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Dog Days of Final Exams: Using Canine-Assisted Therapy to Reduce Stress and Improve Mood Among Community College Students

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Cover Page Footnote

Psi Beta Research Project

Research in progress for Psi Beta Mentored Research Group

Faculty Mentors: Jennifer L. O'Loughlin-Brooks and Joshua Arduengo

The following paper represents research conducted by members of the Collin College chapter of Psi Beta National Honor Society. Psi Beta is the national psychology honor society for two-year colleges whose mission is "promotion and recognition of excellence in scholarship, leadership, research, and community service." Psi Beta advisors at Collin College teach the methodological essentials of behavioral science to interested Psi Beta members and then mentor them through a multiple-step research process. Specifically, students either work independently or in groups and generate original research questions based on their interests. Students conduct extensive literature reviews to allow for the formulation of research hypotheses. Where applicable, students create research instruments, collect data, analyze results, and discuss findings through APA paper and poster presentations.

Stephanie Quintana, Tanvi Aditya, and Michelle Borckardt investigated the benefits of animal-assisted therapy (AAT) on a community college campus during a week of final exams. 530 participants volunteered to be assessed through a self-report survey before and after interactions with therapy dogs and their handlers. Results indicated that immediately following the dog therapy sessions, a significant number of participants reported improvement of mood and decrease in stress levels. Students also rated the AAT experience as beneficial, with data further suggesting a positive relationship between the amount of time spent interacting with therapy dogs and increased benefits ratings.

Dog Days of Final Exams: Using Canine-Assisted Therapy to Reduce Stress and

Improve Mood Among Community College Students

Stephanie Quintana, Tanvi Aditya, and Michelle Borckardt

Introduction

Students undergo a plethora of different cognitive, social, and environmental

changes upon entering college. Therefore, it is not surprising that a number of students

in higher education report both loneliness and high levels of stress (Peate, 2017). For

community college students, stress might even be exacerbated by heavy commitments

to off-campus work, family obligations, and regular coursework. High levels of stress

may contribute to a number of problems. For example, students may develop

maladaptive behaviors in response to stress such as "avoidance, unassertiveness, self-

destructive actions (including substance abuse and addiction), and social deficits"

(Stewart, Dispenza, Parker, Chang, & Cunnien, 2014, p. 333).

Today, college students are reporting record levels of mental health concerns. A

quarter of a century ago, nearly 70% of freshmen ranked themselves among the top

mentally stable people in their class; today only 52% rate themselves that highly

(Carbone, 2011). The annual national survey by the American College Health

Association states one in six college students has been diagnosed with or treated for

anxiety within the last 12 months (Hoffman, 2015). Potential reasons for this increase

vary extensively. In 2015, an article published in *The New York Times* discussed

possible causes including increased academic pressure at earlier ages, overprotective parents, and continuous compulsive engagement students have with social media.

There has been an increase in the number of college students actively seeking professional counseling. Unfortunately, college counseling clinics have limited staff to meet the growing demands (Hoffman, 2015). Therefore, institutions of higher learning are exploring alternative options to afford immediate tension reduction and introduce alternative strategies for college students dealing with stress. One creative solution to reduce stress in students is the implementation of animal-assisted therapy on college campuses. Animal-assisted therapy (AAT) is the use of certified therapy animals as a part of a therapeutic plan (Binfet, 2017). AAT has recently become popular across a variety of multidisciplinary settings, including institutions of higher education. Colleges around the country are beginning to offer animal-assisted therapy in an effort to provide students with stress relief opportunities, primarily through interactions with therapy dogs (Binfet, 2017; Hoffman, 2015; Reynolds & Rabschutz, 2011; Stewart, et al., 2014).

Literature Review

Beetz, Uvnäs-Moberg, Julius, & Kotrschal (2012) conducted an in-depth analysis of 69 original studies on human-animal interaction and identified a multitude of benefits associated with animal-assisted therapy, including improvements in social attention, behavior, interpersonal interaction, and mood; reduction of stress-related parameters such as cortisol, heart rate, and blood pressure; reduction of self-reported fear and anxiety; improvement of mental and physical health; and improvement of immune

system functioning. Of the AAT possibilities, canine therapy has been utilized and studied most with substantial physiological and psychological benefits reported across differing populations (Beetz et al., 2012).

