

She “Likes” it, He Doesn’t: Gender Differences in
Facebook Communication Behaviors

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ABSTRACT

This study aims to explore whether or not patterns of communication that have been established in face-to-face communication based on gender are maintained or transformed in the communication behaviors engaged in by users on the social networking site, Facebook. A multi-methodological lens was employed to examine Facebook communication behaviors via a content analysis of Facebook posts, as well as an online questionnaire that was filled out by users of the site.

Through the survey and content analysis, I found that there were in fact gender differences in the communication behaviors that users engage in on Facebook. Furthermore, I found that the general patterns of these communication behaviors mirror those that have been established in face-to-face communication; more specifically, I found that women tend to communicate in more interpersonally oriented ways, while men tend to communicate in more task and individually oriented ways while using Facebook. These findings can provide some insight into how people communicate and what may influence these behaviors; therefore, these findings have implications for the fields of both communication and sociology.

As a growing part of our media environment, Facebook is changing the nature of social relationships and online communication. Thus, this has become a rich new context for exploring communication and how behaviors that are performed online compare to those that are performed offline.

INTRODUCTION

With the advent of complex online social communities, social networking sites provide a rich new landscape for exploring communication behaviors. Although there is no reliable data regarding how many people use social networking sites, marketing research indicates that these sites are growing in popularity worldwide (comScore, 2007). These social networking sites allow users to do just as they say- they afford individuals the opportunity to substantially expand the boundary of their “social network” in an arena that is freed from geographical and temporal constraints (Lee, 2008). These sites not only allow people to engage in computer-mediated communication with an extensive network of friends and family, but they also provide a landscape for the formulation of particular identities. Lee (2008) describes how text-based computer-mediated communication allows greater room for strategic self-presentation than other communication behaviors, such as face-to-face interaction. And social networking sites are one particular avenue for self-expression that are popular among young adults (Hargittai, 2008). Therefore, the ways in which individuals communicate and interact through social networking sites are inevitably a reflection of their identity. And, as extensive research has shown, our gender is a very important part of how we formulate and project our identities. Many scholars have argued that the communication behaviors we engage in vary between individuals based on gender. Therefore, this study will investigate how gendered patterns of communication are performed and perpetuated publicly on the social networking site, Facebook. This will be investigated through a multi-methodological lens via an online survey and a content analysis of Facebook posts.

LITERATURE REVIEW

Social networking sites

Boyd and Ellison (2007) define social networking sites (SNS) as “web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system.” According to this definition, the first recognizable SNS launched in 1997 with SixDegrees.com. From 1997 to 2001, a number of community tools began supporting various combinations of profiles and publicly articulated friends (Boyd & Ellison, 2007). It was not until 2002 that the next big SNS came out, which was called Friendster. This was later followed by the creation of LinkedIn and MySpace in 2003, and Twitter in 2006. Facebook was created by Harvard University student Mark Zuckerberg in 2004, but the site was only available to Harvard students at this time. Facebook later expanded to include high school networks in 2005, corporate networks in 2006, and eventually everyone by the end of 2006 (Boyd & Ellison, 2007). All of these online SNS support both the maintenance of existing social ties and the formation of new connections (Ellison, Steinfield, & Lampe, 2007) in addition to affording individuals the ability to navigate and create very personalized virtual selves (Cohen, 2006; Hempel & Lehman, 2005; Stutzman, 2005).

Facebook

As mentioned previously, Facebook was only available to Harvard University students when it was first created in 2004. This meant that the site was originally small and was available only to this particular community. However, once this SNS became available to everyone in 2006, its user base virtually exploded. During this year, Facebook was the seventh most popular

site on the World Wide Web based on total page views (Cassidy, 2006). By 2007, Facebook was reported to have more than 21 million registered members who generated 1.6 billion page views each day (Needham & Company, 2007). By 2009, there were 175 million active users worldwide, making Facebook one of the fastest growing and most well known sites on the internet (Stone, 2009). Finally, on September 14, 2012, Facebook officially hit 1 billion active monthly users, which was a huge milestone for the world's largest social network (Grandoni, 2012). Clearly, Facebook is a growing part of our media environment (Lange & Lampe, 2008) and is changing the nature of social relationships and the ability to quickly share information about oneself (Boyd & Ellison, 2007).

There are several features of Facebook that make it appealing to its users. Facebook allows its users to send public and private messages, post photographs, blog, instant message, post "status" updates, and even play games. The Facebook "status" is "one of the key interactive features on Facebook. It allows users to receive information about what their friends are doing, reading, watching or thinking, and provides opportunities for friends to comment and interact based on what is shared...a user's friends can comment, 'like' and sometimes share their friends' status updates. Many users also 'tag' other friends in photos and messages so that Facebook will alert them that they have been mentioned" (Janssen, 2011). Thus, a status can either be pictographic (i.e. an uploaded picture that the user has taken) or text-based (e.g. an update about one's day, how they are currently feeling, and so on) and are generally designed to be short.

Facebook's various features allow users to engage in either asynchronous or synchronous communication, which allows individuals to communicate with one another with flexibility and convenience. Individuals on Facebook can search for other users by name or interests and accumulate friends by "friend requesting" other users. "Friend requesting" is a self-explanatory

term- that is, one must request that others become their friend and this request must be accepted by the other party in order for two users to become Facebook friends. The site's focal point is the user profile, which is a webpage that displays their self-generated personal information (Muscanell & Guadagno, 2012). Additionally, a unique feature of Facebook is its "news feed" whose "function is to aggregate notifications about changes to the profiles of friends as they occur, with the intent of allowing users to know when individuals on their list of friends make changes immediately rather than requiring a user individually visit each person's profile to keep track of updates" (Lange & Lampe, 2008). The vast majority of one's news feed is made up of "statuses" that have been updated by a user's friends.

Due to the rising popularity of Facebook and SNS in general, scholars have already generated an array of research regarding this budding phenomenon. A majority of the existing work has focused on aspects of self-presentation (Fogel & Nehmad, 2009; Kramer & Winter, 2008; Manago, Graham, Greenfield, & Salimkhan, 2008; Magnuson & Dundes, 2008; Tong, Van Der Heide, Langwell, & Walther, 2008). Other studies have been conducted on a variety of topics, such as how race and ethnicity (Byrne, in press; Gajjala, 2007), religion (Nyland & Near, 2007), and cultural differences (DeAndrea, Shaw, & Levine, 2009) affect communication behaviors on SNS. Finally, recent Facebook-based research has examined student perceptions of instructor presence and self-disclosure (Hewitt & Forte, 2006; Mazer, Murphy, & Simonds, 2007), temporal patterns of use (Golder, Wilkinson, & Huberman, 2007), and the relationship between profile structure and friendship articulation (Ellison, Steinfield, & Lampe, 2007).

Gender and Communication

An important distinction must be made between sex and gender. Sex refers to the physiological and biological aspects of being male or female, while gender refers to the non-

biological (i.e. cultural and social) characteristics of being a woman or a man (Unger, 1979; Canary & Babin-Gallagher, 2008). Gender is understood to be socially constructed through “an ongoing process of learned sets of behaviors, expectations, perceptions, and subjectivities that define what it means to be a woman and what it means to be a man” (Lemish, 2008). This concept has been defined through social role theory, which indicates that men and women occupy different roles in society; through these roles, men and women learn different skills and beliefs and are subject to different normative expectations for social behavior, all of which lead to gender differences in actual behavior (Eagly, 1987).

