Edith Cowan University

CSG1132

Communicating in an IT Environment

Assignment 2

Research Paper:

Facebook User Psychology

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October 15, 2014

Contents

1 Abstract

2 Introduction

This research paper explores the role of gender and its effects relating to personal Facebook use. Facebook is one of today's leading Social Networking Sites (SNS) and the company reports that as of June 2014, their network serves 1.32 billion users per month (Facebook, 2014). Independent studies have also shown that SNS users were more likely to be using Facebook than any other SNS site (Hampton & Goulet, 2011; Hargittai, 2007; Raacke & Bonds-Raacke, 2008). As Facebook expanded registration to users outside educational and professional institutions in September 2006 (Facebook, 2014), users were quick to adopt the technology at a fast paced rate (Mazman & Usluel, 2011). This adoption rate has triggered a multitude of scientific research "from widely different fields of inquiry", attempting to explain the phenomenon of Facebook (Caers et al., 2013, p. 983).

Differences in gender is a facet of SNS use that has been investigated by many researchers (Fallows, 2005; Haferkamp, Eimler, Papadakis, & Kruck, 2012; Hargittai, 2007; Joiner et al., 2014; Kimbrough, Guadagno, Muscanell, & Dill, 2013; Mathiyalakan, Heilman, & White, 2014; Mazman & Usluel, 2011). Men have been generally regarded as earlier adopters of technology compared to women, and the adoption of SNS such as Facebook has been no different. Pitkow and Recker's (1994) study showed that during the mid 1990's, 95% of Internet users were men, while research by Fogel and Nehmad (2009) demonstrates that men are also earlier adopters of SNS, finding that more men had established accounts before women. However, the trend has shifted, with recent reports indicating that women now represent the majority of SNS users compared to men (Duggan & Brenner, 2013; Hampton & Goulet, 2011).

As the Internet user gender gap disappears, it is more important than ever to understand the differences between genders and its effects relating to personal SNS use, so that current social networking sites and social networking sites of the future are able to service, and attract both men and women equally. This research paper will explore the role of gender in SNS as expressed in the body of current research literature, and investigate such differences within the given dataset.

3 Discussion

Fallows (2005) compared American male and female Internet users and found that men were more likely to use the Internet in general for information gathering purposes, while women were more likely to use the Internet for social applications to maintain current relationships. According to the literature in this review, this statement also translates to the use of SNS such as Facebook.

3.1 Social gender role theory and gender motivations

Eagly's (1987) theory of social gender roles introduces a framework to explain differences in gender, regardless of being online or offline, which underpins many cyberpsychology studies (Hum et al., 2011; Kimbrough et al., 2013; Tifferet & Vilnai-Yavetz, 2014). This theory characterizes men as "*agentic* providers" and women as

"*communal* caregivers" (Hum et al., 2011, p. 1830). In other words, according to this theory, men tend to develop traits which lend to task-based activities, while women tend to develop traits which lend to social interactions. The theory of social gender roles is one of many frameworks used to explain the differences between gender in SNS and Internet use, which is evident in Fallows's (2005) generalisation that men use the Internet for information gathering purposes, and women use the Internet for social activities.

3.2 Male gender role and motivations

Widely cited research by Raacke and Bonds-Raacke (2008) was among the first to examine the impact of SNS on college students and observed that men, compared to women, were more likely to use SNS to find out about events, indicating that men spend more time than women performing information-gathering activities on SNS. In support of this view, Choi and Kim (2014, p. 2) hypothesise that men have higher positive attitudes towards SNS advertising than women, as men are more likely to perceive such advertising as "useful information" due to their "information-oriented motivation". The presented evidence supports Eagly's (1987) social gender theory. On the other hand, Park, Kee, and Valenzuela (2009) argues by claiming that women were more likely to use Facebook Groups for obtaining information. However, this study only examines the use of Facebook *Groups* and not Facebook as a whole.

