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# **EXPLORING PET OWNERSHIP AND ITS IMPACT ON PSYCHOLOGICAL WELL- BEING AND EATING BEHAVIORS**

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STAT 496 FINAL PROJECT WRITTEN REPORT



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## Abstract

This study investigates the relationship between pet ownership, pet attachment, and psychological well-being, with a specific focus on eating disorder risk. Pet ownership has long been associated with various psychological benefits, but the complexity of this relationship, especially in the context of eating disorders, has not been fully explored. Using data collected from 686 participants, the study examines the impact of pet ownership, particularly owning a dog or a cat, on psychological factors such as depression, anxiety, positive mood, negative mood, and loneliness, as well as its influence on eating disorder risk. The research also looked at the role of pet attachment in these relationships, considering if a stronger emotional bond with pets could lead to help psychological distress or exacerbate mental health challenges.

The results of the analysis suggest that while pet ownership is associated with some psychological benefits, such as lower levels of depression and anxiety, the relationship with disordered eating behaviors is more complex. Pet attachment, on the other hand, was found to be significantly correlated with increased anxiety and negative mood, indicating that individuals who are more attached to their pets may rely on them as emotional support, potentially leading to greater distress. Mediation analysis revealed that psychological distress mediates the relationship between pet ownership and eating disorder risk. These findings highlight the nuanced role pets play in mental health, suggesting that while they may provide emotional comfort, their impact on psychological well-being and eating disorders is not straightforward. The study calls for further research to understand the mechanisms at play and explore the potential therapeutic applications of pets in managing psychological distress.

## Introduction

Pet ownership has been increasingly studied for its potential psychological benefits, with significant interest in its impact on both mental health and disordered eating behaviors. Previous studies have suggested that pets, particularly dogs and cats, may provide emotional support and alleviate stress, anxiety, and depression. However, there is limited research that directly investigates how pet ownership influences disordered eating behaviors such as body dissatisfaction, drive for thinness, and bulimia. As mental health issues, particularly eating disorders, continue to rise, understanding the potential role of pets as supportive companions could provide valuable insights into alternative interventions for mental health.

This study aims to investigate the effects of pet ownership on both disordered eating behaviors and key psychological factors such as depression, anxiety, positive mood, and loneliness. Specifically, the research examines whether owning a pet has a significant impact on these variables. The focus will be on whether pet ownership can serve as a protective factor or a source of emotional regulation in addressing eating disorder tendencies and psychological distress.

The research questions driving this study are as follows:

**RQ1:** Is pet ownership associated with disordered eating behaviors, including Drive for Thinness (DT), Body Dissatisfaction (BD), and Bulimia (B)?

- **Hypothesis:** Pet owners will report lower levels of disordered eating behaviors due to perceived emotional support and companionship.

**RQ2:** Does pet ownership affect psychological well-being, including depression, anxiety, positive mood, negative mood, and loneliness?

- **Hypothesis:** Pet ownership will be associated with lower depression and anxiety and higher positive mood.

**RQ3:** Does a pet owner's attachment to their pet relate to psychological well-being, such as depression, anxiety, mood, and loneliness?

- **Hypothesis:** Higher pet attachment will correlate with better psychological well-being.

**RQ4:** Does pet attachment relate to disordered eating risk (measured by EDRC\_raw)?

- **Hypothesis:** Stronger pet attachment will be associated with lower eating disorder risk.

**RQ5:** Does pet ownership indirectly affect eating disorder risk through psychological mediators such as depression and negative mood?

- **Hypothesis:** Pet ownership influences EDRC via increased depression and negative mood.

This study employed a variety of robust statistical techniques to investigate the relationships between pet ownership, psychological well-being, and disordered eating behaviors. The methods included:

- **ANOVA:** Used to explore group differences in disordered eating and psychological variables between pet owners and non-owners.
- **Mediation Analysis:** Conducted to determine whether pet attachment, depression, and negative mood mediate the effects of pet ownership on eating disorder risk (EDRC) and psychological well-being.
- **Correlation Analysis:** Applied to examine the strength and direction of relationships between pet attachment and psychological outcomes, including depression, anxiety, mood, and loneliness.
- **Independent Samples t-tests:** Used to compare the means of disordered eating behaviors and psychological well-being variables between dog owners and cat owners.
- **Linear Regression:** Employed to assess the predictive value of pet ownership and pet type on eating disorder risk and psychological variables, while controlling for potential confounding factors.

## Literature

Research into the relationship between pet ownership and psychological well-being has grown in recent years, particularly concerning emotional attachment and its influence on mental health and behavioral outcomes. Several studies suggest that high levels of attachment to pets may be associated with increased emotional distress, including symptoms of anxiety, depression, and mood instability.

High levels of pet attachment have been linked to emotional distress and mental health challenges. Ståhl et al. (2023) found that strong emotional bonds with pets could exacerbate anxiety and depression symptoms, particularly among individuals who are already emotionally vulnerable. Although pets often provide comfort and companionship, excessive attachment may contribute to psychological stress, especially when individuals rely on pets for emotional regulation.

Research conducted by the National Institutes of Health (NIH, 2022) reported that while pets may offer emotional stability for some individuals, they can also increase anxiety and stress levels in others. The study emphasized that over-reliance on pets as a primary source of emotional support may paradoxically intensify distress, especially among individuals already coping with emotional challenges.

Marcial-Modesto et al. (2023) argued that using pets as a coping mechanism may contribute to mood instability and depressive symptoms. Individuals who depend heavily on pets to manage stress may struggle to develop healthier, more adaptive coping strategies. In such cases, reliance on pets may unintentionally worsen mood disorders, particularly when external support systems are limited or absent.

Ståhl et al. (2023) also examined the connection between pet attachment and disordered eating behaviors. Their findings indicated that stronger pet attachment was significantly associated with higher levels of body dissatisfaction and bulimia symptoms. The researchers suggested that pets might play a role in emotional regulation, and individuals with high attachment may be more vulnerable to maladaptive behaviors such as disordered eating when facing psychological stress.

While pets can serve as sources of comfort and emotional stability, the literature indicates that excessive attachment may have unintended negative consequences. High levels of pet attachment have been linked to increased anxiety, depression, and disordered eating behaviors. These findings highlight the need to distinguish between healthy emotional bonds and potentially harmful emotional dependency on pets.

## Methods Section

This study aimed to investigate the influence of pet ownership on eating disorder behaviors and psychological well-being. A cross-sectional, observational design was used to examine the associations between pet ownership and various psychological and behavioral outcomes at a single point in time. This design was appropriate for exploring

correlations without manipulating variables, making it suitable for the exploratory nature of the research.

The study included 686 participants who were selected based on specific inclusion and exclusion criteria. Participants were eligible if they self-identified as pet owners (dog, cat, or other) and completed the self-report survey. Those who did not meet these criteria or submitted incomplete responses were excluded from the final analysis. Recruitment was conducted online through surveys shared via social media platforms and email lists. Demographic data, including age, gender, and pet ownership status, were collected to ensure a diverse and representative sample.

Data was collected using a structured online questionnaire administered over a two-week period. All participants were informed that their participation was voluntary and that their responses would remain confidential. The survey included several validated psychometric instruments to measure key variables. Disordered eating behaviors were assessed using the Eating Disorder Risk Composite (EDRC-Raw), which included subscales for Drive for Thinness, Body Dissatisfaction, and Bulimia. Psychological well-being was measured using the Beck Depression Inventory (BDI), Beck Anxiety Inventory (BAI), Positive and Negative Affect Schedule (PANAS), and the RULS-6 scale for loneliness. Pet attachment was measured using the Lexington Attachment to Pets Scale (LAPS), a widely used instrument in studies involving human-animal bonds.

Data analysis was conducted using R, a statistical software environment. Before analysis, missing values were imputed for participants who had completed at least 75% of the survey, using average scores for the relevant subscale. Statistical assumptions were tested to ensure valid interpretation of results. Normality was assessed using the Shapiro-Wilk test and QQ plots, while Levene's Test was used to assess homogeneity of variance. Multicollinearity in regression models was evaluated using the Variance Inflation Factor (VIF).