Extensive prior research has been performed to examine what types of gender differences exist within the communication behaviors of men and women. Research has found that men typically behave and are expected to be more agentic, while women typically behave and are expected to be more communal (Eagly, 1987). Due to these socialization influences, men tend to be more assertive, controlling, independent, rational, individual, and autonomous while also being more closed, less expressive, and unemotional (Eagly, 1987; Petronio & Martin, 1986; Bond, 2009; Lemish, 2008; Walker, 2008). Additionally, men are typically associated with action, adventure, aggression, competition, and preoccupation with vehicles and weapons (Lemish, 2008). Women, on the other hand, tend to be more concerned for the welfare of others, interpersonally sensitive, emotionally expressive, open, empathetic, revealing, dependent, and vulnerable (Eagly, 1987; Petronio & Martin, 1986; Lemish, 2008). This all means that, in general, women’s communication indicates a desire for solidarity, meaning that women tend to use language to build connections, relationships, and intimacy. In contrast, men’s communication indicates a concern for power, meaning that they tend to use language for more direct and instrumental purposes such as disseminating information, rather than building

interpersonal connections (Walker, 2008). This information was supported by the findings of Bond (2009), who found that women disclose more relationship-oriented information than men in face-to-face interpersonal interactions.

Gender and Online Communication

With the rising popularity of SNS, a vital new area of research is being conducted to explore the relationship between gender and computer-mediated communication. A key issue here is whether “established trends in gender and language research are reproduced or transformed” in an online environment (Weatherall, 2008). Haferkamp, Eimler, Papadakis, & Kruck (2012) point out that it is plausible to assume that some gender differences that have been identified in face-to-face (FtF) communication are likely to be replicated on SNS.

Research that has been conducted in this area supports this assumption that some FtF gender norms are replicated in computer-mediated communication (CMC). Smith & Kollock (1999) summarize this phenomenon well; instead of creating a whole new identity, users of CMC utilize their offline identities to shape their online interactions and activities. Several other studies on gender and CMC echo these conclusions. For instance, Valkenburg, Schouten, and Peter (2005) concluded that both men and women often use gender stereotyping in their presentation of self online. Because of this, there have been well-established findings that suggest that women’s online behavior is more interpersonally oriented (e.g. social interaction, relationship maintenance), while men are more task and information oriented (e.g. reading the news, researching financial information) (Jackson, Ervin, & Gardner, 2001; Guadagno & Cialdini, 2002; Guadagno & Cialdini, 2005; Guadagno & Cialdini, 2007; Guadagno et al., 2011; Lucas & Sherry, 2004; Weiser, 2000; Weiser, 2001; Williams, Consalvo, Caplan, & Yee, 2009). Additionally, women’s CMC has been shown to emphasize supportiveness, apologize,

compliment, and hedge more than men (Walker, 2008), as well as relying on graphic accents to express emotions (e.g. smiley faces) more than men (Walker, 2008; Thomson & Murachver, 2001). In contrast, men's CMC has shown more self-promotion, sarcasm, insults, and strong assertions (Thomson & Murachver, 2001).

Recently, research on gender and CMC has focused specifically on gendered communication patterns on SNS. Again, this research has largely supported findings on gendered CMC in general; that is, the use of SNS mirrors the broad use of CMC for both men and women (Bond, 2009). For instance, research has found that there are gender differences in reasons for using SNS, i.e. men reported using SNS for forming new relationships while women reported engaging in more SNS activities that facilitate maintenance of existing relationships (Muscanell & Guadagno, 2012). While using SNS, females have been found to disclose more about relationships with others (i.e. family, friends, significant others) and scenarios where relationships tend to be the central focus (e.g. holidays), whereas men have been found to disclose more information related to entertainment (e.g. sports) (Bond, 2009). In general, research has found that females tend to self-disclose more overall, as well as engage in more sexual expressiveness when using SNS (Bond, 2009).

A study by Guadagno, Muscanell, Okdie, Burk, & Ward (2011) examined gender differences in an online environment called Second Life. They found that men and women who use this site behave according to societal gender expectations; they found that men engaged in more agentic activities while women engaged in more communal (i.e. interpersonally oriented) activities (Guadagno et al., 2011). Another study performed by Haferkamp et al. (2012) examined the SNS StudiVZ (the German equivalent of Facebook). They found that there were gender differences in motives for looking at others' profiles: men were more likely to look for

friends (i.e. seek new relationships), while women looked at others' profiles to gain information and engage in social comparison (Haferkamp et al., 2012). Furthermore, Haferkamp et al. (2012) found that women used more portrait photographs for their profile picture, while men used more full body shots that included other people. However, other studies have found contradictory information on the nature of SNS users' profile pictures; this research has found that women were actually more likely than men to present a social picture of themselves that revolves around others (Magnuson & Dundes, 2008; Peluchette & Karl, 2008). Furthermore, Peluchette and Karl (2008) found that men were more likely than women to display more risky photographs or information (e.g. comments or photographs involving sex or alcohol).

An extremely limited amount of research has been conducted that specifically examines gendered patterns of communication and behavior on the world's most popular SNS, Facebook. One of the only studies that has examined Facebook in relation to gender was a study conducted by Thompson & Lougheed (2012). This study examined gender differences in feelings toward Facebook, and found that there were distinct gender differences related to anxiety and stress from Facebook use. More specifically, they found that females reported more stress caused by Facebook, more anxiety if they cannot access Facebook, and a higher loss of control over checking Facebook. Additionally, Thompson & Lougheed (2012) found that much more females are "heavy users" of Facebook (i.e. spend more than 1 hour a day on the site) than males are.

All of this research on gender and online communication indicates that gendered CMC patterns do in fact mirror FtF gendered communication patterns. The tendency for women's CMC to be more interpersonally oriented and for men's CMC to be more task oriented supports social role theory and this notion that CMC mirrors FtF communication. These findings suggest that gendered behavior "may be so ingrained in most individuals that they will not alter their

behavior even in an environment where there are no repercussions for doing so” (Guadagno et al., 2011).

The Present Study

As Thompson & Lougheed (2012) point out, research that is specific to social networking communication in reference to gender is hard to find. Furthermore, research that looks specifically at Facebook communication and behavior in reference to gender is even more scarce. Therefore, the present study will fill in this gap in knowledge by extending literature on gender differences in interpersonal (FtF) and computer-mediated communication to Facebook communication behaviors. The goal is to gain a deeper understanding of how individuals communicate on Facebook and whether or not established patterns in gendered communication are perpetuated in this popular online environment.

METHOD

This study aimed to answer the following research question:

RQ: Do Facebook communication behaviors mirror established face-to-face communication patterns based on gender?

