A Systematic Review of the Effectiveness of Animal Assisted Therapy (AAT)

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Background and Significance

The belief that the human-animal bond can have a positive impact on health and wellness has been documented as early as the 17th century (Serpell, 2006)

The birth of modern AAT occurred in the 1960’s and is attributed to psychotherapist Borris Levinson (Julius, Beetz, Kotrschal, Turner, & Uvnäs-Moberg, 2013; Stefanini, Martino, Bacci, & Tani, 2016)
Background and Significance

Despite it’s popularity, there is not conclusive evidence of the effectiveness of AAT (Nimer and Lundahl, 2007)
Background and Significance

Reasons for this uncertainty include:

◦ Low level research (Griffin, McCune, Maholmes, & Hurley, 2011)

◦ No clear delineation of intervention protocol used (Fine, O’Callaghan, Chandler, Schaffer, Pichot, & Gimeno, 2010)

◦ Lack of standardized terminology used (Fine & Beck, 2010; Fine, O’Callaghan, Chandler, Schaffer, Pichot, & Gimeno, 2010; Griffin, McCune, Maholmes, & Hurley, 2011)
Our study aims to provide a summary of current AAT research by conducting a systematic review of intervention studies that define AAT according to standardized terminology.
Clarification of Terminology

Animal-Assisted Intervention (AAI)

- Umbrella term that consists of animal-assisted therapy (AAT), animal assisted activities (AAA), and animal-assisted education (AAE)

Clarification of Terminology

AAT

- Therapeutic intervention that is goal-oriented, structured, and conducted by a trained health or human service provider

Clarification of Terminology

AAA

- Less structured activities that are recreational and aim to enhance quality of life. It is provided by volunteers, are not goal-oriented

Clarification of Terminology

AAE

- Goal-oriented intervention provided by a trained educational professional that aims to increase academic skills, prosocial skills, or cognitive skills

Clinicians and Family Members may come across AAT

- Need to know which populations and interventions have been studied and whether they have been shown to be effective.
Project Description

Master’s Research Project through The University of New Mexico Occupational Therapy Graduate Program
Methods

IRB or HRPO not needed
  ◦ No involvement with human subjects
Methods

Databases searched: PubMed Central, PubMed, Proquest, CINAHL, PsychINFO, and OT Seeker

Search terms included: animal assisted therapy, canine assisted therapy, animal assisted intervention, animal facilitated therapy, pet therapy, pet facilitated therapy, therapy pets, and therapy dogs
Methods

Inclusion criteria:

1. Peer reviewed articles
2. Written in English
3. Published between 2001-2016
4. Quantitative or Mixed Methods Design
5. Interventions planned by a licensed/degreed healthcare or human service provider
6. Goal-directed intervention involving a dog(s), and have defined outcome variable(s)
Methods

Exclusion criteria:

1. Systematic reviews
2. Doctoral dissertations
3. Anecdotal reports
4. Qualitative studies
5. Studies with more than 75% participants above the age of 65
6. Articles not published in English
Methods

Selection of Articles

◦ Each article was rated for inclusion by two team members and results were sent to a neutral team member for comparison

◦ Discrepancies were discussed until team members came to a consensus
Methods

Level and Quality Rating:

- AACPDM: Levels I-V
- AACPDM: 7-point scale for group research designs, 13-point scale for single subject designs

(AACPDM, 2008)
### Part A: type of research design

<table>
<thead>
<tr>
<th>Level</th>
<th>Group research</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td>Systematic reviews of Randomized Controlled Trials (RCT); RCT with n &gt; 100</td>
</tr>
<tr>
<td>II.</td>
<td>RCT with n &lt; 100; systematic reviews of cohort studies</td>
</tr>
<tr>
<td>III.</td>
<td>Cohort studies with concurrent control group; systematic reviews of case control studies</td>
</tr>
<tr>
<td>IV.</td>
<td>Case series; case control; cohort study without a concurrent control group</td>
</tr>
<tr>
<td>V.</td>
<td>Case study; expert opinion</td>
</tr>
</tbody>
</table>

### Part B: quality of study

1. Were inclusion/exclusion criteria of the study population well described and followed?
2. Was the intervention well-described and was there adherence to the intervention assignment? For two group designs was the control exposure also well-described?
3. Were the measures used clearly described, valid, and reliable for measuring the outcomes of interest?
4. Was the outcome assessor unaware of the intervention status of the participants, i.e. was there blind assessment?
5. Did the authors conduct and report appropriate statistical evaluation including power calculations/analysis?
6. Was dropout/loss to follow-up reported and less than 20%? For two group designs, was the dropout balanced?
7. Considering the potential within the study design were appropriate methods for controlling confounding variables and limiting potential biases used?
### Part A: Type of Research Design

**Level**  | **Single Subject Research**
---|---
I.  | Randomized controlled trial N-of-1 (RCT); alternating treatment design (ATD), and concurrent or non-concurrent multiple baseline design (MBD); generalizability if the ATD is replicated across three or more subjects and the MBD consists of a minimum of three subjects, behaviors, or settings.
II. | Non-randomized, controlled, concurrent MBD**
III. | Non-randomized, non-concurrent, controlled MBD**
IV.  | Non-randomized, controlled SSRDs with at least three phases (ABA, ABAB, BAB, etc.)**
V.   | Non-randomized controlled AB SSRD**

