

**The Effects of Animal-Assisted Therapy on Children and Youth
Who Have Experienced Developmental Trauma**

by

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Abstract

Animal-assisted therapy (AAT) is a relatively new field of study that has gained considerable support over the past decade, with more research dedicated to understanding its impact on humans' psychological and physical well-being. The author of this paper provided insight into the aforesaid modality and its impact on developmental trauma (DT) in children and youth to specifically answer the research question "How does animal-assisted therapy impact children and youth who have experienced developmental trauma?" The theoretical framework that guided this capstone research reflects attachment theory and the premise that the human-animal bond can create a secure attachment (Bowlby, 1969; Parish-Plass, 2021). The paper also includes the findings from a literature review and a methodological analysis. The results of the literature review present three major themes: attachment bonds, treatment adherence, and AAT with canines and equines. The author further derived subthemes that led to additional findings. The most significant findings in this research are attachment bonds and the human-animal bond; therefore, attachment theory guided the findings across the literature. The author discusses these findings in detail; they guide the recommendations for clinical practice. Furthermore, this paper includes ethical and cultural considerations within the literature reviewed and recommendations for future research.

Keywords: *alliance, animal-assisted therapy, attachment, canine-assisted therapy, developmental trauma, equine-facilitated therapy, PTSD, the human-animal bond, trauma, treatment adherence*

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Dedication

I dedicate this paper to the staff and clients at Dreamcatcher Nature-Assisted Therapy. The executive director, clinical supervisor, therapeutic staff, volunteers, and administration team who are dedicating their lives to helping those in need have ignited a passion in my heart that I will carry throughout my life. Thank you for welcoming me with open arms into the Dreamcatcher family, offering me endless encouragement and support, and helping me to make my dreams come true.

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Chapter One: Introduction

The purpose of this capstone paper is to provide insight into the impact of animal-assisted therapy (AAT) on children and youth who have suffered developmental trauma (DT). According to Statistics Canada (2023), approximately 60% of Canadians have reported experiencing some form of trauma or childhood trauma before the age of 15. Providing therapy for children and youth can be challenging, with high dropout rates, avoidance, and comorbid diagnoses. Researchers have conducted significant research on AAT and adult populations; therefore, the significant gap in the literature reflects DT and the impacts of AAT. This capstone project included studies with equines and canines as the primary focus because they are the most popular choice among mental health professionals and researchers (Fine, 2019).

Understanding the human-animal bond is the first step in understanding the effectiveness of AAT. Furthermore, understanding the roles of animals in the lives of children and youth who have experienced trauma is essential in using comprehensive and effective therapeutic interventions that address their emotional needs and promote healing and resilience (Parish-Plass, 2021). The American Veterinary Medical Association ([AVMA] n.d.-a) defined *human-animal bond* as “a mutually beneficial and dynamic relationship between people and animals influenced by behaviours which is considered essential to the health and well-being of both” (para. 1) This bond can be a source of companionship, comfort, and a sense of security and safety, vital and often absent ingredients in the lives of traumatised children. Brain chemistry strongly influences the human-animal bond, which impacts the autonomic nervous system by producing oxytocin and decreasing stress responses in traumatised children (Parish-Plass, 2021). According to the biopsychosocial model, human-animal bonds directly impact individuals’ biological, social, and psychological dimensions, which can improve overall well-being

(Applebaum et al., 2021; Oosthuizen et al., 2023). With regard to children and youth with DT disorder (DTD), a concept that Bessel Van Der Kolk introduced, it is clear that trauma encompasses far more than a posttraumatic stress disorder (PTSD) diagnosis. DTD highlights the complex effects of trauma on children, including developmental, emotional, cognitive, behavioural, and physical symptoms (Spinazzola et al., 2021). Because of the significant impact of trauma on children's development, it is essential to understand these complexities to provide effective treatments, such as AAT.

Researchers have examined the field of AAT through the lens of several different theories, including attachment theory, which involves the human-animal bond and dimensions such as the therapeutic alliance (Mezza et al., 2022), and trauma-informed theory, which highlights animals' roles in creating safe spaces and healthy relationships (Maoz, 2021). For the purpose of this capstone, I reviewed the current literature through an attachment-theory lens because they are closely related to the human-animal bond and the understanding of child development. Childhood DT impacts the physical, mental, and emotional health of children; therefore, in this paper I explore ways to combat this condition through love and support from animals (Knight & Miller, 2024). My aim was to examine the impact of AAT on children and youth who have experienced DT and provide new insights in this new field of study.

Research Problem

The experience of trauma has lifelong effects not only on individuals, but also on society as a whole, which makes it a global concern. In Canada, for example, around 76% of the population has experienced at least one traumatic event, and approximately 8% eventually developed PTSD (Canadian Mental Health Association, 2013). Children are particularly vulnerable to trauma and process it differently from adults, often with disruptions in their

development and significant neurological damage (Knight & Miller, 2024). Because of the high rates of trauma and the number of PTSD diagnoses across Canada, exploring alternative options of psychotherapy that are tailored to the needs and wants of those individuals should be a priority (Canadian Mental Health Association, 2013). The purpose of this capstone project was to explore the effects of AAT on children and youth who have experienced DT. The research question is “How does animal-assisted therapy impact children and youth who have experienced developmental trauma?”

Justification/Significance of the Study

Considering the vast amount of literature on AAT and trauma in the last decade, significant gaps and areas still need further research (Parish-Plass, 2021). AAT is growing in popularity among professionals in the helping field and therefore needs special attention to provide clients and clinicians with empirically sound treatment options. Such limitations include the lack of professional training with animals. For example, Parish-Plass (2021) highlighted that the field of AAT significantly lacks adequate training for professionals who want to incorporate animals into their practice with clients, and they therefore lack the knowledge to incorporate them properly and therapeutically and can possibly cause harm both their clients and animals.

In recent years, research on trauma and AAT has significantly expanded into other disciplines, such as medicine and neuroscience. With new knowledge, we now know that child DT—more specifically, the inability of children to feel safe and secure—can cause severe reactions within their sympathetic nervous systems that is often prolonged and leads to biological and neurological symptoms (Knight & Miller, 2024). Both canines and horses can create a sense of safety and attachment. With regard to equines, researchers have found that riding, grooming, haltering, and generally caring for such large animals has helped individuals with PTSD to

develop a sense of control, decreased their anger and anxiety, and positively affected their interpersonal relationships (Shelef et al., 2019). Canines decrease arousal and improve communication, social interaction, and cognitive functioning, all of which children and youth require to process trauma (Signal et al., 2017). Both animals decrease avoidance behaviours because of trauma (Shelef et al., 2019; Signal et al., 2017).

Although including canines and equines in therapy has noted benefits, such as those that I stated above, a comparison is lacking in the literature. In this capstone research I intended to fill this gap and highlight the effectiveness of each for traumatised children. Moreover, according to the *Canadian Code of Ethics* (Canadian Psychological Association [CPA], 2017), Principle IV states that professionals have a duty to society, which can they can fulfill by providing empirically proven interventions such as AAT, which is an alternative to traditional psychotherapy or psychopharmacology treatments. Because AAT is such a new field in psychology, those who practice it must contribute as much as they can to the expansion, legislation, certification, and education on the benefits of working with animals in a therapeutic setting. Overall, in incorporating animals into the therapeutic relationship, they must be aware of the impact of animals on human beings and how the human-animal bond affects the psychological, social, and physical dimensions.

Theoretical Framework

John Bowlby (1969, as cited in Parish-Plass, 2021). began his research by studying maltreated children and the direct impact of the ability and presence of caregivers on their psychological development. Attachment theory, which Bowlby proposed in 1969, highlights the emotional bonds and attachments developed in childhood and identified vital factors for healthy attachments, such as a secure base, a safe haven, proximity maintenance, and separation distress

(Bowlby, 1969; as cited in Parish-Plass, 2021). These components can be replicated within the human-animal bond, and, according to Meredith et al. (2023), individuals who have animals can develop strong attachments to them and even consider them part of family; they thus become significant attachment figures. Attachment theory consists of four types of attachment—secure, anxious, avoidant, and disorganised (Schreiber, 2023)—that form early in childhood and continue to influence relationships throughout the lifespan. Those who have secure attachments are significantly more likely to have healthier relationships, whereas those who have insecure attachments, such as anxious, avoidant, or dismissive, are at a higher risk of relationship difficulties and emotional deregulation (Cassidy et al., 2013).

Researchers have demonstrated that animals can maintain close bonds through a shared desire to be together, experience separation distress when apart, and provide a secure base by comforting one another (Geist, 2011; Nicholson, 2023). Although attachment theory is a general framework for understanding the human-animal bond, the dynamics of this bond are distinct from the human-human bond, yet still provide a sense of comfort, security, and companionship. As Ferrell and Crowley (2021) noted, animals have the potential to serve as secure attachment figures for children when their other attachment figures are absent and support them through deep, nonjudgmental and meaningful attachment. Attachment theory is a valuable framework for understanding the relationships among animals, clients, and their therapists because it highlights emotional bonds and connections (Parish-Plass, 2021). Furthermore, children who have been subjected to traumatic experiences have difficulty relying on others for help and developing relationships, which impedes the therapeutic relationship (Parish-Plass, 2021). By utilising the human-animal bond, clinicians can bypass this barrier by creating a safe environment for both animals and clients. Feeling safe and secure enables children to develop the capacity to process

their traumatic experiences and move forward with therapists and animals walking beside them. Consistent with Bowlby's theory, Mezza et al. (2022) suggested that secure attachments to animals and therapists are vital for therapeutic change.

In addition to viewing the literature through an attachment theory lens, it is crucial to understand the complexity of changes that occur because of DT. Bessel Van Der Kolk (as cited in Porges, 2022) stated, "When humans feel safe, their nervous systems support the homeostatic functions of health, growth, and restoration, while they simultaneously become accessible to others without feeling or expressing threat and vulnerability" (p. 2). This highlights the impact of trauma responses on the nervous system and how animals can counteract those responses. Therefore, in this capstone I used attachment theory to understand the impacts of DT and AAT.

Definition of Key Terms:

Animal-assisted therapy: Therapeutic modality that incorporates animals into a treatment plan (Fine, 2019)

Canine-assisted therapy: The incorporation of a dog into therapy or counselling sessions (Jones et al., 2019)

Developmental trauma: An extension of PTSD that encompasses the complexity of trauma in children and the developmental, emotional, cognitive, behavioural, and physical symptoms that arise (Spinazzola et al., 2021)

Equine-facilitated therapy: Mental health professionals' and equine therapists' therapeutic services that involve horses to treat mental health conditions (Perez-Gomes et al., 2021).