In 1988, a study involving undergraduates observed participants as they verbally, physically, or visually interacted with dogs. Blood pressure and heart rates were assessed. Results indicated that blood pressure was highest while talking to the experimenter and lowest while stroking the dog (Vormbrock & Grossberg, 1988).

Following this study, most recently Cole, Gawlinski, Steers, & Kotlerman (2005) demonstrated that 12-minute visits with therapy dogs improved heart and lung function, reduced blood pressure, diminished harmful hormones and decreased anxiety in heart patients. Stroking one's own dog for just three minutes led to decreased heart rates 55 minutes later in dog owners, while no such response was observed in a control group not petting a dog (Handlin et al., 2011).

In 2004, a study with undergraduate students investigated the effects of dog therapy on the immune system. Charnetski, Riggers, & Brennan (2004), reported a "significant increase in salivary immunoglobulin A (IgA), an indicator of good immune system functioning, in college students after stroking a live dog in comparison to stroking a stuffed dog or quietly sitting for 18 minutes" (Charnetski et. al, 2004, p.1087). An additional study found that college students who held an unfamiliar dog or cat experienced a significant decrease in diastolic blood pressure immediately after holding the animal (Somerville, Kruglikova, Robertson, Hanson, & MacLin, 2008).

Grajfoner, Harte, Potter, and McGuian (2017) reported that dog therapy sessions on college campuses could improve student reported well-being, anxiety, and mood. The researchers assigned 132 university students to either an experimental condition—a 20-minute interaction with a therapy dog and a handler—or one of two control conditions—a 20-minute interaction with a therapy dog or a 20-minute interaction with a handler only. Each student completed the Warwick–Edinburgh Mental Well-Being Scale (WEMBS), the State Trait Anxiety Scale (STAI), and the UWIST Mood Adjective Checklist (UMACL) before and after intervention. Analyses of results revealed a significant decrease in anxiety and an increase in mood and well-being in conditions where a dog was present (Grajifoner et al., 2017).

Binfet (2017) examined the effects of group-administered canine therapy intervention on university students' perceptions of stress, homesickness, and affinity to campus. A total of 163 students filled out a pre-test questionnaire comprised of the 10-item Perceived Stress Scale, 33-item Homesickness Questionnaire, and a 14-item Sense of Belonging in School Scale. Students were randomly assigned to either a treatment condition involving a 20-minute exposure to a canine therapy dog or a control condition involving 20 minutes of individual study. Participants in the treatment group showed significant decreases from pre-test to post-test scores in perceived stress, homesickness, and significant improvements in sense of school belonging. These findings suggest that the use of canine intervention could temporarily help reduce students' feelings of stress and homesickness, as well as increase the extent to which

they feel connected to their school community, which could help contribute to optimal learning and mental well-being (Binfet, 2017).

In college settings, final exams are widely recognized as a major stressor for students. Research shows that excessive stress can impair memory and lead to sleep deprivation and depression (Chapell et al., 2005; Somerville, et al., 2008; Trammell, 2017; Vormbrock & Grossberg, 1988). Chapell et al. (2005) noted that exam-related stress contributes to negative academic outcomes for students; specifically, higher exam stress has been associated with poorer academic performance. In a study measuring perceived exam stress and salivary cortisol in a small sample of students before and after a final exam, students with higher perceived stress and higher cortisol levels before the exam had significantly poorer exam performance (Ng, Koh, & Chia, 2003).

In 2016, Barker, Barker, McCain, & Schubert investigated the effect of visiting therapy dogs on college-student perceived stress the week prior to final exams. Subjective measures of stress were reported by students using a 10-item Perceived Stress Scale (PSS), which utilized a 5-point Likert scale to rank self-perceptions of one's life over the past month and a single-item Stress Visual Analog Scale (SVAS) to assess immediate perceived stress. Students completed the PSS and SVAS before being randomly assigned to either the canine intervention or attention-control condition, with both being 15 minutes in length before and after. Statistical findings suggested that students who received canine therapy had a significant reduction in self-perceived stress. The authors concluded that utilizing this low-cost outreach intervention could be

valuable for college campus communities because of easy accessibility to students and limited need for professional resources (Barker et al., 2016).