In comparison to women using SNS as a medium to maintain existing relationships, men have been found to use SNS as a tool for creating new relationships and expanding their networks (Mazman & Usluel, 2011). This view is supported by findings in research by Muscanell and Guadagno (2012), Raacke and Bonds-Raacke (2008) and Haferkamp et al. (2012), which illustrates that men are more likely to use SNS for dating purposes than women. These findings reiterate a difference in motivation of SNS use between genders.

3.3 Female gender role and motivations

In contrast, Mazman and Usluel (2011) and Muscanell and Guadagno (2012) both assert that women are more likely to seek out old friends on the network, and are more likely to utilise SNS communication tools to maintain existing relationships. To support this statement, Joiner et al. (2014) provides evidence that women are more likely to demonstrate higher emotional support in response to a friend's negative Facebook status update. Women are also twice as likely to respond publicly to a negative status update when compared to men (Joiner et al., 2014, p. 167). These statements lend to the hypothesis that women use SNS as a tool for relationship maintenance more than men, which align with Eagly's (1987) theory of social gender roles.

As the female gender role is more concerned with socialising than men, it could be assumed that women would have more friends within their SNS network. Raacke and Bonds-Raacke (2008) and Fogel and Nehmad (2009) found the contrary, demonstrating that men had more friends than women, which could support the theory that men use SNS to expand their networks more than women. Nevertheless, more recent research by McAndrew and Jeong (2012) found that women have more friends than men. The contradiction in findings could be due to the difference in time frames

in which these studies occurred, and as Fallows (2005) suggest, women have since caught up to men in Internet connectedness. However, according to Tifferet and Vilnai-Yavetz (2014, p. 389), there are many studies that have conflicting conclusions relating to gender and network size, which warrants further investigation.

4 Research questions and thesis statements

4.1 Research question 1: Is gender related to a user's Facebook network size?

Gender and its relation to SNS network size has been found to be a topic of debate. As indicated by Tifferet and Vilnai-Yavetz (2014), studies have reported conflicting results and require further investigation. The variables measured in the current dataset allows the research question and thesis statement to explore these conflicting views.

4.2 Thesis statement 1: Gender is related to the size of a user's Facebook network

The number of Facebook friends, offline close friends and sociability scores will be tested against gender, seeking any correlations that may support or negate the hypothesis that gender is related to a user's Facebook network size.

4.3 Research Question 2: Is gender related to the amount of time a user spends on Facebook?

The literature in the review suggests that women are attracted to the social aspect of Facebook and SNS more than men. Since the majority of activities on such sites are related to socialising, it is possible to suggest that gender is related to the amount of time a user spends on Facebook.

4.4 Thesis statement 1: Gender is related to the amount of time a user spends on Facebook

Reported hours will be tested against gender, seeking any correlations that may support or negate the hypothesis that gender is related to the amount of time a user spends on Facebook.

5 Data analysis and interpretation

5.1 Participants

The sample consisted of 61 fictional under-graduate students from a University in Perth, Western Australia who responded to a survey regarding their Facebook use.

Out of the 61 observations, five were excluded from the dataset with NA responses. Three observations were excluded with responses to the questionnaire as "0" (zero). The dataset was then screened for outliers, excluding two observations with reported Facebook logins greater than 50 per week. One observation was excluded, with reported hours spent Facebook greater than 50 per week. Finally, two observations were excluded, with reported number of close friends greater than 70.

This resulted in a final sample of 48 Facebook users, 3 female, 45 male (M = 0.938, SD = 0.2446) between the ages of 17 to 29 (M = 20.6, SD = 3.206543). Gender is coded as 0 = female and 1 = male in the dataset.

5.2 Survey

Each participant filled out a survey which consisted of 10 questions. The first section included questions about the participants demography, requesting their age and sex.

The second section included questions regarding the amount of Facebook use, requesting self-reported estimates on how many Facebook logins per week, and hours spent per week on Facebook.

