A PHYSIOLOGICAL BASIS FOR

ANIMAL-FACILITATED PSYCHOTHERAPY

DECLARATION

I, Johannes Stefanus Joubert Odendaal, declare that the thesis submitted for the degree Philosophiae Doctor in the Department of Physiology, Faculty of Veterinary Science, University of Pretoria, 6 April 1999 is not previously submitted for any other title.

Johannes Stefanus Joubert Odendaal

Submitted in partial fulfilment for the requirements for the degree Philosophiae Doctor in the Department of Physiology, Faculty of Veterinary Science, University of Pretoria

6 April 1999
DECLARATION

I herewith declare that the thesis submitted for the degree Philosophiae Doctor at the University of Pretoria has not previously been submitted for a degree at another University and that it is my own work.

J S J Odendaal
"There is no such thing as an immaculate perception; we are inevitably part of the world we are trying to measure. And everywhere we look, we come face-to-face with randomness. We build our orders, but only at expense of creating randomness elsewhere. Complexity - this delicate tension between order and surprise - is a very fragile thing. Whether something appears simple, complex, or random depends on the observer as well as on the observed" - George Johnson.


To Hanna, again
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ABSTRACT

Since Boris Levinson published his pioneering studies on animal-facilitated psychotherapy in the sixties, human health professions had limited interest in this field. A particular problem in animal-facilitated psychotherapy is a lack of a theoretical foundation, which can provide a rationale for such therapy. The aims of this study were two-fold: firstly, to integrate existing theories on positive human-human and human-animal interaction; and secondly, to find common physiological support for such a theoretical foundation.

By using an elective approach, positive interaction (attention needs) was valued in 16 personality theories as an integral part of the psychological, emotional, social and cultural needs of all individuals. Attention was indicated as a basic need and that many of the therapeutic advantages claimed from human-animal interaction, are actually based on such a need. It was further indicated that positive interaction between man and animal is reciprocal and this mutual effect can contribute to the success of the therapy. The term used to describe this basic need of positive interaction is *attentionis egens*. A Latin term was chosen to avoid confusion with therm attention-seeking behaviour, which is often associated with negative or problem behaviour.

A physiological framework was used to support the theoretical foundation. This was based on known studies related to human-human and animal-animal affiliation, providing measurable parameters for positive human-animal interaction. The method was to take baseline values before and measurements after positive interaction with a dog. Parameters were an anxiety questionnaire, blood pressure, phenylethylamine, norepinephrine, dopamine, endorphins, oxytocin, prolactin and cortisol. The indication to collect blood for chemical analyses was a decrease in blood pressure over a maximum period of 30 minutes of positive interaction. Participants were divided into two groups: the experimental group interacted with their own dogs and the control group with unfamiliar dogs. The effect of interacting with dogs was also compared to the effect of quiet book-reading with the same participants.
The results supported the mutual physiological effect in human and dogs as well as the theoretical foundation for animal-facilitated psychotherapy. Such phycological parameters paved the way for an encompassing theory on positive interaction behaviour and thus provided a rationale for animals in therapy, particularly where basic attention needs are to be fulfilled. The attentionis egens theory proved to be rather accommodating than opposing other positive interaction theories.

The main results were:

- a significant decrease in blood pressure (5-24 minutes) is a valid indicator of biochemical changes associated with positive interaction;

- the experimental group (ie people with their own dogs), had significant higher plasma levels of oxytocin and prolactin, indicating a long term bond;

- both species had significant changes of β-phenylethylamine, β-endorphin, dopamine, oxytocin and prolactin, indicating that the physiological response during positive human-dog interaction is reciprocal;

- there were similarities between an anxiety state questionnaire (feeling) and normal mean arterial blood pressure of humans, ie no significant anxiety was present;

- positive interaction with dogs can equal, and in some instances improve on the effect of an quiet, calm intervention such as book-reading;

- a neurochemical profile for positive human-dog interaction should include at least β-phenylethylamine, dopamine and oxytocin; and

- norepinephrine decreased, probably as a reaction to the intravenous blood collection and cortisol decreased significantly in humans and the control dog group. Dogs with their owners, were more excited about the new experience.
With regard to the application of this knowledge, animals in therapy could be described in a similar format used for medicinal therapies. It is further recommended that:

- animal-facilitated psychotherapy should become a commonly accepted approach in psychiatry and become part of the formal curricula for psychiatrists;

- that animal therapy programmes should be structured in a multidisciplinary way, always including veterinarians who should be responsible for the animals’ welfare; and

- that programmes should be carefully planned, as for any other therapeutic regimen, using a suitable physiological rationale for clinical psychotherapy.