The human-animal bond: A mutually beneficial relationship between people and animals that is influenced by behaviours essential to the mental, physical, and social health and well-being of both (AVMA, n.d.-b)

Treatment adherence: Motivation and beliefs about therapy, understanding and agreement upon treatment plans, and overall attendance and engagement in therapy (Chakrabarti, 2014)

Reflexivity and Positionality Statement

My researcher positionality in this capstone research reflects self-awareness of experiences, biases, and values (Creswell & Poth, 2018). I identify as a cis-gender, heteronormative, able-bodied Caucasian woman; and the topic of AAT is incredibly important to me. I have developed a deep passion for learning, understanding, and practising AAT in my personal life and professional practice. This passion began in my undergraduate degree when I worked at Dreamcatcher Nature-Assisted Therapy. Here, I could see the healing power of animals and their profound impact on individuals, especially those with traumatic histories. The therapists at Dreamcatcher specialise in treating high-risk populations, trauma, complex diagnoses, and hard-to-reach populations with a range of animals, including equines and canines. I have had the pleasure of witnessing firsthand the love and support that animals can give individuals. I firmly believe in holistic approaches to healing, and AAT is an example of a holistic approach to treating mental health issues. Some of the concepts that I outline in this capstone paper stem from my observation of clients who heal through their relationships with animals. These personal encounters have ignited my passion for this topic and a solid inclination to explore further the integration of animals into psychotherapy. Despite my deep connection with and passion for AAT in treating mental health concerns, this capstone encompasses a multifaceted view of the overall impact of AAT, including the limitations and barriers associated with incorporating animals into therapeutic practice. I mitigated potential biases by setting clear exclusion and inclusion criteria, conducting a comprehensive search through multiple databases, presenting transparent data, and being aware of publication bias (Creswell & Creswell, 2018).

Furthermore, because of my personal experience with AAT and my positive bias toward this modality, it was essential that I mitigate them by including all of the results of the studies that I reviewed, including those of researchers who disagreed with the use of animals within therapeutic practice. I also carefully analysed the results of these studies, which included dropout rates, participant feedback, and significant concerns or results. Examining the benefits along with the negatives of AAT resulted in a responsible and conscientious understanding of the complexities of AAT for myself and future practitioners.

Because of my firsthand witnessing of AAT's impacts, my worldview reflects postpositivism, which is also evident in the types of research articles that I selected and my interpretation of them through an attachment and polyvagal lens, which highlights the biopsychosocial changes within individuals (Creswell & Poth, 2018). I used reflexivity throughout to address the influence of my background and values on this research project (Creswell & Poth, 2018). My research question on the effectiveness of the use of AAT to treat DT and my personal experience in working with this modality and population led to my search for a diverse range of studies, including qualitative, quantitative, systematic reviews and case studies, with the intention of understanding the impacts of AAT. Furthermore, I critiqued the literature to provide deeper insight into the benefits and limitations of AAT, which further limited a biased interpretation of the results. I also addressed conflicting findings, critically evaluated the quality and credibility of the literature, and incorporated reflexivity and positionality to mitigate any biased interpretations.

Overview

In this capstone project I explored the most recent literature in the field of AAT and addressed the research question "How does animal-assisted therapy impact children and youth

who have experienced developmental trauma?” In Chapter Two I examine the literature search methods, describe the databases and search parameters that I used, evaluate the studies in detail, and offer insight into the strengths and limitations of the most recent literature. Chapter Three includes a detailed and thematic overview of recent research and offers deeper insights to understand AAT and DT. This chapter includes an identification of the gaps and ethical considerations within the literature and addresses the research question. In Chapter Four I discuss the application of AAT and DT to clinical practice and make recommendations. Finally, Chapter Five is the conclusion and summary of this capstone and the research problem that I addressed, and I make recommendations for future researchers and clinicians.

In this capstone research I examined the human-animal bond with children and their experienced trauma, including literature with particular attention on canine and equine forms of AAT or interventions. In additional literature I explored the ethical and cultural considerations of AAT and how professionals can utilise this modality competently. With this capstone I hope to highlight and educate professionals who wish to incorporate animals into their therapeutic practice and provide insight into the impacts of the human-animal bond on traumatised children.

Chapter Two: Methods

This chapter examines literature data collection methods and the procedures used to analyze the information gathered from the current literature. In addition, this chapter will examine the literature search methods, including a description of the databases used, search parameters, a detailed evaluation of the studies and providing insight into the strengths and limitations of the most recent literature. Exploring and understanding the methodology used within the research is essential for providing accurate information to those reading this capstone and ensuring integrity. Moreover, being aware of the findings, limitations, and interpretations is crucial and provides a solid foundation for this literature review.

Literature Search Process

I collected research and data from the Human-Animal Bond Research Institute. The combination of databases resulted in a well-rounded view of the topic that I explored and helps to provide additional insight into the phenomenon of AAT and DT in children and youth. The methodology that I used for this capstone includes a systematic search in relevant electronic databases, including EBSCO Psychology and Behavioral Sciences Collection, APA PsychInfo, APA PsycArticles, PTSDpubs, and Google Scholar. I chose 10 articles, which included six quantitative-research articles, three of which consisted of mixed methods and a systematic literature review.

Selection of Articles

I heavily considered my search parameters, including the search terms, inclusion and exclusion criteria, publication date, and literature type. The search terms for this topic included *AAT, AAT, trauma, PTSD, equine-assisted therapy, canine-assisted therapy, child traumatic stress, treatment, developmental trauma, and neurobiology of trauma and attachment*. The

articles that I chose for this examination included trauma or PTSD symptoms, children or youth under the age of 18, and the primary treatment modality of AAT.

Some challenges that I faced during the literature search process included a lack of overall research in the field of AAT, samples that included adult populations, and diagnoses such as depression and anxiety, as well as physical health concerns. To refine the literature search process, I used key terms such as *developmental trauma*, *children*, *youth*, *adverse childhood experiences (ACES)*, and *child psychology* to limit the search results to this specific population.

Inclusion and Exclusion Criteria

The inclusion criteria for articles were only peer-reviewed research studies published within the last seven years; 2017 was the oldest, and the most recent was published in 2024. This limitation yielded the most relevant literature on the topic and avoided the inclusion of any potentially outdated information that might not accurately reflect the current understanding in the field. The research articles that I chose were primarily qualitative or quantitative and included mixed methods, case studies, and one comprehensive literature review and meta-analysis to develop a well-rounded view of the studied variables. All of the articles that I chose included DT and AAT as the modality of treatment. The exclusion criteria for this capstone were articles that focused on a species of animal other than a canine or equine or a different mental health diagnosis, such as a personality disorder. Additionally, this literature review does not include other capstones or dissertations, which adds to the credibility because in my selection of databases and articles, I aimed to offer a comprehensive and impartial perspective based on current literature. Additional efforts to maintain objectivity encompassed integrating diverse and balanced viewpoints in the literature review and strictly adhering to predefined inclusion and exclusion criteria. I also addressed conflicting findings, critically evaluated the quality and

credibility of the literature, and incorporated reflexivity and positionality to mitigate any biased interpretations.

Data-Analysis Procedures

In this capstone research I explored whether AAT is an effective intervention for traumatised children and youth. Therefore, in my data-analysis procedure I identified data that answered the research question and then thematically organised the data and analysed and synthesised the presenting themes (Popenoe et al., 2021). To grasp the information in each article, it was essential that I remain unbiased and open about the results and interpretations and provide a well-rounded review of the studied variables. As a researcher, I have maintained objectivity when deriving the themes based on the current literature. Understanding and examining the methodological strengths and limitations of the studies used is essential, as it provides a deeper understanding of any gaps and limitations in the field. Because AAT is still a relatively new area of research, offering insight into what is needed to further this area of study is crucial to making it grow.

Methodological Strengths and Limitations

All of the articles that I reviewed in this capstone reflect the complexity of children's and youth's DT and AAT. This section includes a critical analysis of the methodologies of the selected articles. The methodological critiquing includes the research paradigms, the sampling and recruitment techniques, the data collection, and the validity and reliability of the instruments that the researchers used. In addition to my critiques of the primary research articles, in the literature review I link themes and ideas across the field.

The studies that I critiqued revealed significant strengths and limitations, which I will discuss in the following paragraphs. Awareness of these studies' strengths and limitations sheds

light on what future researchers need to examine further, what they can change or avoid, and what they can replicate. Flaws found within the studies may impact the generalizability of the findings, and if findings are biased, they can have clinical and research implications. I chose nine quantitative and mixed-methods studies and one systematic literature review to develop a comprehensive view and unbiased opinion based on the current literature. This examination led to a well-rounded understanding of the most recent literature in the field of AAT. Appendix 1 presents the studies that I selected for my methodological critique.

According to Creswell and Poth (2018), paradigms are the beliefs that researchers bring to their research, such as their worldview or theoretical orientation. All of the researchers of the articles that I reviewed for this capstone research utilised a postpositivist paradigm (Allen et al., 2022; Dravnsnik et al., 2018; Hediger et al., 2021; Lass-Hennemann et al., 2018; Maoz et al., 2021; Mezza et al., 2022; Naste et al., 2018; Shelef et al., 2019; Signal et al., 2017). This paradigm highlights the scientific approach to research and knowledge development and enables researchers to examine the cause and effect of variables and challenge absolute truths (Creswell & Poth, 2018).

The articles that followed the postpositivist paradigm included research questions and hypotheses to explore the relationship between AAT and DT. Some examined attitudes with regard to the acceptance of AAT (Allen et al., 2022; Mezza et al., 2022), whereas others studied the direct impact of AAT on biopsychosocial domains such as the physiological, psychological, and social (Hediger et al., 2021; Lass-Hennemann et al., 2018; Signal et al., 2017). The postpositivist paradigm was a good fit for the purposes of these studies because it involves the scientific method to examine research questions and variables such as the biopsychosocial impacts and measurements. Including articles that offered a well-rounded view of AAT was

essential to interpreting the findings and deriving the themes as well as understanding the overall benefits and implications of AAT.

The researchers of the studies that I reviewed utilised nonprobability sampling techniques, which means that they chose their participants based on nonrandom criteria (Creswell & Creswell, 2018). Most of the studies utilized stratified sampling, meaning that participants required specific characteristics to be selected; this limits the generalizability of the results presented in many of the studies used in the literature review, as data is only represented from a specific population (Hediger et al., 2021; Maoz et al., 2021; Shelef et al., 2019). Most of the researchers recruited their participants from local treatment centres (Allen et al., 2022; Maoz et al., 2021; Mezza et al., 2022; Naste et al., 2018; Shelef et al., 2019). These studies used a snowball sampling technique, as inclusion and exclusion criteria were not limited.

Qualitative researchers typically use data-collection methods such as surveys, closed-ended questions, and numerical data (Creswell & Creswell, 2018). Additionally, they utilise two types of data collection: longitudinal, which they collect at different points in time; and cross-sectional, which they collect at one point in time (Creswell & Creswell, 2018). The researchers of three of the articles that I reviewed collected cross-sectional data (Dravnik et al., 2018; Hediger et al., 2021; Lass-Hennemann et al., 2018), and those of six studies collected longitudinal data (Allen et al., 2022; Maoz et al., 2021; Mezza et al., 2022; Naste et al., 2018; Shelef et al., 2019; Signal et al., 2017). Using different data collection methods increases accuracy, provides stronger evidence and provides a more accurate understanding of the research (Creswell & Creswell, 2018).

Strengths and Limitations of Selected Studies

In the following paragraphs I highlight the methodological strengths and limitations of the studies selected. As I mentioned, all of the articles that I reviewed in this capstone reflect the complexity of children's and youth's DT and AAT. Additionally, I will explore how these factors contribute to the overall validity and reliability of the studies' findings.

The strengths of these studies include the low dropout rates of the participants and reliable and valid results, which indicates the value of AAT to hard-to-reach and traumatised populations. However, Allen et al. (2022) reported high dropout rates as a result of the COVID-19 pandemic and found it difficult to recruit participants because of the fear or avoidance of processing traumatic memories. The researchers utilised various sampling and recruitment techniques, including the collection of data from parents and clinicians and researchers' observations. Additional strengths reflect larger sample sizes because they ensured a smaller margin of error, increased the statistical power, and improved the generalisability of the findings (Creswell & Creswell, 2018). Although some researchers used small sample sizes, their narrative data yielded valuable insights and results.