The third section included questions regarding the participant's social networking and connection, requesting self-reported estimates on how many Facebook friends they have, how many offline close friends they have, and a 5 point Likert-style scale opinion of their own sociability; 1 = strongly disagree, 5 = strongly agree.

The fourth and final section included personality surveys, measuring extraversion, self-esteem and social anxiety. Extraversion was measured through a personality test of 25 items, the scores of which were converted to an integer value between 1 and 25. A lower value suggests introversion and a higher value suggests extraversion. Self esteem was measured using a Rosenberg self esteem scale survey of 10 items. The scale ranges between 0 to 30, with scores between 15 to 25 considered normal, and scores below 15 suggesting low self esteem. Social anxiety was measured using a Liebowitz Social Anxiety Scale survey of 24 items, with scores between 55 to 65 suggesting moderate social phobia, scores between 65 to 80 suggesting marked social phobia, 80 to 95 suggesting severe social phobia and scores greater than 95 suggesting very severe social phobia.

5.3 Descriptive statistics

This research paper aims to explore the relationship between gender and network size, and the relationship between gender and amount of time spent on Facebook. As such, the following measured variables from the survey have been selected for this research:

- **Gender:** The categorical variable with binary values 0 or 1.
- **Facebook friends (FB friends):** Primary variable related to testing Thesis Statement 1.
- **Close friends:** Secondary variable related to testing Thesis Statement 1, exploring the possibility that gender is also related to number of close friends offline, and may provide further evidence for Thesis Statement 1.
- **Sociability:** Secondary variable related to testing Thesis Statement 1, exploring the possibility that gender may also have a correlation with Sociability, and may provide further evidence for Thesis Statement 1.
- **Facebook hours:** Primary variable related to testing Thesis Statement 2.

Table 1 provides centrality and variance measures of the selected variables.

Table 1: Measures of centrality and variance

Variable	Min	Max	Mean	Median	Mode	Std. Dev	Skew	Kurt
Gender	0	1	0.9375	1	1	0.2446	-3.502	10.49
FB Friends	33	798	290.7	275	242	176.001	0.7959	0.04759
Close Friends	6	53	21.73	19	23	12.29	0.9668	0.1483
Sociability	2	5	3.667	4	4	0.7532	-0.5633	-0.008646

With gender coded as 0 = female and 1 = male, the gender mean of 0.9375 demonstrates that the majority of participants within this dataset are men. Women only represent 3 of the total 48 observations. With such a small number of female participants, there is not enough evidence to provide any meaningful conclusions when testing for any correlations between gender and the selected variables.

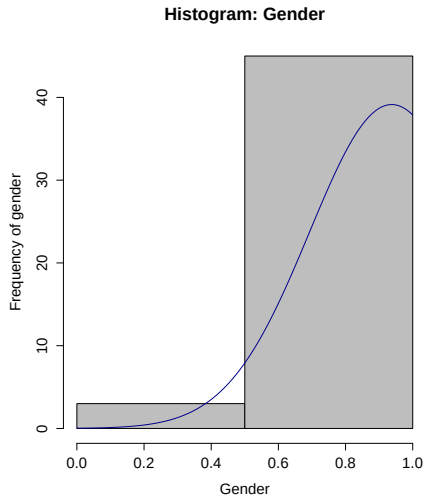
Facebook friends exhibits the highest variance about the mean, with a standard deviation of 176.001. A positive skew of 0.7959 also indicates that the majority of scores would be towards the lower end of the range. The high variance is caused by a potential outlier, with a maximum score of 798. The exclusion of this outlier could possibly normalize the variance and skew. However, the score belongs to an observation from a female participant, and the exclusion would result in a dataset with only 2 female participants. Therefore, it was decided that this observation would not be screened, so that the following tests would include as many female participants as possible.

The figures below include histograms and q-q plots to assist in identifying a normal or non-normal distribution.

5.3.1 Gender

Figure 1 shows the histogram for gender. The blue curve overlay demonstates a non-normal distribution. Only non-parametric tests are applicable for this variable. As previously mentioned, men greatly outnumber women in this study, therefore, no meaningful conclusions can be made from the following tests.