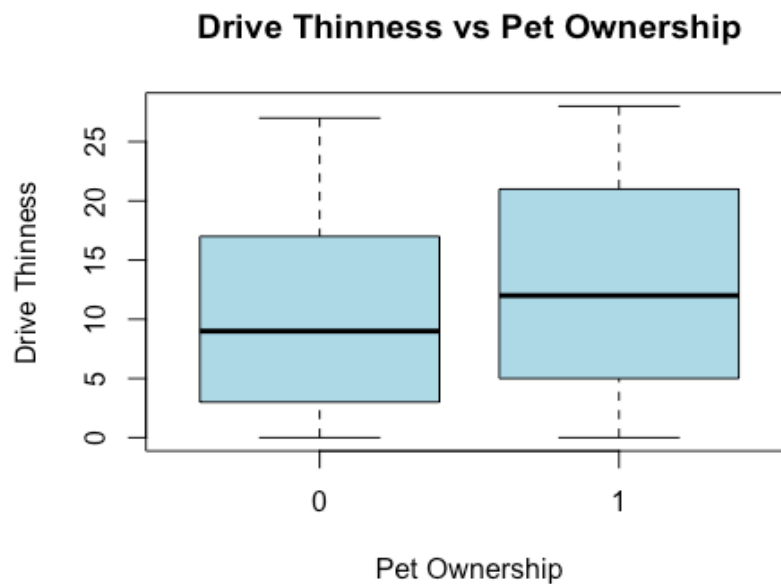
The study adhered to all ethical research guidelines. Informed consent was obtained from all participants prior to their involvement in the study. No personally identifying information was collected, and all responses were kept anonymous and used solely for research purposes. Confidentiality and participant rights were maintained throughout.

To ensure the accuracy and reliability of the findings, data cleaning procedures were implemented before statistical analysis. Incomplete or inconsistent responses were identified and excluded. All statistical tests were conducted using consistent coding procedures in R markdown to maintain methodological integrity and reproducibility.

Despite the strengths of the design and analysis, this study has some limitations. The cross sectional design helped limit the ability to draw causal conclusions about the relationship between pet ownership and psychological or behavioral outcomes. Additionally self-reported data measures introduce the possibility of response biases, such as social desirability bias. Lastly, some potentially important confounding variables such as pre-existing mental health conditions were not controlled for, which may have influenced the findings.

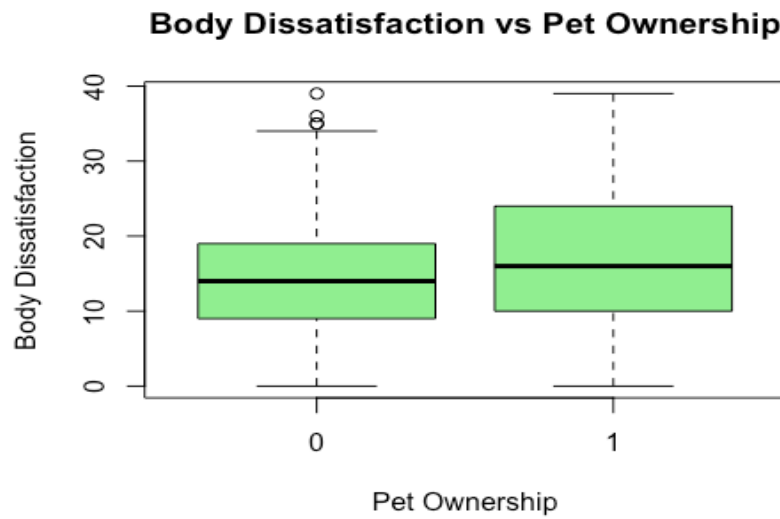
## Results Section

**Research Question 1: Is pet ownership associated with disordered eating behaviors, including drive for thinness (DT), body dissatisfaction (BD), and bulimia (B)?**



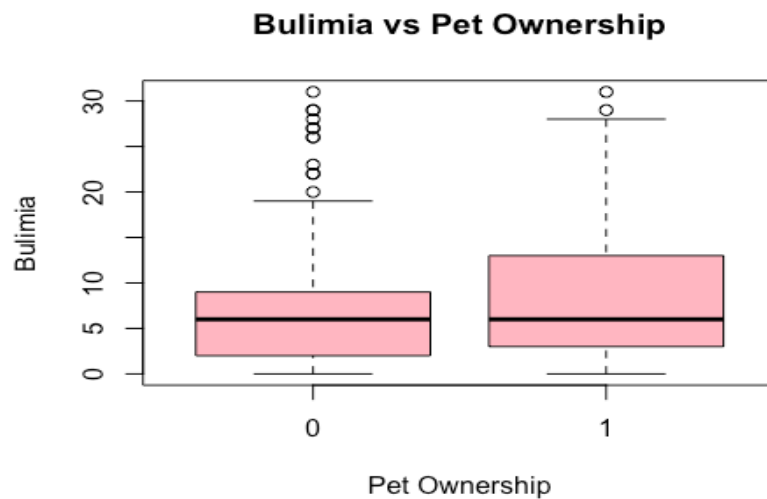
Beta	Standard Error	p-value	R^2
2.2439	0.6659	7.98e-05	0.01743

Linear regression analysis revealed a statistically significant association between pet ownership and Drive for Thinness ( $p < 0.001$ ), with pet owners reporting slightly higher scores. However, the model accounted for only 1.7% of the variance ( $R^2 = 0.017$ ), indicating limited explanatory power. The boxplot supports this finding, showing marginally elevated median scores among pet owners, with comparable variability across groups.



Beta	Standard Error	p-value	R <sup>2</sup>
2.4428	0.6928	4.52e-05	0.01905

Pet ownership was significantly associated with increased Body Dissatisfaction ( $p < 0.001$ ), with pet owners showing higher median scores. However, the model explained only 1.9% of the variance ( $R^2 = 0.019$ ), suggesting limited predictive power. The boxplot supports this trend, showing a slightly elevated distribution for pet owners, although both groups display considerable overlap.



Beta	Standard Error	p-value	R^2
1.6092	0.5575	0.00403	0.01297

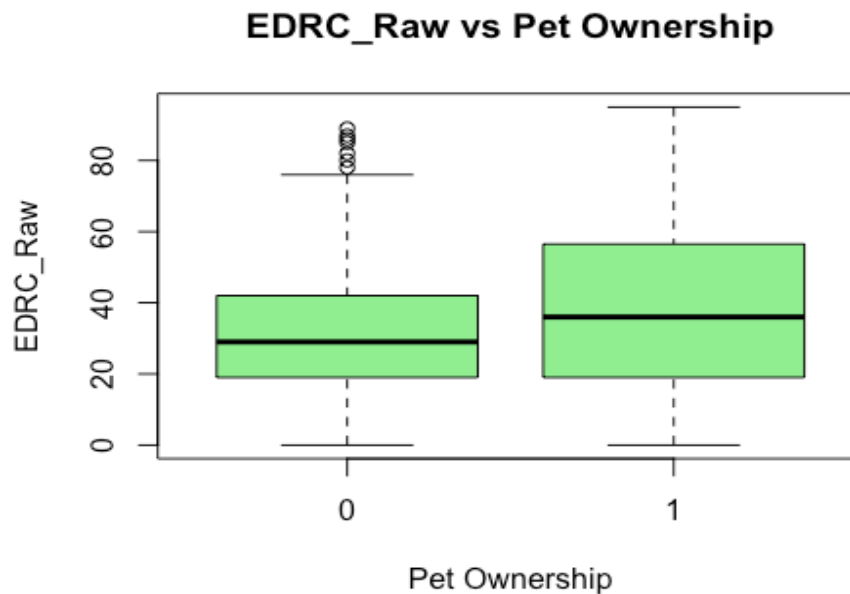
Regression analysis revealed a significant association between pet ownership and Bulimia scores ( $p = 0.004$ ), with pet owners reporting slightly higher levels. However, the model's explanatory power was minimal ( $R^2 = 0.013$ ), indicating that pet ownership explains just over 1% of the variance. The boxplot shows overlapping distributions with more outliers among non-owners.

The results do not support the hypothesis that pet ownership is associated with lower levels of disordered eating behaviors. In contrast to expectations, pet owners reported higher levels. This challenges the common belief that pets inherently improve mental health and instead suggests that the relationship is more nuanced, requiring consideration of broader emotional, psychological, and environmental influences.