Creswell and Creswell (2018) defined *reliability* as the internal consistency of scores from an instrument. For reliable studies, researchers must use instruments with strong internal reliability. Creswell and Creswell also stated that Cronbach's alpha should quantify the internal consistency; the optimal ranges are between 0.70 and 0.90. Throughout the studies that I examined, the researchers reported that their internal reliability was within the optimal range. However, some researchers, such as Naste et al. (2018), reported a lower-than-optimal range for some of their scales. Overall, all of the studies examined in this capstone research produced reliable and valid results, and the researchers used psychometrically sound instruments;

otherwise, the publication of these studies would have been challenging. Psychometrically sound instruments ensure the quality and credibility of the studies that I examined. Furthermore, using valid and reliable instruments is crucial to ethical research and helps to draw meaningful conclusions (Creswell & Creswell, 2018).

Some researchers included narrative and numerical data to ensure rich detail (Naste et al., 2018; Shelef et al., 2019; Signal et al., 2017). Using various data-collection techniques, such as narrative and numerical, helps clinicians, participants, and researchers to gain a deeper understanding of the impacts of AAT and increases the reliability of the findings. The self-report measures that the researchers used were validated and reliable and led to well-rounded and informative data. Future research should emphasise more qualitative data-collection methods such as interviews, focus groups, observation, and case studies for a deeper understanding of the effects of AAT on traumatised individuals.

The first limitation of the studies that I have examined in this literature review include the focus on only one form of trauma, such as childhood sexual abuse. Although this is a significant form of abuse, it is not the only form of DT that can lead to the development of a diagnosis or have long-lasting impacts. Signal et al. (2017) highlighted the need for future research to examine different characteristics of trauma, such as the home environment, the duration of the trauma, and the characteristics of children that can lead to the development of a diagnosis or long-lasting symptoms.

Some studies of the selected articles included only a small size in their research. While their data provides deep insight and a narrative point of view, it also underscores a significant limitation of the research in this field as it impacts the generalizability of the results (Mezza et al., 2022; Naste et al., 2018). Although their small sample size makes generalizability difficult,

their case descriptions included narrative information and data from standardized measures. Additionally, the researchers utilized equine-assisted therapy with youth who have a diagnosis of Complex Post-Traumatic Stress Disorder (C-PTSD), limiting their findings to that specific population and treatment modality. While this research provides insight into an effective treatment for high-risk populations and how equine-assisted therapy can help, most studies can not produce generalizability due to small sample sizes. A consistent finding across the research examined is that many articles used small sample sizes. This highlights the need for more research with larger populations, potentially leading to more broadly applicable findings (Creswell & Creswell, 2018).

Another limitation of the research was the lack of follow-up data from the participants. Although the results that the researchers found immediately after treatment were promising, many of the studies lacked data that would offer insight into the long-term impacts of AAT and identify negative impacts. Moreover, the researchers of some of the studies in this literature review cannot transfer their findings to the general population or to real traumatic events. For example, Lass-Hennemann et al. (2018) measured the stress responses of their participants after they viewed a traumatic film, and Dravnsnik et al. (2018) examined the acceptability of AAT after their participants read a vignette about problematic behaviour following childhood sexual abuse. Although the results from these studies offer different insights into the effectiveness and acceptability of AAT, they lack generalisability and the ability to transfer data to different populations and to real traumatic events.

As the research that I reviewed demonstrates, it has significant strengths and limitations, such as low sample sizes, a lack of generalisability, and low dropout rates. My methodological critique will add further insight into current knowledge and what researchers can do in the future.

Therefore, in the following chapters I discuss these results further, offer insight into the applications to clinical practice, highlight the research implications, draw conclusions, and make recommendations.

Chapter Three: Review of the Literature

In this paper I delve into a relatively unexplored area of research and focus on the impacts of AAT on children and youth who have experienced DT. To review the recent literature on the use of AAT with children and DT comprehensive, I will synthesise the findings and offer unique insights into the effectiveness of AAT for this population. Furthermore, in this chapter I discuss relevant ethical and cultural considerations in working with high-risk populations and animals.

Literature Review

Impact of Developmental Trauma

The National Institute of Mental Health (2023) defined *trauma* as the physical and psychological reaction to a stressful event that has the potential to lead to PTSD. PTSD, according to the *Diagnostic and Statistical Manual of Mental Disorders* ([*DSM-V-TR*] American Psychiatric Association [APA], 2022), consists of eight criteria: (a) exposure to a traumatic event; intrusion symptoms such as (b) recurrent, distressing memories; (c) persistent avoidance of stimuli associated with the traumatic event; (d) negative alterations in cognition and mood; (e) alterations in arousal and reactivity; and significant distress in (f) social, (g) occupational, or (h) educational domains. Additionally, these symptoms must be present for at least one month and not be results of physiological effects such as medication or other physical health conditions (APA, 2022). Trauma has lifelong impacts not only on individual, but also on society as a whole and has become a global concern. For instance, in Canada, approximately 76% of the population has experienced at least one traumatic event, and approximately 8% of Canadians go on to develop PTSD (Canadian Mental Health Association, 2013). Among those impacted, children

are the most at risk and manage trauma differently; it often interrupts their development and causes significant neurological damage (Knight & Miller, 2024).

DTD, first proposed by Bessel Van Der Kolk (as cited in Spinazzola et al., 2021), is an extension of PTSD that encompasses the complexity of trauma in children and the developmental, emotional, cognitive, behavioural, and physical symptoms that arise. Currently, the *DSM-V-TR* (APA, 2022) does not recognise DTD as a diagnosis but classifies PTSD into age groups that reflect the symptoms in children over the age of six and under the age of six (APA, 2022). Because of the severity and the developmental and neurological changes that can occur when children suffer from trauma, it is vital to recognise and understand how to provide effective treatment for this population (Spinazzola et al., 2021). Working with DT in children and youth is challenging. It can be a long process, with many barriers and obstacles, such as comorbid diagnoses, difficulty with self-regulation, resistance to or refusal of therapy, and the inability to function in interpersonal relationships, including the relationship between client and therapist (Parish-Plass, 2021). The inability to develop healthy relationships with others is a significant barrier to receiving help and progressing in therapy; therefore, it is important to identify alternative options for the treatment of DT.

Impact of AAT on Developmental Trauma

At the core of DT is attachment trauma, which occurs when children are exposed to traumatising attachment figures; it leads to overwhelming feelings of distress and the inability to form healthy, secure attachments (Lahousen et al., 2019; Spinazzola et al., 2021). Understanding the impact of animals on those with traumatic backgrounds requires an understanding of the impact of DT on children and their worldviews. DT creates attachment trauma when the source of the abuse is caregivers; it has been connected with insecure attachment styles, lack of

intimacy, lack of a perception of safety, and self-direction problems (Spinazzola et al., 2021). In addition to a disruption in attachment styles, recent research has shown evidence that DT significantly impacts brain development (Perverill et al., 2023). Therefore, the treatment of DT should emphasise a neurological understanding of attachment bonds, safety, and emotional and behavioural regulation to appeal to this hard-to-reach population. AAT is a form of treatment that connects the mind and body and helps clients to regulate their nervous systems through calming, secure attachment bonds.

Children experience trauma differently; therefore, professionals must utilise any tool available to reach these clients effectively. AAT is effective in treating a range of mental health concerns, including childhood trauma (Fine, 2019; Parish-Plass, 2021). Understanding the impact of trauma on children, the human-animal bond, and the impact of AAT through the use of canines and equines was the purpose of this capstone, and it offers future clinicians valuable insight.

Throughout the literature I identified several gaps. Researchers do not currently know the long-term impacts of AAT and the human-animal bond on trauma, and many current studies have identified the limitations of not including follow-up with the participants. Therefore, no current research has addressed the long-term neurobiological changes (Lass-Hennemann et al., 2018; Parish-Plass, 2021). Cultural considerations are flawed, which highlights a significant gap in the research. Signal et al. (2017) suggested that researchers should dedicate further studies to gaining a better understanding of the impact of AAT across a range of cultures and ethnic groups to underline the importance of this area. Hediger et al. (2021) concurred and pointed to the lack of research on AAT and other hard-to-reach populations. Additional cultural concerns reflect the complex relationships with animals because of the religious beliefs of different cultures, such as

the association of dogs with uncleanliness (Dravnsnik et al., 2018). In comparison with other cultures, such as Indigenous cultures, AAT might be significantly effective and culturally appropriate (Signal et al., 2017).

More work is needed to determine the timing, duration, and frequency of AAT (Lass-Hennemann et al., 2018). The length of research on these factors is wide ranging, from weeks to months. Additionally, the researchers used a range of measures. A significant gap in the literature is the lack of narrative data and self-report ratings, which shows the need for more research in this domain (Mezza et al., 2022). Most of the studies were small and had no follow-up, which has led to recommendations for larger studies, follow-up procedures, and the inclusion of different populations. Finally, given the prevalence of trauma in today's society, future researchers should further examine the impact of equines in treating this population, because this form of therapy requires the same as traumatised individuals: safety, positive attachment, and regulation (Naste et al., 2018).

In the literature review I have identified some concerns related to DT. Although there is no consensus on all aspects, future researchers will make more relevant conclusions on how evidence-based therapies such as AAT can help to alleviate children's suffering from trauma. The research will show that AAT has been effective in treating this population. In the findings section, I present more detailed information on how the outcomes are manifested.

AAT With Children and Youth

Over the recent decade researchers have dedicated a significant amount of research to AAT, a modality of therapy that incorporates animals into the therapeutic relationship. The benefits of animals and AAT have a long history, with key figures such as Sigmund Freud documenting his observations when his dog was present during his psychotherapy sessions and

Boris Levinson in 1950 coining the term *pet therapy* when he began to document the effects of his dog, Jingles, on children who were withdrawn and nonverbal (as cited in Fine et al., 2019; Jones-Schenk, 2020). Research has suggested that the presence of animals in therapy can elicit multiple physiological reactions, including the release of oxytocin and a decrease in blood pressure and heart rate (Woehler & Akers, 2022). Furthermore, as Chandler (2017) highlighted, clients tend to become comfortable with therapists faster when they observe healthy, positive relationships between animals and their therapists. This can increase the rapport and trust, which helps clients to develop the capacity to engage more effectively with their therapists. AAT is a goal-directed intervention based on solid emotional connections among clients, animals, and therapists. It can create a sense of safety and potentially improve healthy therapeutic relationships (Fine, 2019).

Therapists have incorporated many different species of animals into the therapeutic process, including chickens, goats, horses and donkeys, canines, cats, reptiles, and dolphins (Jones-Schenk, 2020). However, the most popular choices of animals in AAT are canines and equines, and researchers have conducted studies to understand the impact of AAT with these animals on various mental health disorders and the limitations, strengths, and ethical considerations of incorporating them into therapy (Fine, 2019). Both canines and equines can produce positive changes in the therapeutic relationship. However, both have limitations, such as financial costs, animal care and needs, and boarding and training (Bona & Coutnage, 2014; Fine, 2019). Mental health professionals who practice AAT in any capacity with any species should be competent and knowledgeable about the limitations and ethical concerns, as well as up to date on the most recent research and applications of AAT. Although researchers have proven the effectiveness of AAT in treating a range of mental health concerns, including PTSD and trauma

symptoms, it can cause harm if therapists do not practise it correctly. Such harm includes causing physical injury to clients, therapists, or animal; improperly using AAT interventions and activities; and ignoring signs of distress from the clients or animals, which all cause unintended harm (Bona & Coutnage, 2014).