Based on existing literature regarding gendered communication behaviors both offline and online, I have formulated the following hypotheses:

1. Women's Facebook communication behaviors will mirror their FtF communication behaviors, meaning that they will behave in more interpersonally-oriented ways
 - a. Women will have a higher number of friends, more pictures with others, will tag others more in status updates (both text-based and pictographic updates), and their motivation for use will be about maintaining existing relationships
 - b. In terms of text-based status updates, women will post more about others/more about activities that involve others, more emotion/feelings, and more graphic accents (like smiley faces, hearts)
2. Men's Facebook communication behaviors will mirror their FtF communication behaviors, meaning that they will behave in more individually and task oriented ways
 - a. Men will post more pictures of themselves alone, and their motivation for use will be about meeting new people/making new friends
 - b. Men will post more about facts/statements, more about entertainment (such as cars, weapons, and sports), more about tasks to do/achieved, more about news-related issues, more about themselves, and more insults
3. Women will spend more time on Facebook on a daily basis

Hypotheses 1a, 1b, 2a, and 2b are the operationalizations pertaining to how these hypotheses will be measured. In other words, these are sub-hypotheses based on how the main hypotheses (1 and 2) are expected to manifest themselves via Facebook.

Survey

For the survey portion of my data collection, participants were asked to fill out a voluntary and anonymous online questionnaire that was administered through SurveyMonkey. An invitation with a link to the survey was posted on my personal Facebook wall. A total of 96 subjects responded to the online questionnaire. Of the 96 respondents, 54 identified themselves as female, while 42 identified themselves as male. The reported ages of these respondents ranged from age 16 to age 92, and the average of the ages was 33.3 (see Appendix, Figure I for graph of

all respondents' ages). Respondents were asked to identify their race/ethnicity in order to determine the racial diversity of this population. The racial breakdown of the respondents was as follows: 83 identified as Caucasian, 1 identified as African American, 2 identified as Hispanic or Latino, 1 identified as American Indian or Alaska Native, 5 identified as Asian, 1 identified as Pacific Islander, and 3 respondents filled out the "other" category and specified that they identified as multiracial. It is important to note that the population I was drawing from was not the Facebook population as a whole, but rather the user population that was connected to me in some way. Even though they may not have all been my direct friends on Facebook, they were still a part of my social network web in some way. Thus, the sample of subjects who responded to the survey were drawn from this population of users that have certain traits as to be connected to me in some way.

There were a total of seven questions on the survey, three of which pertained to the demographics mentioned above (gender, age, and race/ethnicity). In order to test whether or not women have a higher number of Facebook friends than men, one of the survey questions asked subjects to identify "about" how many Facebook friends they have. Subjects responded by marking one of seven choices, all of which were a number range, such as 0-99 and 100-199.

A similar question asked, "In a typical week, about how many minutes per day do you spend on Facebook?" in order to gauge whether or not women spend more time on Facebook on a daily basis. Subjects responded to this question by marking one of six options, each of which was a range of time such as 0-30 and 30-60.

One of the survey questions asked, "What is your primary motivation for using Facebook?" in order to gauge whether people were motivated to meet new people and make new friends or whether they were motivated to maintain existing relationships through this SNS.

One portion of testing the hypothesis that women would tag others more in their text-based and pictographic status updates was a survey question that read: “I typically tag other people in my status updates and/or photographs.” Responses to this statement were gauged on a 5-point Likert scale ranging from “strongly disagree” to “strongly agree.” The other portion of testing this hypothesis was done through the content analysis of posts on Facebook.

Content Analysis

The other portion of this study’s methodology was a content analysis of Facebook posts. Posts that were analyzed were posts that appeared in my personal Facebook “news feed” over a ten-day period from February 1 to February 10, 2013. I started analyzing posts on February 1st, and continued to do so until a total of 400 unique “status updates” were collected for each gender. The gender of each poster was determined by how they identified themselves on their Facebook profile. An equal number of posts were collected for each gender in order to maintain consistency and for the results to be more clearly interpreted. In order to collect data from the content analysis portion of this study, each sub-hypothesis (Hypothesis 1a, 1b, 2a, 2b) became a different category. Each post was then placed into a category based on the main content of the post and which category the post fit into best. Each post was placed into only one category, except for the categories of “tags” and “graphic accents.” These were the only two categories that overlapped with the other categories, which is why the totals for each gender add up to more than 400, but there were only 400 different posts collected for each gender. For example, if an individual posted about an emotion and included a graphic accent in the post, then the post was placed in both the “posts about emotions/feelings” category and the “posts with graphic accents” category. However, only posts that included either a graphic accent or posts that tagged other individuals were placed into more than one category. All other posts were placed into the

category that was the best fit for the overarching theme of the post. For example, a post was only placed in the “posts about themselves” category if it could not fall into any other category. Posts that would have fallen into multiple categories were not counted in order to maintain consistency and objectivity. Again, because these were posts that appeared in my personal “news feed,” the larger population that I was drawing from was Facebook users that I am connected to. Thus, all of the data collected in the content analysis came from a sample of the users that I am personally connected to on the site.

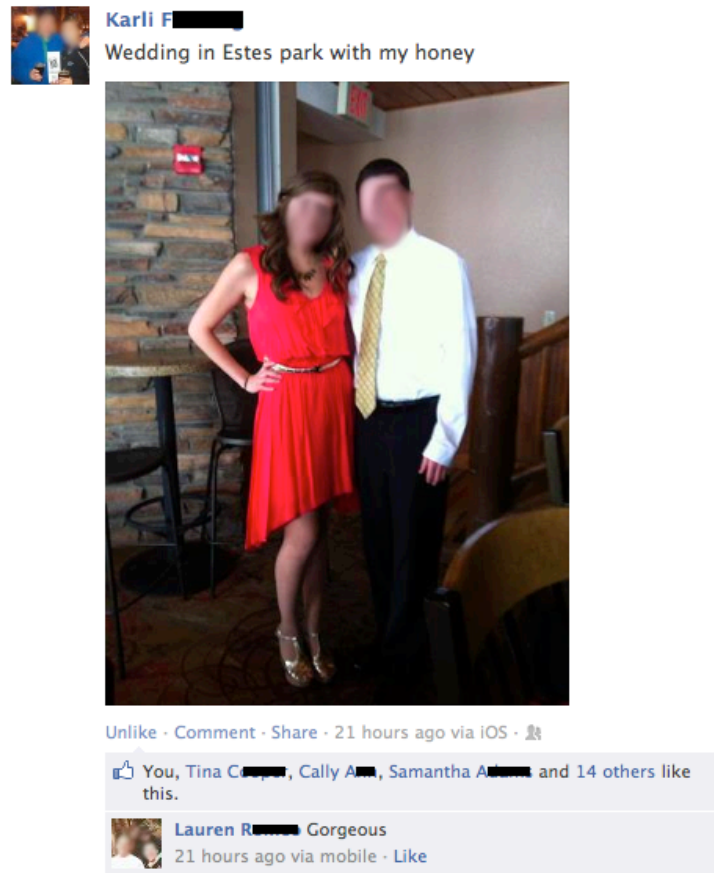
RESULTS

Content Analysis

When a user posted a picture in a status update (i.e. pictographic updates) the photo was categorized based on whether or not it was a picture of the user alone, or whether it was a picture of the user with one or more other people. In terms of total pictographic status updates, females posted more of these than males did (114 and 72, respectively). For females, a large majority of their pictographic updates were pictures of themselves with others (83 pictures with others versus 31 pictures alone). For males, there were the exact same number of pictographic updates that fell into each category (36 pictures with others and 36 pictures alone).

