Statistical Analysis Report

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Introduction

This report has been prepared by Mohammad Esfandiari as part of an academic assignment. The task was given by one of the university professors to enhance familiarity with various statistical analyses and hypothesis testing. The goal of this assignment is to understand the statistical foundations behind each hypothesis, perform the required tests using SPSS, and subsequently write a structured report analyzing the results.

It is important to note that the dataset used in this analysis is not necessarily real or scientifically valid. The statistical analyses conducted are purely for educational purposes, aimed at improving proficiency in statistical methodologies and software applications. Therefore, the findings presented in this report hold no scientific value or research contribution.

Hypothesis 1: Effect of Gender on Depression

This section examines whether there is a significant difference in depression scores between men and women.

Descriptive Statistics

Table 1 presents the descriptive statistics for depression scores in males and females.

Gender	N	Mean	Std. Deviation
Males	99	20.93	4.477
Females	111	24.98	4.555

Table 1: Descriptive Statistics for Depression Scores

The table above presents descriptive statistics for the two groups. The sample consists of 99 males and 111 females. The mean depression score for males is 20.93, while for females, it is 24.98. The histograms below visualize the distribution of depression scores across genders.
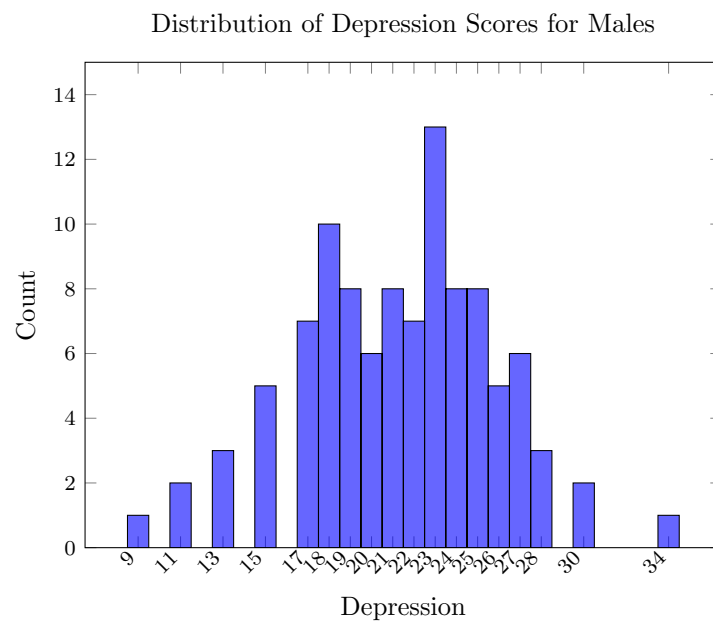
Distribution of Depression Scores

Figure 1: Distribution of Depression Scores for Males

Independent Samples t-Test

To test whether the difference in mean depression scores between men and women is statistically significant, an independent samples t-test was conducted. Table 2 presents the results.

Table 2: Independent Samples t-Test for Depression by Gender

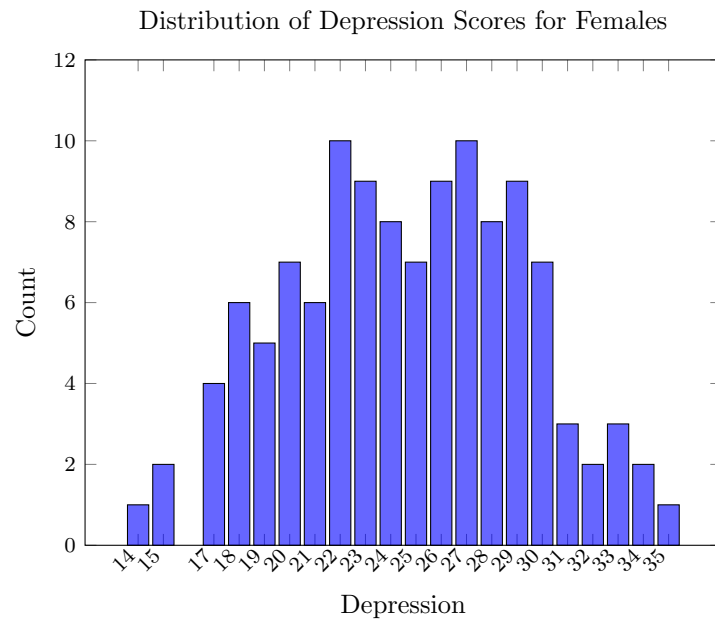|	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	95% CI
Equal variances assumed	0.352	0.554	-6.488	208	0.000	-4.053	-5.284 to -2.821
Equal variances not assumed	-	-	-6.495	206.025	0.000	-4.053	-5.283 to -2.822

Figure 2: Distribution of Depression Scores for Females

Interpretation of Results

The Levene's test for equality of variances was non-significant ($p = 0.554$), indicating that the assumption of equal variances is met. The independent samples t-test revealed a statistically significant difference in depression scores between men and women ($t = -6.488, p < 0.001$). The mean difference of -4.053 suggests that women report significantly higher levels of depression compared to men.