## Research Question 2: Is pet ownership related to the composite score of disordered eating behaviors (EDRC\_Raw)?

```
##
## Call:
## lm(formula = EDRC_Raw ~ Pet_Ownership, data = data)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -38.295 -17.182  -2.295   14.044   57.156
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)      31.844      1.273   25.021 < 2e-16 ***
## Pet_Ownership1    6.452      1.658    3.892  0.00011 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 20.6 on 636 degrees of freedom
## (7 observations deleted due to missingness)
## Multiple R-squared:  0.02326,    Adjusted R-squared:  0.02172
## F-statistic: 15.14 on 1 and 636 DF,  p-value: 0.0001101
```



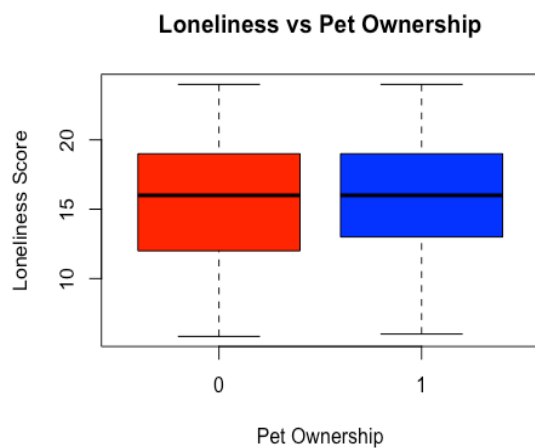
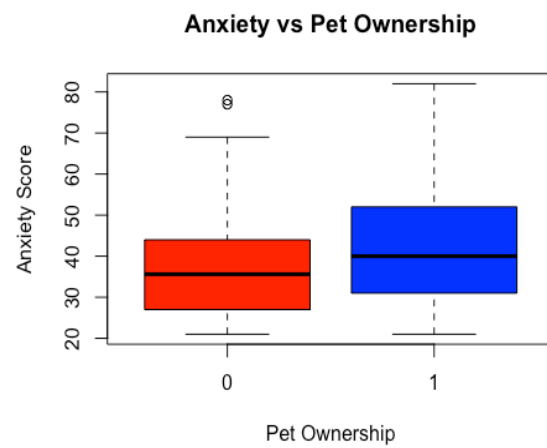
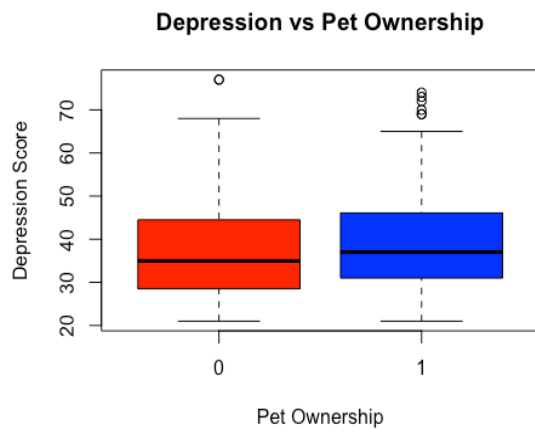
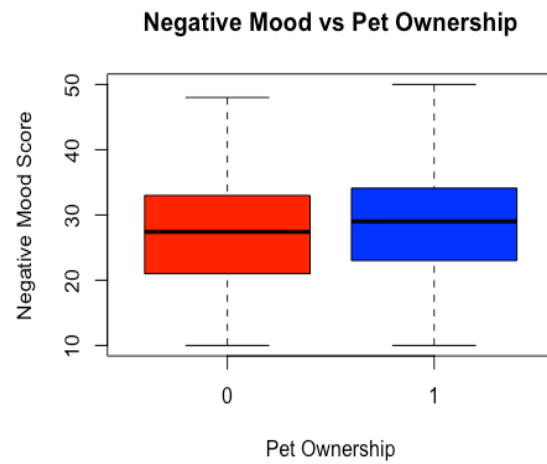
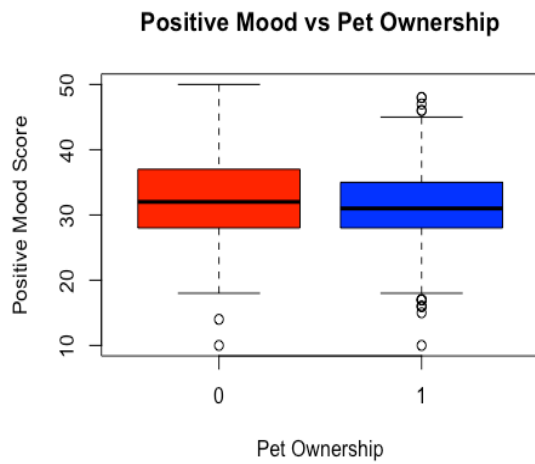


To assess whether pet ownership is associated with disordered eating behaviors overall, a linear regression was conducted using the composite score EDRC\_Raw as the outcome variable. The analysis revealed a significant positive association between pet ownership and disordered eating risk. Pet owners reported higher EDRC scores compared to non-owners, suggesting a measurable relationship between pet ownership and elevated disordered eating behaviors.

However, the explanatory power of the model was limited, which indicated that pet ownership accounted for only a small proportion of variance in EDRC scores. The boxplot illustrates this pattern, with pet owners showing slightly higher median scores and a modest upward shift in overall distribution.

These findings suggest that while pet ownership is linked to an increase in disordered eating behaviors at a composite level, the effect is modest. This reinforces earlier results and highlights the need to examine additional psychological or contextual variables such as attachment, stress, or emotional regulation to fully understand the mechanisms underlying this relationship.

**Research Question 3: Does pet ownership affect psychological well-being (depression, negative mood, positive mood, loneliness, and anxiety)**



The relationship between pet ownership and psychological well-being was assessed across five variables: depression, anxiety, positive mood, negative mood, and loneliness. Group differences were analyzed using ANOVA, and results were visualized through boxplots to

compare pet owners and non-owners on each psychological outcome. Summary statistics are presented in the table below.

**Table 1: ANOVA Results for Psychological Well-Being by Pet Ownership**

Variable	F-value	p-value	Significance
Depression	7.739	0.00556	Significant
Anxiety	20.93	0.001	Significant
Negative Mood	6.149	0.0134	Significant
Positive Mood	3.118	0.0779	Not significant
Loneliness	2.445	0.118	Not significant

The analysis revealed that pet ownership was significantly associated with lower levels of depression, anxiety, and negative mood. Pet owners consistently reported lower median scores on these outcomes, suggesting a modest but meaningful link between having a pet and reduced psychological distress. Boxplots further supported these findings, showing lower distributions for pet owners, particularly for anxiety, which also exhibited higher variability among non-owners.

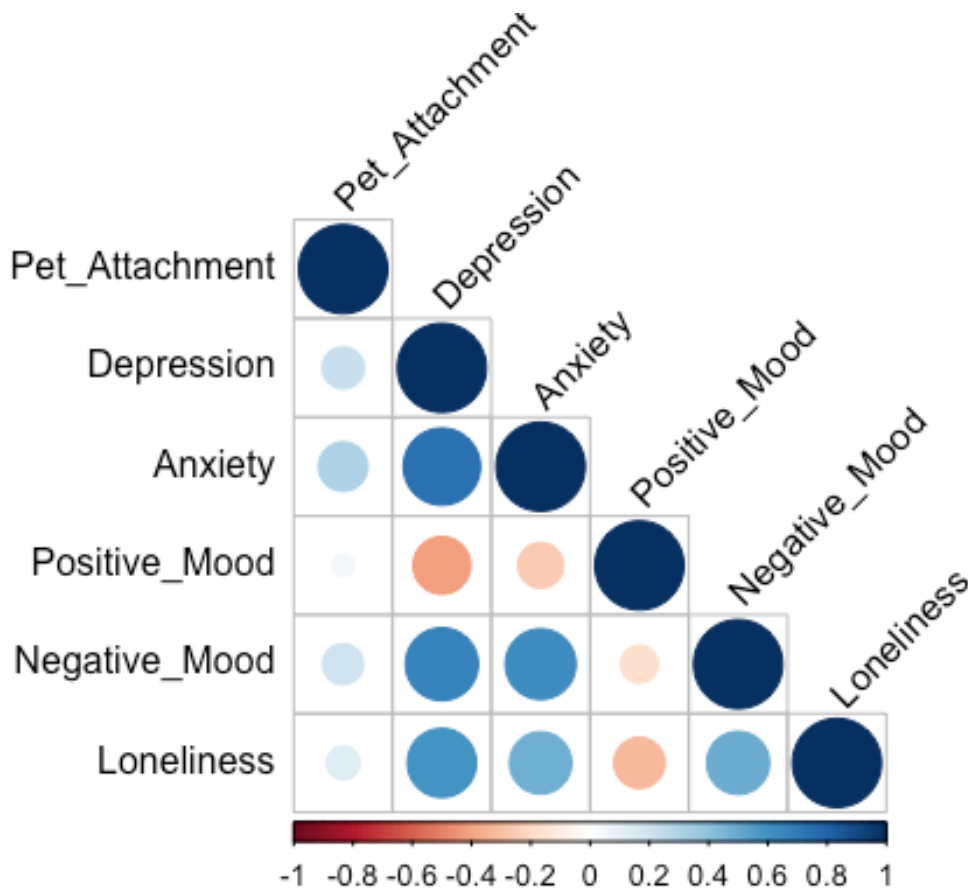
In contrast, there were no statistically significant differences in positive mood or loneliness between pet owners and non-owners. This suggests that pet ownership may not enhance positive emotional states or reduce social isolation. The boxplots confirmed these findings, displaying similar median values and distribution patterns across groups.

