

Animal Assisted Interventions
for Adolescents with Emotional and Behavioural Problems

A Review of Selected Literature

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Human-Animal Bond

Humans and animals sometimes share a close emotional connection, typically called the human-animal bond. The existence of this bond can be traced back through history, where animals have traditionally played an integral role in humans' survival, health and well-being. The significance of the relationship between humans and animals is evidenced through mythology, the role of animals in spirituality, belief in the healing nature of human-animal relationships and, more recently, the relationship between many people and their companion animals (RHMS, 2003). The human-animal bond in Australia is evidenced through the 68% of Australians who keep at least one companion animal on their property, the most popular animal being the dog (Franklin, 2007). Families with children under the age of 18 are the most common households to keep a companion animal (Franklin, 2007).

In Western society, animals play an important role in the lives of children. Children's toys are manufactured in the likeness of animals, animals feature in children's stories, cartoons, television programs and movies, and are depicted in clothing and décor aimed toward children. Real animals are also important for children, who enjoy visiting zoos and other places to see animals, and often have pets at home (Serpell, 1999). Companion animals are particularly important in children and young people's social and emotional development. Many children include pets when rating the most important individuals in their lives, and describe obtaining emotional support from their companion animals, particularly when experiencing emotional distress (Melson, 2003).

Pet ownership is often considered a social relationship, and therefore it is considered reasonable to use models of the psychology of human relationships to investigate humans' relationships with animals (Bonas, McNicholas & Collis, 2000). This includes relationships between animals and their owners, but also relationships between animals and people they engage with in other contexts such as during animal assisted interventions. In this review the theoretical constructs used to explain the human-

animal bond are described. This is followed by a definition of animal assisted interventions, including the differentiation between animal assisted therapy (AAT) and animal assisted activities (AAA). Animal assisted interventions with children and young people are then presented, with particular emphasis on studies conducted with young people with emotional and behavioural problems, and utilising dog training as a modality.

*Theoretical perspectives of the human-animal bond
and animal assisted interventions*

Kruger and Serpell (2006) assert that the field of animal assisted interventions “lacks a unified, widely accepted or empirically supported theoretical framework for explaining how and why relationships between humans and animals are potentially therapeutic” (pp.25-26). However, the theoretical constructs that have been applied to animal assisted interventions most often include the following perspectives.

Attachment Theory

The human-animal bond is often conceptualised within the framework of human attachment theory. Attachment can be defined as a lasting emotional bond between people, where the individual strives to maintain proximity to the attachment figure, considering them a safe haven during times of distress, and using them as a secure base from which to engage in autonomous behaviour (Holmes, 1993; Parish-Plass, 2008). Children internalise representations of their attachment figures, and representations of themselves in relation to these figures. Eventually, these representations generalise, and influence the individual’s relationships with other individuals, as well as their self concept (Holmes, 1993). Securely attached children develop positive self concepts, and are able to trust caregivers and significant others. They develop empathy and the ability to self soothe in times of distress, and are then able to develop positive relationships with others. In contrast, children with insecure attachments develop negative self concepts, and view caregivers as unavailable, unreliable and rejecting. They lack the ability to self soothe and may not develop empathy. They often develop unhealthy relationships with others (Hanselman, 2001).

Most studies on attachment focus on relationships between humans; however studies on children and pets indicate that this construct may also be applied to the child-pet relationship (Melson, 1990; Parish-Plass, 2008). Research indicates that young people aged 11 to 12 years spend more time caring for pets than caring for younger siblings, young people aged 10 to 13 years may find a pet more supportive than humans, and young people aged 7 to 15 years have been found to readily attach to an unfamiliar (visiting) dog (Melson, 2004). Levinson and Mallon (1997) suggest that children with emotional and social problems who have experienced difficulty in their interpersonal relationships might relate more easily to an animal than to another human being. This is attributed to the animal's ability to provide non-threatening, non-judgmental, unconditional attention and affection.