Hypothesis 2: Effect of Gender on Positive Body Image After Controlling for Depression

This section examines whether there is a significant difference in positive body image between men and women after controlling for depression. To test this hypothesis, a one-way ANCOVA was conducted.

Descriptive Statistics

Table 3 presents the descriptive statistics for positive body image scores across gender.

Table 3: Descriptive Statistics for Positive Body Image Scores

Gender	Mean	Std. Deviation	N
Male	24.60	3.673	99
Female	19.48	3.526	111
Total	21.89	4.408	210

The table above provides an overview of the descriptive statistics. The mean positive body image score is 24.60 for males and 19.48 for females.

Visualization

Figure 3 illustrates the mean positive body image scores for males and females.
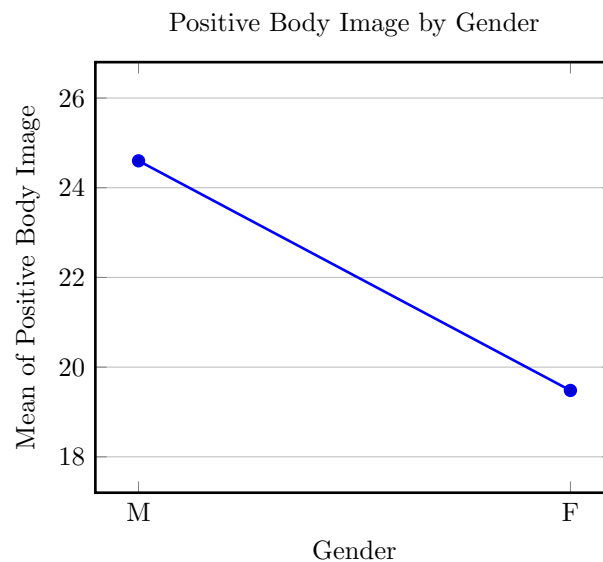

Figure 3: Mean Positive Body Image Scores by Gender

ANCOVA Results

Table 4 presents the results of the ANCOVA test examining the effect of gender on positive body image while controlling for depression.

Table 4: ANCOVA Results for Positive Body Image

Source	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1403.911	2	701.955	54.696	.000	.346
Intercept	3108.294	1	3108.294	242.198	.000	.539
Depression	32.962	1	32.962	2.568	.111	.012
Gender	1304.804	1	1304.804	101.670	.000	.329
Error	2566.570	207	12.834			
Total	104691.000	210				
Corrected Total	4060.481	209				

Interpretation of Results

The ANCOVA results indicate that, even after controlling for depression, gender remains a significant predictor of positive body image ($p < 0.001$). The partial eta squared value of 0.329 suggests a large effect size. These findings support the hypothesis that men exhibit significantly higher levels of positive body image compared to women.

Hypothesis 3: Effect of Number of Children on Marital Adjustment

This section examines whether the number of children affects marital adjustment after controlling for income. To test this hypothesis, a one-way ANCOVA was conducted.

Descriptive Statistics

Table 5 presents the descriptive statistics for marital adjustment scores across different numbers of children.

Table 5: Descriptive Statistics for Marital Adjustment Scores

Child Num	Mean	Std. Deviation	N
0	53.41	9.916	68
1	51.83	10.647	78
2	43.42	9.947	53
Total	50.13	10.966	199

The table above provides an overview of the descriptive statistics. The mean marital adjustment score is highest for individuals with no children (53.41) and decreases as the number of children increases.

