

Analysis Report

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SAMPLE REPORT - Rafael Data Analysis Portfolio

Sample Characterization

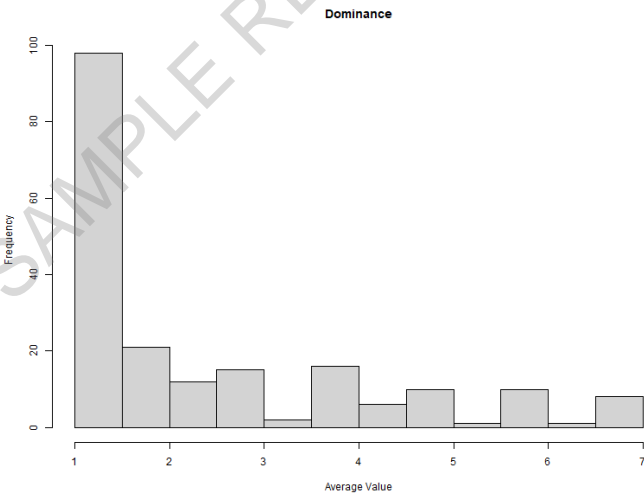
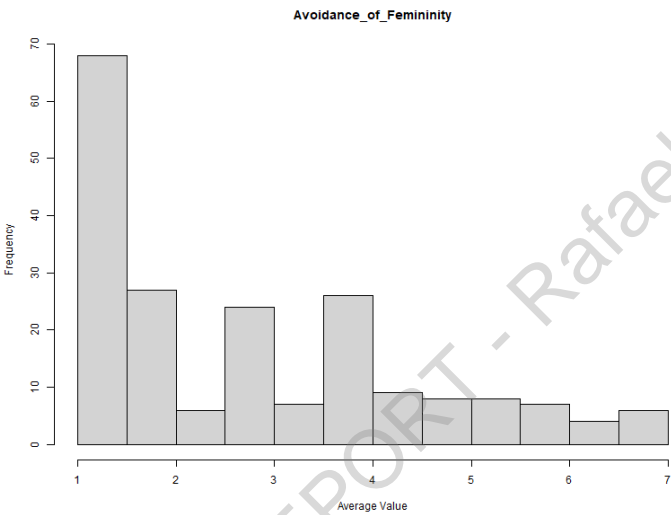
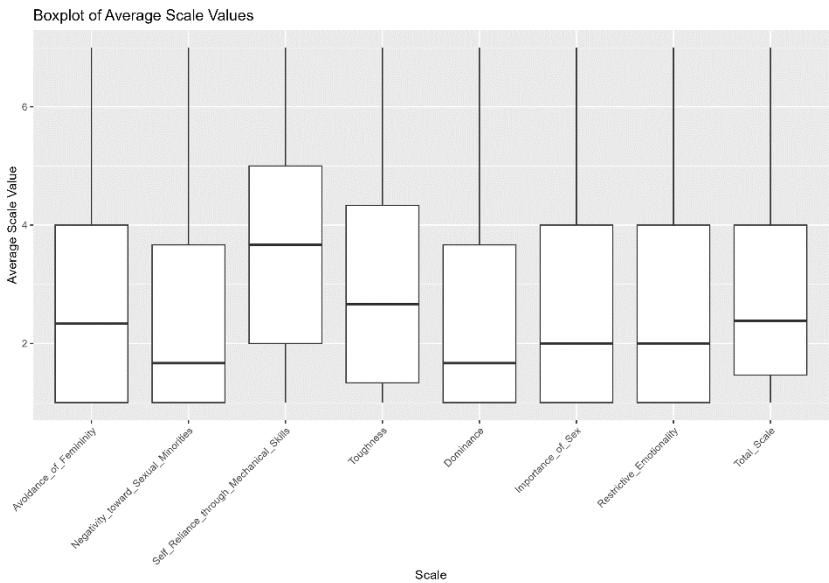
The sample comprises 79 men, 116 women, and 5 non-binary individuals. The average age across all participants is approximately 35.21 years.

