and secured her to cross ties in the center aisle of the barn facing away from the arena. The horse handler stood against the wall on the left side of the horse, in front of her head, in case assistance was needed. The participant was brought over to Wicky and given a soft brush to groom her with in the direction of hair growth. Instructions were to stay on the left side of Wicky, and only to brush as far as her neck to her croup, the point in front of the hind leg. Grooming lasted as long as the participant chose; the experimental group ( $M = 365.25$ ,  $SD = 148.23$ ) had a higher average length of grooming (in seconds) than the matched group ( $M = 168.5$ ,  $SD = 75.83$ ).

### Leading:

After grooming, the horse handler attached a lead rope to the left side of Wicky's halter and a longer lunge line to her right. The participant was shown how to hold the rope on the left side while the horse handler held the lunge line loosely in order to assist if necessary. The participant was asked to turn Wicky around, either to the left or right, and walk into the arena. She led her in one large circle around the length of the arena and out through the opening. Leading continued back to Wicky's stall, but before entering the stall door the participant was asked to stop Wicky in order for the horse handler to disconnect the lunge line. The participant then led Wicky into her stall and turned her around to face the entrance; with assistance from the horse handler they removed the lead rope and took off her halter before leaving the stall and

locking the door. Length of time was independent of participant, for both groups the average was 117 seconds ( $SD = 27.9$ ).

#### Final goodbye:

The window in the stall bars was opened once more and the participant was able to say goodbye to Wicky for as long as she chose. The experimental group ( $M = 40.75$ ,  $SD = 22.52$ ) had a similar length of goodbye (in seconds) compared to the matched group ( $M = 48.75$ ,  $SD = 34.84$ ).

#### Questionnaire administration:

Participants were given the same ECR questionnaire at three different time points:

1. Pre-screening
2. Upon entering the Witter Farm, pre-experiment
3. Immediately after interaction with horse, post-experiment

#### Video:

Participants were filmed during the experiment from two different vantage points using a Canon Vixia HF R300 and a Canon Vixia HF R600. As part of an informed consent form at prescreening, participants were asked whether they gave permission for the video footage to be publicly shown (see Appendix I).

#### Video Coding:

Qualitative data from the Canon Vixia HF R300 video footage were translated into quantitative data by separately rating the length of time (seconds) the participant (P) engaged with the horse (H), H engaged with P, and both P and H simultaneously engaged with one another. This was assessed during meeting and goodbye, as both P and H were able to initiate interaction during these activities. Engagement was assessed for P and H as follows, requiring the expression of at least one behavior at a time:

Meeting/Goodbye	P Engagement (seconds)	H Engagement (seconds)	Overlapping Engagement (seconds)
Length of meeting/goodbye (seconds)	-Eyes facing H -Head turned towards H -Arm outstretched/hand on H	-Eyes facing P -Head turned towards P -Ears directed towards P	Length of time P and H simultaneously engage with one another

Due to a confidentiality concern, one participant from the abuse group could not be viewed; with the inclusion of the participant outside of our age range there existed four matched pairs of videos to analyze.

## Results

### *Testing Hypothesis 1*

To investigate whether the likelihood of secure attachment differed between the abused and matched women, following the instructions of Fraley (2012), the pre-screening scores of all 10 participants were used to calculate the median score for both anxiety ( $MANX = 2.44$ ) and avoidance ( $MAVOID = 1.11$ ). A score less than both  $MANX$  and  $MAVOID$  indicates a loose assignment of secure attachment (Fraley, 2012). Examining the abused women and the matched women, one participant from each group was deemed securely attached (participant 1;

participant 10) (see Table 1). Thus, counter to the hypothesis, the results did not show that matched women had more secure attachment than the abused women.

Table 1. *Assessment of Attachment Security in Abused vs. Matched Women at Pre-Screening*

	Group	Age	Anxiety Time 1	Avoidance Time 1
Participant 1	Abused	27	1.56*	0.11*
Participant 2	Abused	18	1.72*	2.06
Participant 3	Abused	19	1.78*	1.50
Participant 4	Abused	22	3.61	0.33*
Participant 5	Abused	45	4.11	1.11
Participant 6	Matched	27	3.82	0.83*
Participant 7	Matched	18	1.78*	1.53
Participant 8	Matched	19	3.11	1.11
Participant 9	Matched	21	3.94	1.78
Participant 10	Matched	22	1.56*	0.22*

\* Score is less than MANX or MAVOID

### *Testing Hypothesis 2*

To investigate whether equine-assisted activities would have an impact on participants' anxiety, particularly for the abused women, a 2 (group: abused vs. matched) x 3 (time) mixed ANOVA was conducted using SPSS. Three different time points were examined, and the intervention occurred between times 2 and 3 (see Table 2). The analysis of variance showed a nonsignificant interaction effect [ $F(2, 7) = 2.38, p = .163$ ]. Thus, contrary to the hypothesis,



anxiety did not significantly decrease following interaction with the horse, however a slight downward trend was present in the abused group.

Table 2. *Means and Standard Deviations of Anxiety over Time in Abused vs. Matched Women*

	Anxiety Time 1 <i>M (SD)</i>	Anxiety Time 2 <i>M (SD)</i>	Anxiety Time 3 <i>M (SD)</i>
Abused	2.56 (1.21)	2.42 (1.10)	2.29 (1.36)
Matched	2.84 (1.12)	3.37 (0.91)	3.02 (0.72)

To test whether equine-assisted activities would have an impact on participants' avoidance across the three time points, a 2 (group: abused vs. matched) x 3 (time) mixed ANOVA was conducted (see Table 3). The results showed a nonsignificant interaction effect [ $F(2,7) = .29, p = .758$ ]. Thus, contrary to the hypothesis, avoidance did not decrease for the abused women following interaction with the horse.

Table 3. *Means and Standard Deviations of Avoidance over Time in Abused vs. Matched Women*

	Avoidance Time 1 <i>M (SD)</i>	Avoidance Time 2 <i>M (SD)</i>	Avoidance Time 3 <i>M (SD)</i>
Abused	1.02 (0.81)	1.04 (0.51)	1.36 (0.41)
Matched	1.09 (0.61)	0.98 (0.72)	1.37 (0.74)

### *Testing Hypothesis 3*

To investigate the hypothesis that the length (seconds) of activity (meeting or goodbye) and degree of engagement would vary between the abused and matched women, as ascertained

from video data, a series of independent samples t-tests were conducted using SPSS (see Table 4). Contrary to the hypothesis, no significant effects were observed, however the length of meeting was marginally significant ( $p = .09$ ), with abused women involved in a longer meeting with the horse than the matched group.