These results align with the broader literature suggesting that pet ownership can offer emotional support and companionship, particularly in buffering against negative psychological states. However, the lack of effect on positive mood and loneliness points to the complexity of mental health outcomes, highlighting that the benefits of pet ownership may be context-dependent and influenced by individual differences or external social support systems.

#### Research Question 4: Does pet owner's attachment relate to psychological well-being indicators, including depression, anxiety, positive mood, negative mood, and loneliness.

```
##
## Pearson's product-moment correlation
##
## data: data$Pet_Attachment and data$Loneliness
## t = 2.715, df = 370, p-value = 0.006939
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  0.03862916 0.23805541
## sample estimates:
##      cor
## 0.1397593

##               Pet_Attachment Depression   Anxiety Positive_Mood
Negative_Mood
## Pet_Attachment      1.00000000  0.2212364  0.3043768   0.05709229
0.2077925
## Depression          0.22123642  1.0000000  0.7470881  -0.41520801
0.6668598
## Anxiety             0.30437682  0.7470881  1.0000000  -0.25913237
0.6278758
## Positive_Mood       0.05709229 -0.4152080 -0.2591324   1.00000000  -
0.1786904
## Negative_Mood       0.20779246  0.6668598  0.6278758  -0.17869040
1.0000000
## Loneliness          0.13975927  0.5999140  0.4843814  -0.32629765
0.4960524
##               Loneliness
## Pet_Attachment  0.1397593
## Depression      0.5999140
## Anxiety          0.4843814
## Positive_Mood   -0.3262976
## Negative_Mood   0.4960524
## Loneliness      1.0000000
```



To examine whether pet attachment relates to psychological well-being, a correlation analysis was conducted between pet attachment and five mental health variables: depression, anxiety, positive mood, negative mood, and loneliness. Results are summarized in Table 2 and visualized using a correlation matrix plot.

**Table 2. Correlation Between Pet Attachment and Psychological Well-Being Variables**

Variable	Correlation (r)	p-value	Significance
Depression	0.221	0.001	Significant
Anxiety	0.304	0.001	Significant
Negative Mood	0.208	0.001	Significant
Positive Mood	0.057	0.272	Not significant

Loneliness	0.140	0.007	Not significant
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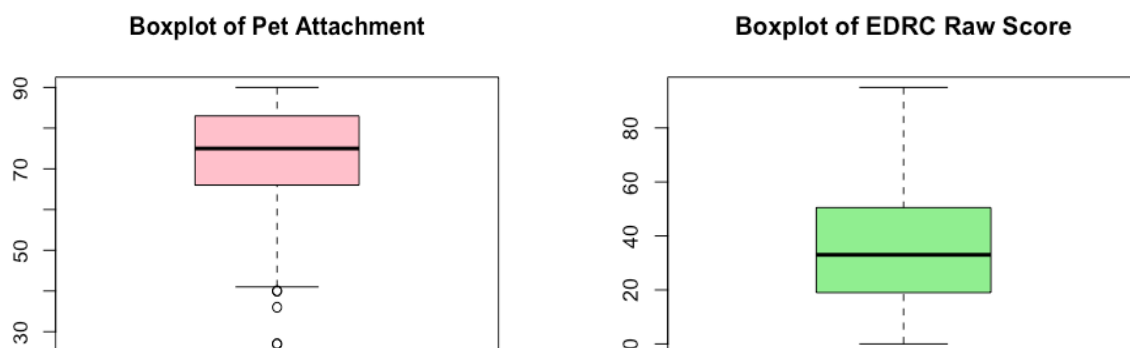
The analysis revealed significant positive correlations between pet attachment and depression, anxiety, and negative mood. This suggests that stronger emotional attachment to pets is associated with slightly higher levels of psychological distress. While pet attachment is often assumed to be beneficial, these findings indicate it may reflect an increased reliance on pets for emotional regulation, potentially arising from existing mental health challenges.

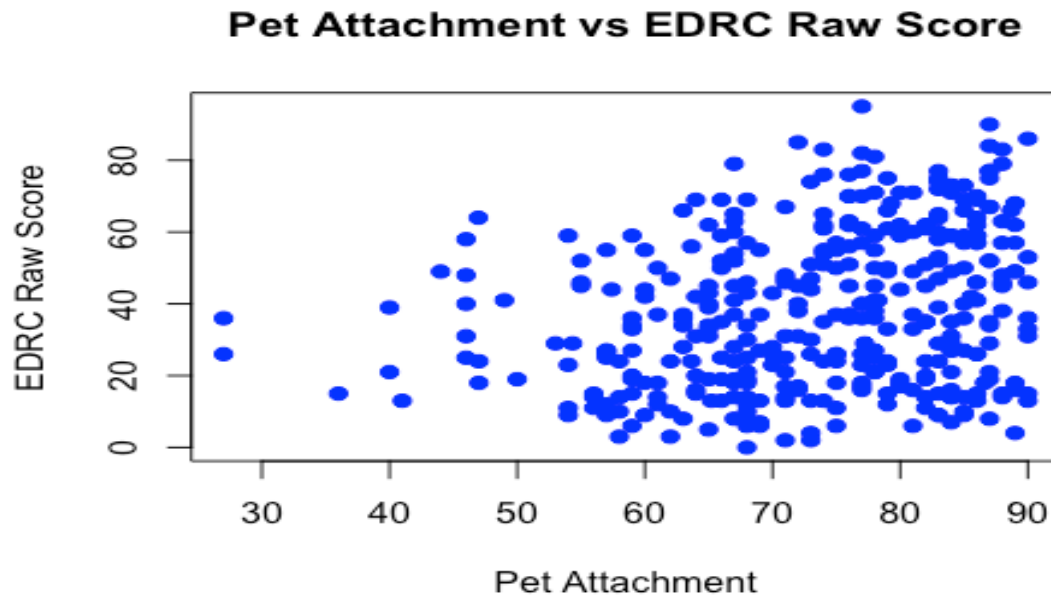
No significant correlations were found between pet attachment and either positive mood or loneliness, suggesting that pet attachment does not necessarily enhance positive affect or reduce feelings of isolation.

These results highlights the complexity of pet-owner relationships. While attachment may offer emotional comfort, it may also correlate with greater psychological vulnerability, particularly in the context of depression, anxiety, and negative mood. This challenges simplified views of pet ownership as inherently protective and highlights the importance of examining the context and quality of attachment.

Understanding these dynamics is essential for future mental health interventions and programs aimed at supporting individuals who turn to pets as emotional companions. Further research should investigate whether certain patterns of attachment (e.g., anxious or dependent attachment) are more likely to co-occur with distress.

## Research Question 5: Does a pet owner's attachment to their pet relate to disordered eating risk (measured by EDRC\_raw score)





To assess the relationship between pet attachment and disordered eating risk, a scatterplot was generated comparing pet attachment scores with EDRC\_raw scores. The plot showed a positive linear trend, indicating that individuals with higher pet attachment tended to report higher disordered eating risk scores. Although the data points were dispersed across the graph, a moderate but statistically significant correlation was observed ( $r = 0.221$ ,  $p < 0.001$ ).