Alternate attachment opportunities for children and young people, such as those involving a companion animal, can be critically important during development, because insecure attachment styles are associated with a wide range of psychosocial problems in adolescence, particularly in the areas of self esteem (Armsden & Greenberg, 1987; Gomez & McLaren, 2007; Gullone & Robinson, 2005; Rubin, Dwyer, Booth-LaForce, Kim, Burgess & Rose-Krasnor, 2004), social competence (Allen, Marsh, McFarland, Boykin McElhaney, & Land et al., 2002; Engels, Dekovic & Meeus, 2002; Laible, 2007; Rubin et al., 2004), both externalising and internalising behaviours (Buist, Dekovic, Meeus & van Aken, 2004; Chase-Lansdale, Wakschlag & Brooks-Gunn, 1995; Dekovic, 1999; Gomez & McLaren, 2007; Muris, Meesters & van den Berg, 2003; Rönnlund & Karlsson, 2006; Rubin et al., 2004), empathy and pro-social behaviours (Chase-Lansdale et al., 1995; Laible, 2007; Noom, Dekovic & Meeus, 1999), emotional regulation (Laible, 2007) and self efficacy (Noom et al., 1999).

When an animal is used in therapy it can serve as a transitional object of attachment, to support therapeutic goals and, subsequently, improved psychosocial functioning (Kruger & Serpell, 2006). Another role of attachment in animal-assisted interventions relates to Weiss's social provisions theory (1974, cited in Kruger & Serpell, 2006), where interacting with an animal can support psychological wellbeing and social relationships, via the provision of attachment, social integration, reassurance of worth,

reliable alliance, guidance and opportunity for nurturance. The Green Chimneys facility in New York works with young people aged 7 to 16 years, who demonstrate social, emotional and behavioural difficulties and have experienced issues pertaining to trauma, grief and loss. The facility incorporates an animal assisted therapy program, to help the children and young people connect with animals and experience a nurturing relationship (Mallon, 1992). Mallon (1994) conducted qualitative studies on the effects of this program, revealing benefits among the following five themes: opportunities for love, companionship and affection; acceptance and unconditional positive regard; the animals as confidants; therapeutic relationships which assisted in their other interpersonal relationships; and nurturing opportunities.

The Biophilia Hypothesis

Put forward by Wilson (1984, cited in Kruger & Serpell, 2006) the biophilia hypothesis purports that humans have an innate tendency toward affiliation with other living beings and nature. Kahn (1997) asserts that humans tend to choose natural landscapes that fit evolutionary patterns of life on the savannas of East Africa. He argues that these landscapes, which have historically supported human survival and reproduction, “nurture the human physiology and promote a sense of wellbeing” (Kahn, 1997, p.6). Therefore, humans are drawn to these environments for recreation and restoration (Gullone, 2000; Kahn, 1997). Humans are also drawn to environments where it is possible to look at and interact with non-human animals (Gullone, 2000).

Studies claiming to support the biophilia hypothesis have found that interacting with animals and/or nature can produce calming effects and a greater sense of wellbeing (Gullone, 2000; Kahn, 1997). Nature is incorporated into therapeutic interventions in a number of ways, including the use of nature-related stimuli in relaxation strategies; wilderness therapy programs; and incorporating nature into indoor settings, such as with water, birds, fish tanks, nature paintings and natural light. Evaluations of wilderness therapy programs have demonstrated improved self-confidence, self-esteem or self-concept, and self-efficacy in adolescents with a range of issues (White & Heerwagen,

1998). Animal assisted therapy in other contexts is a natural extension or adaptation of this phenomenon.

Social Cognitive Theory

Social cognitive theorists describe a reciprocal relationship between cognitions, behaviour and environment (Bandura, 2001; Kruger & Serpell, 2006). Cognitive constructs include self-efficacy; self-esteem or self-concept; personal agency, or locus of control; social competence; and emotional and behavioural regulation (Bandura, 1991; Bandura, 2001; Kruger & Serpell, 2006). Relationships have been reported between these social cognitive constructs and depression (Bandura, Caprara, Barbaranelli, Gerbino & Pastorelli, 2003; Luszczynska, Gutiérrez-Doña & Schwarzer, 2005; Wise, 2002), anxiety (Landon, Ehrenreich & Pincus, 2007; Wise, 2002) and social skills (Luszczynska et al., 2005; Spence, 2003).

