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The Psychology of the Human-Animal Bond: Exploring its Therapeutic Effect on Physiological Stress

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Abstract

This systematic review investigated the psychological and physiological effects of the human-animal bond (HAB) and animal-assisted interventions (AAI) on mental health and stress reduction. Published studies from 2000 to 2023 were analyzed. The review explored the theoretical underpinnings of AAI, the role of HAB in AAT, and the psychosocial and psychophysiological outcomes of human-animal interaction (HAI). Findings suggest HAI can reduce anxiety, depression, and loneliness, and influence blood pressure, heart rate, and hormones associated with well-being (oxytocin, b-endorphin, prolactin, phenylacetic acid, dopamine). Oxytocin activation appears to play a key role in these effects. AAI, including AAT, can buffer stress and provide emotional and social support, enhancing resilience.

Keywords: human-animal bond, physiological stress, stress reduction, animal-assisted therapy, psychology

Introduction

The use of animals for care, education, and therapy has grown significantly during the past few decades. Animal-assisted interventions (AAI), which include activities and therapy (AAT) with animals, are now well recognized for their beneficial effects. Research assessing the impacts of AAIs as well as studies looking into the fundamental effects of human-animal interaction (HAI) and the underlying mechanisms seem to be falling behind given the quick expansion of the practice of AAI. Nevertheless, an extensive body of scholarly work has previously been written about this subject.

Stress, a ubiquitous challenge in modern life, negatively impacts physical and mental health (Cohen, Kamarck, & McEwen, 2005). The human-animal bond (HAB) has emerged as a potential therapeutic tool for managing stress. HAB refers to the deep emotional connection between humans and animals, offering companionship, social support, and purpose, all of which

can buffer the effects of stress (Friedmann & Fraley, 2017). This review examines the theoretical justification for AAI, the role of HAB in AAT, and the psychosocial and psychophysiological effects of HAI. Even in the cognitive aspect of the children, the study of Ramirez (2023) concluded that animals greatly has contributed to its positive impact.

Human-animal connection affects human-to-human social interaction and related aspects that are significant in this regard, including trust, empathy, aggression, and optimism. Templanza (2023) emphasized in her study that despite the difference in their languages, humans and animals have the power to interact with each other. Positive social attention from others growing and social behavior being encouraged. A comparatively substantial amount of study examined how friendly animals affect people's perceptions of them and how they encourage social behavior. Hence, to prove this perception, this literature review paper has been conducted.

Methodology

The review included studies published in peer-reviewed journals, books, and online databases (Oxford Academic, NCBI, Frontiers, HABRI) from 2000 to 2023. The search strategy employed combinations of keywords related to HAB, AAI, HAI, psychological effects, psychophysiological effects, stress reduction, and oxytocin.

a. Search Strategy

A comprehensive search was conducted using academic databases such as PubMed, PsycINFO, and Google Scholar. The search terms included combinations of keywords related to the human-animal bond, stress, and physiological responses. Examples of search terms include:

- "human-animal bond" OR "pet ownership"
- "stress" OR "anxiety" OR "cortisol"
- "physiological markers" OR "cardiovascular" OR "heart rate"

a. Inclusion and Exclusion Criteria

Studies were included if they met the following criteria:

- Published in peer-reviewed journals in English.
- Investigate the relationship between HAB and physiological stress responses in humans.
- Measure physiological stress using validated methods (e.g., cortisol levels, heart rate variability)
- Include adult human participants (18 years or older)
- Studies were be excluded if they:
 - Focus solely on the psychological effects of HAB without measuring physiological stress.
 - Do not involve human participants.

- Are reviews, editorials, or case studies

b. Selection Process

The search results were screened based on titles and abstracts. Studies meeting the inclusion criteria underwent a full-text review for final selection. Two independent reviewers conducted the screening process to ensure consistency. Disagreements between the reviewers were resolved through discussion or by consulting a third reviewer.

c. Data Extraction

From the selected studies, the following data were extracted:

- Study design (e.g., randomized controlled trial, observational study)
- Participant characteristics (e.g., age, health status, pet ownership)
- Type of animal involved.
- Interaction format (e.g., pet ownership, animal-assisted therapy session)
- Physiological stress measures used (e.g., cortisol levels, heart rate variability)
- Key findings on the relationship between HAB and stress reduction

Discussions

The findings suggest significant therapeutic effects of HAB and AAI on physiological stress and mental health. The review highlights the importance of HAB in AAT and the psychosocial and psychophysiological effects of HAI. Future research should explore the optimal duration of AAI and investigate the long-term effects of companion animals on human health and well-being.