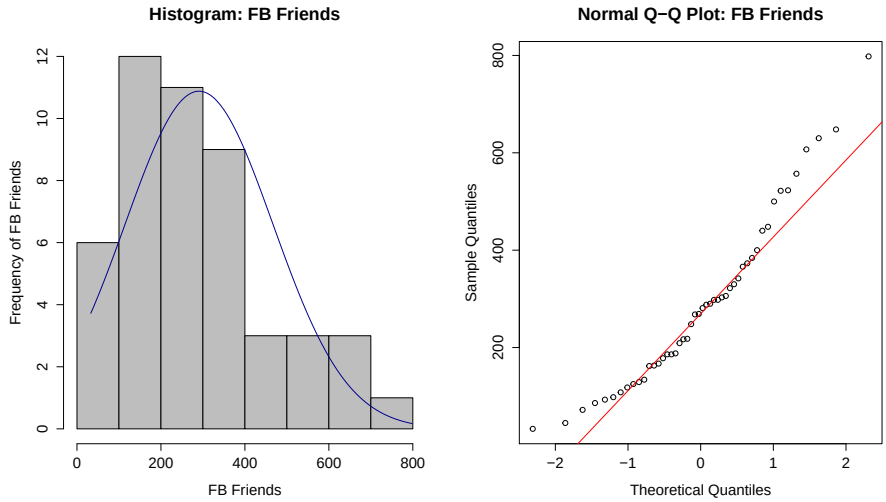
Figure 1: Histogram: Gender



5.3.2 Facebook friends

Figure 2 shows the histogram and normal q-q plot for Facebook friends. The blue curve overlay on the histogram demonstrates a non-normal distribution. The normal q-q plot also demonstrates a non-normal distribution, as the majority of data-points do not fall on the expected normal distribution line. Only non-parametric tests are applicable for this variable.

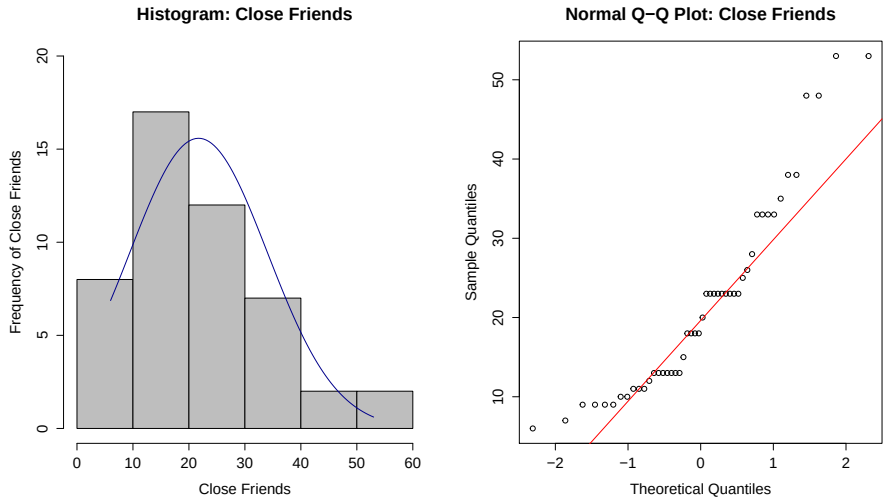
Figure 2: Histogram and Normal Q-Q Plot: Facebook friends



5.3.3 Close friends

Figure 3 shows the histogram and normal q-q plot for close friends. The blue curve overlay on the histogram demonstrates a non-normal distribution. The normal q-q plot also demonstrates a non-normal distrbution, as the majority of data-points do not fall on the expected normal distribution line. Only non-parametric tests are applicable for this variable.