**Keywords:** positive human-dog interaction, physiological parameters, animal-facilitated psychotherapy, pets as prescription, human-human interaction theories, animal-animal interaction theories, human-animal interaction theories, therapeutic rationale, *attentionis egens*, psychiatric training.
'N FISIOLOGIESE BASIS VIR DIER-FASILITERENDE PSIGOTERAPIE

Johannes Stefanus Joubert Odendaal

Voorgelê vir die gedeeltelike vervulling van die vereistes vir die graad Philosophiae Doctor in die Departement Fisiologie, Fakulteit Veeartsenykunde, Universiteit van Pretoria

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OPSOMMING

Sedert Boris Levinson sy pionierstudie in die veld van dier-fasiliterende psigoterapie in die sestigs gepubliseer het, het die menslike gesondheidsprofes- sies beperkte belangstelling daarin getoon. ’n Spesifieke probleem in dier- fasiliterende psigoterapie is die afwesigheid van teoretiese beginsels wat ’n rationale vir so ’n teorie kan voorsien. Die doelwitte van hierdie studie was dus tweevolgig: eerstens, om bestaande teorie oor mens-tot-mens en mens-tot-dier te integreer en tweedens, om ’n gemeenskaplike fislogiese ondersteuning vir sulke teoretiese beginsels te bepaal.

Deur gebruik te maak van ’n elektiewe benadering, is positiewe interaksie (aandagsoekende behoeftes) in 16 personologie teorieë geëvalueer as ’n integrale deel van die psigologiese, emotionele, sosiale en kulturele behoeftes van alle individue. Aandag was aangedui as ’n basiese behoefte en dat baie van die terapeutiese voordele waarop aanspraak gemaak word in mens-dier-interaksies, in werkelikheid gebaseer is op so ’n behoefte. Verder is aange- toon dat positiewe interaksie tussen mens en dier wederkerig is en hierdie onderlinge effek kan bydra tot die sukses van sulke tarapieë. Die term wat gebruik is om hierdie basiese behoefte aan aandag te beskryf is *attentionis egens*. Latynse terminologie is verkies om verwarring te voorkom met die term aandagsoekende gedrag, wat dikwels geassosieer word met negatiewe- of probleemgedrag.

’n Fisologiese raamwerk is gebruik om die teoretiese beginsels te onder- steun. Dit was gebaseer op bekende studies wat verband hou met mens- mens en dier-dier affiliasie, ten einde meetbare parameters daar te stel vir positiewe mens-dier-interaksie. Die metode was om basislyn-waardes te bepaal en weer na positiewe interaksie met ’n hond. Die parameters was ’n angs-skaal, bloeddruk, fenieletielamien, norepinefrien, dopamien, endor- fiene, oksitosien, proklaktien en kortisol. ’n Aanduiding wanneer om bloed- monsters te versamel vir chemiese analises, was ’n verlaging in bloeddruk oor ’n periode van maksimum 30 minute van positiewe interaksie. Deelne- mers was verdeel in twee groepe, die eksperimentele groep wat met honde geïnterreageer het en ’n kontrole groep wat met onbekende honde geïnterre- reageer het. Die effek van die hond-interaksies was ook vergelyk met die effek van stil boekles deur dieselfde deelnemers.
Die resultate het die onderlinge fysiologiese effek in mense en honde ondersteun, sowel as die teoretiese beginsels vir dier-gefasiliteerde psigoterapie. Sulke fysiologiese parameters het die weg gebaan vir 'n insluitende teorie oor positiewe interaksie gedrag, veral waar basiese aandagbehoeftes vervul moet word. Die *attentionis agens*-teorie blyk eerder inklusief, as opponerend teenoor ander positiewe interaksie teorieë te wees.

Die belangrikste resultate was:

- 'n beteekenisvolle vermindering in bloeddruk (5-24 minute) is 'n geldige indikator van biochemiese verandering wat geassosieer is met positiewe interaksie;

- die eksperimentele groep (di met eie honde), het beteekenisvolle hoër plasmavlakke van oksitosien en prolaktien getoon, wat op 'n langtermyn binding dui;

- beide spesies het beteekenisvolle verskille van β-fenieletielamien, β-endorfiën, dopamien, oksitosien en prolaktien getoon, wat daarop dui dat die fysiologiese reaksie gedurende positiewe mens-hond-interaksie wederkerig van aard is;

- daar was ooreenkomste tussen 'n angs-status vraëlys (gevoel) en normale gemiddelde arteriële bloeddruk van mense, di geen beteekenisvolle angs was teenwoordig nie;

- positiewe interaksie met honde kan dieselfde, en in sommige gevalle 'n beter effek hê as 'n stil, kalm intervensiie soos boeklees;

- 'n neurochemiese profiel vir positiewe mens-hond-interaksie behoort ten minste β-fenieletielamien, dopamien en oksitosien in te sluit; en

- norepinefrien het gedaal, waarskynlik as reaksie op die intraveneuse bloeddruk, en kortisol het beteekenisvol in mense en die kontrole hondegroep gedaal. Honde wat by hul eienaars was, was meer opgewonde oor die nuwe ervaring.
Ten opsighte van die toepassing van hierdie kennis, kan diere vir terapie beskryf word in 'n soortgelyke formaat as vir medisinale behandeling. Dit word verder aanbeveel dat:

- dier-fasiliterende psigoterapie algemeen aanvaar word as 'n benadering vir psigoterapie en dat dit deel word van die formele kurrikula van psigiaters;

- dat diere in terapieprogramme gestructueer word op 'n multidissiplinêre basis wat as 'n reël veeartse sal insluit om na die welsyn van die diere om te sien; en

- dat programme met oorleg beplan word op dieselfde wyse as vir enige ander terapeutiese benadering, terwyl 'n gesikte fisiologiese rationale vir kliniese psigoterapie gebruik word.

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