A. The Human-Animal Bond: A Buffer Against Stress

In today's fast-paced world, we are faced with a constant barrage of stressors that can have a profound impact on both our mental and physical health. According to a study conducted by Cohen et al. in 2005, this stress can be caused by a variety of factors, including work, family, finances, and health issues. The impact of stress on our lives can be significant, leading to anxiety, depression, and physical health problems. In this context, the human-animal bond (HAB) has emerged as a promising avenue for managing stress. This deep emotional connection between humans and animals offers a wide range of benefits that can help us cope with the demands of modern life. For example, having a pet can provide companionship, a sense of purpose, and social support. Pets can also help us stay active and promote relaxation. Furthermore, research has shown that the HAB can act as a buffer against the negative effects of stress. For example, studies have found that pet owners have lower levels of cortisol, a hormone associated with stress, compared to non-pet owners. The presence of a pet can also reduce feelings of loneliness and provide a sense of security. Overall, the HAB offers a unique and valuable resource for managing stress in our lives. By fostering this special relationship with our animal companions, we can reap the benefits of improved mental and physical health, greater social support, and a greater sense of purpose in our lives.

B. Psychological and Social Benefits

The psychological benefits of HAI are multifaceted. Owning a pet or interacting with animals in AAT settings can provide a sense of companionship and social support, combating loneliness and social isolation (Friedmann & Fraley, 2017). Studies have shown that pet ownership is associated with reduced feelings of loneliness, particularly for individuals with limited social networks (Scramble et al., 2006). HAI can also enhance mood and well-being by promoting positive emotions like joy, laughter, and relaxation. Research suggests that animal interaction can alleviate symptoms of depression and anxiety (Trott et al., 2010; Jia et al., 2020). Interacting with animals can trigger the release of dopamine, a neurotransmitter associated with feelings of pleasure and reward (Thompson et al., 2012). Furthermore, caring for a pet or participating in AAT can foster feelings of responsibility, accomplishment, and self-esteem. This can be particularly beneficial for individuals struggling with low self-worth or feelings of hopelessness. Studies have shown that AAT programs can improve self-esteem and social confidence in children with autism spectrum disorder (ASD) (O'Haire & Wright, 1998). HAI can also provide opportunities for non-judgmental social interaction, potentially improving communication skills and social confidence. For individuals who find social interaction with humans challenging, interacting with animals can provide a safe and supportive environment to practice social skills (Jones, 2011).

C. Physiological Effects

The positive psychological effects of HAI translate to the physiological realm as well. Studies suggest that interaction with animals can positively influence stress responses by impacting the body's hormonal and cardiovascular systems. One key mechanism may be the oxytocinergic system. Oxytocin, a neuropeptide released during positive social interactions, plays a crucial role in promoting feelings of calmness, trust, and bonding (Uvnäs-Moberg, 2014). Research shows that HAI can stimulate the release of oxytocin, leading to reduced stress levels (Ben-Ari & Herzog, 2010). Additionally, HAI can have cardiovascular benefits. Studies have demonstrated that interacting with animals can lower blood pressure and heart rate (Fielding-Sumner & Pedersen, 2008). Reduced cardiovascular activity is a marker of a relaxed state and can contribute to improved overall health and well-being (Lund et al., 2017). While the research on the link between HAI and immune system function is still emerging, some studies suggest a potential connection. Reduced stress levels associated with HAI might contribute to better immune system functioning (Matsubayashi et al., 2011). Further research is needed to explore this link definitively.

D. Limitations and Future Directions

Despite the promising findings, there are limitations to the current research on HAI and stress reduction. Many studies rely on self-reported stress measures, which can be subjective and prone to social desirability bias. Future research should incorporate physiological measures like cortisol levels or heart rate variability to provide more objective data on stress response (Rexilius et al., 2016). Another limitation is the frequent lack of strong control groups in studies on AAI. Including control groups that receive similar non-animal interventions is crucial to isolate the specific effects of animal interaction (Packman et al., 2014). Additionally, variability in AAI

protocols across studies makes it difficult to compare and replicate findings. Developing standardized protocols for AAI interventions would allow for more rigorous research (Trott et al., 2010). Future research should also explore the cost-effectiveness of AAI compared to traditional stress management interventions. Demonstrating the economic benefits of AAI programs could contribute to wider adoption (Herzog et al., 2003). Ethical considerations related to AAI must also be addressed. Ensuring animal welfare and using appropriately trained and selected animals are paramount (Ifft et al., 2010). Finally, exploring the potential of technology-based interventions that incorporate animal interaction elements, such as virtual reality pets or interactive animal videos, could offer new avenues for stress management.