Interventions for children and young people with emotional and behavioural problems often include strategies to enhance the development of social skills (Meadows & Stevens, 2004). Social skills training can target non verbal communication skills such as eye contact, facial expression, posture, social distance and use of gestures, as well as verbal skills such as tone of voice, volume, and clarity of speech (Spence, 2003). These skills are often also taught in animal assisted interventions, where animals can play a role in promoting cognitive and behavioural changes in people through the use of observation, modelling and association involving animals (Kruger, Trachtenberg & Serpell, 2004).

Other interventions for children and young people with emotional and behavioural problems include training in emotional and behavioural self control, which involves self monitoring, goal setting, strategy selection and implementation, and self evaluation and reinforcement (Polsgrove & Smith, 2004). In contrast to the popular view that animals provide unconditional positive regard, the response of an animal is often dependent on verbal and nonverbal behaviours, such as tone of voice, eye contact, facial expression, physical gestures, and the individual's emotional expression. In dog training programs, young people must regulate their own affect, to regulate the animal's arousal state and therefore its behaviour (Fredrickson & DePrekel, 2004). The mere presence of an animal

during therapy has also assisted clients in emotional and behavioural regulation. Fine (2006) provides examples of young clients learning to regulate their reactions. Excessive behaviours receive an immediate response from an animal, serving as a guide for the young person's behaviour. Fine explains that clients generally appear to calm down quickly, in an effort to provide a safe and calm environment for the animal. The animal's response can then be used in discussion about various emotions.

An important aspect of self regulation involves the ability to voluntarily shift and focus attention as required (Murphy, Shepard, Eisenberg & Fabes, 2004). Brickel (1982) proposed that animals are “emotionally laden distracting stimuli” (p.71) that are able to shift attention from stressful stimuli, thereby allowing for exposure to, rather than avoidance of, these stimuli. Brickel framed this concept in social cognitive theory, in the context of competing response patterns.

Social cognitive theory also identifies the benefits of performance accomplishment. This may be achieved after participating in a goal-focused animal assisted intervention, or by participating in a demonstration of the skills acquired from the intervention. Finally, in accordance with role theory (which fits within a social cognitive framework), individuals participating in animal assisted interventions involving dog training may demonstrate competence in the role of trainer. This sense of competence may generalise to other settings and areas of their lives (Kruger & Serpell, 2006).

What are Animal Assisted Interventions?

The animal-assisted interventions field has utilised many different types of interventions, and the work has attracted a wide range of terms, including animal assisted therapy, animal assisted activities, pet therapy, animal-assisted counselling and pet-facilitated therapy (Kruger & Serpell, 2006). It is important to differentiate between some of these terms. The Delta Society is a large organisation that certifies therapy animals, and advocates for professional practice and standardisation of terms. The Delta Society defines Animal-Assisted Therapy (AAT) as a goal-directed intervention with measured progress, where animals are an integral component of treatment, and therapy is directed and/or facilitated by a health or human services professional. On the other hand,

Animal Assisted Activities (AAA) are not specifically focused on treatment goals, but provide opportunities for increased motivation and recreational benefits that may enhance quality of life, through interventions such as animal visiting programs (Kruger & Serpell, 2006). The most commonly reported animals utilised in animal assisted interventions include horses, dogs, cats, birds, dolphins, small mammals such as rabbits and guinea pigs, and farm animals (RHMSS, 2003).