Preliminary studies by Trammell (2017) suggest that academic performance might also be positively affected by canine therapy. Trammell (2017) investigated whether or not college student interaction with therapy dogs prior to exams would reduce stress and improve final exam scores when interacting with dogs 3 to 6 days before final exams. A total of 127 college students completed a pre-interaction survey (two weeks before final exams) and a post-exam survey. Students who interacted with therapy dogs reported a significantly larger decrease in perceived stress from pre-interaction to post-exam survey and scored an average of 5.5 points higher on their final exams than those who did not. The study put forward that college student interaction with therapy dogs prior to taking a final exam appeared to reduce stress and positively impact academic performance (Trammell, 2017).

As previous research suggests, AAT may be a helpful resource to use on college campuses to reduce perceived stress and divert attention from academic stressors. A survey of first-year college students at West Chester University revealed that 96% of the respondents were interested in the idea of AAT being made available on campus (Daltry & Mehr, 2015). In 2011, the University of Connecticut made therapy dogs available for student-animal interaction during the week of final exams; the program was affordable and well-received among students, faculty, and staff (Reynolds & Rabschutz, 2011). In 2014, Stewart et al. found that providing AAT within a group counseling setting led to

decreased levels of self-reported anxiety and loneliness both pre- and post-interaction with the therapy dogs.

Indications are that dog therapy sessions on college campuses can improve well-being, anxiety, mood, and academic performance. The current study took place at a North Texas community college campus and sought to add to the empirical literature on the effectiveness of canine AAT events with college populations. This study investigated whether canine therapy would affect students' perceived stress and mood during the week of final exams. Additionally, the study sought to determine if the amount of time spent with the dogs would play a role in reported outcomes.

Method

Trained therapy dogs and their handlers were invited to participate in a "Dog Days of Finals" event held on a North Texas community college campus during the first two days of final exam week. Students volunteered to participate in the study and were asked to complete a pre-survey asking demographic information and measuring current levels of stress and mood before canine interaction. Students were then invited to interact with the canines in the form of stroking and playing with them while their handlers were present. After brief interactions with the therapy dogs, students were asked to complete a post-survey to measure self-reported interaction time with the dogs and any perceived change in their levels of stress and mood.

Participants

There were 525 college students who voluntarily participated in the study, of

which 386 were full-time students, 123 were part-time students, and 16 marked "other" on the survey. All of the students who interacted with the dogs agreed to participate in the study. The intervention was conducted in a high-traffic area of the college atrium, so participants were recruited on a volunteer basis. Canine therapy was available for students on two separate days of the week of final exams (Monday and Tuesday) for a four-hour time slot each day. There were no selection criteria, incentives, or compensation for participants. Most of the subjects were female (63.61%) and the majority age was 30 (90.28%). The data showed that most respondents were employed (68.95%) and owned some type of pet (70.28%). Additionally, the bulk of respondents were single (88.19%) with no children (90.10%).

Procedure

All canines involved in the study were certified therapy dogs and their handlers were on site with them. Survey respondents signed liability waivers and informed consent forms before participating in the study. Upon completing these documents, students received a copy of the survey packet, which included three sections: demographics, pre-AAT questions, and post-AAT questions. The latter two sections both included the same sets of simple questions related to the student's mood, stress, knowledge of AAT, and fear of dogs. These questions are included in Appendix A for reference.

The third section (post-AAT questions) asked how many minutes the student spent with the dogs and how beneficial they felt the experience was. Students received the entire packet (including all three sections) at the same time and in correct order to

ensure that the pre- and post-AAT responses for each participant remained together. This allowed the research team to calculate the change in mood, stress, AAT knowledge, and fear levels per respondent.

Results

Results showed a positive correlation between the amount of time students reported spending with the therapy dogs and overall beneficial ratings from the subjects ($r(523) = .311$, $p < 0.01$). Greater amounts of time spent with the dogs correlated with higher ratings of the experience as beneficial. The amount of time spent with the dogs positively correlated with change in stress ($r(523) = 0.25$, $p < 0.01$) as well as with change in mood ($r(523) = 0.213$, $p < 0.01$). The more time students spent with the therapy dogs, the greater their improvement in stress and mood levels.

The change of stress (SFS) was positively correlated to the increased rating of the experience as beneficial ($r(523) = 0.205$, $p < 0.01$), which means that students reporting greater improvements in stress levels tended to report their experience as being more beneficial than students reporting smaller improvements in stress. Results also showed the change in mood (MFS) was positively correlated to the increased rating of the experience as beneficial ($r(523) = 0.256$, $p < 0.01$). Students reporting greater improvements in mood tended to report their experience as being more beneficial than students reporting smaller improvements in mood. See Appendix B for a full list of the correlation coefficients.