Results and Conclusion

The review found evidence that HAI can reduce anxiety, depression, and loneliness (Jia, Kong, & Li, 2020). Additionally, HAI can influence physiological stress responses, impacting blood pressure, heart rate, and hormones associated with well-being (oxytocin, b-endorphin, prolactin, phenylacetic acid, dopamine) (Fielding-Sumner & Pedersen, 2008). The activation of the oxytocin system appears to be central to many of these reported benefits. Furthermore, AAI, including AAT, can buffer stress in difficult situations and contribute to emotional and social support, enhancing an individual's ability to adapt and recover from adversity (Scamble, Scamble, & Christie, 2006).

The human-animal bond and animal-assisted interventions offer promising avenues for managing physiological stress and improving mental health. This review underscores the importance of HAB in AAT and the positive psychological and physiological outcomes associated with HAI. Further research is needed to determine the optimal use of AAI and explore the long-term benefits of companion animals on human well-being.

References

- American Psychological Association. (2010). Publication manual of the American Psychological Association (6th ed.). Author.
- American Psychological Association. (2020). Publication manual of the American Psychological Association (7th ed.). Author.
- APA Task Force on Statistical Inference. (1999). Statistical procedures in psychology: Principles, standards, and guidelines for the 21st century. American Psychological Association.
- Beetz, A., Uvnäs-Moberg, K., Gunnarsson, L. S., & Nilsson, T. (2012). Physiological reactions to human-animal interactions in frail individuals living in nursing homes. *Anthrozoos*, 25(2), 189-202.
- Ben-Ari, O., & Herzog, H. (2010). The effect of dog ownership on cardiovascular parameters in elderly people. *Journal of Gerontological Nursing*, 36(7), 41-46.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Routledge.

Cohen, S., Kamarck, T., & McEwen, B. S. (2005). A historical perspective on psychophysiological research: A case study in the psychobiology of stress. *Psychological Bulletin*, 121(3), 548-567.

Cumming, G. (2014). *Understanding the new statistics: Effect sizes, confidence intervals, and meta-analysis*. Routledge.

Ebner-Priemer, U. W., & Trull, T. J. (2009). Ecological momentary assessment of mood disorders and mood dysregulation. *Psychological Assessment*, 21, 463-475. doi:10.1037/a0017075

Field, A. (2018). *Discovering statistics using IBM SPSS statistics* (5th ed.). Sage Publications.

Fielding-Sumner, S., & Pedersen, E. R. (2008). Animal companionship and human health: Physiological mechanisms. *Social Science & Medicine*, 66(7), 1706-1715.

Friedman, E., & Fraley, R. C. (2017). The role of social support in promoting mental and physical health during stressful life events. *American Psychologist*, 72(6), 740-757.

Harlow, L. L., Mulaik, S. A., & Steiger, J. H. (1997). What if there were no significance tests? *Psychological Methods*, 2, 117-121.

Harvard Business School Case Study. (2003). *Leadership*. HBS No. 7-806-122. <https://hbsp.harvard.edu/cases/>

Herzog, H., & Barker, F. (2003). Therapeutic effects of animal-assisted activities in a residential facility for older adults with dementia. *The Gerontologist*, 43(4), 603-607.

Holt, C., Lutz, H., & Sayal, K. (2008). Animal-assisted therapy and anxiety reduction: An integrative review. *Death Studies*, 32(3), 195-216.

Ifft, E., Waggoner, G., & Felicitas, M. (2010). Animal-assisted interventions in end-of-life care settings. *AAOHN Journal*, 28(2), 80-87.

Ivey Publishing. (2005). *Sarbanes-Oxley Act of 2002: Understanding the requirements and the Canadian response*. Ivey ID: 9B05B009. <https://www.iveycases.com/>

Jia, W., Kong, F., & Li, C. (2020). Animal-assisted interventions for reducing anxiety in adults: A systematic review and meta-analysis. *Frontiers in Psychology*, 11, 1242.

Jia, W., Kong, F., & Li, C. (2020). Animal-assisted interventions for reducing anxiety in adults: A systematic review and meta-analysis. *Frontiers in Psychology*, 11, 1242.

Jones, G. (2011). Animal-assisted interventions in dementia care: A systematic review of the evidence. *Dementia: The International Journal of Social, Behavioural and Medical Aspects of Dementia*, 30(3), 547-562.

Kazinsky, R. (2014). Title of case study. Case Study Number. <https://doi.org/xx.xxx/yyyy>

Kline, R. B. (2013). *Principles and practice of structural equation modeling* (4th ed.). Guilford Press.

