Gendered Expression Online: Exploring Gendered Communication on Facebook and in a Collaborative Editing Task

Christina M. Shane-Simpson
Graduate Center, City University of New York

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Gendered Expression Online: Exploring Gendered Communication on Facebook and in a Collaborative Editing Task

By

Christina Shane-Simpson, M.S.W.

A dissertation submitted to the Graduate Faculty in Psychology in partial fulfillment of the requirements for the degree of Doctor of Philosophy, The City University of New York

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This manuscript has been read and accepted for the Graduate Faculty in Psychology in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy

Kristen Gillespie-Lynch, Ph.D.

______________________  ________________
Date  Chair of Examining Committee

Maureen O’Connor, Ph.D.

______________________  ________________
Date  Executive Officer

Patricia J. Brooks, Ph.D.

Anna Stetsenko, Ph.D.

Michael Mandiberg

Ellen-ge Denton, Ph.D.
Abstract

Gendered Expression Online: Exploring Gendered Communication on Facebook and Examining the Role of Anonymity in an Editing Task

By

Christina Shane-Simpson

Advisor: Dr. Kristen Gillespie-Lynch

College students are increasingly using digital media, such as social network sites (SNSs) and collaborative editing tools (Wikipedia), as identity exploration tools, aligning or distancing themselves from their offline selves through the online affordances of anonymity and agentic choice. The opportunities for gender fluidity available online (Armentor-Cota, 2011) provide college students with opportunities to experiment with and manipulate varied identities in a safe space where consequences of confronting identity norms may be less severe (Turkle, 1996; Shaw, 1997). Similarly, restrictive offline gender differences may diminish in online spaces, favoring a more flexible and androgynous enactment of gender (Martin, Cook, & Andrews, 2016) in certain online spaces. Even so, research has identified a significant gender gap in collaborative digital spaces such as Wikipedia (Glott, Schmidt, & Ghosh, 2010; Hill & Shaw, 2013; Lam et al., 2011; Pande, 2011). The current research examined identity choices and gendered communicative patterns online using a popular SNS, Facebook, and a simulated collaborative editing environment. Study one explored gender variations in communicative patterns on Facebook, while study two explored gender expressions in a public, collaborative editing task. Although the studies found specific gendered communicative patterns on both Facebook and Wikipedia, the majority of the online
behaviors were not gender-specific and online behaviors reflected more similarities than
differences between men and women, supporting a more flexible understanding of
gendered expressions (Martin, Cook, & Andrews, 2016) online. Based on these studies,
some offline gender differences replicated through certain online spaces, such as women
favoring relationship maintenance (Facebook), women orienting towards more
harmonious behaviors/environments (Facebook and Wikipedia), and gender-specific
power dynamics from offline spaces (Facebook). Women also favored more positive
collaborative environments and those that included at least one other female editor, while
men more actively edited in a neutral environment lacking positive affirmations. Other
gender differences appear to dissipate in certain online environments, illustrated by both
women and men actively editing and collaborating to the same extent on a fact-based
section of an essay. Furthermore, men have more often favored this type of information
sharing than women in other online environments. Overall, these results find that certain
offline inequalities and power dynamics may replicate in online spaces. Online gender
differences appear to be nuanced in nature with regards to specific online behaviors and
expressions of gender may reflect the gender composition of peers engaging in the online
space.

Keywords: Online, identity, gender, editing, communication, Facebook,
Wikipedia
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# Table of Contents

Abstract iv
Acknowledgments vi
List of Tables ix
List of Figures x

Chapters

1. Introduction 1
   - Defining and Expressing Gender 3
   - Offline and Online Identities 6
   - Gender Fluidity Online 9
   - Current Research 10

2. Study One: Communicative Patterns on Facebook 15
   - Methods 24
   - Results 29
   - Discussion 33

3. Study Two: Gender Identity and Collaborative Editing 38
   - Methods 50
   - Analytic Plan 65
   - Results 67
   - Discussion 79

4. General Discussion 92
   - Limitations and Future Directions 97
   - Conclusion 100
Appendix A: Study One Instruments 102
Appendix B: Study Two Instruments 106
References 125
List of Tables