Since much of the current literature focuses on the effects of dogs on pet owners, this research team chose to explore whether differences would be found in the effects of AAT between pet owners and non-pet owners. Data analysis revealed that students who did not own a pet tended to experience a significantly greater change in fear (decreased fear levels) than those who did own a pet. This calculation was statistically significant (t(147.1)=2.26, p=0.03). However, no significant differences were found in change of mood or stress levels between those who owned pets and those who did not.

Paired samples t-tests were conducted in order to compare average pre- and post-survey responses for four measures: change in mood (MFS), change of stress (SFS), animal-assisted therapy knowledge (AAK), and fear of animals. Results indicated significant differences in average scores for Pre-MFS (M = 1.62, SD = 2.43) and Post-MFS (M = 3.59, SD = 1.67); t(524) = -20.501, p < .001, Pre-SFS (M = -.62, SD = 3.02), and Post-SFS (M = 1.77, SD = 2.50); t(524) = -17.19, p < .001, Pre-AAK (M = .23, SD = 2.65), and Post-AAK (M = 1.80, SD = 2.19); t(524) = -1.56, p < .001, Pre-Fear (M= 3.30, SD = 2.55), and Post-Fear (M = 3.71, SD = 2.25); t(524) = -.40, p < .001. Higher response averages on the post-test of each rating scale indicate that mood improved, perceived stress levels were reduced, student knowledge of AAT improved significantly, and fear of animals was reduced after having been with the dogs.

Discussion

The purpose of this study was to explore how the use of AAT during final exam week relates to changes in the mood and stress levels in college students. This study

sought to determine if students would experience decreased stress and improved mood levels after interacting with the therapy dogs and rate the AAT experience as beneficial. The results above support these benefits and further suggest that there may be a direct relationship between the amount of time students spend with therapy dogs and the benefits experienced. These results agree with previously conducted studies, supporting the idea that human-animal interaction improves mental well-being among college students, even if the animal does not belong to the student.

It is important to note that although correlations found were significant, they may not represent very strong correlations, possibly due to the high number of participants. This large sample size could have influenced the significance of the correlations calculated, which affects the meaningfulness between each measured variable. Regardless, the results of this study provide empirical data on the beneficial relationship of AAT in decreasing stress levels among college students during the week of final exams. Overall, improvements in stress levels may greatly increase students' quality of life and their ability to continue through school and be successful in their academic careers.

Limitations

While this study had promising results, a few limitations require mentioning. First, there could be some confounds. Student stress levels decreased and mood improved, but in addition to interaction with therapeutic dogs, it is possible that these results were generated by the welcoming environment, the encouragement of chatting with the dog

handlers, or even the opportunity to take a break from studying and taking exams,

regardless of the type of break. Additionally, there is the question of self-selection.

Students volunteered to participate because they wanted to interact with dogs, which

means that they could have initially assumed that interacting with therapy dogs would

be beneficial. Therefore, it is difficult to know how AAT would be perceived in a sample

where participants were not self-selecting. For future studies, it may be beneficial to

have a control group in which students take a break by themselves, doing what they

normally might do during a break, but not interacting with the dogs or handlers.

Another limitation of the research was the phrasing of the "time spent" measure.

The question read: "How many minutes do you think you spent with the animal?" We did

not record the actual time. Unfortunately, a student's perception of the time spent with

the animal may not be accurate because time passes quickly when interacting with

animals. In future research, a more objective time measure should be established, even

if it is students recording their time in and out on their survey packets. Lastly, it is worth

mentioning that students received the entire survey packet at the same time, so there

was no assurance that each student filled out the questionnaires pre- and post-

interaction with the animals.

Conclusion

The results of this study show that animal-assisted therapy could be a viable

approach to handling the increased stress among today's college students. As available

counseling resources on campuses are decreasing, this creative approach may become

a more important service provided by college campuses. Future research is needed to determine whether having therapy dogs integrated into counseling sessions on a regular basis may improve therapeutic results to address staffing constraints. In general, AAT outreach events on college campuses, like this one and the one conducted at West Chester University, show evidence of the benefit they have on college students' stress, mood, and overall well-being (Daltry & Mehr, 2015).