Two boxplots were also used to examine the distributions of pet attachment and EDRC\_raw scores. The pet attachment boxplot showed that participants generally reported moderate to high attachment to their pets, with a few low-score outliers. The EDRC\_raw boxplot indicated that disordered eating scores were more variable, with a broader range and notable outliers in both directions.

The combination of these visuals reveals a pattern of slight elevation in disordered eating scores among individuals with stronger pet attachment. However, the wide variability and overlapping distributions indicate that this relationship is not robust and is likely influenced by other underlying factors.

Although the correlation between pet attachment and disordered eating risk is statistically significant, the effect size is small, and the relationship should be interpreted with caution. These findings suggest that greater emotional reliance on pets may be associated with elevated disordered eating behaviors, possibly reflecting unmet emotional needs or coping difficulties.

Importantly, the scattered nature of the data and overlap in boxplot distributions emphasize that pet attachment alone does not account for the variability in disordered eating symptoms. This underlines the need to consider broader psychological and social influences, such as self-esteem, body image, trauma history, or emotional regulation strategies.

The results contribute valuable nuance to the understanding of pet-owner relationships. While pet attachment can offer companionship and emotional support, in some individuals, it may signal deeper emotional vulnerabilities that correlate with eating pathology. This complexity is important for clinicians and researchers developing holistic mental health interventions involving companion animals.



## Research Question 6: Does pet ownership mediate the relationship between anxiety, depression, loneliness, positive/negative mood, and disordered eating behaviors?

```
## [1] 0.6668598

## lavaan 0.6-19 ended normally after 15 iterations
##
##      Estimator                      ML
##      Optimization method          NLMINB
##      Number of model parameters          9
##
##                                     Used      Total
##      Number of observations          635        645
##
## Model Test User Model:
##
##      Test statistic                0.000
##      Degrees of freedom              0
##
## Model Test Baseline Model:
##
##      Test statistic                640.604
##      Degrees of freedom              6
##      P-value                        0.000
##
## User Model versus Baseline Model:
##
##      Comparative Fit Index (CFI)        1.000
##      Tucker-Lewis Index (TLI)          1.000
##
## Loglikelihood and Information Criteria:
##
##      Loglikelihood user model (H0)      -7181.393
##      Loglikelihood unrestricted model (H1) -7181.393
##
##      Akaike (AIC)                     14380.786
##      Bayesian (BIC)                    14420.868
##      Sample-size adjusted Bayesian (SABIC) 14392.294
##
## Root Mean Square Error of Approximation:
```

```

##
## RMSEA 0.000
## 90 Percent confidence interval - lower 0.000
## 90 Percent confidence interval - upper 0.000
## P-value H_0: RMSEA <= 0.050 NA
## P-value H_0: RMSEA >= 0.080 NA
##
## Standardized Root Mean Square Residual:
##
## SRMR 0.000
##
## Parameter Estimates:
##
## Standard errors Bootstrap
## Number of requested bootstrap draws 5000
## Number of successful bootstrap draws 5000
##
## Regressions:
## Estimate Std.Err z-value P(>|z|) Std.lv Std.all
## Depression ~
## Pt_Ownrsh (a1) 2.302 0.938 2.453 0.014 2.302 0.100
## Negative_Mood ~
## Pt_Ownrsh (a2) 1.597 0.660 2.421 0.015 1.597 0.097
## EDRC_Raw ~
## Depressin (b1) 0.586 0.090 6.536 0.000 0.586 0.319
## Pt_Ownrsh (cp) 3.790 1.371 2.764 0.006 3.790 0.090
## Negatv_Md (b2) 0.729 0.114 6.371 0.000 0.729 0.284
##
## Covariances:
## Estimate Std.Err z-value P(>|z|) Std.lv Std.all
## .Depression ~~
## .Negative_Mood 61.121 4.054 15.078 0.000 61.121 0.671
##
## Variances:
## Estimate Std.Err z-value P(>|z|) Std.lv Std.all
## .Depression 127.416 7.300 17.453 0.000 127.416 0.990
## .Negative_Mood 65.118 3.179 20.485 0.000 65.118 0.991
## .EDRC_Raw 292.826 15.510 18.880 0.000 292.826 0.676
##
## Defined Parameters:
## Estimate Std.Err z-value P(>|z|) Std.lv Std.all
## indirect_D 1.349 0.611 2.206 0.027 1.349 0.032
## indirect_NM 1.164 0.512 2.272 0.023 1.164 0.027
## direct 3.790 1.371 2.763 0.006 3.790 0.090
## total 6.303 1.638 3.848 0.000 6.303 0.149

```

This analysis explored whether depression and negative mood help explain the relationship between pet ownership and disordered eating risk. Using statistical modeling with the lavaan package in R, we tested if these psychological factors act as mediators—that is, whether owning a pet leads to emotional changes, which in turn increase the risk of disordered eating.

Pet ownership was significantly associated with higher disordered eating scores (Estimate = 3.79,  $p = 0.007$ ). It also predicted higher levels of depression (Estimate = 2.30,  $p = 0.013$ )

and negative mood (Estimate = 1.60,  $p = 0.015$ ), indicating that pet owners in the sample experienced more emotional distress overall.

The indirect pathways were also statistically significant:

- The indirect effect through depression was significant (Estimate = 1.34,  $p = 0.026$ ).
- The indirect effect through negative mood was also significant (Estimate = 1.14,  $p = 0.023$ ).

When considering both direct and indirect effects, the total effect of pet ownership on disordered eating risk remained strong and significant (Estimate = 6.30,  $p < 0.001$ ). This indicates that pet ownership, along with the emotional challenges it may reflect or exacerbate, is associated with greater disordered eating behaviors.

Contrary to common assumptions that pet ownership is emotionally protective, the findings suggest that it may, in some cases be linked with greater emotional distress and higher eating disorder risk. Rather than serving as a buffer, pet ownership may reflect underlying psychological vulnerabilities such as reliance on pets for emotional regulation which contribute to disordered eating behaviors.

These results underscore the importance of evaluating the psychological context of pet ownership. Researchers and practitioners should consider emotional well-being as a critical component when examining how pet relationships influence mental health and behavioral outcomes.

## Explanatory Analysis

Call:

```
lm(formula = Drive_Thinness ~ Pet_Type, data = data2)
```

Residuals:

Min	1Q	Median	3Q	Max
-13.6667	-7.6798	-0.6667	7.6424	15.3158

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	12.68421	1.39414	9.098	<2e-16 ***
Pet_TypeDog_Only	-0.32663	1.54637	-0.211	0.833
Pet_TypeCat_Only	0.02765	1.60298	0.017	0.986
Pet_TypeBoth	0.98246	1.79983	0.546	0.585

---

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 8.594 on 374 degrees of freedom

Multiple R-squared: 0.002623, Adjusted R-squared: -0.005378

F-statistic: 0.3278 on 3 and 374 DF, p-value: 0.8053

Call:

```
lm(formula = Bulimia ~ Pet_Type, data = data2)
```

Residuals:

Min	1Q	Median	3Q	Max
-8.940	-5.940	-2.103	4.118	22.897

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	8.7105	1.1737	7.422	7.94e-13 ***
Pet_TypeDog_Only	-0.6075	1.3018	-0.467	0.641
Pet_TypeCat_Only	0.2291	1.3523	0.169	0.866
Pet_TypeBoth	-0.0614	1.5152	-0.041	0.968

---

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 7.235 on 372 degrees of freedom

(2 observations deleted due to missingness)

Multiple R-squared: 0.002631, Adjusted R-squared: -0.005412

F-statistic: 0.3271 on 3 and 372 DF, p-value: 0.8058

Call:

```
lm(formula = Body_Dissatisfaction ~ Pet_Type, data = data2)
```

Residuals:

Min	1Q	Median	3Q	Max
-17.491	-7.333	-1.333	6.667	21.667

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	16.1053	1.4681	10.970	<2e-16 ***
Pet_TypeDog_Only	1.2281	1.6284	0.754	0.451
Pet_TypeCat_Only	0.5388	1.6880	0.319	0.750
Pet_TypeBoth	1.3860	1.8953	0.731	0.465

---

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 9.05 on 374 degrees of freedom

Multiple R-squared: 0.002518, Adjusted R-squared: -0.005483

F-statistic: 0.3147 on 3 and 374 DF, p-value: 0.8147

The regression analysis revealed that pet type (dog or cat) was not a significant predictor of disordered eating behaviors, including Drive for Thinness, Body Dissatisfaction, and Bulimia. All p-values were greater than 0.05, and the  $R^2$  values were extremely low (below 0.003), indicating that pet ownership type explained virtually none of the variance in these outcomes. This suggests that the kind of pet someone owns does not have a meaningful

impact on eating disorder risk, and psychological factors such as depression or negative mood are likely more influential.