Table 1. Coding Scheme for Responses to: Have You Ever Blocked or Un-Friended Someone? 26
Table 2. Coding Scheme for Responses to: How Do You Find and Contact a New Friend On Facebook? 27
Table 3. Coding Scheme for Responses to: How Do You Decide to Accept a Friend Request? 28
Table 4: Responses to: How Do You Find and Contact a New Friend on Facebook? 30
Table 5: Responses to: How Do Decide Whether to Accept a Friend Request? 31
Table 6: Responses to: Have You Ever Blocked or Un-Friended Someone? If so, why? 32
Table 7. Descriptive Information about Variables Prior to Square Root Transformations on Editing Behaviors 65
Table 8. Pearson’s Correlations Among Editing Behaviors, Predictors, and Editing Behaviors in the Fact-Based Section of the Essay 68
Table 9. Differences in Potential Editing Predictor Variables and Editing Behaviors Based on Self-Reported Gender 70
## List of Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Constructive essay condition one</td>
<td>58</td>
</tr>
<tr>
<td>2</td>
<td>Constructive essay condition two</td>
<td>58</td>
</tr>
<tr>
<td>3</td>
<td>Constructive essay condition three</td>
<td>59</td>
</tr>
<tr>
<td>4</td>
<td>Constructive essay condition four</td>
<td>59</td>
</tr>
<tr>
<td>5</td>
<td>Neutral essay condition one</td>
<td>60</td>
</tr>
<tr>
<td>6</td>
<td>Neutral essay condition two</td>
<td>60</td>
</tr>
<tr>
<td>7</td>
<td>Neutral essay condition three</td>
<td>61</td>
</tr>
<tr>
<td>8</td>
<td>Neutral essay condition four</td>
<td>61</td>
</tr>
<tr>
<td>9</td>
<td>Neutral essay condition two with male participant</td>
<td>73</td>
</tr>
<tr>
<td>10</td>
<td>Neutral essay condition two with female participant</td>
<td>74</td>
</tr>
<tr>
<td>11</td>
<td>Constructive essay condition two with female participant</td>
<td>74</td>
</tr>
<tr>
<td>12</td>
<td>Constructive essay condition two with male participant</td>
<td>75</td>
</tr>
</tbody>
</table>
CHAPTER 1

Introduction

Recent research found that 65% of adults in the U.S. are actively using social network sites (SNSs), with the greatest increase in usage progressively occurring from 2005-2013 (Perrin, 2015). Adolescents and adults gain access to online spaces through computers, games, smartphones, and tablets, all of which provide opportunities for consistent communication with others and access to information through interactive online environments. Almost ¾ of all adults in the U.S. access an online environment on a daily basis (Perrin, 2015). Interestingly, early research found differences between how men and women used SNSs, even though these differences have lessened over time from the early 2000’s to 2014 (Perrin, 2015). Research now suggests that men and women are using SNSs (as a whole) at a similar rate, a trend that was maintained from 2014-2015 (Perrin, 2015).

Many online spaces allow for both passive viewing of posted information, such as news articles posted to sites like CNN.com, as well as active opportunities for engagement that can include communicating with others, posting messages, and editing shared “public” information (i.e., SNSs or Wikipedia). Individuals choose how to engage with and through online environments, while also co-constructing these spaces (Subrahmanyam & Greenfield, 2008; Subrahmanyam, Reich, Waechter, & Espinoza, 2008; Subrahmanyam, Smahel, & Greenfield, 2006). As such, the ways in which we conceptualize identity and identity development may need further revision to compliment the increasing complexity of many online spaces, which often allow users to edit the posts of others, create a profile, share information, connect with others, and follow the consistent updates of contacts (boyd & Ellison, 2007). In addition, constant participation in these online sites requires that the
individual appropriately understands and then acts in accordance with social norms of the specific online environment. With the increasing popularity of SNSs and collaborative online spaces, there is a growing need for research that examines how identity develops through and with the assistance of online tools.