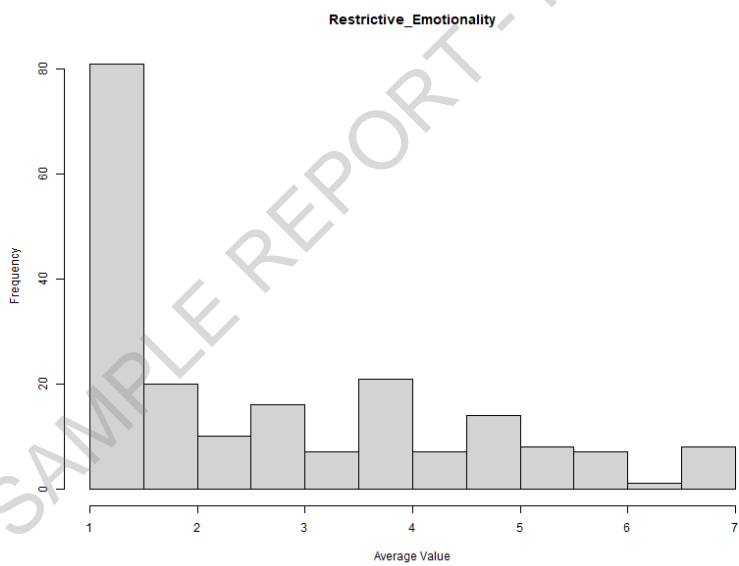
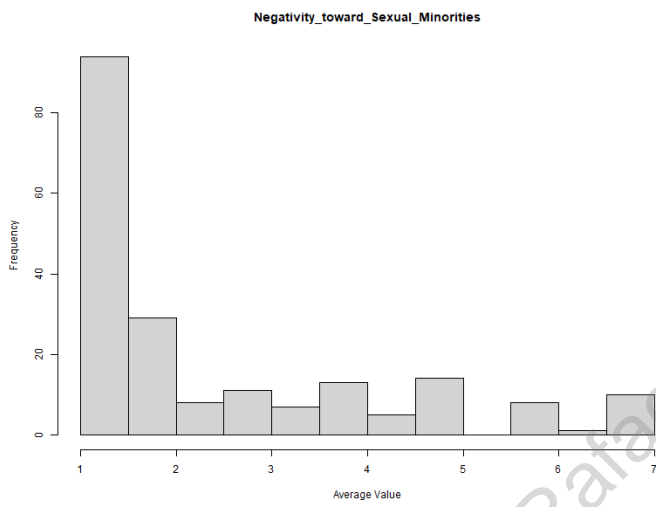
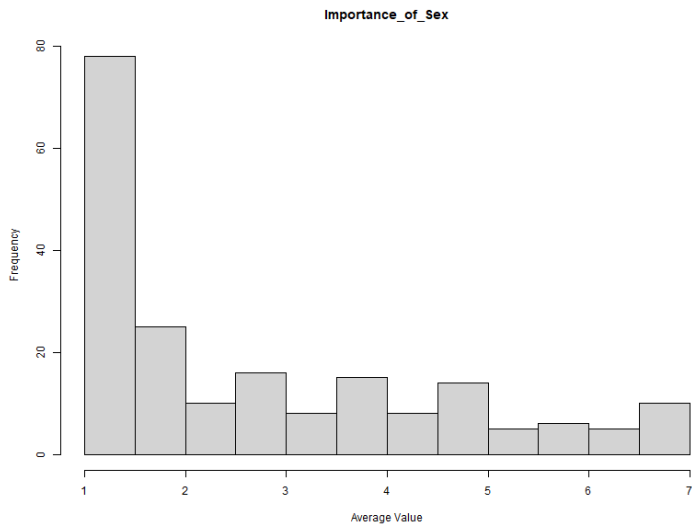
Reliability Analysis