Table 4. *Independent Samples T-Tests from Coded Video Data of Abused vs. Matched Women*

	Abused <i>M (SD)</i>	Matched <i>M (SD)</i>	t	df	Significance
Length of meeting	148.00 (69.17)	69.00 (39.34)	1.99	6	.09
P Engaged (meeting)	138.50 (67.01)	65.75 (41.14)	1.85	6	.11
H Engaged (meeting)	21.25 (11.47)	11.75 (21.55)	0.78	6	.47
Overlapping Engagement (meeting)	18.00 (7.48)	11.50 (21.69)	0.57	6	.59
Length of goodbye	40.75 (22.52)	48.75 (34.84)	-0.39	6	.71
P Engaged (goodbye)	38.00 (18.57)	48.50 (34.43)	-0.54	6	.61
H Engaged (goodbye)	8.50 (6.46)	15.00 (13.19)	-0.89	6	.41
Overlapping Engagement (goodbye)	8.50 (6.46)	14.75 (13.35)	-0.84	6	.43

## Discussion

This study's intention was to assess the efficacy of an informal equine-assisted activity in increasing the attachment security of abused women. The briefness of a one-time, unmounted intervention has not been previously looked at; the perspective of attachment security is also unusual in the field of equine-assisted activities. Furthermore, matching participants, as was done by the present study, is uncommon and intended to give insight into differences between those who self-reportedly have or have not experienced abuse.

We hypothesized that the two incoming groups would show differences in attachment security, specifically that the women who experienced abuse would be less securely attached. This was not supported by our results as only two women could be considered secure when employing Fraley's (2012) method of calculation. Of these two women, one came from the abuse group and the other came from the matched group. The similarity of groups is reiterated by Time 1 (prescreening) scores of avoidance and anxiety, of which neither were significantly different between groups.

Though results were not statistically significant, from Time 1 (prescreening) to Time 3 (post-experiment) there was a slight increase in avoidance for both the abused and matched women, a pattern that is also true of anxiety in the matched group. However, a difference between the two groups was present in a downward trend of anxiety for the abuse group. A reduction in anxiety is considered a move towards a more positive self-model (Bartholomew & Horowitz, 1991) marked by increased self-confidence (Henderson et al., 2005); this is particularly vital for women who have experienced an abusive relationship as 85% maintain a predominantly negative view of the self (Henderson et al., 1997). This finding is consistent with the results of previously conducted studies (Earles et al., 2015; Holmes et al., 2012; Whittlesey-Jerome, 2014). No comparable research could be discovered regarding a slight increase in avoidance, however it may be explained by the context-dependent nature of attachment in which a situation evokes feelings that do not match an individual's typical attachment state (Wallin, 2007). The term 'avoidance' indicates an increasingly negative view of others (Bartholomew & Horowitz, 1991) and is defined as evading intimacy, and compulsive self-reliance (Henderson et al., 2005). Self-reliance, however, is akin to empowerment, which has been found to increase

after engaging in equine-assisted activities (Froeschle, 2009). Though assessment measures and terminology differ, and the results of the present study were nonsignificant, it is conjectured that empowerment could be translated as a small increase in avoidance in the context of EAA.

The different trend in anxiety scores indicates that there may be variation between the two groups that could not be detected by the ECR; this is a consideration reiterated by the video footage of horse/human interaction during the first activity (meeting). Coded video data revealed a marginally statistically significant ( $p = .09$ ) difference in length of meeting between the two groups; the abuse group's meeting ( $M = 148.00$  seconds,  $SD = 69.17$ ) was longer than the matched group's meeting ( $M = 69.00$  seconds,  $SD = 39.34$ ). Although the length of each activity is determined by the human participant, results show it is the horse who primarily determines the extent to which joint engagement occurs. The participant is engaged for almost the entire activity, but the horse engages for only brief sections of it. In addition, the amount of time during which the horse engages with the participant is not in one extended interaction but rather several shorter durations. As primarily non-verbal herd animals, horses are extremely sensitive to body language (Brandt, 2004). Without intending to, those who are unfamiliar with being around horses may inadvertently put pressure on the animal and dissuade her from approaching by applying direct eye contact or large physical gestures. As per recruitment requirements, no participant had extensive experience with horses and their attempts to engage with Wicky lasted almost the entire duration of the activity (97.9% matched/meeting; 100% abused/goodbye; 98.3% matched/goodbye) except for the abused women during meeting who spent slightly less time actively engaged with the horse (84.7%). Although the percentage of time Wicky spent engaged with the participants varied (14.4% abused/meeting; 17.0% matched/meeting; 20.9%

abused/goodbye; 30.8% matched/goodbye), it does not seem to be in relation to the percentage of time the participant spent engaged. The horse spent more time engaged with the matched participants for both activities, however, which again hints at a potential difference in the two groups that resulted in a greater sense of comfort or willingness to approach women who had not experienced intimate partner violence.

### *Limitations*

The most glaring limitation of the present study concerns the sample size. The recruitment of only five female survivors of intimate partner violence severely inhibited our ability to draw any significant conclusions. This lack of participation was partly affected by the local resources and their degree of cooperation. Despite having permission for researchers to visit local domestic abuse support groups and give a brief explanation of the study, only one of the two locations allowed us to follow through on attending. The support group that two researchers were able to appear at had very few members, of whom even fewer were suitable for the study based on age or extenuating physical or mental circumstances. Only one abuse participant was recruited from outside of the University of Maine campus, and it was via a flyer posted in a local therapist's office rather than at either support group. This participant was outside of the desired age range, which further limits any claims or contributions made by our results due to incongruence.

The present study also faced a challenge with confidentiality. As one of the participants in the abuse group was known by the researcher performing the coding, only four sets of videos (eight videos altogether) could be analyzed with respect to privacy. Video coding was performed

by one individual, and therefore the coding results lack inter-rater reliability. Furthermore, between angle of the camera, lighting in the barn, and structures of the stall impeding with clear visibility, there was not always enough precision to determine if either the horse or human was engaged and for what length of time.