### Part B: Quality of Study

1. Was/were the participant(s) sufficiently well described to allow comparison with other studies or with the reader’s own patient population?
2. Were the independent variables operationally defined to allow replication?
3. Were intervention conditions operationally defined to allow replication?
4. Were the dependent variables operationally defined as dependent measures?
5. Was inter-rater or intra-rater reliability of the dependent measures assessed before and during each phase of the study?
6. Was outcome assessor unaware of the phase of the study (intervention vs. control) in which the participant was involved?
7. Was stability of the data demonstrated in baseline, namely lack of variability or a trend opposite to the direction one would expect after application of the intervention?
8. Was the type of SSRD clearly and correctly stated, for example, A-B, multiple baseline across subjects?
9. Were there an adequate number of data points in each phase (minimum of five) for each participant?
10. Were the effects of the intervention replicated across three or more subjects?
11. Did the authors conduct and report appropriate visual analysis, for example, level, trend and variability?
12. Did the graphs used for visual analysis follow standard conventions, for example x- and y- axes labeled clearly and logically, phases clearly labeled (A, B, etc.) and delineated with vertical lines, data paths separated between phases, consistency of scales?
13. Did the authors report tests of statistical analysis, for example celeration line approach, two-standard deviation band method, Cstatistic, or other?
14. Were all criteria met for the statistical analyses used?
Methods

Inter-rater reliability
  ◦ 86% agreement for quality rating
Results

A total of 14 articles met inclusion criteria
- 10 group research design studies and 4 single subject design studies

Level of Evidence: Quality:
- 1 Level I study 0 with strong quality
- 2 Level II studies 3 with moderate quality
- 5 Level III studies 11 with weak quality
- 6 Level IV studies
Results

Categorization of Articles:
◦ 2 Developmental Disabilities
◦ 3 Pediatric Mental Health
◦ 6 Adult Mental Health
◦ 3 Adult Neurological Rehabilitation
Conclusions

There is some evidence to suggest AAT is effective for certain pediatric and adult populations for improving the following outcomes:

- Increased social skills
- Decreased psychiatric symptoms
- Increased motivation
- Increased satisfaction with intervention
Conclusions

However, articles in this review were primarily of low level of evidence and quality, and findings should be interpreted with caution.

More rigorous research should be conducted to determine the effectiveness of AAT.
Dissemination

Information was disseminated at poster presentation on 4/12/17 at University of New Mexico North Campus to students and faculty from various departments as well as community members.

Manuscript will be submitted to Anthrozoos Journal for publication.
Specifics My Role in the Project

Define Inclusion and Exclusion Criteria
Literature Search (2014-2016)
Determine which articles met inclusion
Rate level of evidence and quality using AACPDM
Write portion of manuscript
What you learned

Process of conducting systematic review
How to write a clear and succinct introduction and discussion section
How to design a professional poster
How to present a poster
The efficacy of AAT
Thank You!
Questions?


References


Picture References

Images used with permission from Dogwood Therapy Services, Inc.


https://encrypted-tbn0.gstatic.com/images?q=tbn:ANd9GcQD5hsmZ_L5RoM22zfttz-U8t8sUqRqbygwErGMoHGeLp0QBaP9Qg

More Detail on Diagnoses and Outcomes
Pediatric Mental Health

Diagnoses Studied
- Mood disorders
- Eating disorders
- Survivors of physical abuse
- Survivors of sexual abuse

(Dietz, Davis, & Pennings, 2012; Hamana et al., 2011; Stefanini, 2016)
Pediatric Mental Health

Outcomes Observed
- Internalized symptoms (statistically significant)
- Global functioning (statistically significant)
- Total competence (statistically significant)
- Anxiety (statistically significant)
- Depression (statistically significant)
- Anger (statistically significant)
- PTSD (statistically significant)
- Dissociation (statistically significant)
- Sexual Concerns (statistically significant)
- Coping skills
Developmental Disabilities

Diagnosis Studied
- Autism Spectrum Disorder

Outcomes Observed [need to see if these are statistically significant]
- Appropriate social interactions
- Number of prompts needed
- Appropriate social behaviors
Adult Mental Health

Diagnoses Studied
- Mild psychological distress
- Substance use disorder
- Schizophrenia

Henry, 2015; Kovacs, 2004; Kovacs, 2006; Nathans-Barel, Feldman, Berger, Modai, & Silver, 2005; Villalta et al., 2009; Wesley, Minatrea, & Watson, 2009).
Adult Mental Health

Outcomes Observed
- Psychological distress
- Anxiety
- Therapeutic alliance
- Social skills
- Nonverbal communication
- Anhedonia
- Psychiatric symptoms
- Functional skills
Adult Neurological Rehabilitation

Diagnosis Studied
- CVA

Outcomes assessed
- Aphasia
- Verbal and nonverbal communication
- Gait