Visualization

Figure 4 illustrates the mean marital adjustment scores for different numbers of children.
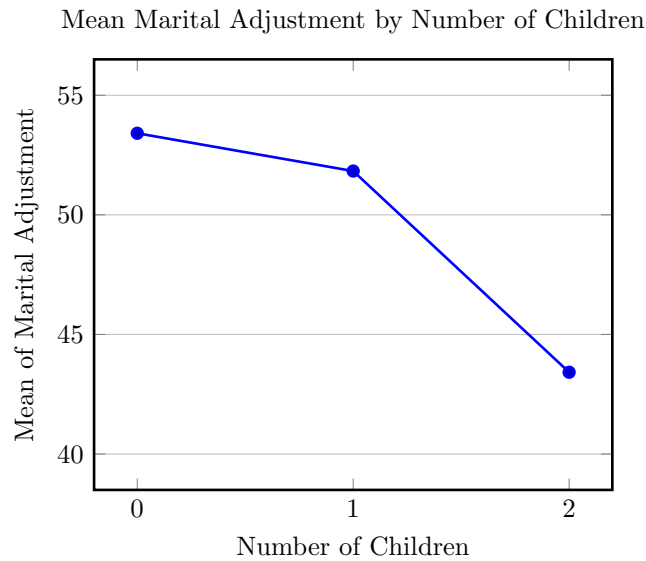

Figure 4: Mean Marital Adjustment Scores by Number of Children

ANCOVA Results

Interpretation of Results

The ANCOVA results indicate that, even after controlling for income, the number of children remains a significant predictor of marital adjustment ($p < 0.001$). The partial eta squared value of 0.076 suggests a moderate effect size. These findings support the hypothesis that individuals with more children tend to have lower marital adjustment scores compared to those with fewer or no children.

Table 6: ANCOVA Results for Marital Adjustment

Source	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	4441.642	3	1480.547	14.906	.000	.187
Intercept	1350.572	1	1350.572	13.597	.000	.085
Income	1093.211	1	1093.211	11.006	.001	.053
Child Num	1592.637	2	796.318	8.017	.000	.076
Error	19398.961	195	99.328			
Total	523941.000	199				
Corrected Total	23810.603	198				

Hypothesis 4: Effect of Childhood Abuse on Intimacy and Attachment Styles

This section examines whether childhood abuse influences intimacy and different attachment styles. To test this hypothesis, a factorial ANCOVA was conducted.

Descriptive Statistics

Table 7 presents the descriptive statistics for intimacy scores across abuse history and attachment styles.

Table 7: Descriptive Statistics for Intimacy Scores

Abuse	Attachment	Mean	Std. Deviation	N
No	Secure	32.64	4.788	36
No	Anxious	38.00	5.579	33
No	Avoidant	30.16	6.504	25
No	Total	33.86	6.371	94
Yes	Secure	35.77	3.982	44
Yes	Anxious	42.48	3.813	32
Yes	Avoidant	41.16	6.207	36
Yes	Total	35.28	6.525	112
Total	Secure	34.36	4.609	80
Total	Anxious	33.54	6.377	69
Total	Avoidant	38.33	8.352	57
Total	Total	34.63	6.478	206

The table above presents descriptive statistics for intimacy scores based on abuse history and attachment styles.

Visualization

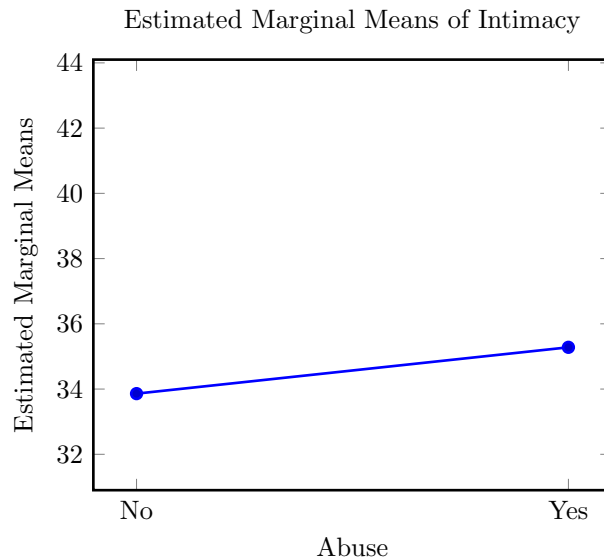Figures 5 and 6 illustrate the mean intimacy scores for different conditions.