Animal Assisted Interventions with children and young people

While there are records of animal assisted interventions since 1792, when animals were used with psychiatric patients at the York Retreat in England (Mallon, 1992), the first account of this modality used with children and young people appears to be the work of psychologist Boris Levinson in the 1960s. Levinson, often referred to as the pioneer of animal assisted therapy, introduced his dog 'Jingles' into his therapy work with children and young people, and noted enhancements to therapy via social facilitation and assistance in establishing rapport, as well as the pet's provision of companionship and unconditional acceptance. Levinson conducted several case studies utilising animal assisted therapy, and found this modality particularly helpful with children with emotional and behavioural difficulties, particularly those who were nonverbal, withdrawn or inhibited, or those with obsessive-compulsive tendencies, or autism (Levinson & Mallon, 1997). These findings were supported more recently by similar case studies conducted by Fine (2006). However, both Levinson and Fine have advocated for more scientific research into animal assisted interventions (Fine, 2006; Levinson & Mallon, 1997).

Since the early work of Levinson, research on the use of animal-assisted interventions has shown numerous physiological and psychosocial benefits across a wide range of ages, settings, and diagnoses, and using a variety of different types of animals. The studies described below demonstrate the use of dogs in interventions targeting psychological issues, with predominantly children and young people. Many animal assisted intervention programs have been conducted with children and young people with emotional and social and/or behavioural problems. Emotional and behavioural disorders

are often categorised as either externalising or internalising. Animal-assisted interventions have been demonstrated as effective for adolescents experiencing both internalising and externalising disorders and behaviours (RHMS, 2003).

Internalising problems. Internalising behaviours are directed internally toward the individual, and are over controlled. These include anxiety, depression, social withdrawal and somatic problems (Gresham & Kern, 2004). It is proposed that animal assisted interventions are effective in minimising internalising behaviours via the animal's inclination to predictably react positively to positive stimuli, and for their ability to provide unconditional positive regard and acceptance (Fawcett & Gullone, 2001).

One example of the use of animal assisted interventions in anxiety treatment is a study conducted by Barker and Dawson (1998). The authors studied 230 adult psychiatric inpatients (mean age 37 years) that were referred for therapeutic recreation activities. Participants engaged in weekly animal assisted therapy (AAT) and recreational therapy on consecutive days. Anxiety was measured by the State-Trait Anxiety Inventory. Results indicated statistically significant reductions in anxiety for the AAT group, specifically for patients with psychotic disorders, mood disorders, and other disorders. Significant reductions in anxiety were also found for those participants in the recreational therapy group diagnosed with mood disorders. No statistically significant differences were found between the two conditions. Findings of reduced anxiety following engagement in animal assisted therapy offer support for the biophilia hypothesis.

Animal assisted interventions have also demonstrated efficacy in the treatment of depression. In a study of 44 adult college students aged 18 to 23 years (median age 21), Folse, Minder, Aycock and Santana (1994) found significant improvements in depression in a non-directive animal assisted activity (AAA) group, compared to the directive animal assisted therapy (AAT) group and the control group. The authors noted that the AAT group was a psychotherapy group and therefore dealt with painful issues and depressing thoughts, compared to the AAA group which was not as emotionally laden. They believed that this difference might account for the findings. This is certainly a possibility. However this study had several methodological problems, including the different sample sizes in each group (the control group had 23 participants, compared to 9 participants in

the AAT group and 12 in the AAA group); the use of different facilitators in each group; and also the use of different dogs of different ages and with different temperaments and energy levels, in each group. The dog utilised in the AAA group was younger and more energetic than the one used in the AAT group, which may have had an effect on the participant's activity levels, or provided a more cheerful atmosphere. In a meta-analysis of the effects of animal assisted interventions on depression, Souter and Miller (2007) indicated that animal assisted interventions demonstrate efficacy in the reduction of depression in elderly populations. Of particular benefit were non-directive interventions, such as animal assisted activities. This outcome supports the finding of Folse and colleagues (1994), despite the reported methodological problems. However, while the authors started with 165 articles, only 5 studies were used in this meta-analysis, as only 60 were scientific studies, and only 5 actually met the selection criteria for the analysis, including the provision of adequate statistical information to conduct the meta-analysis. The findings of reduced depression offer support for attachment theory and the related social provisions theory, where interacting with an animal can support psychological wellbeing and social relationships, via the provision of attachment, social integration, and unconditional positive regard, leading to reassurance of worth. These findings also support the biophilia hypothesis, via the notion that interacting with nature and animals provides a sense of wellbeing.