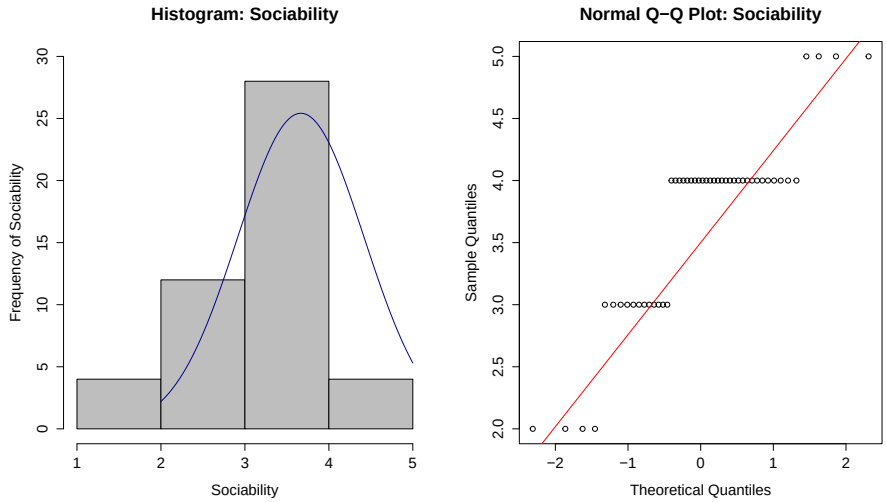
Figure 3: Histogram and Normal Q-Q Plot: Facebook friends



5.3.4 Sociability

Figure 4 shows the histogram and normal q-q plot for Sociability. The blue curve overlay on the histogram demonstrates a non-normal distribution. The normal q-q plot also demonstrates a non-normal distrbution, as the majority of data-points do not fall on the expected normal distribution line. Only non-parametric tests are applicable for this variable.

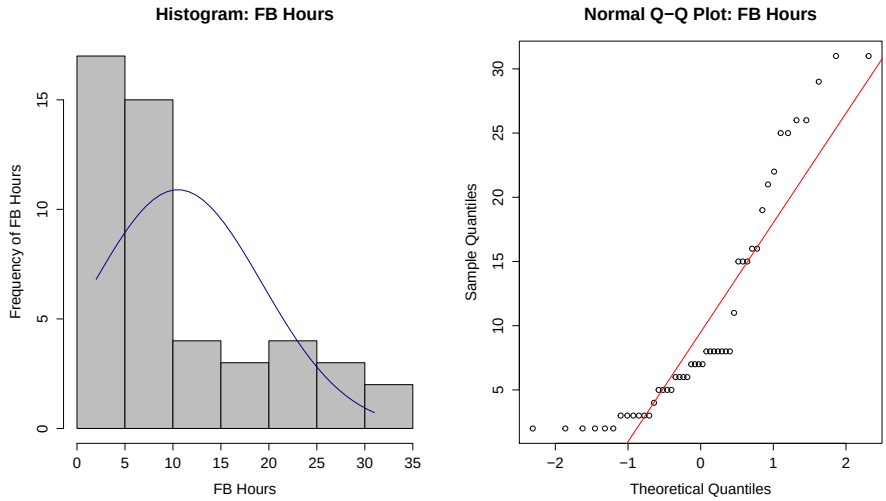
Figure 4: Histogram and Normal Q-Q Plot: Sociability



5.3.5 Facebook hours

Figure 5 shows the histogram and normal q-q plot for Facebook hours. The blue curve overlay on the histogram demonstrates a non-normal distribution. The normal q-q plot also demonstrates a non-normal distrbution, as the majority of data-points do not fall on the expected normal distribution line. Only non-parametric tests are applicable for this variable.