## Discussion Section

The present study examined the relationship between pet ownership and disordered eating behaviors (DEB), with a focus on potential mediating effects of depression and negative mood. The findings revealed that pet ownership was significantly associated with higher DEB scores. Mediation analyses showed that this relationship was partially explained by elevated levels of depression and negative mood among pet owners. These results suggest that emotional factors may play a key role in understanding the link between pet ownership and eating-related psychopathology.

Although pet ownership is commonly believed to enhance psychological well-being, the results of this study challenge that assumption. Rather than serving a protective function, pet ownership was linked to increased emotional distress specifically, higher depression and negative mood which in turn contributed to greater disordered eating symptoms. This suggests that the relationship between pet ownership and mental health is more complex than often assumed and may vary depending on individual circumstances or stressors related to pet care.

Previous research has produced mixed findings regarding the psychological effects of pet ownership. Some studies report reduced loneliness and improved emotional regulation among pet owners, while others have found increased stress or no effect. The current results align more closely with studies emphasizing the emotional burden or variability in pet ownership experiences. Importantly, this study adds to the literature by demonstrating that emotional distress, rather than pet ownership itself may be the more relevant predictor of disordered eating.

Several limitations must be acknowledged. First, the study's cross-sectional design limits the ability to draw causal conclusions about the relationships between pet ownership, mood, and DEB. While pet type and attachment were included in the broader dataset, this specific analysis focused only on general ownership status and did not account for differences in the quality of the pet-owner relationship within this model. Additionally, important contextual variables such as socioeconomic status, income, or caregiving burden were not measured. For example, individuals with limited financial resources may experience stress related to affording pet care, because having pets can be expensive which could indirectly contribute to emotional strain and disordered eating. Finally, other unmeasured factors such as trauma history or social support may have influenced the outcomes.

Future studies should include detailed measures of financial stress, caregiving responsibilities, and socioeconomic status to better understand the broader context of pet ownership. Longitudinal research is also needed to determine the directionality of these relationships whether emotional distress leads to disordered eating in pet owners, or whether those with existing vulnerabilities are more likely to experience pet-related stress.

Additionally, future models could test moderation by variables such as pet attachment strength, gender, or psychological resilience.

In conclusion, the study found that pet ownership was positively associated with disordered eating behaviors, and this relationship was partially mediated by higher levels of depression and negative mood. These findings suggest that pet ownership is not uniformly protective and may be linked to emotional challenges that contribute to eating pathology. Understanding the emotional context of pet ownership is essential for clarifying its impact on mental health and guiding future clinical or wellness interventions.

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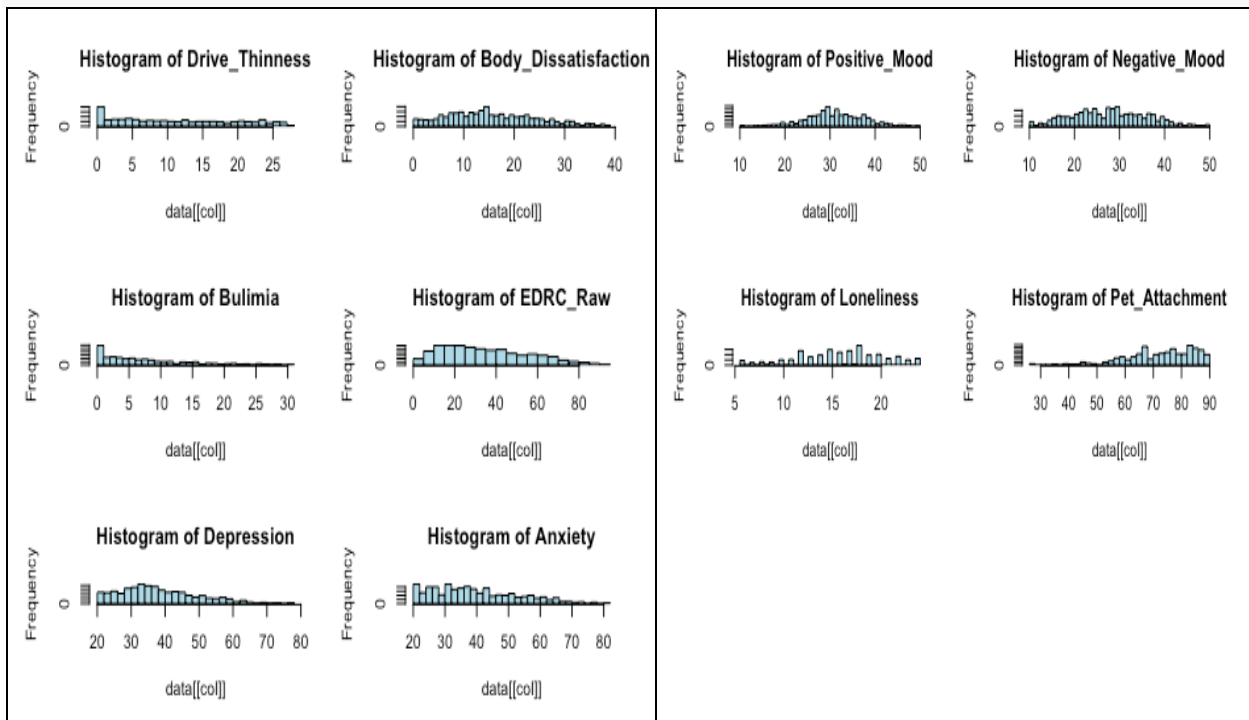
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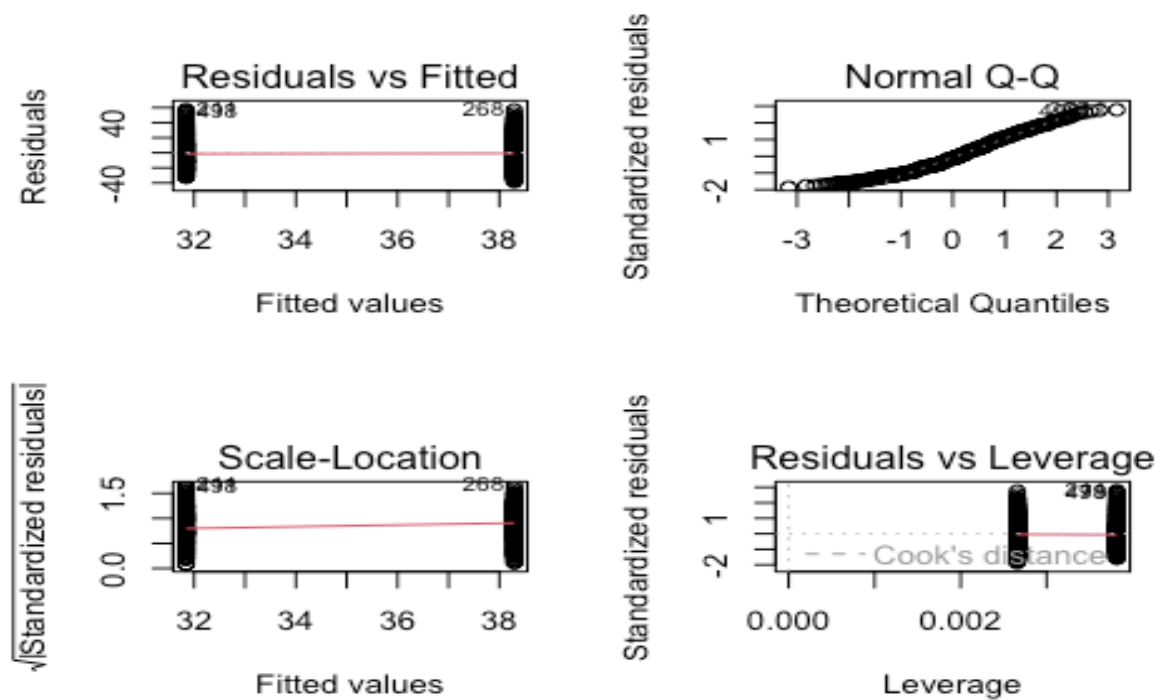
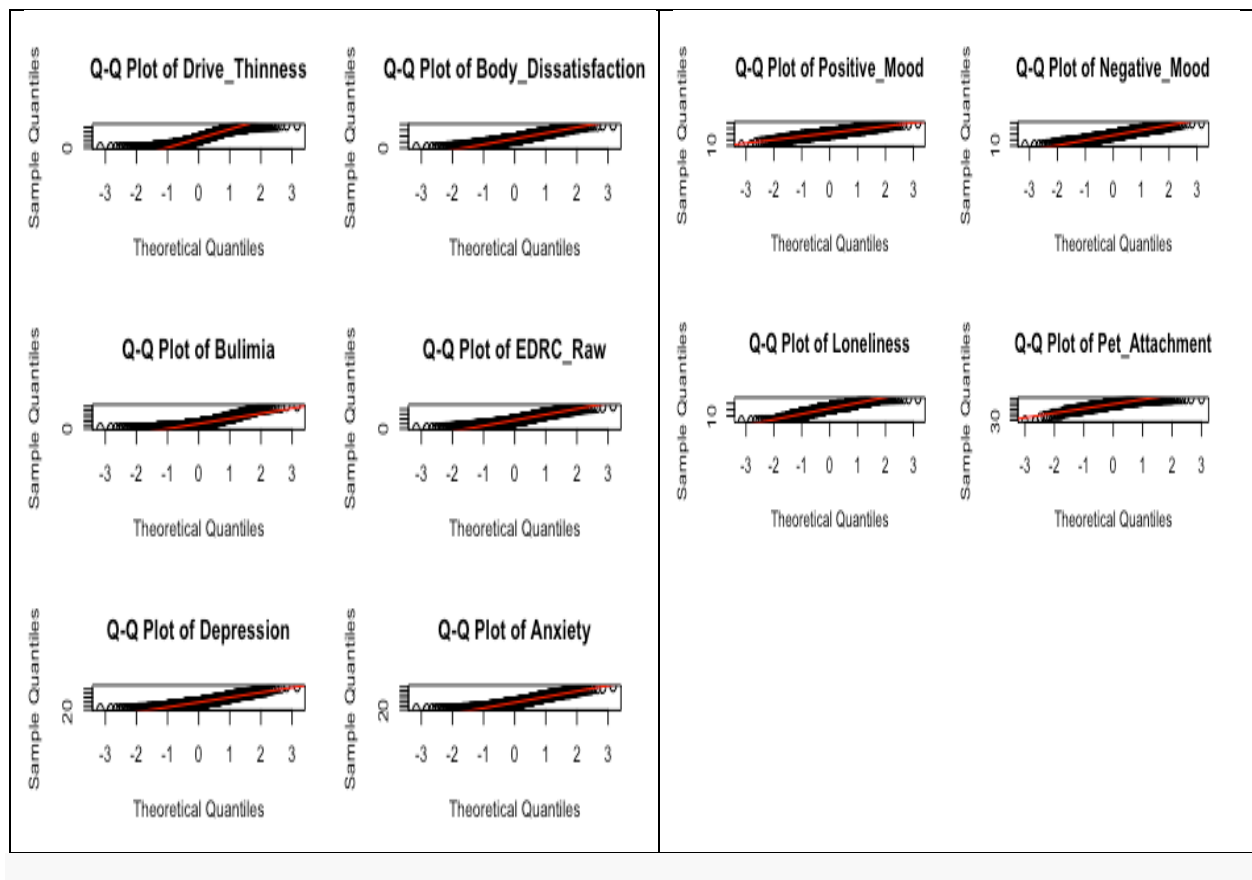
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## Appendices