Figure 5: Estimated Marginal Means of Intimacy by Abuse

ANCOVA Results

Table 8 presents the results of the ANCOVA test examining the effect of childhood abuse and attachment styles on intimacy.
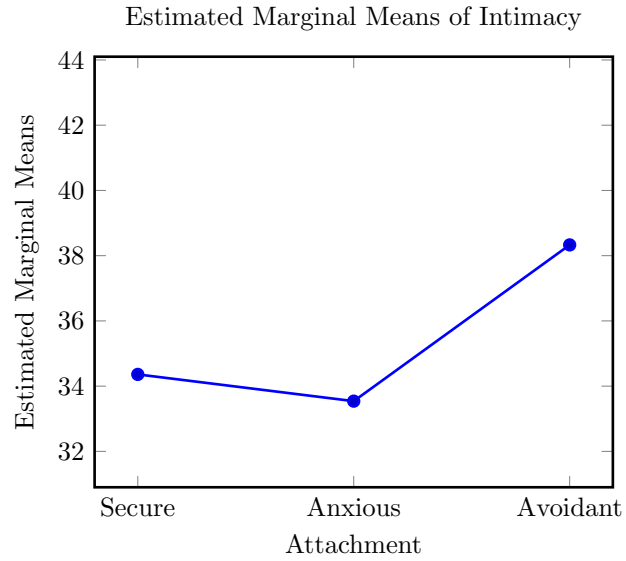
Estimated Marginal Means of Intimacy

Figure 6: Estimated Marginal Means of Intimacy by Attachment Style

Table 8: ANCOVA Results for Intimacy

Source	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	3409.008	6	568.168	21.764	.000	.396
Intercept	2662.160	1	2662.160	101.978	.000	.339
Income	3.548	1	3.548	.138	.713	.001
Abuse	169.362	1	169.362	6.488	.012	.032
Attachment	122.087	2	61.043	2.398	.099	.023
Abuse * Attachment	3060.727	2	1530.364	58.623	.000	.371
Error	51494.953	199	26.105			
Total	255602.000	206				
Corrected Total	8803.961	205				

Interpretation of Results

The ANCOVA results indicate that, even after controlling for income, childhood abuse remains a significant predictor of intimacy ($p = 0.012$). However, attachment styles alone did not significantly predict intimacy ($p = 0.099$). The interaction effect between abuse and attachment styles was highly significant ($p < 0.001$).

Hypothesis 5: Relationship Between Childhood Abuse and Attachment Styles

This section examines whether there is a relationship between childhood abuse and attachment styles. To test this hypothesis, a correlation analysis was conducted.

Correlation Analysis

Table 9 presents the correlation analysis between childhood abuse and attachment styles.

Table 9: Correlation Analysis Between Childhood Abuse and Attachment Styles

	Abuse	**Attachment**
Abuse	1	0.010
Sig. (2-tailed)		0.891
N	210	210
Attachment	0.010	1
Sig. (2-tailed)	0.891	
N	210	210

Interpretation of Results

Based on Table 9, the Pearson correlation coefficient between childhood abuse and attachment styles is $r = 0.010$, indicating a negligible relationship. The significance level ($p = 0.891$) suggests that this correlation is not statistically significant.

Therefore, the findings indicate that there is no meaningful relationship between childhood abuse and attachment styles, leading to the rejection of the hypothesis.

Hypothesis 6: Experience of Abuse in Childhood as a Risk Factor for Anxiety Symptoms in Adulthood

This section examines whether childhood abuse is a significant risk factor for experiencing anxiety symptoms in adulthood. To test this hypothesis, a chi-square test was conducted.

Crosstabulation

Table 10 presents the crosstabulation of abuse experience and anxiety symptoms.

Table 10: Crosstabulation of Abuse and Anxiety Symptoms

Abuse	No Anxiety Symptoms	Yes Anxiety Symptoms	Total
No	83	15	98
Yes	17	95	112
Total	100	110	210

The table above presents the cross-tabulation of childhood abuse experience and anxiety symptoms. The corresponding bar chart visualizes the distribution.

Visualization

Figure 7 illustrates the relationship between childhood abuse and anxiety symptoms.
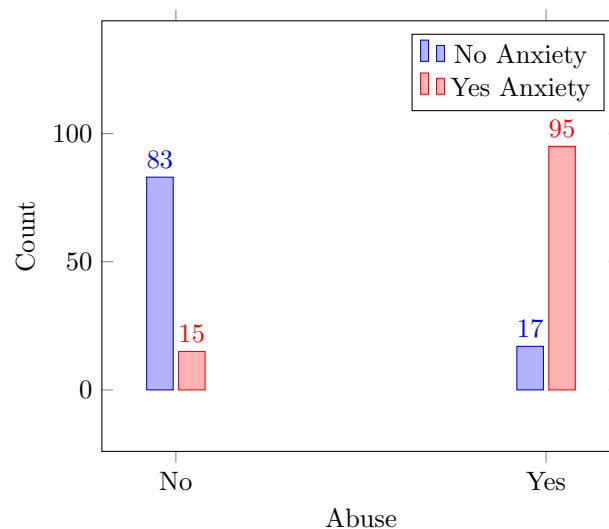

Figure 7: Bar Chart of Abuse Experience and Anxiety Symptoms

Chi-Square Test Results

Table 11 presents the results of the chi-square test examining the relationship between childhood abuse and anxiety symptoms.