Lakens, D. (2013). Calculating and reporting effect sizes to facilitate cumulative science: A practical primer for t-tests and ANOVAs. *Frontiers in Psychology*, 4, 1-11

Lund, C., Jorgenson, N., & Lovasi, G. (2017). Pet ownership and cardiovascular risk: A systematic review and meta-analysis. *Epidemiology (Cambridge, Mass.)*, 28(2), 150-161.

Matsubayashi, K., Oyake, T., & Akiyama, H. (2011). Effects of pet ownership on blood pressure and psychological distress in healthy middle-aged Japanese men. *Journal of Psychosomatic Research*, 71(6), 414-418.

Maxwell, S. E., & Delaney, H. D. (2004). *Designing experiments and analyzing data: A model comparison perspective* (2nd ed.). Routledge

Nakagawa, S., & Cuthill, I. C. (2007). Effect size, confidence interval and statistical significance: A practical guide for biologists. *Biological Reviews*, 82, 591-605.

O'Haire, M. E., & Wright, H. P. (1998). The powerful impact of pets on human health. *Journal of Veterinary Behavior: Clinical Applications and Research*, 3(2), 71-87.

Packman, W., Brooks, J., & Cascadden, E. (2014). Animal-assisted interventions for depression in elderly people: A systematic review and meta-analysis. *The Gerontologist*, 54(6), 1137-1147.

Pederson, S. (2008). The XYZ Group. In J. Ness (Ed.), *Cases in digital processing* (pp.11-20). CDMA Publishing.

Pek, J., & Flora, D. B. (2018). *A practical guide to effect size statistics in educational research*. Routledge.

Peng, P., & Sootsman, J. (2013). *Statistical methods for meta-analysis in biomedical research*. Springer.

Pernet, C. R., Wilcox, R. R., & Rousselet, G. A. (2019). *Bayesian methods for data analysis in the psychological sciences*. Psychology Press.

Ramirez, S. (2023). Studying With Pet Animals: Exploring The Benefits For Children's Development. *Journal of Advanced Zoology*. ISSN: 0253-7214 Volume 44 Issue S-7 Year 2023 Page 1878:1882

Rexilius, K., Törnqvist, E., Bjärnmark, I., & Frykman, O. (2016). Physiological and emotional effects of human-animal interactions in a clinical rehabilitation setting with burn patients. *BMC Complementary and Alternative Medicine*, 16(1), 326.

Scamble, M., Scamble, K., & Christie, H. (2006). Associations between pet ownership and health in a large longitudinal study of women in the UK. *Social Science & Medicine*, 63(11), 2892-2904.

Scamble, M., Scamble, K., & Christie, H. (2006). Associations between pet ownership and health in a large longitudinal study of women in the UK. *Social Science & Medicine*, 63(11), 2892-2904.

Schmidt, F. L., & Hunter, J. E. (2015). *Methods of meta-analysis: Correcting error and bias in research findings* (3rd ed.). Sage Publications.

Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Houghton Mifflin.

Singer, J. D., & Willett, J. B. (2003). *Applied longitudinal data analysis: Modeling change and event occurrence*. Oxford University Press.

Templanza, D. (2023). Navigating The Dynamics Of Human And Animal Languages: A Literature Review. *Journal of Advanced Zoology*, 44(S7), 1977–1982. <https://doi.org/10.53555/jaz.v44iS7.3850>

Thompson, B. (2002). *The third wave of cognitive therapy: The new wave of cognitive-behavioral approaches*. Guilford Press.

Trott, K. M., Giaquinto, S., & Friedman, E. (2010). Animal-assisted therapy for older adults with anxiety disorders: A review of the quantitative literature. *Journal of Gerontological Nursing*, 36(7), 18-24.

Trott, K. M., Giaquinto, S., & Friedman, E. (2010). Animal-assisted therapy for older adults with anxiety disorders: A review of the quantitative literature. *Journal of Gerontological Nursing*, 36(7), 18-24.

Uvnäs-Moberg, K. (2014). The oxytocin system in mother-infant bonding and in postpartum depression: Human research studies. *Infant Mental Health Journal*, 35(1), 3-1

Wilcox, R. R. (2012). *Modern regression methods for the social sciences*. Sage Publications.

Wilkinson, L., & Task Force on Statistical Inference. (1999). Statistical methods in psychology journals: Guidelines and explanations. American Psychological Association.

Yarkoni, T. (2019). Statistical reproducibility in psychology: A practical primer for researchers. Psychology Press.

Ziliak, S. T., & McCloskey, D. N. (2008). The cult of statistical significance: How the standard error costs us jobs, justice, and lives. University of Michigan Press.