A two sample t-test between percents was used in order to calculate whether or not there was a significant difference between men and women for each picture category. The critical z value for a 95% level of confidence is 1.96. Therefore, any calculated value above 1.96 means that there is a significant difference between the two groups. In order to calculate this, I first determined the percentage that each post appeared out of the 400 total posts for each group. For example, since females posted 83 pictures with others, their percentage became: $83/400 = 0.2075 = 20.75\%$. The two sample t-test between percents then compared the percentages from each group to determine whether the difference between the two groups was statistically significant. The calculated z value when comparing men and women on pictures that were taken with others was 4.67. This means that there was a significant difference between the two groups on this category. When comparing these two groups on pictures taken alone, the calculated z value was 0.638. This means that there was not a significant difference between men and women when it came to posting pictures that were of the users by themselves.

Figure 1: Example of a Pictographic Status Update



Overall, females posted significantly more pictures with others than did males, but males did not post more pictures alone than did females. Therefore, there was overwhelming support for the hypothesis that women would post more pictures of themselves with others than men, but there was no support for the postulation that males would post more pictures of themselves alone when compared to females.

In terms of the text-based status updates, a two sample t-test between percents was again calculated to determine statistical significance. The critical z value remained 1.96 at the 95% confidence level. It was found that women did post more about others/activities that involved others than men did (98 of these posts versus 32 of these posts from men). The calculated z value

was 6.325, which means that there was a significant statistical difference between men and women on this category.

Figure 2: Example of a Text-Based Status Update



Women also posted more about emotions/feelings (66 versus 15 from men), and the calculated z value for this category was 5.977. Again, there was a significant difference between men and women on this variable.

Finally, women also posted more status updates that included graphic accents (86 of 400 posts by women contained a graphic accent, while only 16 out of 400 posts by men contained them). The calculated z value here was 7.42, so the difference between the two groups was also significant on this variable. For all three of these sub-hypotheses, the calculated z value was well over the critical value, meaning that there was overwhelming support for the predictions pertaining to these variables.

In terms of the sub-hypotheses concerning men, it was also found that men did post more straightforward facts/statements (83 of these posts versus 46 of these posts from women). The

calculated z value for this variable was 3.557, so the difference between the two groups on this variable was significant.

Men also posted more about entertainment in the form of cars, weapons, and sports (64 of these posts versus 10 from women), with a calculated z value of 6.59. Again, the difference between the two groups here was significant.

Additionally, men posted more about tasks to do/achieved (47 from men versus 19 from women), and more about news related issues (19 from men versus only 3 from women). The difference between men and women on these two variables was also significant, with calculated z values of 3.598 and 3.459, respectively.

When it came to posts about themselves, men did post more of these than women (61 versus 43 from women). However, the calculated z value for this variable was 1.892, so the difference was not statistically significant.

Finally, men posted more insults (7 insults from men versus only 1 insult from a woman), and the difference between the groups was significant, with a calculated z value of 2.132.

Overall, the differences between men and women were significant for five out of these six sub-hypotheses. The only variable that failed to meet the significance level was for posts that were strictly about the users themselves.

The results of the text-based status updates demonstrate surprisingly overwhelming support for these sub-hypotheses, having followed my expectations for all but one of these nine categories. It is surprising in the degree to which my expectations for almost all categories were actually performed in real, independently existing Facebook status updates by unknowing users.

In terms of tagging, the notion that women would tag others more in both text-based and pictographic status updates was supported by the content analysis. A total of 92 out of 400 posts

by females tagged at least one other person, while only 33 out of 400 posts by men included such tags. The calculated z value for the tagging category was 5.745, so the difference between the two groups was significant here as well. There was also a statistically significant difference between the groups for the question on the survey that asked about tagging (see calculation below). Therefore, both the content analysis and the survey supported the hypothesis that women would tag others more in their status updates.

Figure 3: Content Analysis Results

Status Updates	Male (400 total)	Female (400 total)	Z value	Significant? (alpha= .05)
Pictures with others	36 (9%)	83 (20.75%)	4.67	Yes
Pictures alone	36 (9%)	31 (7.75%)	0.638	No
Tagged someone in status update	33 (8.25%)	92 (23%)	5.745	Yes
Posts about others/activities that involve others	32 (8%)	98 (24.5%)	6.325	Yes
Posts about emotions/feelings	15 (3.75%)	66 (16.5%)	5.977	Yes
Posts with graphic accents	16 (4%)	86 (21.5%)	7.42	Yes
Posts with facts/statements	83 (20.75%)	46 (11.5%)	3.557	Yes
Posts about entertainment (cars, weapons, sports)	64 (16%)	10 (2.5%)	6.59	Yes
Posts about tasks to do/achieved	47 (11.75%)	19 (4.75%)	3.598	Yes
Posts about news-related issues	19 (4.75%)	3 (0.75%)	3.459	Yes
Posts about themselves	61 (15.25%)	43 (10.75%)	1.892	No
Posts of insults	7 (1.75%)	1 (0.25%)	2.132	Yes

Survey

Each of the choices for survey questions 4, 5, and 7 were coded in order to determine the mean response from each gender group (for full survey, see Appendix- Figure II). The lowest choice for each question was coded as (1), and each subsequent choice was coded in increasing order. Therefore, the higher the mean was for each group, the higher their response was.

Thus, for question 4, the 0-99 category was coded as (1), the 100-199 category was coded as (2), and so on up to the 600+ category, which was coded as (7). The mean score for each group was calculated for comparison, and the higher the mean (closer to 7) was for the group the more friends each group had on average. The mean for the male group was 3.095 and the mean for the female group was 3.167. An independent samples t-test was calculated to determine whether or not there was a statistically significant difference between the two groups on this variable. The calculated t value was -0.1747 and the critical t value (alpha= .05, 94 df) was 1.6612. Therefore, the difference between the groups on total number of Facebook friends was not statistically significant.

Figure 4: Number of Friends Responses

Number of friends	Male (mean: 3.095)	Female (mean: 3.167)
0-99 (1)	8	17
100-199 (2)	11	10
200-299 (3)	10	5
300-399 (4)	4	7
400-499 (5)	4	5
500-599 (6)	1	4
600+ (7)	4	6

For question 5, the 0-30 minute choice was coded as (1), the 30-60 minute choice was coded as (2), and so on up to the 150+ minute choice, which was coded as (6). Again the mean was calculated for each group, and the higher the mean was (closer to 6), the more time each group spent on Facebook each day, on average. The mean for the male group was 1.881, while the mean for the female group was 3.037. An independent samples t test was again calculated; the critical t value ($\alpha=.05$, 94 df) remained 1.6612, and the calculated t value was -3.514. Therefore, there was a statistically significant difference between the groups on this variable.