Findings From the Literature

Several themes are present in the findings of this literature review: biopsychosocial changes such as neurobiological changes, cognitive-emotional changes, and interpersonal changes. Despite the long history of AAT, research in this field is still limited and has significant gaps. In the literature review and this section I highlight and discuss the most relevant research on the impacts of AAT on children and youth with DT. Notable themes that emerged include biopsychosocial changes, including neurobiological, cognitive-emotional, and interpersonal changes, and the impacts of exposure to equine-facilitated therapy (EFT) and canine-assisted therapy, the two most popular species of animal in the therapeutic setting (Parish-Plass, 2021). I discuss them in detail in the following paragraphs. Additionally, I discuss the limitations of the literature and gaps within it and the ethical and cultural considerations that emerged throughout my research. Table 2 is a presentation of these themes.

Theme 1: Biopsychosocial Changes

The biopsychosocial model includes biological, psychological, and social factors and the crucial role of each in mental and physical health (Brown, 2023). The biological factors include genetics, neurobiology, and physical health; the psychological factors include the cognitive and emotional facets, such as emotions, thoughts, and behaviours; and the social factors include the social environment and interpersonal changes (Brown, 2023). According to Bona and Courtnage (2014), when children are exposed to trauma, neurobiological changes manifest as changes in

Table 1*Summary of Themes*

Theme	Topic
Theme 1	Biopsychosocial changes
Subtheme 1a	Neurobiological changes
Subtheme 1b	Cognitive-emotional changes
Subtheme 1c	Interpersonal changes
Theme 2	Nature of the therapeutic relationship
Theme 3	Benefits of exposure to equine vs. canine

behavioural, cognitive, and emotional functioning and often have lifelong implications, such as the development of severe mental and physical health concerns. In the following paragraphs I discuss the impact of AAT on the neurobiological, cognitive-emotional, and interpersonal changes that occur in children who have experienced DT. Each theme highlights the most recent literature on AAT and DT and offers insights into how clinicians can implement AAT effectively and safely.

Neurobiological Changes. Not only can AAT impact the therapeutic relationship and attachment bonds, but the human-animal bond also has physiological impacts, such as the release of oxytocin. Oxytocin is called *the love hormone* (Harvard Health, 2023) and is famous for releasing positive feelings, inducing relaxation, and decreasing arousal states such as anxiety or stress (Applebaum et al., 2021). The human-animal bond also decreases cortisol, the body's stress hormone (Mills & Hall, 2014). Together, the bond that children develop with animals enables traumatised children's nervous systems to calm and self-regulate, which is essential to therapeutic change. In a literature review, Parish-Plass (2021) discussed the neurobiology of trauma and the impacts of AAT. She showed that the human-animal bond decreases the barriers

associated with therapeutic change, such as distrust in others, emotional numbness, and feelings of shame. The inclusion of animals in therapy mitigates these barriers because the development of the human-animal bond helps clients to recognise healthy relationships, develop trust, and improve their capacity to engage with therapists. According to experts on DT, therapy should occur in the context of relationships (Parish-Plass, 2021; Spinazzola et al., 2021). Furthermore, clients might view therapy as threatening, especially children who are unable to recognise a healthy relationship; this elicits avoidant behaviours and creates a sense of arousal in the nervous system. The human-animal bond has the potential to decrease this avoidance through the development of a consistent and secure relationship for children who have little or no experience with safety in relationships; it also calms the nervous system (Spinazzola et al., 2021).

AAT is not only a popular choice for mental health professionals but is also growing in acceptance from parents and those who seek therapeutic services for their children. The medical model for mental health always has the potential for resistance, and the fear of overmedication and pharmaceutical addiction is on the rise (Dravnsnik et al., 2018). Dravnsnik et al. (2018) found that parents appreciate having other options for the treatment of trauma, especially in children with developing brains, and suggested that medication is the least acceptable form of treatment and that AAT offers superior support. DT impacts children's ability to form or recognise healthy relationships; however, they are more open to the development of relationships with animals, which increases their commitment to and motivation for therapy. Mezza et al. (2022) echoed this finding in more recent research, which suggests that animals serve as a social lubricant in the treatment of traumatised children who struggle with traditional talk therapy and do not have the cognitive ability to participate in traditional forms of therapy (Chandler, 2017). Mezza et al. examined the attitudes of parents of children who had experienced childhood trauma to AAT,

traditional therapy such as trauma-informed cognitive behavioural therapy (TF-CBT), and medication. Their perspective is rarely researched: the opinions of parents who seek treatment for their children. Parents have a significant amount of control over their young children, and parental support for therapeutic intervention is crucial for any form of therapy (Mezza et al., 2022). Mezza et al.'s research has shed light on parents' attitudes to and acceptance of AAT, and medical treatment is becoming the least favoured option for the treatment of traumatised children. Barnett and Zayas's (2019) findings were similar, and they stated that medical treatment of trauma symptoms in children has not demonstrated efficacy or received FDA approval for the DT, attachment disorders, or disruptive behaviours that traumatised children often exhibit and that it often has significant and sometimes severe side effects. This further adds to the support of parents who seek holistic and practical treatment options that impact the neurobiology of developing children without the use of medication.

Lass-Hennemann et al. (2018) showed further evidence of the neurobiological changes that occur with AAT when they examined the physiological reactions of animals after crisis situations. By measuring their cortisol levels and blood pressure, they found a significant decrease in stress reactions when animals were present, which highlights the power of animals in changing the neurobiology of participants. Although in their research they measured only their participants' physiological responses and neglected a narrative perspective, it has highlighted the effectiveness of AAT viewed through a neurobiological lens.

Cognitive-Emotional Changes. The cognitive-emotional changes that occur with the use of AAT reflect thoughts, behaviours, and emotions and can also directly impact learning, memory, temperament, and coping skills (Brown, 2023). Across the studies that examined for this review, I found that the cognitive-emotional changes in all of the participants were

significant. Naste et al. (2018) examined the impact of EFT on six core domains related to trauma: biological regulation, affect regulation, behavioural control, cognition, self-concept, and attachment. Their findings reflect the themes that I have presented in this literature review, because all six domains are closely related to the biopsychosocial model and highlight attachment theory in the development of these domains. Naste et al. found that their participants' higher-order functioning improved, they developed positive coping skills, and the symptoms associated with trauma decreased overall (Naste et al., 2018). Signal's (2017) themes were similar in their study of caregiver reports that indicated notable changes in children's behaviour and significant improvements at school after they participated in an AAT program for 10 weeks. Bona and Courtnage (2014) noted that the prefrontal cortex, which is an area that is often underdeveloped in traumatised children, is responsible for higher cognitive processes. EFT promotes emotional and behavioural regulation, helps to regulate the body, and helps children to feel the calmness required to heal damaged systems (Perry, 2001).

Maoz et al. (2021) further noted cognitive-emotional changes when they examined the effectiveness of a dog-training program on traumatised youth. Trauma creates a survival mechanism, with heightened arousal and extreme hypervigilance that lead to deficits in the cognitive-emotional facets of life. The results of this study show improvements in not only PTSD symptoms, but also attentional and emotional regulation in the participants in the dog-training program. These improvements are evident across multiple domains, such as in school, at home, and in interpersonal relationships; as well as in the self-esteem and leadership skills that result from training, and engagement in and the development of a relationship with an animal.

When they treat DT, clinicians need to be aware of how it impacts multiple domains of life. The researchers whose studies I reviewed noted cognitive-emotional changes and suggested

that animals can have positive emotions, which facilitate a more mindful and present experience (Naste et al., 2018). Although clinicians strive to create this state for their clients, animals have a natural ability to break barriers and create a sense of safety and attachment for children to heal the deepest wounds in the nervous system.

Interpersonal Changes. Although the APA (2022) does not currently list DTD in the *DSM-V-TR*, a growing body of research has been dedicated to promoting an understanding of its complexities. According to the APA, DTD is specific to children and impacts multiple facets of life, including relationships, emotions, cognition, and behaviour. Because of the significant impacts of trauma on children and the complexities of their symptoms, clinicians should consider a range of therapeutic interventions. Among these treatments is AAT, which has several benefits and impacts attachment bonds. John Bowlby (as cited in Parish-Plass, 2021) began his research with a study of maltreated children and how the direct influence and presence of caregivers shape their psychological development. Attachment theory highlights the significance of emotional connections and bonds during childhood. It involves the crucial elements to foster healthy attachments, including a secure base, a safe haven, the maintenance of proximity, and the experience of separation distress (Bowlby, 1969). These fundamental components of attachment theory apply to human-animal relationships as well. As Ferrell and Crowley (2021) noted, animals hold the potential to serve as secure attachment figures for children in the absence of other primary caregivers because they offer unwavering support characterised by deep, nonjudgmental, and meaningful connections.

Naste et al. (2018) examined the effectiveness of EFT for complex trauma (EFT-CT). This trauma-informed intervention involves some components of attachment theory, such as safety, attachment, and regulation. Safety is both physical and emotional. Physically, safety is a

primary concern in work with large animals such as horses. Traumatized children and youth who learn about the safety and boundaries that they need to maintain when they work with horses will eventually transfer that knowledge outside the therapy to their interpersonal relationships, and it will aid them in developing healthy relationships (Naste et al., 2018).

The second component of EFT-CT is attachment, which reflects the general relationship-building skills that are often impaired in children who have DT. According to Naste et al. (2018), attachment formation begins by developing an understanding of horse language and communication, as well as attunement and caregiving skills. Children can then transfer these skills to relationships outside their therapy in combination with the safety skills that they learned earlier.

The final component of EFT-CT is regulation, which is a barrier to treating DT in a population who often struggles with impulse control, affect regulation, focus, and aggression (Naste et al., 2018; Parish-Plass, 2021). Horses are nonverbal and highly empathetic to the feelings of humans; therefore, the ability to self-regulate and be aware of internal and external body states is critical to the safety of clients and animals. When clients learn to self-regulate and remain calm, they engage with their executive functioning and acquire the coping skills that they need to develop and maintain trusting relationships. The overall results of Naste et al.'s (2018) and Parish-Plass's (2021) studies show that the core components of EFT-CT can successfully treat traumatized youth and that the participants' trauma symptoms such as anxiety, depression, and behavioural dysregulation decreased and their interpersonal skills and social functioning improved (Naste et al., 2018).

Regardless of the setting, the overall presence of animals creates caregiving behaviours such as grooming and feeding and helps to establish secure attachments in individuals who have

experienced DT (Mezza et al., 2022). In a meta-analysis, Hediger et al. (2021) discovered that interventions that involve animals and AAT are useful across various settings such as therapy centres, equine riding facilities, farms or ranches, shelters, hospitals, schools, and even clients' homes and foster the development of healthy attachment for clients in diverse settings. In their analysis, Mezza et al. (2022) included 41 studies on different forms of AAT in a range of settings with children and adults who had experienced traumatic events. These studies focused mainly on horses, dogs, and farm animals; and the researchers compared AAT to other forms of being in psychotherapy or on a waitlist. The meta-analysis showed that AAT positively affects attachment security, coping skills, and general physical health; for examples, it decreases the heart rate and cortisol levels. These results also demonstrate that AAT is effective in treating the symptoms of PTSD, it is superior to being on a waitlist, and it is comparable to traditional forms of treatment for PTSD. Treating trauma is incredibly difficult; therefore, AAT in different settings helps a range of populations, including those from rural and urban areas, those with low-income status, and those who lack a means of transportation, to diversify treatment options.