Figure 5: Histogram and Normal Q-Q Plot: Facebook hours



5.4 Bivariate inferential tests

5.4.1 Pearson's correlation coefficient

Table 2 displays the parametric Pearson's correlation coefficient results with each variable compared with gender. A one-tailed test has been selected to identify a negative correlation, where 0, representing females is predicted to have higher scores than 1, which represents males. r is calculated by (McKillup, 2011):

$$r = \frac{\sum_{i=1}^{N}(Z_{xi} \times Z_{yi})}{n-1}$$

The results express that gender and Facebook friends have a moderate negative correlation, gender and close friends have a weak negative correlation, and gender and Facebook hours have a moderate negative correlation. The negative correlation indicates that at x variable 0, which represents women, the scores are higher than those at x variable 1, which represents men. The 0 r value for gender and Sociability demonstrates that there is no correlation between these two variables. These results are further illustrated in the scatter plots at Figure 6, which exhibits a reverse sloped regression line for the variables with a negative correlation to gender.

Table 2: Pearson's correlation coefficient - Gender

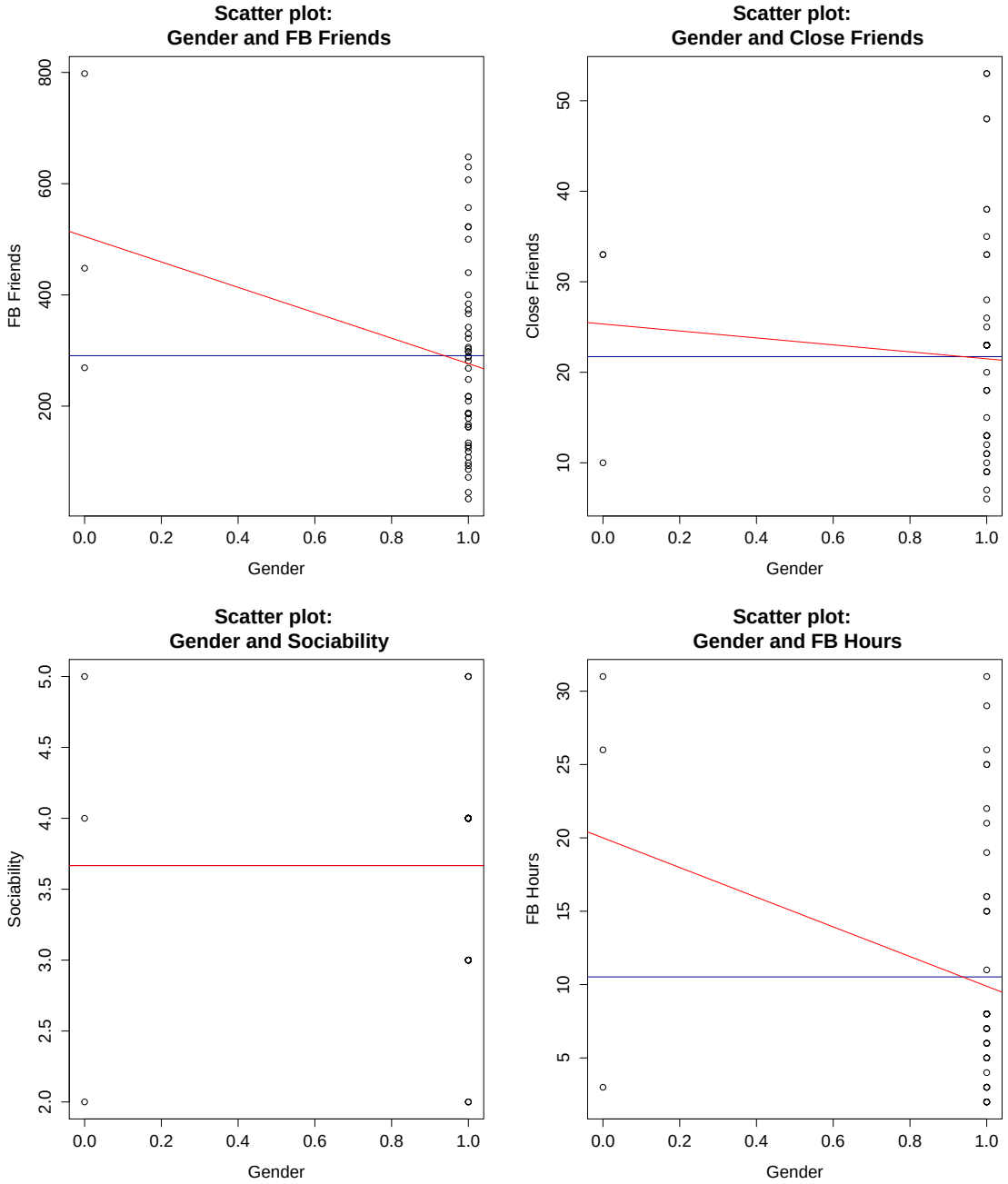
Variable	r	p-value
FB Friends	-0.3176993	0.01389
Close Friends	-0.07652931	0.3026
Sociability	0	0.5
FB Hours	-0.2815223	0.02629