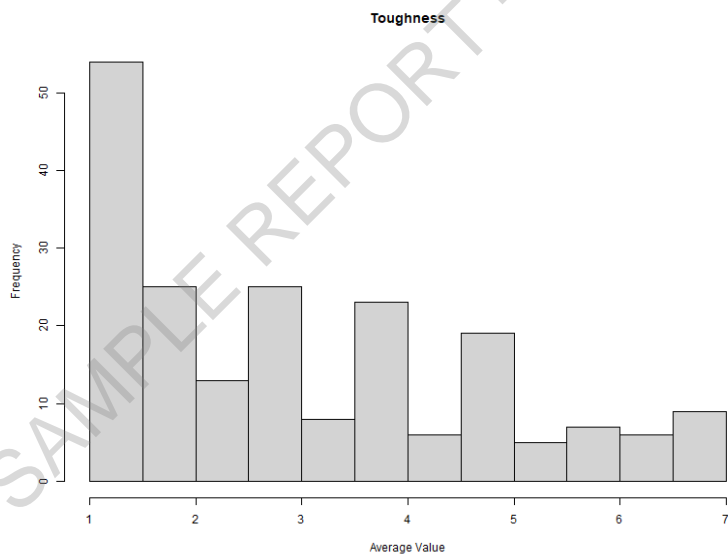
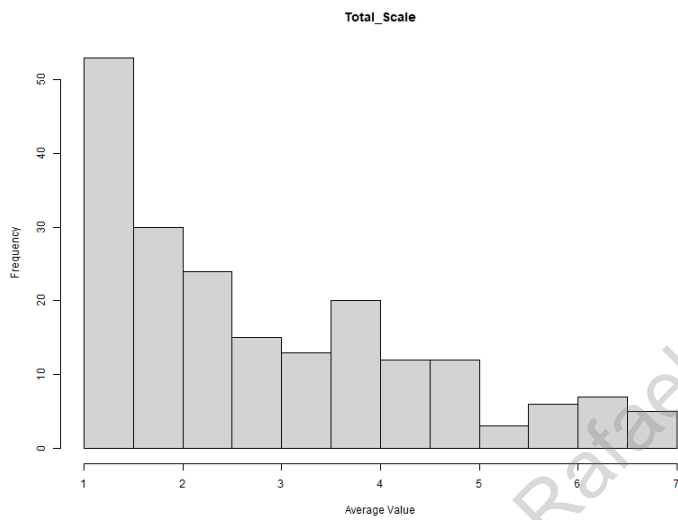
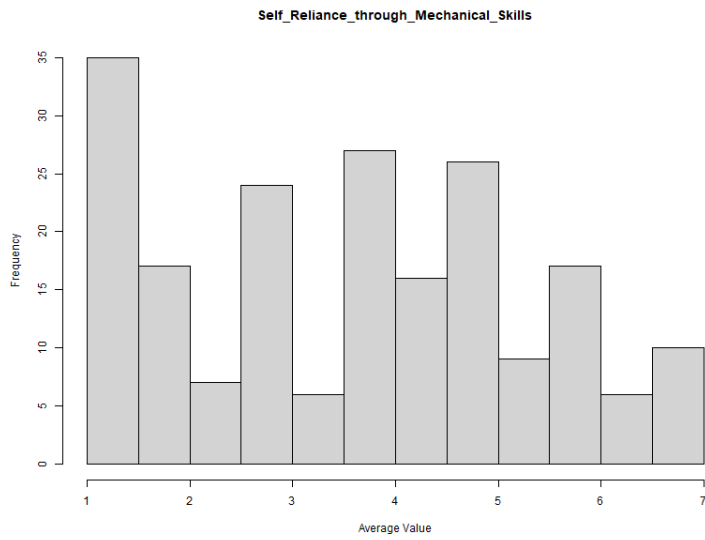
The reliability analysis table presents the internal consistency of different scales and their respective items. It includes the mean, standard deviation (SD), and Cronbach's alpha (α) for each scale and item. The Cronbach's alpha values for all the scales are well above 0.8, suggesting good internal consistency. The Total Masculinity Scale, combining all subscales, exhibited excellent reliability with a Cronbach's alpha of 0.975.