Shelef et al. (2019) examined the impacts of EFT on the symptoms of PTSD with regard to work, family, and the social functioning of their adult participants. Although this study involved adults, it demonstrated the effectiveness EFT in healing. Some participants reported that they had children and that working with horses has enabled them to become better parents. Children of parents who have PTSD are at risk because of the higher rates of domestic violence and substance abuse, as well as co-morbidity with other mental and physical health concerns. Effective therapy for those who suffer from PTSD or trauma also impacts those around them and enables them to have healthy and functional relationships with their families. Understanding how AAT helps children is the focus; however, understanding how AAT can also help parents and the

environment in which children live improves the long-term benefits outside the therapy room and within their own homes.

Theme 2: The Therapeutic Relationship

The human-animal bond can be a significant source of comfort, companionship, and security and is mutually beneficial (Shen et al., 2018). Animals offer unconditional positive regard and a nonjudgmental presence, and although clinicians strive to demonstrate this to their clients, children who have experienced trauma find it extremely difficult to develop trusting relationships with adults, which impacts the effectiveness of the therapy (Dravnsnik et al., 2018). Because children's trauma dramatically impacts their ability to maintain and form relationships, traditional forms of therapy can have a minimal effect. However, in recent research Parish-Plass (2021) suggested that AAT has promising results in the treatment of trauma in children because it involves the human-animal bond. Mezza et al. (2022) found that the human-animal bond improves the therapeutic alliance and motivation and has successful therapeutic outcomes for traumatised children. Mezza et al. highlighted attachment theory and suggested that animals can become safe havens and secure bases for children and promote social interaction between therapists and their clients. Likewise, when children observe the human-animal bond between therapists and animals, therapeutic rapport develops more quickly (Chandler, 2017). Mezza et al. emphasised the human-animal bond and its ability to improve the therapeutic alliance, the smoothness of therapy sessions, and depth of children's elaboration; and their findings show that AAT positively impacts feelings of safety and helps clients to engage in the therapeutic process and develop healthy therapeutic relationships. These results replicate the findings from different populations, including adults who are typically hard to reach, such as the participants in Sikstrom et al.'s (2020) research. They found that the presence of therapy animals increased the depth of

the data that they gathered from their participants who had severe mental health diagnoses. The animals improved their motivation and helped them to develop a stronger rapport with the researchers, and the participants demonstrated the ability to connect to the researchers.

Shen et al. (2018) produced an overall summary of recent literature on the human-animal bond. They reviewed a total of 1,866 qualitative studies in which the researchers examined the human-animal bond and the effectiveness of AAT. The researchers concluded that a human-animal bond in the therapeutic relationship fosters feelings of normalcy; improves behavioural activation, self-esteem, physical belonging, and companionship; and comforts and distracts clients. These results support the overall findings from the research on the human-animal bond and highlight the experiences of children and youth with DT.

The research on AAT and DT has shown that they have a positive impact on the therapeutic relationship. Chakrabarti (2014) identified improved client motivation, beliefs about therapy, understanding of and agreement upon treatment plans, and overall attendance and engagement in therapy. Signal et al. (2017) suggested that children who have been exposed to DT often develop disruptions in attachment bonds, which can promote avoidant behaviours that directly impact the therapeutic relationship because of resistance to engagement with the treatment, resistance to the development of relationships with therapists, and avoidance of the need to process traumatic memories. Furthermore, Signal et al. reported high attrition rates with other forms of trauma therapy: Approximately 60% of children discontinue therapy before the processing begins. These barriers are difficult to overcome in therapy; therefore, Signal et al. investigated the effectiveness of AAT in treating avoidant behaviours and whether it impacts treatment adherence. Using AAT, the researchers were able to reduce the avoidance symptoms of their participants. They found that 90% of the participants completed treatment, a significant

increase compared to that with traditional forms of trauma-informed therapy such as TF-CBT. Processing trauma is complex and triggering, but animals help to reduce the arousal symptoms associated with trauma through physiological reactions to the human-animal bond, which improves clients' ability to attend to and process traumatic memories. As Spinazzola et al., (2021) noted, some children with extensive traumatic backgrounds do not have the cognitive capacity to process trauma because of disruptions in their early brain development, which further supports the premise that traditional forms of therapy might not be effective. Spinazzola et al., (2021) highlighted the importance of considering the specific needs of children with trauma in selecting a treatment and of working directly on avoidance tendencies through the love and commitment of animals. Research in the field has supported this, which suggests that animals can offer what trauma has taken from these children—loving, caring, and mutually beneficial relationships and healing attachment bonds.

Researchers also found low attrition rates and high treatment adherence when clinicians combine AAT with another modality (Dravnsnik et al., 2018). For example, although TF-CBT and other forms of trauma-informed treatments have shown high attrition rates, AAT in combination with other evidence-based practices decreases the attrition rates. This suggests that children can benefit more from therapy that involves animals, and Dravnsnik et al. (2018) reported that their participants felt more comfortable with interacting with a dog than the therapist.

Maoz et al. (2021) examined the effectiveness of a dog-training program on the symptoms of PTSD in adolescents. Their findings show significant improvement in avoidance symptoms and a decrease in the reexperiencing of traumatic memories. The researchers affirmed the impact of animals on treatment adherence and the therapeutic relationship and emphasised that avoidance behaviours directly affect treatment. Their research offered insight into

nonpharmacological treatment options for PTSD and sheds light on other potential options for parents who seek beneficial activities for their children that improve their attention, focus, attachment, and multiple mental health and physical health concerns outside the therapy room. Not only is AAT beneficial, but having an animal, building a bond, creating trust, and learning to communicate with it also improve children's development and serve as protective factors against trauma. Additionally, these factors within a therapeutic relationship can be highly beneficial because they enable properly trained AAT therapists to facilitate the connection and security and create a safe environment for their clients to process traumatic memories (Fine, 2019). According to Parish-Plass (2021), AAT creates a mutually beneficial relationship with a strong connection among clients, therapists, and animals and improves therapists' ability to process the behavioural, cognitive, and social issues that are common in traumatised children.

Theme 3: Benefits of Exposure to Equines vs. Canines

Although AAT is not limited to a particular species, the studies that I reviewed focused specifically on canines and equines. I will examine the differences between the two species in the therapeutic relationship and offer insight into the incorporation of AAT into practice. Significant differences exist between canines and equines, including size, temperament, and communication signals, all of which therapists must consider when they work with these animals and traumatised populations.

EFT involves horseback riding, grooming, and the development of horsemanship skills to treat a range of mental health concerns, including the symptoms associated with DT (Shelef et al., 2019). Parish-Plass (2021) established that DT has significant impacts on multiple facets of children's lives, including physical health, psychological well-being, interpersonal relationships, and the neurological implications that impact the emotional and behavioural

domains of functioning. Research has also pointed to the direction of EFT for DT, which restores a sense of safety and improves regulation and the ability to form connections in relationships.

Working with equines has the potential to repair attachment bonds because it fosters trustworthiness (secure base) and a predictable environment and consistency (safe haven), which everyone, including children, require to develop secure attachments with loved ones (Trotter & Baggerly, 2019).

Working with equines has additional benefits. Because of their large size and boarding requirements, EFT typically occurs in nature, outside an office-based setting. Conducting therapy in rural areas helps youth to feel a sense of anonymity and safety and improves their chances of risk taking in a therapeutic setting (Mueller & McCullough, 2017). Mueller and McCullough (2017) questioned whether EFT is an effective treatment for youth who experience DT and currently have a diagnosis of PTSD. Over 10 weeks they used EFT at a therapeutic riding facility and noted several positive results for their participants, including an overall decrease in their PTSD symptoms. The researchers suggested that EFT appeals to youth because of the anonymity, engagement, motivation, and mastery required to develop a healthy relationship with a horse. The theme in the literature of working with equines in therapy reflects the importance of relationship-building, communication, regulation, and mastery skills, which help traumatised children and youth to feel safe in relationships and develop confidence and leadership skills that are typically undeveloped because of abuse or neglect. Working with equines also helps them to develop adaptive emotional, cognitive, and behavioural responses to past trauma through a “mind-body-emotion-spirit intervention that responds to the complex contextual aspects of post-traumatic stress” (p. 1170). Working with equines in a facility such as the one in Mueller and McCullough’s study adds a therapeutic component that enables clients to observe herd dynamics,

which are similar to family dynamics, with roles and expectations assigned to the members (Trotter & Baggerly, 2019). These observations can lead to realisations, conversations, and increased awareness of interpersonal relationships and help clients to apply the skills that they learn in sessions outside therapy.

Working with canines also shows promising results in treating DT. For example, the inclusion of canines in the therapeutic process is beneficial and effective in treating youth who have a history of abuse. In a quantitative research study, Allen et al. (2022) further emphasised this and offered insight into the effectiveness of AAT in combination with TF-CBT in treating youth diagnosed with PTSD. They randomly divided their participants into two groups, one of whom received 12 sessions of TF-CBT, and the other, 12 sessions of a combination of AAT and TF-CBT. The results of this research indicate improvements in PTSD symptoms in both groups; however, Allen et al. found that the addition of AAT was a distraction for some youth that impeded the achievement of the therapeutic goals of TF-CBT. Therapists must integrate AAT into therapy with caution; otherwise, it can impede the progress of other therapeutic outcomes (Bona & Coutnage, 2014). Flexibility is a significant ingredient of AAT; therefore, if therapists use AAT in combination with other modalities, it should enable more flexibility and emphasise relationship building and human-animal bonds (Allen et al., 2022). The researchers recommended that the integration of AAT into therapeutic practice must be as a stand-alone modality and not in combination with other forms of psychotherapy.

Because of their smaller size, their ability to train extensively, and the ease of transport, canines have become a popular choice among mental health providers (Parish-Plass, 2021). As researchers have recently noted, because animals can reduce the anxiety and stress caused by traumatic experiences, therapists have worked with them in several settings. For example,

Animal-Assisted Crisis Response utilises AAT with canines immediately after a crisis or disaster event, such as the Sandy Hook Elementary School shootings, the World Trade Center, and Hurricane Katrina (Lass-Hennemann et al., 2018). Because of the easy application of AAT in crisis situations, Lass-Hennemann et al. (2018) investigated the implications of AAT with canines directly after traumatic events to determine whether this form of intervention is practical and effective. The results of this study support the hypothesis and additional literature on the topic of AAT; they show decreased stress, anxiety, and negative affect after clients engage with canines for a total of 15 minutes. In connection with this research, the immediate reaction toward animals, both mental and physiological, is positive. According to neurobiology, the nervous system consists of two branches: the sympathetic and parasympathetic systems. The sympathetic nervous system is engaged in stress from a crisis, disaster, or prolonged exposure to trauma. However, the presence of animals naturally engages the parasympathetic nervous system, which is responsible for relaxation and calmness. Lass-Hennemann et al.'s research, in combination with recent literature in the field, has supported the use of AAT for crisis response and shown an immediate reduction in stress and possibly the prevention of long-term symptoms or the development of PTSD. These results can be translated to traditional AAT interventions within a therapy office; however, when therapists work with dogs, clients spend more time with the animals and are able to develop long-lasting relationships and a sense of commitment, which have additional therapeutic benefits.