##	Drive_Thinness	Body_Dissatisfaction	Bulimia
##	7.394550e-16	7.488701e-08	1.513835e-20
##	EDRC_Raw	Depression	Anxiety
##	2.453432e-11	4.987298e-12	3.199666e-13
##	Positive_Mood	Negative_Mood	Loneliness
##	2.361113e-02	5.690398e-04	4.136960e-08
##	Pet_Attachment		
##	4.400767e-11		







```

## PARTICIPANT GENDER (0 = male, 1 = female, 2 = other) Pet_Ownership
## Min. : 1.0 Min. :0.0000 0 :266
## 1st Qu.:173.0 1st Qu.:0.0000 1 :378
## Median :342.0 Median :1.0000 NA's: 1
## Mean :343.7 Mean :0.7736
## 3rd Qu.:519.0 3rd Qu.:1.0000
## Max. :685.0 Max. :3.0000
##
## DOG OWN (yes = 1) CAT OWN (yes = 1) OTHER OWN (yes = 1)
## Min. :0.0000 Min. :0.000 Min. :0.0000
## 1st Qu.:0.0000 1st Qu.:0.000 1st Qu.:0.0000
## Median :1.0000 Median :0.000 Median :0.0000
## Mean :0.5873 Mean :0.463 Mean :0.1402
## 3rd Qu.:1.0000 3rd Qu.:1.000 3rd Qu.:0.0000
## Max. :1.0000 Max. :1.000 Max. :1.0000
## NA's :267 NA's :267 NA's :267
## OWN UNSPECIFIED (yes = 1) INCONSISTENT BINARY Drive_Thinness
## Min. :0.00000 Min. :0.00000 Min. : 0.00
## 1st Qu.:0.00000 1st Qu.:0.00000 1st Qu.: 4.00
## Median :0.00000 Median :0.00000 Median :11.00
## Mean :0.04497 Mean :0.04961 Mean :11.78
## 3rd Qu.:0.00000 3rd Qu.:0.00000 3rd Qu.:19.00
## Max. :1.00000 Max. :1.00000 Max. :28.00
## NA's :267 NA's :3
## Body_Dissatisfaction Bulimia EDRC_Raw Positive_Mood
## Min. : 0.00 Min. : 0.000 Min. : 0.00 Min. :10.00
## 1st Qu.: 9.00 1st Qu.: 2.000 1st Qu.:19.00 1st Qu.:28.00
## Median :15.00 Median : 6.000 Median :33.00 Median :31.00
## Mean :16.01 Mean : 7.847 Mean :35.59 Mean :31.56
## 3rd Qu.:22.00 3rd Qu.:11.250 3rd Qu.:50.50 3rd Qu.:36.00
## Max. :39.00 Max. :31.000 Max. :95.00 Max. :50.00
## NA's :3 NA's :9 NA's :6 NA's :4
## Negative_Mood Depression Anxiety Loneliness
Pet_Attachment
## Min. :10.00 Min. :21.00 Min. :21 Min. : 5.83 Min.

```

```

:27.00
## 1st Qu.:22.00 1st Qu.:30.00 1st Qu.:29 1st Qu.:13.00 1st
Qu.:66.00
## Median :28.00 Median :37.00 Median :38 Median :16.00 Median
:75.00
## Mean :28.21 Mean :38.68 Mean :40 Mean :16.07 Mean
:73.35
## 3rd Qu.:34.00 3rd Qu.:46.00 3rd Qu.:49 3rd Qu.:19.00 3rd
Qu.:83.00
## Max. :50.00 Max. :77.00 Max. :82 Max. :24.00 Max.
:90.00
## NA's :4 NA's :4 NA's :7 NA's :4 NA's :273
## Age Ethnicity Ethnicity_11_TEXT SexualOrientation
## Min. :17.00 Length:645 Length:645 Min. :1.000
## 1st Qu.:18.00 Class :character Class :character 1st Qu.:1.000
## Median :19.00 Mode :character Mode :character Median :1.000
## Mean :20.32 Mean :1.427
## 3rd Qu.:21.00 3rd Qu.:1.000
## Max. :47.00 Max. :5.000
## NA's :15 NA's :4
## SexualOrientation_5_TEXT MaritalStatus Education Education_4_TEXT
## Length:645 Min. :1.000 Min. :1.000 Length:645
## Class :character 1st Qu.:5.000 1st Qu.:1.000 Class :character
## Mode :character Median :5.000 Median :1.000 Mode :character
## Mean :4.851 Mean :1.228
## 3rd Qu.:5.000 3rd Qu.:1.000
## Max. :5.000 Max. :4.000
## NA's :1
## LiveWithOthers LiveCurrently OwnedPast_Pet AgeOwned_Pet
## Length:645 Min. :1.000 Min. :1.000 Min. : 0.000
## Class :character 1st Qu.:1.000 1st Qu.:2.000 1st Qu.: 2.000
## Mode :character Median :1.000 Median :2.000 Median : 6.000
## Mean :1.003 Mean :1.794 Mean : 7.163
## 3rd Qu.:1.000 3rd Qu.:2.000 3rd Qu.:12.000
## Max. :3.000 Max. :2.000 Max. :27.000
## NA's :3 NA's :110
## HowMany_Pet PrimaryGuardian More Than 1 Pet How many total
## Min. : 0.000 Min. :1.000 Min. :1.000 Min. : 1.000
## 1st Qu.: 2.000 1st Qu.:1.000 1st Qu.:1.000 1st Qu.: 2.000
## Median : 3.000 Median :1.000 Median :2.000 Median : 2.000
## Mean : 4.663 Mean :1.488 Mean :1.533 Mean : 3.173
## 3rd Qu.: 5.750 3rd Qu.:2.000 3rd Qu.:2.000 3rd Qu.: 3.000
## Max. :50.000 Max. :2.000 Max. :2.000 Max. :35.000
## NA's :111 NA's :268 NA's :268 NA's :448