In a study examining internalising and externalising difficulties, Hanselman (2001) explored the benefits of animal-assisted therapy as an adjunct to anger management treatment, with an emphasis on animal abuse and family violence issues. Dogs were incorporated into a 12-week Cognitive Behaviour Therapy-based anger management group, with seven young people aged 14 to 17 years. Measures included the State-Trait Anger scale, the Beck Depression Inventory, the Mood Thermometer, and the Companion Animal Bonding Scale. Quantitative findings included a significant reduction in emotional experience of and behavioural expression of anger; a significant increase in companion animal bonding (and awareness of attachment behaviour); significant increases in depression (which were attributed to lack of substance use and increased emotional awareness); several changes in mood factors, such as increased happiness,

security and self worth, and decreased loneliness, isolation and stress. Observations for the animal assisted therapy group included an acceleration of the therapy process, and participants demonstrating more verbal participation and expression of emotion.

Externalising problems. Externalising behaviours are directed outward toward the social environment and are under controlled. These include conduct disorder, oppositional defiance disorder, attention deficit disorder, and aggression (Gresham & Kern, 2004).

Gullone (2003) proposed using animal assisted therapy with children at risk of developing conduct disorder (CD), to assist in the development of empathy, positive relationships, self-efficacy, mastery and competence, and provide an opportunity for nurturance. These skills are considered important in preventing externalising problems such as CD. Gullone further states that using animals to emotionally engage the children provides “an opportunity for emotional investment and expression that is free of negative evaluation and not subject to being rejected” (p.168), which is important for children with emotional and behavioural problems.

Barkley (cited in Katcher & Wilkins, 1998) put forward five assumptions in relation to the use of animal assisted therapy with children with attention deficit hyperactivity disorder (ADHD). First, animals are able to hold children’s attention, due to the unpredictability of their behaviour. Subsequently, the child must pay close attention to the animal’s behaviour, which is a challenge for children with ADHD. Second, the animal creates uncertainty for the child, which may assist in inhibiting impulsive responses. The animal also provides an opportunity for the child to engage in speech, which can stimulate the discussion necessary for therapy and learning. Third, the presence of the animal requires the child’s attention to be external, which helps in accurate perception of others’ behaviour. Fourth, the animal can provide the opportunity for affection, nurturing and appropriate play and touch. Finally, it is assumed that overcoming any fear of the animal, and being able to care for it, provides a sense of competence, which increases self-esteem. Several of these assumptions fit within social cognitive theory. For example, the first assumption relates to the role of animals in attention shifts, part of social cognitive theory; the third point supports social cognitive

theory's emphasis on social skills; and the fifth point reflects the social cognitive factors of sense of competence and self esteem. In addition, the fourth assumption relates to attachment theory and the related social provisions theory.

Katcher and Wilkins (1998) reported the findings of a study conducted with children with conduct disorder (CD) and attention deficit hyperactivity disorder (ADHD). An initial sample of 52 children was randomly assigned to either a six-month outward bound program, or a six-month companion zoo program. Results at post testing indicated that the companion zoo group demonstrated fewer aggressive episodes and a reduced level of (teacher reported) problem behaviours, compared to the outward bound group. These changes also generalised to the regular school program. The authors concluded that AAT demonstrates large therapeutic effects on children with emotional behavioural problems, particularly CD and ADHD. These effects appear to be produced via improved emotional regulation, which is included within the social cognitive perspective of animal assisted interventions. However, as pointed out by Fawcett and Gullone (2001), this study has methodological problems. These include possible response bias, as the teachers were not blind to the participants' conditions, and the multiple components of the companion zoo program, which makes it difficult to isolate the effective elements.