The above findings highlight the recent literature on the use of AAT for children with DT and how it can change essential aspects of their lives, such as improving attachment, self-awareness, and self-regulation. Furthermore, each study has contributed to the knowledge on, guidelines for, and implications of working with canines and equines for this population.

Although the benefits of AAT are promising, it is also important to consider the limitations, such as ethical and cultural considerations, which I will discuss in the next section. Having a well-rounded and well-informed knowledge base on AAT before using it with any population is crucial, and even more important with children who have suffered DT. Therefore, this review and the derived themes shed light on this emerging field of psychotherapy and offer insight into the complexities of AAT.

Ethical Considerations in AAT

The research that I reviewed in this section highlighted AAT and its impact on the DT of children and youth. Working with animals in the therapeutic relationship has additional concerns and separate ethical considerations that it is important to acknowledge, such as additional safety concerns to ensure the welfare of all involved. I will highlight the ethical considerations in the realm of AAT for both researchers and clinicians. Additionally, I will address the specific ethical considerations to which the researchers adhered and offer insight into the complexities of research on AAT. Information from the *Canadian Code of Ethics for Psychologists* (CPA, 2017) and the *Tri-Council Policy Statement* (Canadian Institutes of Health Research et al., 2022) guide this section. Moreover, I will present additional information on the ethics of including animals in a therapeutic setting that is essential for individuals who are exploring the incorporation of animals into their practices.

Safety of Participants in AAT

It is important to consider several things to work with animals ethically, such as proper training and screening of each animal, the competence to work with the animals, an understanding of the animals' health and safety, and any potential risk to the individuals involved (Fine, 2019). The CPA (2017) addressed the safety of clients during therapy. In

incorporating animals into research and therapeutic practice, it is essential to choose the proper animal for the right population. The individual temperament of each animal must be appropriate to the planned task; for example, a hospital-visiting dog must be calm and sociable with all ages of children. Therefore, it is important to assess animals carefully before use. Competence in working with animals is also crucial, as is a full understanding of the animals' history, temperament, and behaviour to ensure everyone's safety. A handler's lack of knowledge about calming and distress signals can result in the misreading of dangerous behavioural cues (Bona, 2023). Competency results from walking, haltering, grooming, maintaining control, and understanding animals' behavioural cues. As Stewart et al. (2013) reflected, the mastery of AAT skills and proper competency is crucial to this therapy modality and especially important in working with large animals such as equines. Understanding 'horse language' is essential to maintaining safety and can help therapists to better understand their clients. Horses are very empathetic and have a natural ability to mimic the internal states of humans, which therapists must understand and respect (Naste et al., 2018; Parish-Plass, 2021). Principle II of the *Canadian Code of Ethics for Psychologists* (CPA, 2017) emphasises the importance of remaining competent, minimising harm, caring for animals, and general caring within research and the therapeutic practice; if therapists do not uphold this principle, they risk practising unethically.

Before animals can participate in research or therapy, their health and appearance must be good; they must also have up-to-date vaccinations and be spayed/neutered and bathed regularly (Fine, 2019). Along with addressing their health and esthetic needs, therapists must also ensure that the animals are obedient and have a calm temperament. Depending on the temperament, animals typically do not enjoy therapy. However, therapists can detect distressing signals from the animal co-therapists with sufficient training. Stopping their participation immediately or

permanently is essential if the animals do not enjoy it. Hatch (2007) pointed out other ethical issues that can arise in working with therapy animals, such as environmental dangers, high expectations, and overall stress, which this type of work can create for the animals. Additionally, if animals are injured by accident or purposefully, therapists must deal with them individually and therapeutically to ensure the best possible outcome (Bona, 2024). If clients or participants injure an animal, it might be necessary to address underlying issues. This is a requirement for therapists to practise ethically, because Principle II (CPA, 2017) emphasises the duty to offset and correct or minimise harm (CPA, 2017). Furthermore, working with animals must benefit both the participants and the animals. It is essential that animal co-therapists consider burnout and fatigue and have a chance to decompress after the therapy sessions. It is important to remember that animals are co-therapists and partners in therapeutic work with each client and that it is therefore important to respect them as such (Trevathan-Minnis & Shapiro, 2021).

A significant concern for psychologists who work with animals in their therapeutic practice is the transference of infectious diseases such as rabies, salmonellosis, influenza, cat scratch fever, and many others; animals have been associated with more than 150 of these *zoonotic* diseases (Fine, 2019). However, certain precautions, such as careful selection of therapy animals, rigorous health care, and continuous monitoring of animals, can help to avoid them.

Code of Conduct in AAT

The CPA (2017) published ethical guidelines for researchers and psychologists alike. Although it is possible to apply many ethical codes to AAT, a select few carry more weight than others. Principle I of the *Canadian Code of Ethics for Psychologists*, respect for the dignity of others, is the most critical code to follow. It underlines the need for general respect as well as respect for the general rights of all those involved. This is applicable to AAT to ensure the safety

and welfare of everyone involved. Therapists must treat their clients or participants and the animals with proper respect at all times and protect their general rights, which include the option for clients to stop their participation and respect for the animals' right to decompress and rest between sessions.

Ethical issues can arise with regard to the competence and self-knowledge of therapists. As I noted above, along with being fully qualified, therapists must be fully competent when they incorporate animals into therapy. Knowledge on how to handle animals and deal with problem situations during therapy sessions is essential. Parish-Plass (2021) noted that if professionals are not competent to work with their animal co-therapists, they might unintentionally harm their clients by using ethically unsound treatments and creating potential safety hazards, which can impact the effectiveness of AAT. Furthermore, this code requires therapists and clients never to subject animals to pain or stress when they use AAT (CPA, 2017).

Therapists must preserve integrity in their relationships, as Principle III of the *Canadian Code of Ethics* (CPA, 2017), highlights, by always maintaining honesty and accuracy. This includes being honest with their clients about the risks associated with working with animals in AAT, such as allergies, phobias, or a history of aggression towards animals, and might necessitate the exclusion of certain participants (Allen et al., 2022). They must also provide clients with a proper disclosure statement that outlines the risks and benefits associated with AAT and enables them to make informed decisions about whether to proceed. This emphasis on transparency and honesty in the professional relationship is crucial to maintain the integrity of the work.

Professionals have a responsibility to society, which is Principle IV of the CPA's (2017) ethical code. It refers to the importance of contributing to the development of society. Because

AAT is such a new field in psychology, those who practise it and conduct research must contribute all that they can to its expansion, legislation on AAT, certification to practise AAT, and education on the benefits of working with animals in a therapeutic setting.

The researchers of the articles that I included in this literature review consistently upheld ethical standards that applied to both their participants and the animals with which they worked (Allen et al., 2022; Lass-Hennemann et al., 2018; Maoz et al., 2021; Naste et al., 2018; Shelef et al., 2019; Signal et al., 2017). The *Tri-Council Policy Statement* (Canadian Institutes of Health Research et al., 2022), which promotes the ethical conduct of research, emphasises three core principles: respect for persons, concern for welfare, and justice. Therapists must uphold these principles when they work with humans and animals. Notably, when they work with therapy animals, professionals must ensure the animals' welfare, including proper medical care, boarding, and consistent provision of basic needs such as food, water, and safety. Aubery Fine (2019) also highlighted this commitment to animal welfare and emphasised the Five Freedoms, government legislation that ensures the welfare of animals: freedom from hunger or thirst, freedom from discomfort, freedom from pain, injury or disease, freedom to express normal behaviour and freedom from fear and distress (Fine, 2019). Upholding these five core freedoms demonstrates professionals' commitment to animal welfare in their research or therapeutic practice.

Ethical Considerations in Research Articles

Throughout the research, I noted that the users of AAT in the studies were adequately trained and had previous experience, especially when they worked with larger animals such as equines (Naste et al., 2018). In many of the studies, masters-level clinicians, social workers, psychotherapists, certified riding instructors, and dog trainers utilised AAT; and many of the

therapists included a combination of professionals, such as registered psychologists and zoo therapist veterinarians (Mezza et al., 2022). Shelef et al. (2019) selected certified riding instructors, with a ratio of 1 instructor to 5 participants, who emphasised strict safety regulations to ensure the safety of the participants, animals, and handlers. Signal et al. (2017) also addressed the animals' well-being and noted that special ethical considerations are always important in work with human participants and animals of any species.

Informed Consent and Withdrawal

The researchers strictly followed ethical protocols for informed consent that the *Tri-Council Policy* (Canadian Institutes of Health Research et al., 2022) mandates. All of the participants gave consent voluntarily, and the researchers informed them that they could withdraw from participation at any time without penalty. The researchers all asked for informed consent from the guardians of the children or directly from the participants if they were over the age of 18; however, the child participants were also able to withdraw their participation at any point (Signal et al., 2017). Furthermore, the researchers clearly documented and discussed all forms of consent (Canadian Institutes of Health Research et al., 2022). All of the treatment was trauma-informed, and the researchers offered access to psychiatrists and mental health services for participants with extensive trauma backgrounds (Maoz et al., 2021). All of the researchers stated that they adhered to the ethical standards of an institutional review board (Shelef et al., 2019), the Helsinki Declaration of 1975 (Lass-Hennemann et al., 2018; Mezza et al., 2022; Maoz et al., 2021; Naste et al., 2018), the Institutional Animal Care and Use Committee (Allen et al., 2022), or their associated university (Dravnsnik et al., 2018; Signal et al., 2017).

Confidentiality

The researchers respected the confidentiality of all participants, and the results included no names or identifying information. If the researchers collected video or audio recordings, they stored them in secured databases that were accessible only to specific researchers (Mezza et al., 2022). Because of the sensitivity of working with child participants, the researchers did not make some of their data publicly available to protect the identity of their participants (Maoz et al., 2021). All of the researchers followed their ethical duty to maintain confidentiality (Canadian Institutes of Health Research et al., 2022) by safeguarding the participants' information and avoiding misuse of the data.

Debriefing

The researchers gave all of the research participants full details of their research studies and warned those who received triggering material, which ensured that they fully understood the nature of the research before they provided consent. Principle III of the *Canadian Code of Ethics* (CPA, 2017) highlights integrity in relationships; more specifically, accuracy, honesty, straightforwardness, and the avoidance of incomplete disclosure or deception. The researchers whose articles I reviewed adhered to this code and conducted ethically sound research. This code coincides with Article 4.8 of the *Tri-Council Policy* (Canadian Institutes of Health Research et al., 2022), which emphasises the importance of disseminating the research results to peers and participants and ensuring that the data is timely and accurate.