A final limitation of the study at hand concerns the unavailability of suitable horses. While it reduced the number of variables by using one horse for each participant, the horse selected for the task had never been involved as a therapy animal beforehand. She, along with the other horses at J.F. Witter Farm, were screened and it was found that six seemed suitable for the task (Schramm, 2014). In practice, only Wicky maintained suitability in her actions towards inexperienced and unfamiliar participants, but it is possible a more experienced therapy horse would elicit a different response. The lack of suitable horses for equine-assisted activities goes in conjunction with the limitations of our research setting; as the stables was never entirely private, there were continuous opportunities for interruptions and distractions that may have impacted the horse and/or the participant.

### *Future Directions*

In response to our limitations, future directions could aim to address these concerns by acquiring a larger sample size, and perhaps concentrating more efforts on college campuses if the age range is of value. A greater degree of participation would provide insight as to whether the slight decrease in anxiety for the abuse group and slight increases in avoidance for both groups is representative of a larger population. An intent of the present study that could not be completed within the time frame, but a consideration for future studies, is redistribution of the attachment

questionnaire for a fourth time approximately three months after the equine-assisted activity.

This would allow for the exploration of whether interaction with the horse contributed to longer-term changes in participants' attachment anxiety or avoidance.

While a unique facet of this study was in its one-time intervention, the activities could be performed at varying intervals, such as daily, weekly, or monthly. A method such as this would still incorporate the elements of an informal, unmounted interaction with a horse but would potentially lead to a different intensity of effect on attachment. This type of intervention, either in one or multiple sessions, could furthermore be applied to different markers of well-being than attachment. There are also opportunities for better analysis of video data through higher quality footage and more feature-oriented coding; of interest is the Equine Facial Action Coding System (EquiFACS) (Wathan, Burrows, Waller, & McComb, 2015). This method, with its high inter-rater reliability (0.86), may allow for greater understanding of what the horse is communicating in response to the participant. It would also be interesting to use video data to explore the approach and retreat pattern of engagement between the horse and human, as engagement on behalf of the horse was rarely observed in one uninterrupted bout.

A final direction regards the selection of horses for this type of intervention. As can be seen in the results, Wicky spent very different amounts of time engaging with different individuals. While the participant was typically engaged for most, if not all, of meeting and saying goodbye, the length of time the two spent simultaneously engaged was largely dependent upon the horse. One of the strengths of our chosen horse was that she interacted slightly differently with each participant, but the length of time she spent engaged with certain participants indicates a preference for some individuals to others. In other applications of equine-

assisted activities, a group of horses (Whittlesey-Jerome, 2014) is accessible or participants have been accompanied into a herd setting (Tramutt, 2003); this allows both the participant and the horses to express preferences and gravitate towards one another.

### *Conclusion*

As a tool for physical rehabilitation, equine-assisted activities and therapy have been employed for several decades with marked success (Berg & Causey, 2014). Although the horse has also been employed for social, emotional, and mental therapeutic interventions in diverse populations, the field requires greater evidence in order to substantiate early findings. Measuring the efficacy of equine-assisted activities through the framework of attachment could contribute to the expanding therapeutic application of horses. Though the contributions of this study are severely limited, there is the potential of a greater effect in a larger sample size and more intensive intervention. The target population, female survivors of intimate partner violence, typically experience treatments that target symptoms of abuse; an intervention such as equine-assisted activities and therapies seeks to address the underlying attachment pattern and contribute to an individual's sense of security in relationships.



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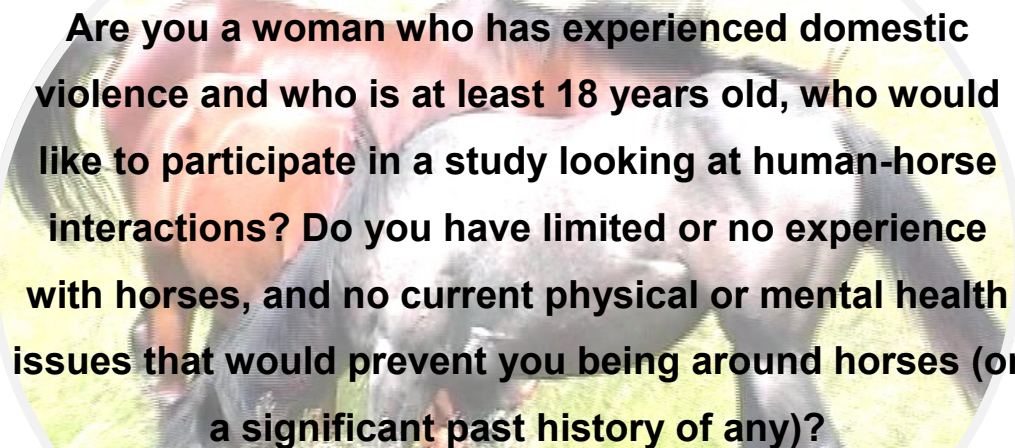
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## **Appendices**

### *Appendix A: Domestic Abuse Recruitment Poster*

#### **Would you like to learn how to groom and lead a horse?**



**Are you a woman who has experienced domestic violence and who is at least 18 years old, who would like to participate in a study looking at human-horse interactions? Do you have limited or no experience with horses, and no current physical or mental health issues that would prevent you being around horses (or a significant past history of any)?**

**Participation will involve about 3 hours of your time (spread over 3 separate sessions). The horse session will take place at UMaine's Witter Farm in Orono.**

**If you would like to find out more, please contact me**

**Clare Thomas-Pino: [clare.thomas@umit.maine.edu](mailto:clare.thomas@umit.maine.edu)**

**or 564-2015.**

**If you meet our eligibility criteria and are able to participate you will receive a T-Shirt as thanks for your participation.**

*Appendix B: Permission from Spruce Run-Womancare Alliance*

I

From: Clare Thomas Tuesday, June 09, 2015 9:53:32 AM  
Subject: Re(2): Checking in?  
To: Cindy Freeman Cyr <cindy@wmncare.org>

Hi Cindy

Thank you- we will be in touch in early August as we hope to be able to come out in mid/late August to the support group and to distribute flyers. Do you have a suggestion for a contact person at Spruce Run?

Take care

Clare




Cindy Freeman Cyr <cindy@wmncare.org> writes:  
Hi, Clare,

Good to see you the other night. We are all clear for distributing flyers to support group participants and others who use services in both centers.