Scale	Variable	Mean	SD	α
Avoidance_of_Femininity	Q4	2.565	1.922	
Avoidance_of_Femininity	Q8	2.765	1.875	
Avoidance_of_Femininity	Q10	3.000	1.959	
<i>Avoidance_of_Femininity</i>	<i>Avoidance_of_Femininity_Avg</i>	<i>2.777</i>	<i>1.728</i>	<i>0.883</i>
Negativity_toward_Sexual_Minorities	Q1	2.375	1.901	
Negativity_toward_Sexual_Minorities	Q5	2.245	1.914	
Negativity_toward_Sexual_Minorities	Q13	2.655	2.068	
<i>Negativity_toward_Sexual_Minorities</i>	<i>Negativity_toward_Sexual_Minorities_Avg</i>	<i>2.425</i>	<i>1.804</i>	<i>0.908</i>
Self_Reliance_through_Mechanical_Skills	Q6	3.935	2.055	
Self_Reliance_through_Mechanical_Skills	Q7	3.770	2.090	
Self_Reliance_through_Mechanical_Skills	Q14	3.190	2.021	
<i>Self_Reliance_through_Mechanical_Skills</i>	<i>Self_Reliance_through_Mechanical_Skills_Avg</i>	<i>3.632</i>	<i>1.783</i>	<i>0.836</i>
Toughness	Q17	3.115	2.033	
Toughness	Q19	3.050	2.014	
Toughness	Q20	3.005	1.953	
<i>Toughness</i>	<i>Toughness_Avg</i>	<i>3.057</i>	<i>1.786</i>	<i>0.873</i>
Dominance	Q2	2.310	1.869	
Dominance	Q3	2.400	1.921	
Dominance	Q12	2.520	1.918	
<i>Dominance</i>	<i>Dominance_Avg</i>	<i>2.410</i>	<i>1.783</i>	<i>0.931</i>
Importance_of_Sex	Q9	2.940	2.032	
Importance_of_Sex	Q11	2.600	1.907	
Importance_of_Sex	Q18	2.700	2.025	
<i>Importance_of_Sex</i>	<i>Importance_of_Sex_Avg</i>	<i>2.747</i>	<i>1.853</i>	<i>0.924</i>
Restrictive_Emotionality	Q15	2.575	1.927	
Restrictive_Emotionality	Q16	2.780	1.926	
Restrictive_Emotionality	Q21	2.725	1.899	
<i>Restrictive_Emotionality</i>	<i>Restrictive_Emotionality_Avg</i>	<i>2.693</i>	<i>1.796</i>	<i>0.930</i>
<i>MRNI-SF Total Score</i>	<i>MRNI-SF Total Score</i>	<i>2.820</i>	<i>1.608</i>	<i>0.975</i>

The figures below presents a boxplot of all subscales and the total masculinity scale, along with histograms of all scales, which show the distribution of scores across the sample.







Normality Assessment

This section outlines the skewness, kurtosis, and Shapiro-Wilk p-value for each scale. Although the Shapiro-Wilk p-values for all scales were below 0.05, indicating a departure from normality, it's worth noting that the skewness and kurtosis values for all scales were within acceptable ranges. Furthermore, ANOVA is generally robust to violations of the normality assumption, particularly when sample sizes are large, as is the case with the current dataset.

Scale	Skewness	Kurtosis	Shapiro.Wilk.p.value
Avoidance_of_Femininity	0.677	-0.614	< 0.001
Negativity_toward_Sexual_Minorities	1.127	0.086	< 0.001
Self_Reliance_through_Mechanical_Skills	0.010	-1.060	< 0.001
Toughness	0.541	-0.780	< 0.001
Dominance	1.116	0.067	< 0.001
Importance_of_Sex	0.821	-0.522	< 0.001
Restrictive_Emotionality	0.750	-0.604	< 0.001
MRNI-SF Total Score	0.786	-0.303	< 0.001

In summary, while the Shapiro-Wilk test suggests non-normality, the skewness and kurtosis values are within acceptable limits. Combined with the robustness of ANOVA to normality deviations in large samples, these results still permit a valid interpretation of the subsequent statistical analyses.