Care for Animals

With regard to the welfare of all participants, it is essential that researchers consider potential impacts on the animal participants throughout their research. Principle II of the *Canadian Code of Ethics* (CPA, 2017) cautions therapists: "Treat animals humanely and do not

expose them to unnecessary discomfort, pain or disruption” (p. 26). Additionally, as the *Tri-Council Policy* (Canadian Institutes of Health Research et al., 2022) noted, “Ethical obligations often extend to respectful relations with plant, animal and marine life” (p. 150). Specifically, Maoz et al. (2022) reported results measured by both the canine and human participants. They noted that, although the human participants’ symptoms of PTSD improved, the canine participants showed inverse reactions: Their anxiety and selective attention significantly decreased. This highlights the importance of ethical considerations and the proper care of animals. It is the responsibility of professionals to learn, understand, and respond to nonverbal communication specific to the animal to prevent negative cross-species interplay.

Cultural Considerations

As I noted earlier, a significant gap in the literature is the lack of research on AAT with participants of different cultural or ethnic backgrounds. Although AAT has promising results, they depend on the individual. For example, those who display fear or nervousness in the presence of animals might not benefit from AAT. Signal et al. (2017) emphasised that traditional forms of psychotherapy might be ineffective for those from specific cultures such as Indigenous and that they might benefit more from AAT or nature-based modalities of therapy. These individuals might also benefit from AAT and the use and inclusion of animals in the therapeutic process, as vulnerability and disclosure are considered inappropriate; using animals in session may break those barriers. Dravnsnik et al. (2018) suggested that individuals from diverse backgrounds have different relationships with animals as a result of fear, the notion of uncleanliness, or religious beliefs and that AAT might not be appropriate.

In using AAT, it is important to consider cultural differences to prevent harm. However, the lack of research on people of culturally diverse backgrounds has left a significant gap in the

literature and a lack of knowledge about whom AAT can benefit the most. AAT is not appropriate for everyone, and not all species of animals are appropriate for use in AAT; therefore, careful consideration of the client, the animal, and the reason for referral is required.

Chapter Four: Application to Clinical Practice

In this chapter of the paper, I highlight the themes from the literature review, offer insight into the application to clinical practice, and describe how aspiring practitioners can apply my capstone research to clinical practice. I aimed to understand the challenge of integrating AAT into clinical practice and the importance of considering many aspects for clients, therapists, and animals. Understanding ethical and cultural considerations is crucial, as is a deep understanding of how animals can impact mental health. In this chapter I apply information from the literature to clinical practice to help future clinicians who wish to utilise AAT.

Working With Developmental Trauma

The literature review and the above themes shed light on the potential positives and negatives of working with animals in the therapeutic process and whether it improves the overall well-being of children and youth who have experienced DT. The modality of AAT has shown promising results for clients with a range of mental health disorders and is becoming a popular choice among psychologists because of its positive results. Because AAT is an effective treatment for various mental health concerns, such as trauma, depression, and PTSD, I will highlight research examining the research and help to inform clinicians on the implications of AAT to treat DT.

When they work with clients who have experienced DT, mental health professionals need to take special care and consideration because this population is at high risk of comorbid diagnoses and physiological, cognitive, and attachment disturbances (Cruz et al., 2022). The biopsychosocial impacts of DT are significant and long term, throughout development and beyond. According to Signal et al. (2017), trauma has long-term impacts on the physical, social, and occupational or academic functioning of individuals throughout their lifespan. Furthermore,

DT has been associated with distorted self-perception and identity confusion, which leads to difficulties in relationships with others, including clinicians (Parish-Plass, 2021). With emerging research dedicated to understanding the biopsychosocial impacts of DT and AAT, it is possible to match treatment options with clients who have been traumatised and are resistant to traditional modalities of therapy. Signal et al. explained, animals help to reduce the arousal symptoms of trauma and have calming a ability, which helps children and youth who have experienced DT to process therapy.

The Integration of AAT

Two well-known AAT models are the triangle and the diamond models (Allen & Colbert, 2016; McIntosh, 2006). The triangle model of AAT consists of the animal, the handler, and the client. The animal handler is the mental health professional, who must be skilled in handling, understanding, and competent to work with the animal of choice. In this model, handlers must be aware of how the participants influence one another and understand the dynamics within the therapeutic interaction (Allen & Colbert, 2016; McIntosh, 2006). The diamond model of AAT consists of the animal handler, a skilled mental health professional, the animal, and the client. In this model it is essential that the animal handler and the mental health professional have good communication skills and work together to foster healthy therapeutic interactions for their clients (Bona & Coutnage, 2014; McIntosh, 2006). Both models are acceptable, and it is important to consider them; success depends on the skill level and knowledge of the therapist who plans to practise AAT.

In addition to different AAT models, clinicians must be aware of the therapeutic format in which they deliver AAT. AAT encompasses a range of formats, such as animal-assisted crisis response, which includes an animal in a crisis situation (Pet Partners, n.d.). Animal-assisted

activities have therapeutic benefits that enhance well-being (Bona & Coutnage, 2014).

Therapeutic riding involves riding horses to promote physical and emotional health (Canadian Therapeutic Riding Association, n.d). Equine-facilitated psychotherapy involves working closely with a horse by grooming, handling, and riding (Equine Facilitated Mental Health Association, 2009). Equine-facilitated wellness incorporates counselling, learning, and personal development by bringing humans and horses together (Professional Association for Equine Facilitated Wellness, n.d). Finally, equine-assisted growth and learning reflects equine-assisted growth and learning through a mutually beneficial relationship between the horse and the client (Equine Assisted Growth and Learning Association, n.d). All formats of AAT have specific goals and therapeutic outcomes and require specialised training.

Before they use AAT with clients, clinicians should be aware of their history and whether they have been involved in any reported animal abuse or violence (Bona & Coutnage, 2014). Additionally, clinicians should be aware of clients' allergies, fears, or phobias of working with animals and develop a general understanding of them and their needs before they agree to provide therapeutic services. They require specialised training, skills, and experiences to integrate animals into therapy ethically, because it is crucial to the safety of all participants to have proper knowledge on the handling, care, and communication signals of the animals with whom they work (Bona, 2024). Clinicians need not only special training and experience to work with animals in therapeutic settings, but also appropriate liability insurance that covers AAT.

Clinicians must consider the benefits of AAT in addition to being aware of the risks and how to mitigate harm. Allen and Colbert (2016) recommended that they take into account four key factors when they incorporate AAT into therapeutic practice: (a) the welfare and safety of the animal and client, (b) the *Canadian Code of Ethics for Psychologists* (CPA, 2017), (c) the

most appropriate delivery model, and (d) the need to contribute to the advancement and knowledge of AAT. These are crucial factors in ethical practice, and clinicians should constantly reevaluate them throughout their therapy to determine the most beneficial and least harmful approach for each client.

Client Care

The complexity of DT requires that therapists take special care. For example, researchers suggested that individuals with trauma are at a higher risk of severe mental health problems and social and economic struggles such as poverty and homelessness, hospitalisation, and incarceration, as well as at risk of developing comorbid diagnoses (Cruz et al., 2022). Knowing this, clinicians must work with clients to find a modality of treatment that will work best for them and be appropriate to their history and religious, cultural, or spiritual worldviews; this treatment might or might not be AAT. Researchers highlighted these considerations and provided their participants with access to mental health services and excluded them if they had allergies, phobias, or religious concerns and were working with trained professionals and animal handlers (Allen et al., 2022; Maoz et al., 2021; Shelef et al., 2019; Signal et al., 2017)

Combined with the unique skills, training, and knowledge that clinicians need to practise AAT, they must also have a keen awareness of potential impaired objectivity or multiple relationships. The triangle and diamond models of AAT involved additional assistants, such as animals or animal handlers, and therefore additional therapeutic dynamics. Clinicians must develop the ability to divide their attention among client, animal, and handler without disrupting the therapeutic services (Fine, 2019). The therapist's role is now expanded to multiple entities, with the primary goal of safety and therapeutic benefit equally balanced between client and animal. This skill is challenging to acquire and takes time and patience, but it can become a

powerful therapeutic asset. Regular check-ins with clients, animals, and handlers; adequate debriefing; adherence to safety expectations; and evaluation of services or interventions are essential when clinicians practise AAT in any capacity (Allen & Colbert, 2016; Fine, 2019).

Furthermore, it is also essential that they be aware of different safety concerns when they work with different species. For example, horses are large and powerful animals that can startle easily, which can cause them to give a sudden rear kick. Additionally, the positioning of their eyes limits the scope of their vision, causing blind spots and increasing the risk of being startled (Bona, 2024). Teaching clients how to approach and engage with horses not only teaches them about safety, but also how to communicate and practise healthy boundaries. Causing injury, even accidental injury, can lead to further traumatisation; therefore, it is important that clinicians heed safety expectations at all times, especially when they work with large animals.

Additional safety with regard to client care is necessary in work with canines. Canines have a powerful bite and can cause harm to clients or handlers if they are not trained, socialised, or respected. Handlers need to be aware of behavioural cues from canines to ensure all parties' safety.

Another significant concern with regard to clients' health and safety in working with animals is the transmission of infectious diseases such as rabies, salmonellosis, influenza, cat scratch fever, and numerous others. These diseases are known as *zoonosis*; it encompasses over 150 diseases associated with animals (Fine, 2019, p. 152). However, clinicians and handlers can prevent the spread of these diseases by taking precautions such as selecting therapy animals carefully and maintaining rigorous health care and monitoring practices with the animals. Bona (2024) recommended training dogs not to lick or "kiss" to limit the spread of infectious diseases.

Animal Care

Although AAT was developed to help humans in need of mental health support, it is also important to consider the impact of humans on animals. As I noted previously, Maoz et al. (2021) found a cross-species interplay between their research participants and dogs and suggested that the participants directly influenced the dog's behaviour. This is a significant gap in the literature, because the researchers of only one study collected data on the experience of the animal as an equal contributor to the therapeutic relationship. Fine (2019) stated, "Simply put, Animal-Assisted Therapy would not exist without animals" (p. 4). With this in mind, clinicians must take the utmost care of their animal co-therapists and ensure that they are safe and protected at all times. This adds to the importance of handlers' ability to read communication skills from their animals effectively, and they must be highly familiar with their animals. Being able to read animals' behavioural cues that signal stress, aggression, or avoidance is essential to the safety of all involved and should not be taken lightly. Additionally, frequent check-ins with the animals and handlers before, during, and after therapy sessions are essential for the animals' welfare (Fine, 2019). Moreover, it is crucial to uphold proper ethical standards with regard to animal co-therapists by being conscious of the cost/benefit balance and highlighting the impacts of AAT on the animals' overall quality of life (Fine, 2019). The human-animal bond suggests a mutually beneficial relationship; therefore, therapists must respect and treat animals with dignity. Both clinicians and clients must care for them properly, because grooming, feeding, attending to their medical needs, and loving them have significant beneficial impacts on the traumatised brain (Parish-Plass, 2021). Helping clients to develop a mutually beneficial, nonjudgmental, and significant attachment to another entity is at the core of AAT's effectiveness. The purpose of AAT is to teach clients to love and be loved through connections with animals.

Cultural Considerations

Cultural considerations are crucial in working with animals in therapy because they can limit the demographics of clients whom therapists can help and exclude those who require psychological care. To work ethically with animals and people, clinicians must be aware that AAT might not be appropriate for all clients or all cultural groups, and some animals or animal species might not be suited for therapy. Additionally, some individuals might not enjoy interacting with animals, and some cultures have complicated relationships with them (Dravnsnik et al., 2018). In comparison, some cultures can significantly benefit from the inclusion of animals in therapy, especially those from Indigenous cultures. They might find the integration of animals into AAT therapy beneficial because the animals can ease their discomfort with vulnerability and disclosure, whereas they might otherwise consider it inappropriate in conventional therapeutic settings (Dravnsnik et al., 2018; Fine, 2019).