Take care,


Cindy

*Appendix C: Permission to distribute flyers to local therapists' offices*

From:  Gayle Jones December 5, 2015 4:28:56 PM  

Subject: Re: Adjusted recruitment

To:  Ilana Silver

Cc:  Clare Thomas

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Ilana Silver writes:

Hello,

I've been working with Clare Thomas on the experiment regarding bringing domestically abused women to Witter to interact with one of the horses there and we've had some trouble getting enough participants. I was asked by my friend who is a therapist in the area if she could have a few flyers to hand out, and just today she asked if she could distribute a few to other therapists she oversees. At this point we've told her yes, but wanted to check that this was alright. Thank you, and Clare will be e-mailing you soon with an adjustment to our compensation.

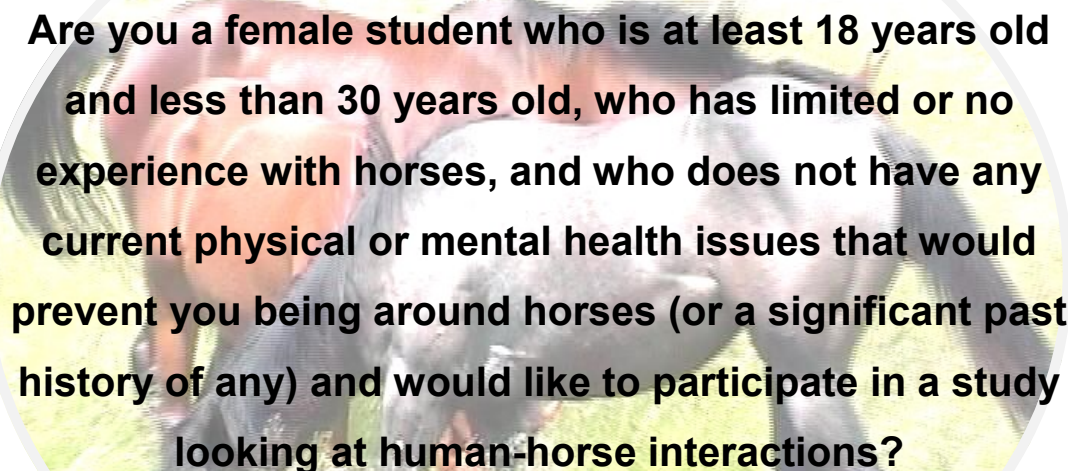
Ilana Silver

Yes, there is no issue with having people distribute the IRB approved flyer about the study.

Thanks, gayle

*Appendix D: Non-Abuse Recruitment Poster*

**Would you like to learn how to groom and lead a horse?**



**Are you a female student who is at least 18 years old and less than 30 years old, who has limited or no experience with horses, and who does not have any current physical or mental health issues that would prevent you being around horses (or a significant past history of any) and would like to participate in a study looking at human-horse interactions?**

**Participation will involve about 3 hours of your time (spread over 3 separate sessions).**

**If you would like to find out more, please contact me**

**Clare Thomas-Pino: [clare.thomas@umit.maine.edu](mailto:clare.thomas@umit.maine.edu)**

**or 564-2015.**

**If you meet our eligibility criteria and are able to participate you will receive a T-Shirt as thanks for your participation.**

Appendix E: Experiences in Close Relationships Scale Questionnaire

Finally, we would like to ask you some questions about your emotional life, in particular, how you control (that is, regulate and manage) your emotions. The questions below involve two distinct aspects of your emotional life. One is your emotional experience, or what you feel like inside. The other is your emotional expression, or how you show your emotions in the way you talk, gesture, or behave. Although some of the following questions may seem similar to one another, they differ in important ways.

For each item, please write in the answer using the following scale:

Disagree Strongly	1	2	3	4	5	6	7	Agree Strongly
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- 1. \_\_\_\_ When I want to feel more positive emotion (such as joy or amusement), I change what I'm thinking about.
- 2. \_\_\_\_ I keep my emotions to myself.
- 3. \_\_\_\_ When I want to feel less negative emotion (such as sadness or anger), I change what I'm thinking about.
- 4. \_\_\_\_ When I am feeling positive emotions, I am careful not to express them.
- 5. \_\_\_\_ When I'm faced with a stressful situation, I make myself think about it in a way that helps me stay calm.
- 6. \_\_\_\_ I control my emotions by not expressing them.
- 7. \_\_\_\_ When I want to feel more positive emotion, I change the way I'm thinking about the situation.
- 8. \_\_\_\_ I control my emotions by changing the way I think about the situation I'm in.
- 9. \_\_\_\_ When I am feeling negative emotions, I make sure not to express them.
- 10. \_\_\_\_ When I want to feel less negative emotion, I change the way I'm thinking about the situation.

Thank you so very much for participating in this research study.

If you have any questions, comments, or concerns please contact:  
Clare Thomas-Pino (Researcher): [Clare.thomas@umit.maine.edu](mailto:Clare.thomas@umit.maine.edu)  
or  
Dr. Robert Causey (Faculty Advisor): [Robert.causey@umit.maine.edu](mailto:Robert.causey@umit.maine.edu)

Code Number:                      Questionnaire Number:

Evaluating Human-Equine Interactions through the Lens of Adult Attachment.



Thank you for agreeing to participate in this research project looking at the interaction between horses and humans and how it may be beneficial to both.

As part of your participation you will be asked to answer some questions when you start the study, before and after you have your interaction with the horses, and about 3 months after your interaction. The questions will cover some health information and ask questions about how you relate to other people.

Please try to answer the questions with the first answer that comes to mind. It should take about 20 minutes to complete the questionnaire.



### Questions about how you feel in relationships

If you are not currently in a romantic relationship, think about previous romantic relationships. However, if you have not been in a romantic relationship you may answer the questions thinking about how they refer to your feelings in platonic friendships.

Please circle which type of relationship you are thinking of when answering the following questions:

Current	Previous	Platonic
Romantic	Romantic	Friendship
Relationship	Relationship	

For each of the following questions please write in the number that most corresponds to how you feel in your relationships with other people.