Figure 5: Time Spent on Facebook Per Day Responses

Minutes per day	Male (mean: 1.881)	Female (mean: 3.037)
0-30 (1)	23	14
30-60 (2)	10	12
60-90 (3)	4	8
90-120 (4)	2	7
120-150 (5)	2	4
150+ (6)	1	9

For question 7, the answers were coded as follows: 1-strongly disagree, 2-disagree, 3-neutral, 4- agree, and 5-strongly agree. Thus, the higher the mean score was for each group (closer to 5), the more the subjects agreed with the statement “I typically tag other people in my status updates and/or photographs.” So, in theory, the higher the mean for each group the more they tag others in their status updates. The mean for the male group was 2.634 and the mean for the female group was 3.113. The calculated t value here was -1.875 and the critical t value ($\alpha=.05$, 92 df) for this question was 1.6616. Therefore, there was also a statistically significant difference between men and women on reported tagging frequency.

Figure 6: Tagging Survey Responses

Survey- tagging (I typically tag...)	Male (mean: 2.634)	Female (mean: 3.113)
Strongly disagree (1)	6	11
Disagree (2)	12	6
Neutral (3)	15	9
Agree (4)	7	20
Strongly Agree (5)	1	7

Figure 7: Example of a Text-Based Status Update with One Friend Tagged

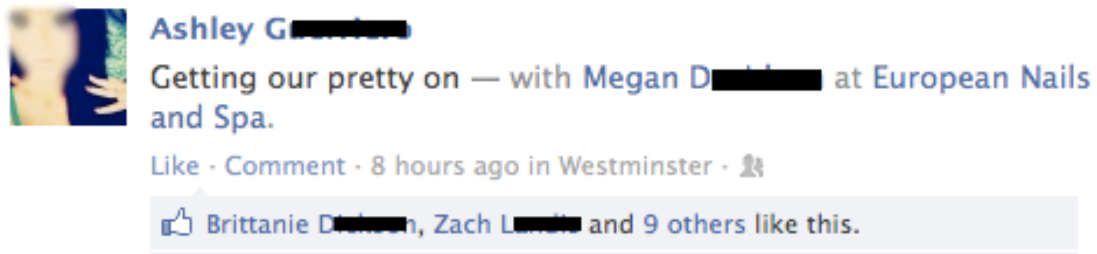


Figure 8: Example of a Pictographic Status Update with Two Friends Tagged



Question 6 on the survey asked participants, “What is your primary motivation for using Facebook?” The three response choices were as follows: “To make new friends,” “To connect with existing friends,” or “Other (please specify)”. A total of four respondents did not answer this question, and a total of eight respondents (four males and four females) filled in an answer to this question under the “Other (please specify)” option, all of which did not fit into either of the first two categories, so they were not counted. The 84 responses that were counted (37 for males and 47 for females) were all the second response. Not a single respondent chose the “to make new friends” option. Therefore, the portion of my hypotheses that postulated that women’s motivation for use would be more about maintaining existing relationships while men’s motivation would be more about making new friends was not supported. Clearly, it appears that the vast majority of both men and women use Facebook to maintain their existing relationships, rather than trying to make new friends.

Overall, there was overwhelming support for my three original hypotheses. There were seven different categories that were operationalized to determine whether women’s Facebook communication behaviors were interpersonally oriented. Six of these seven different categories were supported by my data and, therefore, there was a high level of support for this hypothesis. Additionally, there were a total of eight different categories that were operationalized to determine whether men’s Facebook communication behaviors were more task and individually oriented. Five out of the eight categories were supported by my data. Therefore, although there was weaker support for this hypothesis, the majority of these categories were nevertheless supported by the findings of this study. Finally, the third hypothesis that postulated women would spend more time on Facebook on a daily basis was supported by my data.

DISCUSSION

Facebook is a growing part of our media environment (Lange & Lampe, 2008) and is changing the nature of social relationships and the ability to quickly share information about oneself (Boyd & Ellison, 2007). This realization, along with the popularity of the site, makes Facebook a rich context for exploring communication behaviors in an online environment. Social role theory says that men and women are subject to different normative expectations for social behavior and that this leads to gender differences in actual behavior (Eagly, 1987). As such, this investigational study explored whether or not there are gender differences in Facebook communication behaviors. Based on existing literature, I hypothesized that there would in fact be gender differences in these communication behaviors and that these gender differences would mirror those that have been strongly established for FtF communication. In FtF communication, it has been established that women tend to communicate in more interpersonally oriented ways, while men tend to communicate in more individually and task oriented ways. The key issue here was to examine whether these established trends are reproduced in this particular online environment. I postulated that these general themes would exist in the communication behaviors that users engage in on Facebook. To examine this, I employed a multi-methodological approach by creating an online questionnaire in addition to performing a content analysis of Facebook status updates that appeared in my news feed over a ten-day period.

Previous research has overwhelmingly found that women's communication promotes solidarity and demonstrates value toward relationships with others, emotional expression, and concern for the welfare of others. Men's communication, on the other hand, has been found to promote autonomy and demonstrates value toward independence and the dissemination of information. These patterns have also been found to be replicated through CMC, and the

question was whether or not they were also replicated specifically on Facebook. In other social networking environments, Bond (2009) found that females tend to disclose more about relationships with others (i.e. family, friends, significant others) and scenarios where relationships tend to be the central focus (e.g. holidays), whereas men have been found to disclose more information related to entertainment (e.g. sports). My research findings supported these findings- women's status updates were much more focused on others or activities that involved others, while men's status updates were much more focused on entertainment, as well as stating facts and tasks that they needed to do or had completed. The results show that, in general, women do tend to be more interpersonally oriented and men tend to be more task and individually oriented in their communication behaviors on Facebook, providing support for my first two hypotheses. Thus, the findings of this research support social role theory and the results of previous studies surrounding gendered communication in both offline and online environments.

My third research hypothesis was also supported; my survey data showed that women do spend more time on Facebook on a daily basis. Thompson & Loughheed (2012) found that much more females are "heavy users" of Facebook (i.e. spend more than 1 hour a day on the site) than males are. My data supported their findings- about 52% of the female survey respondents reported spending 60 or more minutes a day on Facebook, while only about 21% of males reported this amount of use. This data may suggest that because women are more concerned about their relationships with others than men are, this may motivate them to use Facebook for more time in order to engage in relational maintenance and to keep a closer eye on what their friends are doing. This would support the idea that since men tend to focus more on

disseminating information and describing their tasks, they do not need to spend as much time on Facebook to accomplish these goals.

When it came to users' motivations for using Facebook (i.e. whether they use this site to make new friends or to connect with existing friends), my findings contradicted those of Muscanell & Guadagno (2012) who found that men reported using SNS for forming new relationships while women reported engaging in more SNS activities that facilitate maintenance of existing relationships. All of my survey respondents who chose between the above two categories for why they use Facebook (84 respondents) reported that they use Facebook to connect with existing friends. Not a single respondent reported using this SNS to make new friends. Therefore, this suggests that Facebook is mainly used by people who want to keep track of, or keep in touch with, people that they know outside of the site, rather than using it to navigate and facilitate new relationships. This is important because it implies that this particular SNS is not used to expand one's social network, but rather to keep users' existing social network intact.