Gender Comparison

The gender comparison table elucidates the mean and standard deviation scores for each scale, stratified by gender. It also presents the F-statistic and the associated p-value. Here, Welsch's ANOVA was performed to accommodate unequal variances detected by Levene's tests ($p < 0.05$). Across all scales, there were statistically significant differences between men and women, with p-values less than 0.001.

Scale	Women (N = 116)		Men (N = 79)		F_statistic	p_value
	Mean	SD	Mean	SD		
Avoidance_of_Femininity	2.034	1.218	3.848	1.850	58.644	< 0.001
Dominance	1.684	1.174	3.456	2.038	48.687	< 0.001
Importance_of_Sex	2.040	1.360	3.776	2.041	43.878	< 0.001
Negativity_toward_Sexual_Minorities	1.741	1.135	3.384	2.165	38.313	< 0.001
Restrictive_Emotionality	1.991	1.346	3.692	1.935	45.909	< 0.001
Self_Reliance_through_Mechanical_Skills	3.118	1.608	4.439	1.788	27.798	< 0.001
Toughness	2.408	1.416	4.008	1.894	40.852	< 0.001
MRNI-SF Total Score	2.145	3.800	1.093	1.775	54.566	< 0.001

Age Group Comparison – Men

This section compares the mean and standard deviation scores of different scales between two age brackets (18-30 and 31+) among men. Here, standard ANOVA was conducted since variances were equal among groups. It also provides the F-statistic and p-value for each scale. With a significance level set at $p < 0.1$, Negativity toward Sexual Minorities ($p = 0.050$) and Self Reliance through Mechanical Skills ($p = 0.092$) approached statistical significance, suggesting potential age-related differences in these scales among men.

Scale	18-30 (N = 26)		31+ (N = 53)		F_statistic	p_value
	Mean	SD	Mean	SD		
Avoidance_of_Femininity	4.077	1.795	3.736	1.883	0.590	0.445
Dominance	3.782	1.962	3.296	2.074	0.993	0.322
Importance_of_Sex	4.103	1.897	3.616	2.108	0.989	0.323
Negativity_toward_Sexual_Minorities	4.064	2.366	3.050	1.998	3.971	0.050
Restrictive_Emotionality	4.051	1.813	3.516	1.985	1.343	0.250
Self_Reliance_through_Mechanical_Skills	4.923	1.501	4.201	1.881	2.911	0.092
Toughness	4.462	1.628	3.786	1.988	2.254	0.137
MRNI-SF Total Score	4.209	3.600	1.607	1.834	2.078	0.154

Age Group Comparison – Women

Similarly, this section provides a comparison between two age brackets (18-30 and 31+) among women. The F-statistic and p-value are reported for each scale. Using a significance level of $p < 0.1$, none of the scales demonstrated significant differences between the age groups for women.

Scale	18-30 (N = 42)		31+ (N = 74)		F_statistic	p_value
	Mean	SD	Mean	SD		
Avoidance_of_Femininity	1.952	2.081	1.032	1.316	0.297	0.587
Dominance	1.889	1.568	1.170	1.169	2.023	0.158
Importance_of_Sex	1.984	2.072	1.173	1.462	0.111	0.739
Negativity_toward_Sexual_Minorities	1.825	1.694	1.201	1.100	0.359	0.550
Restrictive_Emotionality	2.159	1.896	1.324	1.358	1.018	0.315
Self_Reliance_through_Mechanical_Skills	2.937	3.221	1.620	1.603	0.836	0.363
Toughness	2.325	2.455	1.283	1.493	0.223	0.638
MRNI-SF Total Score	2.153	2.141	1.071	1.113	0.003	0.954

In summary, the scales demonstrated good to excellent reliability. Despite the Shapiro-Wilk test suggesting non-normality, the skewness and kurtosis values are within acceptable limits, and ANOVA's robustness to normality deviations in large samples validates the statistical analyses. Clear gender differences were noted across all scales, with men generally scoring higher. Among men, age appeared to marginally influence scores on the scales of Negativity toward Sexual Minorities and Self Reliance through Mechanical Skills, although this was not the case for women.