Disagree Strongly 1 2 3 4 5 6 7 Agree Strongly

- \_\_\_\_\_ I prefer not to show a partner/friend how I feel deep down.
- \_\_\_\_\_ I worry about being abandoned.
- \_\_\_\_\_ I am very comfortable being close to romantic partner's/friend.
- \_\_\_\_\_ I worry a lot about my relationship.
- \_\_\_\_\_ Just when my partner/friend starts to get close to me I find myself pulling away.
- \_\_\_\_\_ I worry romantic partner's/friend won't care about me as much as I care about them.
- \_\_\_\_\_ I get uncomfortable when a romantic partner/friend wants to be very close.
- \_\_\_\_\_ I worry a fair amount about losing my partner/friend.
- \_\_\_\_\_ I don't feel comfortable opening up to romantic partner's/friend.
- \_\_\_\_\_ I often wish that my partner/friend's feelings for me were as strong as my feelings for him/her.
- \_\_\_\_\_ I want to get close to my partner/friend, but I keep pulling back.
- \_\_\_\_\_ I often want to merge completely with romantic partner's/friend, and this sometimes scares them away.
- \_\_\_\_\_ I am nervous when partner's/friend get too close to me.
- \_\_\_\_\_ I worry about being alone.
- \_\_\_\_\_ I feel comfortable sharing my private thoughts and feelings with my partner/friend.
- \_\_\_\_\_ My desire to be very close sometimes scares people away.

Code Number:

Questionnaire Number:

Continued from page 2

Disagree Strongly 1 2 3 4 5 6 7 Agree Strongly

- \_\_\_\_\_ I try to avoid getting too close to my partner/friend.
- \_\_\_\_\_ I send a lot of reassurance that I am loved (cared for) by my partner (friend).
- \_\_\_\_\_ I find it relatively easy to get close to my partner/friend.
- \_\_\_\_\_ Sometimes I feel that I force my partner's/friend to show more feeling, more commitment.
- \_\_\_\_\_ I find it difficult to allow myself to depend on romantic partner's/friend.
- \_\_\_\_\_ I do not often worry about being abandoned.
- \_\_\_\_\_ I prefer not to be too close to romantic partner's/friend.
- \_\_\_\_\_ If I can't get my partner/friend to show interest in me, I get upset or angry.
- \_\_\_\_\_ I tell my partner/friend just about everything.
- \_\_\_\_\_ I find that my partner's/friend don't want to get as close as I would like.
- \_\_\_\_\_ I usually discuss my problems and concerns with my partner/friend.
- \_\_\_\_\_ When I'm not involved in a relationship, I feel somewhat anxious and insecure.
- \_\_\_\_\_ I feel comfortable depending on romantic partner's/friend.
- \_\_\_\_\_ I get frustrated when my partner/friend is not around as much as I would like.
- \_\_\_\_\_ I don't mind asking romantic partner's/friend for comfort, advice, or help.
- \_\_\_\_\_ I get frustrated if romantic partner's/friend are not available when I need them.
- \_\_\_\_\_ It helps to turn to my romantic partner/friend in times of need.
- \_\_\_\_\_ When romantic partner's/friend disapprove of me, I feel really bad about myself.
- \_\_\_\_\_ I turn to my partner/friend for many things, including comfort and reassurance.
- \_\_\_\_\_ I resent it when my partner/friend spends time away from me.

### *Appendix F: Prescreen Informed Consent*

You are invited to participate in a research project being conducted by Clare Thomas-Pino, an interdisciplinary graduate student. Dr. Robert Causey from the School of Food and Agriculture at the University of Maine is the faculty advisor on the project.

The purpose of the research is to look at the interaction between horses and people and see if the behavioral interaction influences or is influenced by the attachment style of the person. You must be **at least 18 years of age** to participate in this study.

#### **What Will You Be Asked to Do?**

If you decide to participate, you will be assigned a code number to place on each questionnaire you are asked to complete. You will be asked to complete a screening questionnaire to see if you are suitable for this study. This should take about 10-20 minutes to complete. We will quickly analyze this and let you know if you are able to continue to participate in the study. We have very specific requirements for those who are able to participate in this study, so please be honest when you complete the questionnaire, all answers are confidential. If you meet our requirements, you will then be asked to complete another consent form for your participation in the full study.

You will be asked to complete a brief screening questionnaire that will ask you some basic questions about yourself and any experience you may have with horses, and some more detailed questions about your physical, emotional and mental health.

Here are some of the questions you will be asked:

Have you ever had contact with a horse before?                      Yes                      No

Do you have any learning disabilities, lack of concentration, hyperactivity or inattention that may affect your understanding and response to simple requests? Yes\_\_\_ No\_\_\_ If yes, please elaborate: \_\_\_\_\_

Do you have any current or past history of assaulting others, harming yourself, unpredictable or dangerous behavior?

Yes\_\_\_ No\_\_\_ Please Check -Current\_\_\_\_\_ Past \_\_\_\_\_

#### **Risks**

- The questions included in the screening questionnaire ask you to tell us about your physical, emotional and psychological health.
- There is the possibility that you may become uncomfortable answering the questions. We will provide you with a list of on and off campus counseling services available to

students. These are professionals you can contact to talk about any concerns that may arise.

- If you indicate that you intend to harm yourself or others, and we will strongly recommend that you contact one of the referrals on the list of on and off campus counseling services available to students.

### **Benefits**

- While this study may have no direct benefit to you, this research may help us learn more about how interactions between horses and humans can help in the field of Equine Assisted Activities and Therapies.

### **Confidentiality**

Your name will not be kept on any of the documents. A code number to protect your identity will be assigned on the day you first participate in the study. You will use your code number when completing all the questionnaires. Data will be kept in the investigator's locked office. Only my faculty advisor, Dr. Robert Causey and I will have access to these documents. Your name or other identifying information will not be reported in any publications. The key linking your name to the data will be destroyed after data analysis is complete by 31<sup>st</sup> May 2016, and prior to this will be kept in a locked cabinet. The data of those who participate in the full study will be kept indefinitely, however if you do not meet our inclusion and exclusion criteria your data will be destroyed immediately after.

### **Voluntary**

Participation is voluntary. If you choose to take part in this study, you may stop at any time. You may skip any questions you do not wish to answer.

### **Contact Information**

If you have any questions about this study, please contact me at Clare Thomas-Pino, Hitchner Hall, University of Maine, Orono, 207-564-2015 (or e-mail [clare.thomas@umit.maine.edu](mailto:clare.thomas@umit.maine.edu)). You may also reach the faculty advisor on this study at Dr. Robert Causey, Hitchner Hall, University of Maine, Orono, ME 04469-5735, 207-922-7475 (mobile), 207-581-2782 (office) (or e-mail [robert.causey@umit.maine.edu](mailto:robert.causey@umit.maine.edu)).