```

```

##
## Wilcoxon rank sum test with continuity correction
##
## data: Drive_Thinness by Pet_Ownership
## W = 42403, p-value = 0.001184
## alternative hypothesis: true location shift is not equal to 0
##
## Wilcoxon rank sum test with continuity correction
##
## data: Body_Dissatisfaction by Pet_Ownership
## W = 42354, p-value = 0.001101
## alternative hypothesis: true location shift is not equal to 0
##
## Wilcoxon rank sum test with continuity correction

```

```

##
## data: Bulimia by Pet_Ownership
## W = 42702, p-value = 0.006582
## alternative hypothesis: true location shift is not equal to 0
##
## Wilcoxon rank sum test with continuity correction
##
## data: Depression by Pet_Ownership
## W = 42924, p-value = 0.003027
## alternative hypothesis: true location shift is not equal to 0
##
## Wilcoxon rank sum test with continuity correction
##
## data: Anxiety by Pet_Ownership
## W = 39432, p-value = 1.611e-05
## alternative hypothesis: true location shift is not equal to 0
##
## Wilcoxon rank sum test with continuity correction
##
## data: Positive_Mood by Pet_Ownership
## W = 53573, p-value = 0.09839
## alternative hypothesis: true location shift is not equal to 0
##
## Wilcoxon rank sum test with continuity correction
##
## data: Negative_Mood by Pet_Ownership
## W = 44628, p-value = 0.02593
## alternative hypothesis: true location shift is not equal to 0
##
## Wilcoxon rank sum test with continuity correction
##
## data: Loneliness by Pet_Ownership
## W = 46930, p-value = 0.2096
## alternative hypothesis: true location shift is not equal to 0
##
## Call:
## lm(formula = Drive_Thinness ~ Pet_Ownership, data = data)
##
## Residuals:
##   Min     1Q   Median     3Q    Max
## -12.6984 -7.6984 -0.6984  7.3016 16.5455
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)  10.4545    0.5110   20.46 < 2e-16 ***
## Pet_Ownership1  2.2439    0.6659   3.37 0.000798 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 8.302 on 640 degrees of freedom

```

```
## (3 observations deleted due to missingness)
## Multiple R-squared: 0.01743, Adjusted R-squared: 0.0159
## F-statistic: 11.35 on 1 and 640 DF, p-value: 0.0007979
##
## Call:
## lm(formula = Body_Dissatisfaction ~ Pet_Ownership, data = data)
##
## Residuals:
##   Min     1Q   Median     3Q      Max
## -17.0185 -6.5758 -0.5758  5.9815 24.4242
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)  14.5758    0.5316  27.418 < 2e-16 ***
## Pet_Ownership1  2.4428    0.6928   3.526 0.000452 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 8.638 on 640 degrees of freedom
## (3 observations deleted due to missingness)
## Multiple R-squared: 0.01905, Adjusted R-squared: 0.01752
## F-statistic: 12.43 on 1 and 640 DF, p-value: 0.0004522
##
## Call:
## lm(formula = Bulimia ~ Pet_Ownership, data = data)
##
## Residuals:
##   Min     1Q   Median     3Q      Max
## -8.505 -5.505 -1.896  3.495 24.104
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)   6.8962    0.4286  16.089 < 2e-16 ***
## Pet_Ownership1  1.6092    0.5575   2.887 0.00403 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## Residual standard error: 6.912 on 634 degrees of freedom
## (9 observations deleted due to missingness)
## Multiple R-squared: 0.01297, Adjusted R-squared: 0.01141
## F-statistic: 8.332 on 1 and 634 DF, p-value: 0.004028
```

```
##           Df Sum Sq Mean Sq F value Pr(>F)
## Pet_Ownership  1  992  991.8  7.739 0.00556 **
## Residuals    639 81896  128.2
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 4 observations deleted due to missingness
```

```

##           Df Sum Sq Mean Sq F value Pr(>F)
## Pet_Ownership 1 3631 3631 20.93 5.72e-06 ***
## Residuals 636 110324 173
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 7 observations deleted due to missingness
##           Df Sum Sq Mean Sq F value Pr(>F)
## Pet_Ownership 1 124 124.08 3.118 0.0779 .
## Residuals 639 25428 39.79
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 4 observations deleted due to missingness
##           Df Sum Sq Mean Sq F value Pr(>F)
## Pet_Ownership 1 402 402.2 6.149 0.0134 *
## Residuals 639 41798 65.4
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 4 observations deleted due to missingness
##           Df Sum Sq Mean Sq F value Pr(>F)
## Pet_Ownership 1 46 46.37 2.445 0.118
## Residuals 639 12122 18.97
## 4 observations deleted due to missingness
##
## Pearson's product-moment correlation
##
## data: data$Pet_Attachment and data$Anxiety
## t = 6.1381, df = 369, p-value = 2.157e-09
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
## 0.2090389 0.3939832
## sample estimates:
## cor
## 0.3043768
##
## Pearson's product-moment correlation
##
## data: data$Pet_Attachment and data$Depression
## t = 4.3637, df = 370, p-value = 1.661e-05
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
## 0.1223087 0.3158113
## sample estimates:
## cor
## 0.2212364
##
## Pearson's product-moment correlation
##
## data: data$Pet_Attachment and data$Positive_Mood
## t = 1.1, df = 370, p-value = 0.2721
## alternative hypothesis: true correlation is not equal to 0

```

```

## 95 percent confidence interval:
## -0.04484711 0.15785498
## sample estimates:
##      cor
## 0.05709229
##
## Pearson's product-moment correlation
##
## data: data$Pet_Attachment and data$Negative_Mood
## t = 4.0862, df = 370, p-value = 5.381e-05
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
## 0.1084038 0.3030682
## sample estimates:
##      cor
## 0.2077925
##
## Pearson's product-moment correlation
##
## data: data$Pet_Attachment and data$Loneliness
## t = 2.715, df = 370, p-value = 0.006939
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
## 0.03862916 0.23805541
## sample estimates:
##      cor
## 0.1397593
##      Pet_Attachment Depression  Anxiety Positive_Mood Negative_Mood
## Pet_Attachment  1.00000000 0.2212364 0.3043768 0.05709229 0.2077925
## Depression      0.22123642 1.0000000 0.7470881 -0.41520801 0.6668598
## Anxiety          0.30437682 0.7470881 1.0000000 -0.25913237 0.6278758
## Positive_Mood    0.05709229 -0.4152080 -0.2591324 1.00000000 -0.1786904
## Negative_Mood    0.20779246 0.6668598 0.6278758 -0.17869040 1.0000000
## Loneliness       0.13975927 0.5999140 0.4843814 -0.32629765 0.4960524
##      Loneliness
## Pet_Attachment 0.1397593
## Depression      0.5999140
## Anxiety          0.4843814
## Positive_Mood   -0.3262976
## Negative_Mood   0.4960524
## Loneliness      1.0000000
##
## Pearson's product-moment correlation
##
## data: data$Pet_Attachment and data$EDRC_Raw
## t = 5.1155, df = 370, p-value = 5.034e-07
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
## 0.1594987 0.3495540
## sample estimates:

```

```
## cor
## 0.2570097
```