Anderson and Olson (2006) conducted a qualitative study of the benefits of the presence of a dog in the classroom with six students aged 6 to 11 years, with internalising and externalising disorders. The dog's presence was observed to distract students' from feelings of anger, de-escalate aggressive behaviour, facilitate social interaction, and support students to regulate their emotions. Once again, these findings support the social cognitive model of animal assisted interventions. The students also demonstrated responsibility, respect and empathy in relation to the dog, which appeared to generalise to their peers.

Dog Training models

Several programs have explored the efficacy of using dog training as an animal-assisted therapy model. Outcomes of a range of dog training programs suggest that this type of intervention may improve a number of factors that relate to social cognitive

theory, including self efficacy and self concept, social skills and interpersonal relationships, emotional and behavioural regulation.

Many dog-training studies have been conducted with 'delinquent' or prison populations who have retrained shelter dogs for adoption. In the shelter dog training initiative *Project Second Chance*, Harbolt and Ward (2001) found qualitative improvements in social skills, including empathy, in a sample of male adolescents in a correctional facility. The three-week program incorporated a range of activities including obedience training, socialising, grooming, walking the dogs, and caring for them. The participants wrote letters to accompany their dog to the shelter for adoption. These letters were used to measure the program's success. The authors acknowledged that the study utilised an anecdotal rather than empirical evaluation method. Efforts were made to measure levels of empathy; however the authors reported finding it difficult to find an effective measurement tool to use with this population. However these findings do support those of other studies, using different designs.

The Toronto Young Offender Program known as *YAPP (Youth & Animal Pilot Project)* is a 13-week dog-training program, where young people retrain shelter dogs for adoption by disabled individuals. The results of this intervention include increased emotional and behavioural regulation, reduced aggressive behaviour, improved problem solving skills, social skills, relationships with others, self-esteem and self-efficacy, and the development of empathy (Mathews, cited in RHMSS, 2003). Another project facilitated in a juvenile detention centre is *Project Pooch*, which teams young offenders with shelter dogs. This program involves obedience training, to prepare the dogs for adoption as pets. Outcomes included observed improvements in behaviour, social interaction, leadership, and self reported improvements in empathy, nurturing, social skills, self-confidence, and pride of accomplishment (Strimple, 2003).

Chandler (2005) has worked therapeutically for a number of years with young offenders, and consistently finds that animal-assisted therapy is useful with this population. She states that after learning dog-training techniques these young people demonstrate improvements in communication skills, frustration tolerance and self-efficacy, and develop peer leadership skills.

Dog training models have also demonstrated efficacy with young people who demonstrate behaviour problems but are not involved with the prison system. One study involved two boys (aged 11 and 12 years) with emotional and behavioural problems, who received weekly AAT sessions of between 45 and 60 minutes in length. Participant A received 11 weeks of the intervention, while participant B received 14 weeks. The program involved an initial period of time brushing the dog and discussing any important events, followed by dog training using positive reinforcement principles, and culminating in a class presentation. Measures included the ADD-H Comprehensive Teacher Rating Scale; observations from the teachers; multi rater coding of observation data from videotapes from three sessions (the first, middle and final sessions); individual education plans, used to monitor progress on identified goals; and post intervention interviews with participants, their families, and teachers. Aggregate results included increased positive verbalisations and decreased negative verbalisations, increased eye contact and appropriate use of tone of voice, which led to improved social skills; reduced hyperactive behaviours; improved relationships with peers; improved problem solving skills; decreased feelings of helplessness; and improved sense of control over self and environment. Importantly, these skills were observed to generalise from the animal-assisted intervention into the participant's wider school experience. However the authors noted that for ethical reasons it was not possible to control for other factors that may have influenced these findings, such as the participants' involvement in other special services or programs (Kogan, Granger, Fitchett, Helmer, & Young, 1999).