If you have any questions about your rights as a research participant, please contact Gayle Jones, Assistant to the University of Maine's Protection of Human Subjects Review Board, at 581-1498 (or e-mail [gayle.jones@umit.maine.edu](mailto:gayle.jones@umit.maine.edu)).

Your signature below indicates that you have read the above information and agree to participate. You will receive a copy of this form.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Print Name



Appendix G: Prescreen Questionnaire

**HEALTH HISTORY:** Please indicate if you have had any problems, currently or in the past, in the following areas:

	Y/N	Comments
Vision		
Hearing		
Sensation		
Communication		
Heart		
Breathing		
Digestion		
Elimination		
Circulation		
Emotional		
Behavioral		
Pain		
Bone / Joint		
Muscular		
Thinking / Cognition		
Allergies		

Thank you so very much for participating in this research study, we will notify you if you are eligible to participate in the interaction study, if you are not eligible, your questionnaire booklet will be destroyed.

If you have any questions, comments, or concerns please contact: Clare Thomas-Pino (Researcher)  
Clare.thomas@umit.maine.edu  
or  
Dr. Robert Causey (Faculty Advisor)  
Robert.causey@umit.maine.edu



Code Number:

Questionnaire Number:

Evaluating Human-Equine Interactions through the Lens of Adult Attachment.



Thank you for your interest in participating in this research project looking at the interaction between horses and humans and how it may be beneficial to both.

We need to decide if you meet the requirements of this study, the following questions will cover some basic information and ask some detailed questions about your physical, mental and emotional health. It is very important that you are very honest in your responses to the questions.

Please try to answer the questions with the first answer that comes to mind. It should take about 10 minutes to complete the questionnaire.

## GENERAL QUESTIONS

Age: \_\_\_\_\_ Gender: \_\_\_\_\_ Height: \_\_\_\_\_

Have you ever had contact with a horse before?

Yes \_\_\_\_\_ No \_\_\_\_\_

If yes, (please circle one answer) how many times?

On one or two occasions only \_\_\_\_\_ On 3 to 5 occasions \_\_\_\_\_

On more than 5 occasions \_\_\_\_\_

Have you ever:

Touched a horse with your hand? Yes \_\_\_\_\_ No \_\_\_\_\_

Groomed a horse with a brush or other grooming object? \_\_\_\_\_

Yes \_\_\_\_\_ No \_\_\_\_\_

Led a horse?

Yes \_\_\_\_\_ No \_\_\_\_\_

Ridden a horse?

Yes \_\_\_\_\_ No \_\_\_\_\_

If yes, how many times? On one or two occasions only \_\_\_\_\_

On 3 to 5 occasions \_\_\_\_\_ On more than 5 occasions \_\_\_\_\_

Driven a horse?

Yes \_\_\_\_\_ No \_\_\_\_\_

If yes, how many times? On one or two occasions only \_\_\_\_\_

On 3 to 5 occasions \_\_\_\_\_ On more than 5 occasions \_\_\_\_\_

Participated in any form of Equine Assisted Activity or Therapy?

Yes \_\_\_\_\_ No \_\_\_\_\_

If yes, what type?

If you are able to progress to the interaction phase, you will be asked to touch the horse with your hand, to groom the horse with a soft brush, to lead the horse for a short distance with the assistance of a horse handler and to return the horse to its stall and remove its halter.

Do you know of any physical reason that may affect your ability to carry out these tasks? Yes \_\_\_\_\_ No \_\_\_\_\_

Do you know of any psychological reason that may affect your ability to carry out these tasks? Yes \_\_\_\_\_ No \_\_\_\_\_

Code Number: \_\_\_\_\_

Questionnaire Number: \_\_\_\_\_

To accurately assess your ability to safely interact with the horses, we need to know about your past and present we have a few more questions, we know they are quite sensitive but ask that you provide accurate responses for your safety, and the safety of the horses and their handlers:

Do you have any learning disabilities, lack of concentration, hyperactivity or inattention that may affect your understanding and response to simple requests? Yes \_\_\_\_\_ No \_\_\_\_\_

If yes, please elaborate: \_\_\_\_\_

Do you have any current or past history of substance abuse, seizure disorders, or medication side effects? Yes \_\_\_\_\_ No \_\_\_\_\_

Please Check - Current \_\_\_\_\_ Past \_\_\_\_\_

Do you have any current or past history of boundary issues, problems with peers, aggression, or anxiety? Yes \_\_\_\_\_ No \_\_\_\_\_

Please Check: Current \_\_\_\_\_ Past \_\_\_\_\_

Do you have any current or past history of assaulting others, harming yourself, unpredictable or dangerous behavior?

Yes \_\_\_\_\_ No \_\_\_\_\_ Please Check - Current \_\_\_\_\_ Past \_\_\_\_\_

Do you currently, or have you ever, experienced any hallucinations, delusions, or dissociations? Yes \_\_\_\_\_ No \_\_\_\_\_

Please Check - Current \_\_\_\_\_ Past \_\_\_\_\_

Do you have any current or past history of Domestic Violence, (physical and/or emotional) or sexual abuse? Yes \_\_\_\_\_ No \_\_\_\_\_

Please Check - Current \_\_\_\_\_ Past \_\_\_\_\_

Physical \_\_\_\_\_ Emotional \_\_\_\_\_ Sexual \_\_\_\_\_

Do you have any current or past history of animal abuse &/or fire setting? Yes \_\_\_\_\_ No \_\_\_\_\_

Please Check - Current \_\_\_\_\_ Past \_\_\_\_\_

*Appendix H: Counseling Resources (Rejected)*

*We are concerned by the answers to some of the questions we asked you during our research study and feel it is very important that you seek qualified assistance to help you through these issues. Below is the contact information for several on and off campus resources we strongly request you connect with.*

*If you require any further information please contact the resources below, they are qualified to assist*

## **Counseling Services**

### **ON-CAMPUS RESOURCES Available for UMaine Faculty, Staff, and Students**

<b>Counseling Center</b> Cutler Health Building (Gannett Hall side)	<b>207-581-1392</b> <a href="http://www.umaine.edu/counseling/">http://www.umaine.edu/counseling/</a>	Weekdays 8:00 am-4:30 pm After business hours, call UMaine Police, 581-4040 or
<b>Psychological Services Center</b> 330 Corbett Hall (Sliding fee scale; costs are your responsibility)	<b>207-581-2034</b> <a href="http://umaine.edu/clinicalpsychology/psychological-services-center/">http://umaine.edu/clinicalpsychology/psychological-services-center/</a>	Weekdays 8:00 am – 4:30 pm
<b>John A. Lindlof Learning Center</b> 203 Shibbes Hall (Free) Provides educational assessment, consultation, counseling, demonstration and training services to children and	<b>207-581-2608</b> <a href="http://umaine.edu/edhd/professionals/john-a-lindlof-learning-center/">http://umaine.edu/edhd/professionals/john-a-lindlof-learning-center/</a>	Weekdays 10:00 am – 7:00 pm

