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The effect of the presence and familiarity of a dog on people's performance of a stressful task

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The Effect of the Presence and Familiarity of a Dog on People's Performance of a Stressful Task

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Background

- Dogs can benefit people physically, socially, and mentally
- Owning a pet is associated with increased survival after a heart attack (Friedmann, Katcher, Lynch & Thomas, 1980)
- Allen et al. (1991, 2002) showed dogs reduce people's stress (heart rate and blood pressure) more than friends or spouses
- Barker et al. (2010) found familiar dogs tended to reduce people's stress reactivity more than unfamiliar dogs, but this was not a significant effect
- Stress-buffering hypothesis - dogs act as social support for people to buffer against stress' negative physiological consequences (Cohen & Pressman, 2004)

Current study

Contribution - replicate & extend Barker et al.'s (2010) study
Application - help design effective dog therapy programs
Question - Does the familiarity of a dog affect a person's stress and performance on a stressful task?

Hypotheses

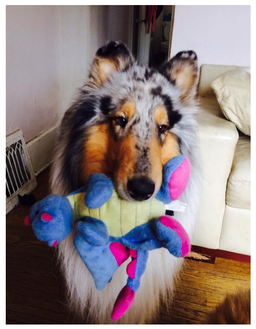
1. The presence of a familiar dog during a stressful task will reduce people's stress (heart rate reactivity) more than an unfamiliar dog or no dog
2. A familiar dog will improve a person's task performance (math score & task speed) more than an unfamiliar dog or no dog

Methods

Participants
12 dog-owning students
12 familiar dogs - participants' pets
2 unfamiliar dogs - Cash (rough collie) & Lucy (black lab)

Variables
Independent variables
- Familiarity of the dog (unfamiliar dog, familiar dog, or no dog) present while a person did a stressful task
- Identity of the unfamiliar dog (Cash or Lucy)

Dependent variables
- Stress measure - heart rate reactivity (highest heart rate during stressor minus lowest heart rate during a testing session) measured with a Fitbit wristband
- Task performance - score on math task & task speed (# of subtractions completed)



Procedure

- Cover story - study examines different dog breed owners' attitudes and aptitudes
- Filled in questionnaires - dog ownership, Pet Attitude Scale, State Trait Anxiety Inventory, exam stress, music preferences, and animal rights questionnaire
- Participants performed a word recall and stressful task (mental subtraction) with no dog, a familiar dog (their pet), or an unfamiliar dog present
- *Stressful task* - serial mental subtraction aloud; e.g., start at 543 and subtract by 17's
- To increase stress more - had kitchen timer on table and told performance would be compared to peers
- During the mental arithmetic, a Fitbit wristband monitored the person's heart rate
- Measured stress as heart rate reactivity
- Measured task performance as score on the math task and the number of subtractions completed
- *Within-subjects design* - tested participants 3x, one week apart to repeat the stress task in a different dog familiarity condition
- Random assignment of participants to unfamiliar dog identity
- Completed conditions in counterbalanced order

Results

- The familiar dog condition had the lowest heart rate reactivity, although this was not significantly different from the other conditions

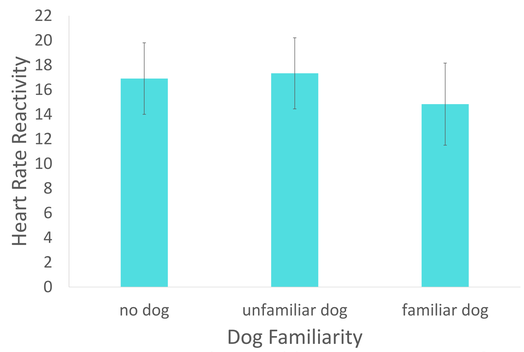


Figure 1. Mean (±S.E.M.) heart rate reactivity for conditions no dog, unfamiliar dog, and familiar dog (n = 12/condition).

- There were no significant differences between conditions for number of subtractions

- The familiar dog condition had a higher math score than the other conditions, although this was not a significant effect

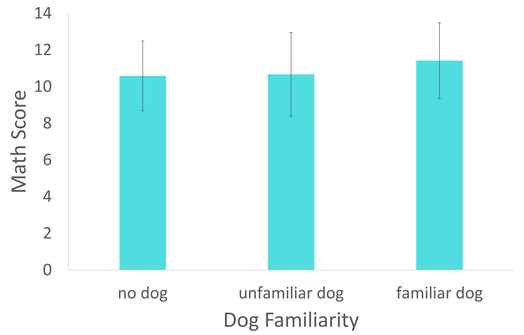


Figure 2. Mean (±S.E.M.) math scores for conditions no dog, unfamiliar dog, and familiar dog (n = 12/condition).

Discussion

Hypothesis 1 is partially supported
-by the trend where people are less stressed when a familiar dog is present
- Agrees with Barker et al.'s (2010) findings
- Adds support to the stress-buffering hypothesis
- Dog therapy design applications - potentially more effective stress reduction if programs have the same dog rather than different dogs visit each time

Hypothesis 2 is partially supported
-When a familiar dog is present, people get higher math scores
- Agrees with Allen et al. (1991, 2002)
- Potentially applies to high test anxiety students - write exam with accommodation & let their dog be present to boost task performance

-Participants do not complete the task faster when a familiar dog is present
- Does not support hypothesis 2
- Maybe dog acts as a distraction

Future Research

A. Use exam stress as a natural stressor and independent variable to see how dog familiarity influenced students' natural stress
-test students before, during, and after exams
B. Examine whether dogs with certain features, e.g. size, breed, colour, sex, reduce people's stress more effectively

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For further information: Please contact Dr. Bill Roberts (roberts@uwo.ca) at the University of Western Ontario. See also the Roberts Animal Cognition lab website: https://sites.google.com/site/robertsanimalcognition/home

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