The findings of this investigational study overwhelmingly support the notion that there are in fact gender differences in Facebook communication behaviors, and that these differences mirror trends that have been established in FtF communication. This supports the notion Smith & Kollock (1999) found that instead of creating a whole new identity, users of CMC utilize their offline identities to shape their online interactions and activities. Furthermore, these findings support the conclusion made by Valkenburg, Schouten, and Peter (2005) that both men and women often use gender stereotyping in their presentation of self online. So, it appears that Facebook users do utilize their offline identities to shape their online communication behaviors and interactions. Furthermore, it appears that the gender of these users- which is extremely

important to one's identity- further shaped how they communicate and present themselves through this popular SNS.

These findings suggest that gendered behavior “may be so ingrained in most individuals that they will not alter their behavior even in an environment where there are no repercussions for doing so” (Guadagno et al., 2011). They may also suggest that since users report using Facebook to connect with people they know offline, they may feel that their identity could come into question if they do not portray the same identity online that they do offline; thus users may feel compelled to perform their gender to avoid risking damage to their “face” and the way that they are viewed by others. Either way, it is clear that gender norms and expectations are performed and perpetuated in online environments such as Facebook, rather than being manipulated or transformed.

This has several implications for the field of communication. These findings are important for understanding how individuals communicate and how their communication behaviors are maintained or transformed in online environments. This study's findings, along with the findings of previous research, show that communication behaviors and trends that exist in “real life” overwhelmingly tend to be maintained in online environments. This is important for understanding how people communicate in different environments and suggests that our communication styles and behaviors tend to remain relatively unchanged across varying domains.

The findings of this study also have several implications for the field of sociology. As we have seen, the gender of an individual greatly influences the types of communication behaviors that they engage in on Facebook. This suggests one of two things: either our socialization is so pervasive that gender norms become deeply ingrained in individuals enough to where their

chosen gender manifests itself in how they communicate, or that people may have such a strong desire to maintain a particular identity and be seen by others in such a specific way that they do not alter their behavior in different environments, even when there may be little or no repercussions for doing so. Either way, we can see that aspects of sociology are important for how we communicate with others both online and off. It is important to note here that this study made the significant assumption that female was equal to woman and male was equal to man. As previously discussed, sex and gender are two separate entities that are not to be confused as the same thing. The focus of this study was about gender, or the cultural and social characteristics of being a man or woman and masculine or feminine. Because Facebook only asks users to identify whether they are male or female, there is no way to identify through a user's profile whether or not they choose to think of themselves as a man or woman. However, the findings overwhelmingly showed that those who identified themselves as "female" did perform in feminine ways that have been associated with being a woman; the same was true for users who identified themselves as "male," which performed in masculine ways that have been associated with being a man. This suggests that the socialization and learning of gender norms is so pervasive that gendered expectations are constantly being performed and perpetuated, even in online environments. Knowing this is extremely important for the field of sociology and the understanding of human communication and behavior.

Limitations

Of course, this study was not without its limitations. Firstly, the number of respondents to the online survey was relatively small. Although 96 subjects did respond, it would be ideal to have a larger sample size from which to draw data. It can be argued, however, that the content analysis portion of this study was more "real." In other words, this data was collected from

independently existing Facebook status updates without the users' knowledge. Therefore, there was no chance that the data collected in the content analysis was purposely skewed in any particular way. It can be reasonably assumed that because the survey was completely anonymous, the respondents would not have felt the need to answer questions in a deceptive way. However, one cannot be sure whether or not this was the case. Therefore, although it would have been ideal to have a larger sample size for the survey portion of this study, it can be argued that the content analysis can provide more accurate insights into how people actually communicate on Facebook. As previously mentioned, however, the population that I was drawing from for both the survey and the content analysis were Facebook users that I was connected to in some way. Therefore, my subject samples were informally chosen based on a convenience sampling method and were not random. Rather, they were drawn from a specific population of users in my web that is not likely to be representative of the Facebook population as a whole.

Another issue with the sample of survey respondents was the fact that it was not racially diverse. Nearly 87% of respondents identified themselves as Caucasian and several of the other racial categories only had one respondent who identified as that race. It would be imperative to explore the racial diversity of users on Facebook as a whole in order to say whether or not this racial breakdown is representative of the entire Facebook population; it may be possible that the majority of Facebook users as a whole are Caucasian, but the degree to which these survey respondents identified themselves as Caucasian is unlikely to be representative of the racial diversity of all Facebook users. Therefore, it would be difficult to generalize these results to the larger population because race and/or ethnicity may play a role in how people communicate via Facebook.

Finally, it is imperative to recognize that my findings do not mean that there is a direct correlation between gender and communication behaviors. Other factors could be at play that influence how these users communicate on Facebook. For instance, cultural differences play a very important role in how people behave and, thus, it can be reasonably assumed that cultural differences may have had a large influence on how these particular subjects were compelled to communicate based on their socialization in our particular culture.

Directions for Future Study

Future research may want to explore this realm and how different types of factors- such as race/ethnicity, age, religion, cultural differences, or even individual psychological/personality differences- intersect with gender in how people communicate on Facebook. Previous studies have conducted research on some of these variables by themselves (like this study did for gender), but it would be important to see how different factors intersect with one another in order to better understand how these factors influence how people communicate in general, as well as the communication behaviors they engage in in online environments such as Facebook.

Another possible direction for future research would be to examine whether peoples' online communication behaviors change in domains where they are anonymous. This would help to determine whether people follow societal expectations of behavior (e.g. how each gender is "supposed" to act) because they are afraid of the repercussions if they do not, or whether people have been socialized so well that these norms are deeply rooted in their communication and behavior.

Finally, future studies may want to investigate how SNS like Facebook are changing large-scale relational patterns. Clearly, the foundation for Facebook is all about the social network and building a vast web of connections. When looking at Facebook, we see that a

sizeable amount of users have hundreds of friends in their direct network. This may imply that people are starting to conduct relationships in a different way by placing more value on the number of friends that they have and less value on having deeper connections with a smaller network of friends. Therefore, future research could explore if this is true and whether or not people are beginning to form relationships on a changing basis.