### **COMMUNITY RESOURCES Available to Anyone**

<b>Community Health &amp; Counseling Services</b> 42 Cedar Street Bangor, ME 04401	<b>207-947-0366</b> <a href="http://www.chcs-me.org/">http://www.chcs-me.org/</a>	Weekdays 8:00 am-5:00 pm
<b>Northeast Crisis Services</b> (Any costs are your responsibility)	<b>1-888-568-1112</b> <a href="http://www.chcs-me.org/index.php?id=2&amp;sub_id=119">http://www.chcs-me.org/index.php?id=2&amp;sub_id=119</a>	7 days/week 24 hours
<b>Psychological Services Center</b> 330 Corbett Hall (sliding fee scale)	<b>207-581-2034</b> <a href="http://umaine.edu/clinicalpsychology/psychological-services-center/">http://umaine.edu/clinicalpsychology/psychological-services-center/</a>	Weekdays 8:00 am – 4:30 pm
<b>John A. Lindlof Learning Center</b> 203 Shibbes Hall (Free) Provides educational assessment, consultation, counseling, demonstration and training services to	<b>207-581-2608</b> <a href="http://umaine.edu/edhd/professionals/john-a-lindlof-learning-center/">http://umaine.edu/edhd/professionals/john-a-lindlof-learning-center/</a>	Weekdays 10:00 am – 7:00 pm
<b>Contact Your Primary Care Provider</b> (Any costs are your responsibility)		

### **NATIONAL RESOURCES**

**Mental Health Services Locator** <http://store.samhsa.gov/mhlocator>

**National Suicide Prevention Lifeline, Toll-Free, 24-hour Hotline, 1-800-273-TALK (1800-273-8255)**

*Appendix I: Informed Consent*

**INFORMED CONSENT FORM**

You are invited to participate in a research project being conducted by Clare Thomas-Pino, an interdisciplinary graduate student. Dr. Robert Causey from the School of Food and Agriculture at the University of Maine is the faculty advisor on the project.

The purpose of the research is to look at the interaction between horses and people and see if the behavioral interaction influences or is influenced by the attachment style of the person. You must be **at least 18 years of age** to participate in this study.

**What Will You Be Asked to Do?**

If you decide to participate, you will use the code number you have been assigned on each questionnaire you are asked to complete. Please be honest when you complete the questionnaires, all answers are confidential.

You will be asked to complete a questionnaire four times on three occasions that will take about 15-20 minutes to complete, on our next meeting you will not only complete the questionnaire twice, you will also be asked to interact with one of the horses at the University of Maine's Witter Farm for about half an hour in a series of tasks which will be videotaped.

- You will be asked to complete a questionnaire on four occasions:
  - today
  - on the day you interact with the horses
    - before and after you interact with them
  - about 3 months after the day of your interaction (an e-mail will be sent you asking you to complete the questionnaire on survey monkey)

Here are some examples of the questions:

*For each of the following questions please write in the number that most corresponds to how you feel in your relationships with other people.*

Disagree Strongly				Neutral/Mixed				Agree Strongly
1	2	3	4	5	6	7		

\_\_\_\_\_ I find it relatively easy to get close to my partner/friend.

\_\_\_\_\_ I worry romantic partners/friends won't care about me as much as I care about them.

*For each item, please write in the answer using the following scale:*

Disagree Strongly				Neutral/Mixed				Agree Strongly
1	2	3	4	5	6	7		

\_\_\_\_\_ When I want to feel more positive emotion (such as joy or amusement), I change what I'm thinking about.

\_\_\_\_\_ When I am feeling negative emotions, I make sure not to express them.

- On the day of the interaction with the horses you will be shown a video showing you what you will be doing with the horses.
  - You must wear closed toe shoes/boots, blue jeans, and weather appropriate clothing for all parts of the interaction.
  - Your interaction with the horses will consist of:
    - greeting the horse while it is in the stall,
    - grooming the horse while the horse is secured on cross-ties,
    - leading the horse (with the assistance of a horse handler),
    - returning the horse to its stall and removing the horse's halter.

### **Risks**

- There is the possibility that you may become uncomfortable answering the questions.
- There is the possibility that you may be injured by the horses during the interaction.
- There is the possibility that your clothes, shoes, and hands may become dirty from being in the animal barn and touching the horses.
- There is the possibility that it may be cold in the barn during your interaction with the horses.
- To minimize the possibility of the physical risks, on the day of the interaction we ask that you wear closed-toe shoes or boots, blue jeans, and weather appropriate clothes that you do not mind becoming dirty. During the encounters with the horses you will be provided with a large T-shirt that will act as both an overshirt and uniform.
- You will be provided with a correctly fitting safety helmet that you must wear during the entire interaction process.
- A bathroom and hand sanitizer are available at Witter Farm to clean up after the interaction process.
- A trained horse handler will be present at all times during your interaction with the horses.

### **Benefits**

- If you have never interacted with a horse, you will learn how to complete basic ground based tasks with a horse.
- While this study may have no direct benefit to you, this research may help us learn more about how interactions between horses and humans can help in the field of Equine Assisted Activities and Therapies.

### **Compensation:**

You will receive a T-Shirt you will use over their clothing during the interaction with the horses and then take home.

### **Confidentiality**

Your name will not be kept on any of the documents. A code number will be used to protect your identity this will be assigned on the day you first participate in the study, you will use your code

number when completing all the questionnaires. Data will be kept in the investigator's locked office. Only my faculty advisor, Dr. Robert Causey and I will have access to these documents. Your name or other identifying information will not be reported in any publications. The key linking your name to the data will be destroyed after data analysis is complete by 31<sup>st</sup> May 2016, and prior to this will be kept in a locked cabinet. The data of those who participate in the study will be kept indefinitely.