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Appendix A

Pre- Dog Therapy Interaction Survey

Please circle all of the following that apply to you.

<u>Demographics</u>

1. Sex:

Male   Female

2. Age:

0-19   20-29   30-39   40-49   50-59   60-69   70 +

3. Ethnicity:

White   Hispanic/Latino   African American   Asian   Other

4. Type of Student:

Full-Time Student   Part-Time Student

5. What is your marital status?

Single   Married   Separated   Divorced   Widowed

6. Number of children (if applicable) _____

7. Do you have a job for which you receive a paycheck?

YES   NO

If yes, please indicate: Full-Time Employment   Part-Time Employment

8. # of Credit hours currently enrolled in:

0-4   5-9   10-14   15-19   20+

9. Do you own a pet (s)?

YES   NO

If yes, circle which one (s) apply.
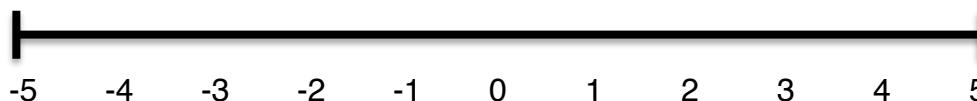
Dog
Cat
Bird
Fish
Reptile
Other _____

<u>On a scale from -5 to 5, Circle which number you agree with.</u>

10.   How would you rate your knowledge of Animal-Assisted Therapy?

```
├──────────────────────────────────────────────────┤
 -5    -4    -3    -2    -1    0    1    2    3    4    5
```

(Know Nothing)   (Neutral)   (Know A LOT)

11. How would you rate your fear of animals?

```
├──────────────────────────────────────────────────┤
 -5    -4    -3    -2    -1    0    1    2    3    4    5
```

(Very Scared)   (Neutral)   (Not scared)

12. Mood Feeling Scale (MFS): How is your mood?

```
├──────────────────────────────────────────────────┤
 -5    -4    -3    -2    -1    0    1    2    3    4    5
```
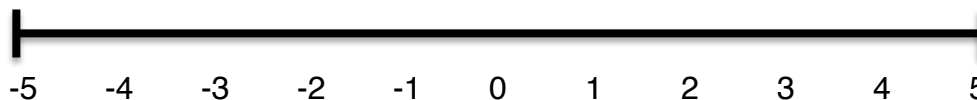
(Very Bad)   (Neutral)   (Very Good)

13. Stress Feeling Scale (SFS): How stressed are you?

```
├──────────────────────────────────────────────────┤
 -5    -4    -3    -2    -1    0    1    2    3    4    5
```
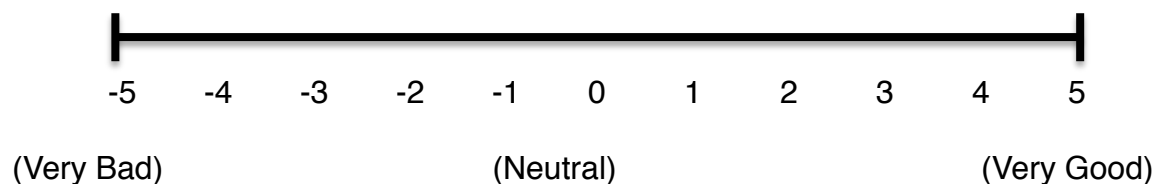
(Very Stressed)   (Neutral)   (Not Stressed)
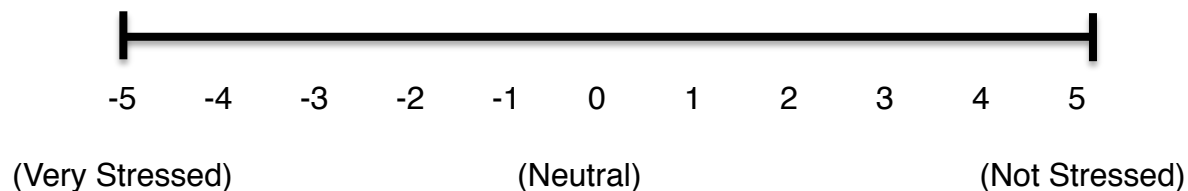
Post- Dog Therapy

NOTICE: Do not answer this survey until after exposure to dogs.