REFERENCES

- Bond, B. J. (2009). He posted, she posted: Gender differences in self-disclosure on social network sites. *Rocky Mountain Communication Review*, 6(2), 29-37.
- Boyd, D.M., & Ellison, N. B. (2007). Social network sites: Definition, history, and scholarship. *Journal of Computer-Mediated Communication*, 13(1), article 11.
- Byrne, D. (in press). The future of (the) 'race': Identity, discourse and the rise of computer-mediated public spheres. In A. Everett (Ed.), *MacArthur Foundation Book Series on Digital Learning: Race and Ethnicity Volume* (pp. 15-38). Cambridge, MA: MIT Press.
- Canary, D.J. & Babin-Gallagher, B. (2008). Interpersonal Communication, Sex and Gender Differences in. *The International Encyclopedia of Communication*. Donsbach, Wolfgang (ed). Blackwell Reference Online.
- Cassidy, J. (2006, May 15). Me media. *The New Yorker*, 50-59.
- Cohen, A. (2006, July). Do you know where your kids are clicking? Your kids aren't going to stop using MySpace and Facebook, but at least you can give them safety helmets and kneepads. *PC Magazine*, p. 88.
- comScore. (2007). *Social networking goes global*. Reston, VA. Retrieved from <http://www.comscore.com/press/release.asp?press=1555>.
- DeAndrea, D., Shaw, A., & Levine, T. (2009). Culture and self-expression in online social networking: An examination of self-construals on facebook. *Conference Papers -- International Communication Association*, 1-22.
- Eagly, A.H. (1987). Sex differences in social behavior: A social-role interpretation. Erlbaum, Hillsdale, NJ.
- Ellison, N. B., Steinfield, C., & Lampe, C. (2007). The benefits of facebook friends: social capital and college students use of online social network sites. *Journal of Computer-Mediated Communication*, 12(4), 1143-1168.
- Fogel, J. & Nehmad, E. (2009). Internet social network communities: Risk taking, trust, and privacy concerns. *Computers in Human Behavior*, 25, 153-160.
- Gajjala, R. (2007). Shifting frames: Race, ethnicity, and intercultural communication in online social networking and virtual work. In M. B. Hinner (Ed.), *The Role of Communication in Business Transactions and Relationships* (pp. 257-276). New York: Peter Lang.

- Golder, S. A., Wilkinson, D., & Huberman, B. A. (2007, June). Rhythms of social interaction: Messaging within a massive online network. In C. Steinfield, B. Pentland, M. Ackerman, & N. Contractor (Eds.), *Communities and Technologies 2007: Proceedings of the Third International Conference on Communities and Technologies* (pp. 41–66). London: Springer.
- Grandoni, D. (2012). Facebook has 1 billion users, mark zuckerberg announces in a status update. Retrieved from http://www.huffingtonpost.com/2012/10/04/facebook-1-billion-users_n_1938675.html?utm_hp_ref=facebook.
- Guadagno, R.E. & Cialdini, R.B. (2002). Online persuasion: An examination of gender differences in computer-mediated interpersonal influence. *Group Dynamics: Theory Research and Practice*, 6, 38–51.
- Guadagno, R.E. & Cialdini, R.B. (2005). Online persuasion and compliance: Social influence on the Internet and beyond. Y. Amichai-Hamburger (Ed.), *The social net: The social psychology of the Internet*, Oxford University Press, New York.
- Guadagno, R.E. & Cialdini, R.B. (2007). Persuade him by email, but see her in person: Online persuasion revisited. *Computers in Human Behavior*, 23, 999–1015.
- Guadagno, R. E., Muscanell, N. L., Okdie, B. M., Burk, N. M., & Ward, T. B. (2011). Even in virtual environments women shop and men build: A social role perspective on second life. *Computers in Human Behavior*, 27(1), 304-308.
- Haferkamp, N., Eimler, S. C., Papadakis, A., & Kruck, J. V. (2012). Men are from mars, women are from venus? examining gender differences in self-presentation on social networking sites. *CyberPsychology, Behavior & Social Networking*, 15(2), 91-98.
- Hargittai, E. (2008). Whose space? Differences among users and non-users of social network sites. *Journal of Computer-Mediated Communication*, 13, 276-297.
- Hempel, J., & Lehman, P. (2005, December 2). The MySpace generation. *Business Week Online*, p. 22.
- Hewitt, A., & Forte, A. (2006, November). Crossing boundaries: Identity management and student/faculty relationships on the Facebook. Paper presented at CSCW, Banff, Alberta, Canada.
- Jackson, L.A., Ervin, K.S., & Gardner, P.D. (2001). Gender and the Internet: Women communicating and men searching. *Sex Roles*, 44, 363–379.
- Janssen, C. (2011). *Facebook Status*. Retrieved from <http://www.techopedia.com/definition/15442/facebook-status>.

- Kramer, N.C. & Winter, S. (2008). The relationship of self-esteem, extraversion, self-efficacy, and self-presentation within social networking sites. *Journal of Media Psychology*, 20(3), 106–116.
- Lange, R., & Lampe, C. (2008). Feeding the privacy debate: An examination of facebook. *Conference Papers -- International Communication Association*, 1-26.
- Lee, Eun-Ju. (2008). Mediated Social Interaction. *The International Encyclopedia of Communication*. Donsbach, Wolfgang (ed). Blackwell Reference Online.
- Lemish, D. (2008). Gender: Representation in the Media. *The International Encyclopedia of Communication*. Donsbach, Wolfgang (ed). Blackwell Reference Online.
- Lucas, K. & Sherry, J.L. (2004). Sex differences in video game play: A communication-based explanation. *Communication Research*, 31, 499–523.
- Magnuson, M.J. & Dundes L. (2008). Gender differences in “social portraits” reflected in MySpace profiles. *CyberPsychology & Behavior*, 11(2), 239–241.
- Manago, M.B., Graham, P.M., Greenfield, G., & Salimkhan B. (2008). Self-presentation and gender on MySpace. *Journal of Applied Developmental Psychology*, 29, 446–458.
- Mazer, J. P., Murphy, R. E., & Simonds, C. J. (2007). I’ll see you on “Facebook:” The effects of computer-mediated teacher self-disclosure on student motivation, affective learning, and classroom climate. *Communication Education*, 56(1), 1–17.
- Muscanell, N. L., & Guadagno, R. E. (2012). Make new friends or keep the old: Gender and personality differences in social networking use. *Computers in Human Behavior*, 28(1), 107-112.
- Needham & Company. (2007). Needham Capital Partners. Retrieved Sept 15, 2012 from <http://www.needhamcapital.com>.
- Nyland, R., & Near, C. (2007, February). Jesus is my friend: Religiosity as a mediating factor in Internet social networking use. Paper presented at AEJMC Midwinter Conference, Reno, NV.
- Peluchette, J. & Karl, K. (2008). Social networking profiles: An examination of student attitudes regarding use and appropriateness of content. *CyberPsychology & Behavior*, 11(1), 95–97.
- Petronio, S., & Martin, J. N. (1986). Ramifications of revealing private information: A gender gap. *Journal of Clinical Psychology*, 42, 499-506.
- Smith, M., & Kollock, P. (1999). *Communities in Cyberspace*. London: Routledge.

- Stone, B. (2009). Facebook. Retrieved from http://topics.nytimes.com/top/news/business/companies/facebook_inc/
- Stutzman, F. (2005). An evaluation of identity-sharing behavior in social network communities. Retrieved from http://www.ibiblio.org/fred/pubs/stutzman_pub4.pdf.
- Thompson, S. H., & Lougheed, E. (2012). Frazzled by Facebook? An exploratory study of gender differences in social network communication among undergraduate men and women. *College Student Journal*, 46(1), 88-98.
- Thomson, R., & Murachver, T. (2001). Predicting gender from electronic discourse. *British Journal of Social Psychology*, 40, 193-208.
- Tong, S.T., Van Der Heide, B., Langwell, L. & Walther, J.B. (2008). Too much of a good thing? The relationship between number of friends and interpersonal impressions on Facebook. *Journal of Computer-Mediated Communication*, 13, 531-549.
- Unger, R. (1979). Toward a redefinition of sex and gender. *American Psychologist*, 34, 1085-1094.
- Valkenburg, P., Schouten, A., & Peter, J. (2005). Adolescents' identity experiments on the internet. *New Media & Society*, 7, 383-402.
- Walker, K.L. (2008). Women's Communication and Language. *The International Encyclopedia of Communication*. Donsbach, Wolfgang (ed). Blackwell Reference Online.
- Weatherall, A. (2008). Gender and Discourse. *The International Encyclopedia of Communication*. Donsbach, Wolfgang (ed). Blackwell Reference Online.
- Weiser, E. (2000). Gender differences in Internet use patterns and Internet application preferences: A two-sample comparison. *CyberPsychology & Behavior*, 4, 167-178.
- Weiser, E. (2001). The functions of Internet use and their social and psychological consequences. *CyberPsychology & Behavior*, 4, 723-742.
- Williams, D., Consalvo, M. Caplan, S. & Yee, N. (2009). Looking for gender (LFG): Gender roles and behaviors among online gamers. *Journal of Communication*, 59, 700-725.