Video recordings of the interaction between yourself and the horse will be kept indefinitely. If you agree, video clips and stills (photographs) from the video recordings may be used in presentations of the research at conferences, at meetings/exhibitions, in printed materials, and for educational activities.

### **Voluntary**

Participation is voluntary. If you choose to take part in this study, you may stop at any time. You may skip any questions you do not wish to answer.

### **Contact Information**

If you have any questions about this study, please contact me at Clare Thomas-Pino, Hitchner Hall, University of Maine, Orono, 207-564-2015 (or e-mail [clare.thomas@umit.maine.edu](mailto:clare.thomas@umit.maine.edu)). You may also reach the faculty advisor on this study at Dr. Robert Causey, Hitchner Hall, University of Maine, Orono, ME 04469-5735, 207-922-7475 (mobile), 207-581-2782 (office) (or e-mail [robert.causey@umit.maine.edu](mailto:robert.causey@umit.maine.edu)).

If you have any questions about your rights as a research participant, please contact Gayle Jones, Assistant to the University of Maine's Protection of Human Subjects Review Board, at 581-1498 (or e-mail [gayle.jones@umit.maine.edu](mailto:gayle.jones@umit.maine.edu)).

Your signature below indicates that you have read these 3 pages of information and agree to participate. You will receive a copy of this form.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
**Print Name**

**OPTIONAL VIDEO/PHOTO RELEASE:** I hereby consent to and authorize the use and reproduction by Clare Thomas-Pino of any and all videos, and any other audiovisual materials taken of me for printed material, educational activities, conferences, or exhibitions for the benefit of the research of Clare Thomas-Pino.

Participant's Signature: \_\_\_\_\_

Date: \_\_\_\_\_

*Appendix J: Participant Information*

**Participant Information Sheet**

Assigned Code Number: \_\_\_\_\_

Full Name: \_\_\_\_\_

E-Mail Address (for final questionnaire): \_\_\_\_\_

Contact Information: We may have to postpone or change your interaction date and time due to bad weather, so can you please let us know the best way to contact you quickly, and if you are comfortable with me leaving a brief message *“Hello, this is Clare Thomas-Pino calling about our meeting, please call me on 564-2015”*:

Phone    Yes      No      Phone number: \_\_\_\_\_

E-mail   Yes      No      E-mail address: \_\_\_\_\_

If you would like to receive a copy of the final summary report from this study please complete your contact details below.

Address (for printed copy)

\_\_\_\_\_

\_\_\_\_\_

E-mail address (for .pdf copy)

\_\_\_\_\_

*Appendix K: Counseling Resources (Accepted)*

*It is possible that answering some of the questions today caused you to feel uncomfortable. If you would like to talk to a professional about your concerns please contact one of the professionals listed below.*

## **Counseling Services**

### **ON-CAMPUS RESOURCES Available for UMaine Faculty, Staff, and Students**

<b>Counseling Center</b> Cutler Health Building (Gannet Hall side)	<b>207-581-1392</b> <a href="http://www.umaine.edu/counseling/">http://www.umaine.edu/counseling/</a>	Weekdays 8:00 am-4:30 pm After business hours, call UMaine Police, 581-4040 or
<b>Psychological Services Center</b> <b>330 Corbett Hall</b> (Sliding fee scale; costs are your responsibility)	<b>207-581-2034</b> <a href="http://umaine.edu/clinicalpsychology/psychological-services-center/">http://umaine.edu/clinicalpsychology/psychological-services-center/</a>	Weekdays 8:00 am – 4:30 pm
<b>John A. Lindlof Learning Center</b> <b>203 Shibbes Hall</b> (Free) Provides educational assessment, consultation, counseling, demonstration and training services to children and	<b>207-581-2608</b> <a href="http://umaine.edu/edhd/professionals/john-a-lindlof-learning-center/">http://umaine.edu/edhd/professionals/john-a-lindlof-learning-center/</a>	Weekdays 10:00 am – 7:00 pm

### **COMMUNITY RESOURCES Available to Anyone**

<b>Community Health &amp; Counseling Services</b> 42 Cedar Street Bangor, ME 04401	<b>207-947-0366</b> <a href="http://www.chcs-me.org/">http://www.chcs-me.org/</a>	Weekdays 8:00 am-5:00 pm
<b>Northeast Crisis Services</b> (Any costs are your responsibility)	<b>1-888-568-1112</b> <a href="http://www.chcs-me.org/index.php?id=2&amp;sub_id=119">http://www.chcs-me.org/index.php?id=2&amp;sub_id=119</a>	7 days/week 24 hours
<b>Psychological Services Center</b> <b>330 Corbett Hall</b> (sliding fee scale)	<b>207-581-2034</b> <a href="http://umaine.edu/clinicalpsychology/psychological-services-center/">http://umaine.edu/clinicalpsychology/psychological-services-center/</a>	Weekdays 8:00 am – 4:30 pm
<b>John A. Lindlof Learning Center</b> <b>203 Shibbes Hall</b> (Free) Provides educational assessment, consultation, counseling, demonstration and training services to	<b>207-581-2608</b> <a href="http://umaine.edu/edhd/professionals/john-a-lindlof-learning-center/">http://umaine.edu/edhd/professionals/john-a-lindlof-learning-center/</a>	Weekdays 10:00 am – 7:00 pm
<b>Contact Your Primary Care Provider</b> (Any costs are your responsibility)		

### **NATIONAL RESOURCES**

**Mental Health Services Locator** <http://store.samhsa.gov/mhlocator>

**National Suicide Prevention Lifeline, Toll-Free, 24-hour Hotline, 1-800-273-TALK (1800-273-8255)**



### **Author's Biography**

Ilana B. Silver was born in Glasgow, Scotland on November 8, 1993. She moved to Bangor, Maine in July, 1999 with her two parents, Noreen and Phillip, as well as two sisters, Noa and Maya. After graduating from Bangor High School in 2011, she took a gap year during which she traveled to Israel, Scotland, Germany, and Thailand before beginning to study at the University of Maine. Ilana is majoring in psychology, with an abnormal/social focus, and minoring in equine studies. She is a member of Psi Chi, Phi Beta Kappa, Gamma Sigma Sigma, and the Standardbred Drill Team. Furthermore, she was awarded the Outstanding Graduating Senior and Kornetsky Scholar within the Department of Psychology.

Upon graduation, Ilana plans to visit family in Scotland and surrounding areas. She intends to travel for a year or two while pursuing her love of working with horses along the way.