On a scale from -5 to 5, Circle which number you agree with.

14. Mood Feeling Scale (MFS): How is your mood?

```
|————————————————————————————————|
-5    -4    -3    -2    -1    0    1    2    3    4    5
```

(Very Bad)   (Neutral)   (Very Good)

15. Stress Feeling Scale (SFS): How stressed are you?

```
|————————————————————————————————|
-5    -4    -3    -2    -1    0    1    2    3    4    5
```

(Very Stressed)   (Neutral)   (Not Stressed)

16. How would you rate your knowledge of Animal-Assisted Therapy?

```
|————————————————————————————————|
-5    -4    -3    -2    -1    0    1    2    3    4    5
```

(Know Nothing)   (Neutral)   (Know A LOT)

17. How would you rate your fear of animals?

```
|————————————————————————————————|
-5    -4    -3    -2    -1    0    1    2    3    4    5
```

(Very Scared)   (Neutral)   (Not scared)
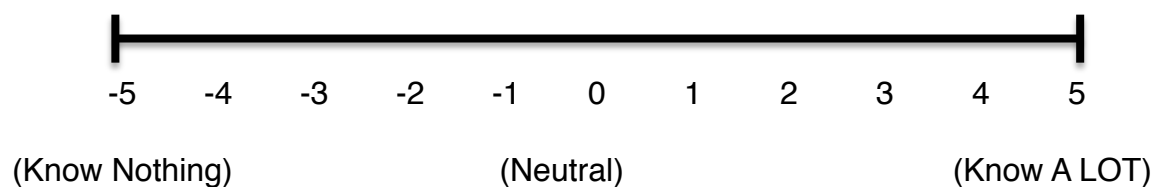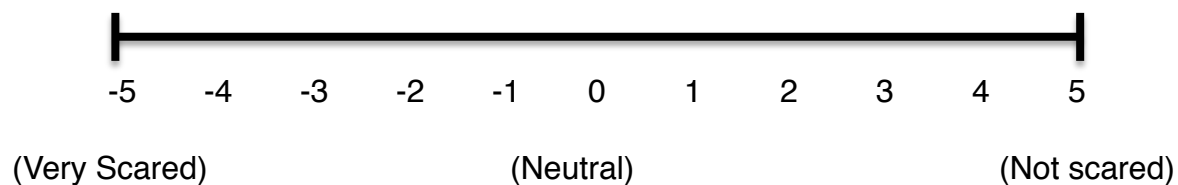
18. How many minutes do you think you spent with the therapy dogs today?

0-5   5-10   10-15   15-20   20+

19. Beneficial Feeling Scale (BFS): Was this experience beneficial?

|——|

    -5   -4   -3   -2   -1   0   1   2   3   4   5

(Not Beneficial)   (Neutral)   (Very Beneficial)
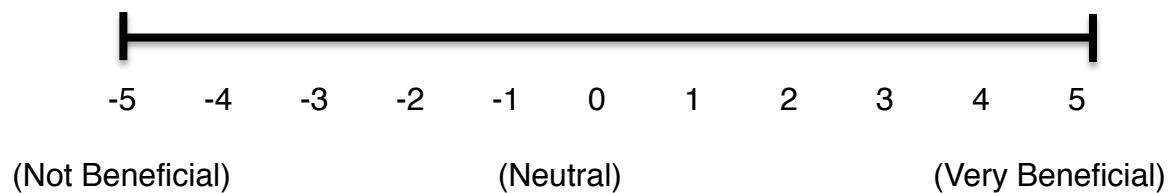
Appendix B

Correlation Coefficient Matrix

The table below displays Pearson's correlations among the following variables: (1) change in SFS from before to after the interaction, (2) change in MFS, (3) change in knowledge about AAT, (4) time (in minutes) spent with dogs, and (5) the ratings of how beneficial the subjects found the experience to be.

Table I: Correlation Coefficients Matrix

Measure	1	2	3	4	5
1. Change SFS	1	0.316	0.170	0.250	0.205
2. Change MFS	0.316	1	0.213	0.213	0.256
3. Change Knowledge	0.170	0.213	1	0.134	0.132
4. Time With Dogs	0.250	0.213	0.134	1	0.311
5. Beneficial	0.205	0.256	0.132	0.311	1

All values are statistically significant at a $p < 0.01$ level.