Another study examined the benefits of animal-assisted interventions with two 13-year-old students with significant behaviour problems. The students retrained a shelter dog for adoption by a disabled individual, working individually with a dog trainer for 45 minutes on a daily basis. One student worked for 18 days, the other for only 6 days due to time constraints. A multiple baseline across subjects design was used to assess the effects of this intervention. Continuous baseline data was also collected for another student, who did not participate in the intervention. These data were used as a control. The students who received the intervention showed reductions in aggressive (verbal and physical) and non-compliant behaviours, and these changes were observed to generalise

across settings. The target behaviours of the control student remained consistently high. It was concluded that animal assisted interventions, specifically dog training, could reduce aggressive and noncompliant behaviours of students with behavioural problems. The authors frame this intervention in role theory, which fits within a social cognitive perspective. They explain that, in having the students take on the role of dog trainer, they develop a new positive self-image, and assimilate these behaviours into their self-concept, resulting in associated positive behaviors. However the authors also consider the possibilities that a similar intervention that does not incorporate an animal may also have been effective, and question the role of the facilitator versus the animal (Siegel, Murdock & Colley, 1997).

Granger and Granger (2004) conducted individual and group animal assisted therapy interventions with 31 students aged 12 to 17 years, attending an alternative high school. These students had previously been expelled from mainstream education settings. In this quasi-experimental study, students were assigned to one of three conditions: individual AAT, small group AAT, or control group. Sessions focused on dog training, social skills related to caring and nurturing, and self-control. The experimental groups met twice per week for one hour, for a period of 10 weeks. Measures included pre- and post-intervention behaviour rating scales; staff observations of direction following, acceptance of feedback, and respectful and caring responses toward others; and classroom absences. Data from individual and group AAT programs were combined for the purpose of analysis. The only significant quantitative difference between the animal-assisted therapy and the control group was a greater improvement in social skills for the animal-assisted therapy group. No differences were found for aggression, interpersonal relations and class absences. Qualitative outcomes for the animal-assisted therapy groups included reports of enhanced trust and communication. School staff perceived the programs as beneficial, and students reported enjoying the programs, as well as learning about the importance of human-animal and human-human relationships. The authors identified several problems involved with this study, including the small sample size, the non-randomised assignment to groups, and (as data from the AAT groups were

combined) the inability to differentiate between the effects of the individual versus the small group intervention.

Summary and Conclusion

Animal assisted interventions have been utilised with a wide range of children and adolescents with emotional and behavioural problems, in a number of different settings. Outcomes have included increased social skills, self efficacy, self esteem and emotional and behavioural regulation, lending support to social cognitive theory; reduced anxiety, in support of the biophilia hypothesis; reduced depression, in support of the biophilia and attachment/social provisions theories; and improved relationships with peers, which offers support to the attachment and social provisions theories, as well as the social cognitive factors of social skill development. Dog-training modalities appear to be a particularly effective intervention with young people with emotional and behaviour problems. These strategies use the inherent benefits of animal assisted interventions, in combination with skill development. The dog-training model has been described in terms of role theory, framed within social cognitive theory.

While these results are promising, the majority of studies have been anecdotal, or in the form of hypothesis-generating case studies, rather than hypothesis-testing empirical studies. Researchers in the field argue that qualitative and anecdotal studies may be legitimately presented alongside the more empirical studies, as the findings are consistent with each other (Fawcett & Gullone, 2001; Nimer & Lundahl, 2007). However, further research is clearly required to provide additional scientific support for these interventions. In particular, empirical research is required to test whether the benefits of animal assisted interventions on a small number of individuals can be generalised to larger populations. There is also often no clear distinction between animal assisted therapy and animal assisted activity modalities, making it difficult to determine the effects of the animal's presence and the effect of the animal as a 'co-therapist', or a living 'tool' in a therapeutic intervention.

Research indicates that animal assisted interventions, particularly dog training modalities, may be effective interventions for this target group. As young people with

emotional and behavioural disorders experience difficulties in interpersonal relationships and social interactions, prosocial behaviours, and social acceptance (Gresham, Cook, Crews & Kern, 2004), establishing interventions that demonstrate efficacy with these populations is essential. Interventions targeting young people, particularly those from 'hard to reach' groups, often need to be innovative. The use of a therapy animal may assist in engaging and building rapport with these clients, and with retaining this target group in therapy.

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