APPENDIX

Figure I: Graph of Ages of All Survey Respondents

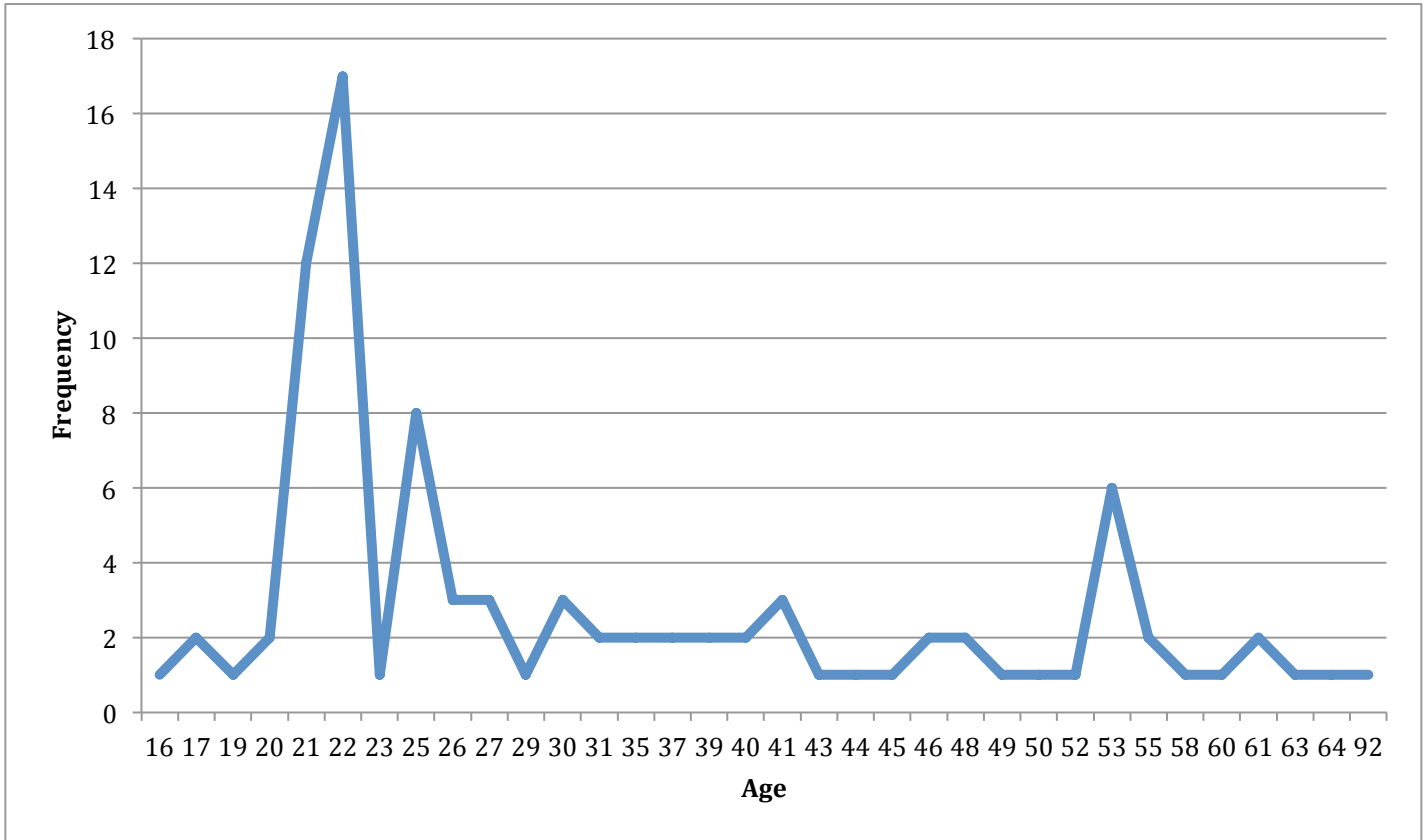


Figure II: Facebook Usage Survey

1. What is your gender?

Female

Male

Other (please specify)

2. What is your age?

Years

3. Please identify your race/ethnicity.

Caucasian

African American

Hispanic or Latino

American Indian or Alaska Native

Asian

Pacific Islander

Other (please specify)

4. About how many Facebook friends do you have?

0-99

100-199

200-299

300-399

400-499

500-599

600+

5. In a typical week, about how many minutes per day do you spend on Facebook?

- 0-30
- 30-60
- 60-90
- 90-120
- 120-150
- 150+

6. What is your primary motivation for using Facebook?

- To make new friends
- To connect with existing friends

Other (please specify)

7. I typically tag other people in my status updates and/or photographs.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Done

Figure III: Institutional Review Board Research Approval Letter



Institutional Review Board
563 UCB
Boulder, CO 80309
Phone: 303.735.3702
Fax: 303.735.5185
FWA: 00003492

17-Dec-2012

Exempt Certification

Morris, Erin
Protocol #: 12-0735
Title: She Likes it, He Doesn't: Gender Differences in Facebook Communication Behaviors

Dear Erin Morris,

The Institutional Review Board (IRB) has reviewed this protocol and determined it to be of exempt status in accordance with Federal Regulations 45 CFR 46.101(b). Principal Investigators are responsible for informing the IRB of any changes or unexpected events regarding the project that could impact the exemption status. Upon completion of the study, you must submit a Final Review via eRA. It is your responsibility to notify the IRB prior to implementing any changes.

Certification Date: 17-Dec-2012
Exempt Category: 2,4

Click here to find the IRB reviewed documents for this protocol: [Study Documents](#)

The IRB has reviewed this protocol in accordance with federal regulations, university policies and ethical standards for the protection of human subjects. In accordance with federal regulation at 45 CFR 46.112, research that has been approved by the IRB may be subject to further appropriate review and approval or disapproval by officials of the institution. The investigator is responsible for knowing and complying with all applicable research regulations and policies including, but not limited to, Environmental Health and Safety, Scientific Advisory and Review Committee, Clinical and Translational Research Center, and Wardenburg Health Center and Pharmacy policies.

Please contact the IRB office at 303-735-3702 if you have any questions about this letter or about IRB procedures.

Douglas Grafel
IRB Admin Review Coordinator
Institutional Review Board