Cultural considerations are always important in practising AAT to avoid potential harm. However, the lack of research on animals in therapy and clients from culturally diverse backgrounds has created a substantial gap in the understanding of who can benefit the most from AAT. To practise AAT ethically, clinicians must carefully assess their clients, the animals, and the reasons for the referrals before they commence therapy.

Scientific Knowledge

I believe that my literature review has added to the scientific knowledge on AAT and DT. The *Canadian Code of Ethics for Psychologists* (CPA, 2017) highlights Principle IV, responsibility to society, which includes knowledge development. This principle states that psychologists should “contribute to the discipline of psychology and to society’s understanding of itself and human beings generally, through free enquiry, innovation, and debate, and through

the acquisition, transmission and expression of knowledge and ideas” (p. 32). Understanding the impacts of AAT on DT helps clinicians, parents, and educators to develop policies, programs, interventions, and services that support this modality and make it more widely available and accessible to high-risk, traumatised populations. The researchers whose studies I included in the literature review concurred and called for more research and clinical trials on the effectiveness of AAT.

Well-Being of Society

According to Dravnsnik et al. (2018) and Signal et al. (2017), although most children are resilient in response to DT, approximately 30% develop significant mental health concerns such as PTSD that can significantly impact their ability to function throughout life. Knowing this, it is essential that we find effective therapeutic interventions for traumatised children to help them to grow up to become functioning members of society. Further developing the field of AAT is a protective, proactive measure that will potentially decrease the impacts of DT and heal children before they become adults. Teaching children how to cope with and process their trauma, regulate their behaviours and emotions, and develop healthy attachments and relationships with animals has long-term benefits and can significantly decrease the number of mental health diagnoses in the future and the high cost of trauma to society.

Recommendations for Clinical Practice

The recommendations for clinical practice reflect revisions to policy and the inclusion of the biopsychosocial model to understand children and youth who have experienced DT. First, because AAT is relatively new in *the counselling field, there is still confusion about what AAT is and how to conduct it ethically (Fine, 2019). For example, AAT has several different modalities, ranging from animal-assisted activities, which therapists can deliver in a variety of

settings to enhance the overall quality of life, to AAT, which is goal-directed and meets clients' and mental health professionals' agreed-upon therapeutic goal (AVMA, n.d). Furthermore, implementing a policy that requires the proper certification and training of AAT practitioners will limit potential harm and unethical practices and add to the legitimacy of AAT.

Second, understanding DT and the impact of AAT through a biopsychosocial lens leads to deeper insight into the complexities and potential effectiveness of this form of therapy. The biopsychosocial model reflects the biological, psychological, and social domains of life, as does DT (Brown, 2023; Spinazzola et al., 2021). Because of the significant impact of DT on children's biological, psychological, and social development, it is essential that therapists understand these complexities to provide effective treatments, such as AAT, through a lens that encompasses a complete understanding of DT and AAT combined.

Chapter Five: Conclusions and Recommendations

This capstone's final chapter serves a crucial purpose: to draw solid and concise conclusions from the literature analysis. These conclusions are not just a summary, but guideposts for future clinicians and professionals in counselling psychology, social work, and education. They inform professionals on the potential of AAT, the benefits, and the limitations of working with DT and lead to recommendations for future research. This new modality of treatment offers hope and optimism to those who suffer from distress.

Conclusions

AAT is an extraordinary branch of psychology that incorporates the unconditional love and affection that animals provide (Fine, 2019). Clients who decide to work with animals can share their feelings and problems in a completely nonjudgmental environment, which results in more successful therapeutic outcomes. Because of its success rate, it is becoming more popular in several different settings, ranging from private practices to schools; and its growth has raised concerns about ethical practice and emphasised the need to establish it as a known, empirically driven therapy modality. Therefore, an ever-growing body of research is dedicated to unpacking and understanding the benefits, complexities, and limitations of AAT. In this capstone project I aimed to understand the impacts of AAT on children and youth who have experienced DT and to synthesise the most current literature.

Conclusions From Literature Review

In my literature review I examined the most recent research on the topic of AAT and its impact on DT. Key impacts that I have identified reflect the biopsychosocial benefits of AAT, such as neurobiological, cognitive-emotional, and interpersonal changes. Neurobiological changes reflect the genetic, neurobiological, and physical health changes that occur with the use

of AAT to treat children with disturbed and traumatic histories. Recent research and theories have highlighted the complex impacts of the human-animal bond at a physiological level that lead to changes in brain structure and decrease the harmful levels of cortisol, the body's stress hormone (Mills & Hall, 2014).

Cognitive-emotional changes include behavioural and emotional changes. Teaching clients a range of skills, including biological regulation, affect regulation, and behavioural control, within the presence of an animal has the potential to create long-lasting changes within the individual. Interpersonal changes are reflected in the social aspects of life, such as interpersonal relationships. The research highlighted key concepts such as attachment theory and the interpersonal changes that occur with the use of AAT. It is apparent that animals can foster secure attachment styles and become factors in healthy development, such as safety, healthy attachment, and regulation.

Recommendations for Clinical/Therapeutic Practice

I make three recommendations at the clinical/therapeutic level: (a) for training and education, (b) for ethical and liability considerations, and (c) for practise from a trauma-informed lens. Clinicians require proper training and education to practise AAT ethically. The research echoed these needs, and the researchers called for attention to this issue. With the popularity of animals in Western society, clinicians and mental health providers have attempted to include them in their practice without having the knowledge, training, certification, or understanding of the dynamics of this relationship that they require. This can lead to unintended harm to all involved: handlers, clients, and animals. The research highlighted the complexities of the human-animal bond and how impactful it can be, but to be effective, it must be practiced ethically,

safely, and therapeutically. This requires skill, training, and practice for the handlers and animals.

The importance of obtaining the proper licensing, animals, and liability insurance cannot be overstated in the practice of AAT; and clinicians must take many essential and nonnegotiable steps before they embark on it. Understanding and researching the best ethical practices, insurance coverage, and liability insurance for themselves, their clients, and their animal co-therapists are crucial because legislation and insurance coverage vary by province or state.

AAT must be trauma informed. A trauma-informed lens is essential to work with high-risk populations; more important, clinicians must incorporate animals into the therapeutic process safely. Therefore, remaining trauma-informed with regard to the emotional or behavioural reactions that can occur during engagement with animals is crucial for effective therapeutic change. Understanding reactions to trauma and knowing how to reduce these reactions with the help of animals are essential factors in trauma-informed AAT.

Therapists can advance the practice of AAT through several avenues, such as consulting with peers and colleagues, participating in and becoming members of province or state AAT regulatory bodies, and staying up to date on recent research, legislation, and certification programs. For example, in Alberta, a chapter of the Canadian Counselling and Psychotherapy Association (2024) is dedicated to providing information on AAT programs and gaining training or certification. Because AAT is a new and promising counselling field, clinicians must contribute to society and develop knowledge in this area to practise ethically. The research highlighted these needs, and by key figures such as Fine (2019), Bona and Coutnagne (2014), Chandler (2017), and Parish-Plass (2021) called for more research and legislation on the topic of AAT with a range of populations.

Recommendations for Future Research

I will make a few recommendations from my critical methodological analysis of the studies that I examined in my literature review. All of these studies were quantitative or mixed method in nature, and many did not provide follow-up data. Although the results were promising after the treatment ended, the researchers acknowledged that they were unsure of how long the changes would last and whether the participants improved over the long term. I therefore recommend future research to understand the long-term impacts of AAT.

Most of the research on the topic of AAT and DT lacked a consideration of major cultural concerns. This further limits the ability to generalise the findings to the larger population, because AAT might not be suitable to every cultural background. Traumatic experiences take all forms, ranging from DT to natural disasters, and impact everyone differently. Therapists must have a deeper understanding of cultural considerations such as for which population AAT is the most effective before they introduce AAT into the therapeutic relationship. I therefore recommend future research on AAT and specific populations, such as those from Indigenous cultures. Based on the extensive review of the recent literature on the topic of AAT and DT, I also recommend that researchers conduct studies to answer the questions “What are the long-term impacts of AAT?” and “Which population does AAT benefit the most?”

Answers to the above questions will further develop knowledge on AAT, legislation, and ethical practice with traumatised populations. In this capstone project I have shed light on the complexities of AAT and DT, which are a global concern of mental health practitioners. Understanding this topic will offer insight and have the potential to help those with the most traumatic histories at a biological, psychological, and social level.

My literature review and critical analysis have demonstrated the overall impact of AAT on DT and the human-animal bond and answered the research question “How does AAT impact children and youth who have experienced developmental trauma?” The impact of DT is widespread, and 60% of Canadians suffer from some form of trauma before the age of 15 (Statistics Canada, 2023). This is a significant societal problem and therefore deserves attention and further research to develop effective treatment options for this population.

The studies that I reviewed for this capstone research have limitations, such as small sample sizes and a lack of generalisability. However, they shed light on the potential impacts, benefits, and therapeutic gains that can occur from including animals in the therapeutic relationship. Further research is required to understand this topic thoroughly, including more qualitative studies, longitudinal data, and follow-up studies on the long-term impacts of AAT and the human-animal bond on traumatised individuals. Additional research will provide a more comprehensive view of AAT and its benefits or limitations across different populations.

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Appendix

Table 2
Reference List of Studies Critiqued

Author	Year	Title	Journal	Type
Allen et al.	2022	Integrating animal-assisted therapy into TF-CBT for abused youth with PTSD: A randomized controlled feasibility trial	Child Maltreatment	<i>Quantitative</i>
Dravnsnik et al.	2018	Canine co-therapy: The potential of dogs to improve the acceptability of trauma-focused therapies for children	Australian Journal of Psychology	<i>Quantitative</i>
Hediger et al.	2021	Effectiveness of animal-assisted interventions for children and adults with post-traumatic stress disorder symptoms: A systematic review and meta-analysis	European Journal of Psychotraumatology	<i>Quantitative</i>
Lass-Henneman et al.	2018	Therapy dogs as a crisis intervention after traumatic events? - an experimental study.	Frontiers in Psychology	<i>Quantitative</i>
Maoz et al.	2021	Dog training alleviates PTSD symptomatology through emotional and attentional regulation.	European Journal of Psychotraumatology	<i>Quantitative</i>
Mezza et al.	2022	Process evaluation of animal-assisted therapies with children: The role of the human-animal bond on the therapeutic alliance, depth of elaboration, and smoothness of sessions	Mediterranean Journal of Clinical Psychology	<i>Quantitative</i>
Naste et al.	(2018).	Equine Facilitated Therapy for Complex Trauma (EFT-CT)	Journal of Child & Adolescent Trauma	<i>Mixed methods</i>

Parish-Plass	2021	Animal-assisted psychotherapy for developmental trauma through the lens of interpersonal neurobiology of trauma: Creating a connection with self and others	Journal of Psychotherapy Integration	<i>Systematic Literature Review</i>
Shelef et al.	2019	Equine-assisted therapy for patients with post-traumatic stress disorder: a case series study	Military Medicine	<i>Mixed Methods</i>
Signal et al.	2017	Going with the Dogs: A Quasi-experimental assessment of animal-assisted Therapy for children who have experienced abuse	Applied Developmental Science	<i>Mixed Methods</i>