Table 11: Chi-Square Test for Abuse and Anxiety Symptoms

Test	Value	df	Sig. (2-sided)
Pearson Chi-Square	101.259	1	.000
Continuity Correction	98.491	1	.000
Likelihood Ratio	111.383	1	.000
Fisher's Exact Test	-	-	.000
Linear-by-Linear Association	100.776	1	.000
Valid Cases	210		

The chi-square test results indicate a significant relationship between childhood abuse and anxiety symptoms ($p < 0.001$). This suggests that individuals with a history of childhood abuse are more likely to experience anxiety symptoms in adulthood.

Symmetric Measures

Table 12 presents the symmetric measures assessing the strength of the relationship.

Table 12: Symmetric Measures for Chi-Square Test

Measure	Value	Sig.
Phi	.694	.000
Cramer's V	.694	.000
Valid Cases	210	

The Cramer's V value of .694 suggests a strong relationship, as it is greater than the threshold of .3.

Risk Estimate

Table 13 presents the risk estimate analysis.

Table 13: Risk Estimate for Childhood Abuse and Anxiety Symptoms

Risk Factor	Value	Lower 95% CI	Upper 95% CI
Odds Ratio for Abuse (No / Yes)	30.922	14.545	65.735
For cohort Anxiety Symptoms = No	5.580	3.573	8.714
For cohort Anxiety Symptoms = Yes	.180	.113	.289
Valid Cases	210		

The risk estimates indicate that individuals with a history of childhood abuse are approximately 30.922 times more likely to experience anxiety symptoms in adulthood. This finding highlights the significant impact of childhood trauma on mental health outcomes.

Hypothesis 7: The Mediating Role of Agreeableness in the Relationship Between Income and Marital Adjustment

This section examines whether agreeableness mediates the relationship between income and marital adjustment. To test this hypothesis, a mediation analysis was conducted.

Model Summary

Table 14 presents the summary statistics for the mediation model.

Table 14: Model Summary

R	R-sq	MSE	F	p-value
0.334	0.112	383.320	24.803	0.000

Regression Coefficients

Table 15 presents the regression coefficients for the mediation model.

Table 15: Regression Coefficients

Predictor	Coeff	SE	t	p-value	LLCI	ULCI
Constant	-35.171	12.625	-2.786	0.006	-60.067	-10.274
Income	0.289	0.058	4.900	0.000	0.175	0.404

Standardized Coefficients

Table 16 presents the standardized coefficients for the mediation model.

Table 16: Standardized Coefficients

Predictor	Standardized Coeff
Income	0.334

Indirect Effects

Table 17 presents the indirect effects of income on marital adjustment via agreeableness.

Completely Standardized Indirect Effects

Table 18 presents the completely standardized indirect effects.

The results indicate that agreeableness significantly mediates the relationship between income and marital adjustment, as the confidence interval does not contain zero.

Table 17: Indirect Effects of Income on Marital Adjustment via Agreeableness

Effect	BootSE	BootLLCI	BootULCI	
Agreeableness	0.104	0.020	0.065	0.144

Table 18: Completely Standardized Indirect Effects

Effect	BootSE	BootLLCI	BootULCI	
Agreeableness	0.227	0.041	0.144	0.305

Hypothesis 8: Moderation Effect of Neuroticism on the Relationship Between Conscientiousness and Marital Adjustment

This section examines whether neuroticism moderates the relationship between conscientiousness and marital adjustment. To test this hypothesis, a moderation analysis was conducted.

Model Summary

Table 19 presents the summary statistics for the moderation model.

Table 19: Model Summary

R	R-sq	MSE	F	p-value
0.671	0.451	66.407	53.620	0.000

Regression Coefficients

Table 20 presents the regression coefficients for the moderation model.

Table 20: Regression Coefficients

Predictor	Coeff	SE	t	p-value	LLCI	ULCI
Constant	67.591	18.966	3.564	0.000	30.187	104.996
Conscientiousness	0.061	0.421	0.146	0.884	-0.769	0.892
Neuroticism	-4.032	1.545	-2.610	0.010	-7.078	-0.986
Interaction (Conscientiousness * Neuroticism)	0.055	0.035	1.563	0.120	-0.014	0.125

Interpretation of Results

The results indicate that neuroticism significantly predicts marital adjustment ($p = 0.010$), but the interaction term between conscientiousness and neuroticism ($p = 0.120$) is not statistically significant. This suggests that neuroticism does not significantly moderate the relationship between conscientiousness and marital adjustment.