Hypothetically, if there were an equal to almost equal ratio between men and women in the dataset, and all variables were of normal distribution, a fair conclusion of these results would be that there is a negative correlation between gender and the number of Facebook friends and hours spent on Facebook. In other words, the negative correlation indicates that females have a greater network size than men, and spend more time on Facebook than men. With significant p-values $< \alpha = 0.05$, the null hypothesis that there are no correlations between gender network size or hours of use is rejected.

While Close friends exhibits a negative correlation, the calculated p-value is insignificant, being $> \alpha = 0.05$. Therefore the null hypothesis that there are no correlations between gender and Close friends survives. Sociability's 0 r value indicates there are no correlations at all.

However, since there is such a small representation of women in the sample set, there is insufficient evidence to provide a conclusion. Additionally, Pearson's method only applies to normally distributed variables and the variables measured are non-normally distributed. Therefore, the results must be further verified by non-parametric tests.

Figure 6: Scatter Plots



5.4.2 Spearman's correlation coefficient

Table 3 displays the non-parametric Spearman's correlation coefficient results with each variable compared with gender. A one-tailed test has been selected to identify a negative correlation towards 0, being female, where r_s is calculated by ranking the scores, then calculating the correlation coefficient using Pearson's method with the ranks rather than the scores themselves (McKillup, 2011).

Similar correlation results are found from those in the previous parametric test. However, in this instance, a weak negative correlation is also found between gender and Sociability. Furthermore, all p-values in this test are considered insignificant being $< \alpha = 0.05$. Therefore, the null hypotheses for these tests cannot be rejected. Facebook friends exhibits the most significant p-value where H_0 could potentially be rejected.

Two-tail and negated one-tail tests were also performed, only to find higher, insignificant p-values.

Table 3: Spearman's correlation coefficient - Gender

Variable	r_s	p-value
FB Friends	-0.2391999	0.05077
Close Friends	-0.08123761	0.2915
Sociability	-0.04207032	0.3882
FB Hours	-0.1747336	0.1174

Since all variables being tested are non-normally distributed, Spearman's non-parametric method is a suitable test. However, three points of bias are introduced while testing the correlation between gender and the selected variables. The decision to include an identified outlier has created bias towards higher scores for female Facebook friends. And while males and females both have a maximum score of 31 for Facebook hours, the lack of gender balance has raised the female mean for Facebook hours, thus creating a bias towards higher Facebook hours for females. The same could also be said for Close friends. Therefore, the issue still applies, that women are under represented in this study, and there is not enough evidence within the dataset to provide any conclusions.

5.4.3 Wilcoxon signed rank test

Due to the non-normal distribution of the data, the non-parametric Wilcoxon signed rank test has been selected to perform a paired differences hypothesis test. Table 4 displays Wilcoxon signed rank test results where each variable is compared with gender. A one-tailed test has been selected to identify a positive correlation

Table 4: Wilcoxon signed rank test - Gender

Variable	W	p-value
FB Friends	106	0.05277
Close Friends	80.5	0.2961
Sociability	73.5	0.3957
FB Hours	95.5	0.1197

6 Conclusion

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