Research has begun to explore behavioral replication and transformation from offline to online spaces (i.e., Leander & McKim, 2003; Reich, Subrahmanym, & Espinoza, 2012; Subrahmanym et al., 2008; Williams, 2006). As both contributors and consumers of online information, individual traits in offline spaces may continue into the online environment. Our offline power dynamics and communication patterns may replicate during online social interactions (Adrianson, 2001; Gay, 1999). Studies are beginning to recognize the significant role of gender in online social environments (i.e., Armentor-Cota, 2011; Barker, 2009; Hargittai & Shaw, 2015; Helsper, 2010; Jackson, Ervin, Gardener, & Schmitt, 2011; Muscanell & Guadagno, 2012; Weiser, 2000), which represent clear examples of patterned behaviors that can replicate or transform through online interactions due to the affordances available online (i.e., anonymity).

The current research examines identity choices and gendered communicative patterns using the popular social SNS, Facebook, and a simulated, peer-based collaborative editing environment based on the Wikipedia editing environment, but without the cultural norms found on Wikipedia. These two environments were chosen due to the different levels of anonymity available on each site and based on research suggesting that women more actively use Facebook (McAndrew & Jeong, 2012; Morris, 2013; Thompson & Lougheed, 2012), while men are more dominant on Wikipedia (Eckert & Steiner, 2013; Glott, Schmidt, & Ghosh, 2010; Hill & Shaw, 2013; Lam et al., 2011; Pande, 2011). Study one explores gender
variations in the maintenance and expansion of online social networks on Facebook, while study two explores how opportunities for anonymity and peer feedback in online spaces may contribute to gender differences in the editing on a public, collaborative essay.

**Defining and Expressing Gender**

Both biological and socialization processes play an essential role in the development and expression of one’s gender (Maccoby, 1998). Gender as an individual characteristic has transformed in the research from the strictly biological notion of *male* versus *female* (now referred to as one’s *sex*) and into a term used to describe a social construct created by cultural expectations in a given society, which interacts with one’s biological processes.

Historical understandings of gender identity have often categorized gender as a binary variable in research: *male* or *female* (see Shields & Dicicco, 2011). As such, social science researchers often explore gender from a categorical perspective as is evident in how demographic information is collected from participants (Eagly, Eaton, Rose, Riger, & McHugh, 2012). However, this simplification of gender may limit the extent to which social science research can explore deviations from traditional gender roles. Prior research has also emphasized how one’s identity may change, including how it is performed, based on the context, time, or place of the social interaction (Butler, 1988; Diamond & Butterworth, 2008; Goffman, 1959). As such, the environmental context (i.e., online, offline), including the social environment of an enacted gendered behavior (such as public versus private online spaces), should also be considered when explaining and describing social behaviors.

The ways in which we *do gender*, or perform our gender, are embedded in our daily interactions with others (Fenstermaker & West, 2002; West & Zimmerman, 1987), and as such, our gender performances are inherently social in nature. Furthermore, our
understanding of our gender identity is situated within a continual, self-reinforcing cycle by which we perceive gender and gender-specific behaviors, and then conform our own behaviors to these gender understandings. These social norms may then serve to limit our behaviors, based on environmental context. Bem (1974; 1981) argues that even the information we process from the outside world is influenced by our own gender schemas, in which specific behaviors may be interpreted differently depending on our masculine or feminine identities. Studies have also identified specific patterns of gendered behaviors, such as communicative patterns, which have consistently differed between the genders.

Differences between men and women’s communicative patterns appear as early as elementary school and continue into adolescence (Eckert, 2008; Tannen, 1991). Patterns of communication often develop in same-sex, group-based environments, where peers reinforce gender-specific behaviors (Maccoby, 1990). Boys and men use more assertive communication styles used to illustrate their social dominance in groups, while girls and women focus on collaborating with others with the hopes of achieving a sense of social harmony (Leaper, 1994; see Leaper & Ayers, 2007 for a review of adult talk; see Leaper & Smith, 2004 for a review of child talk; Leaper, Tenenbaum, & Shaffer, 1999; Savicki, Kelley, & Lingenfelter, 1996). Girls’ preferences towards affiliative speech patterns allow them to initiate and maintain contact with others in their growing social network (Leaper & Smith, 2004), and have been replicated in online communities (Carr, Cox, Eden, & Hanslo, 2004). Women also more frequently engage in emotion sharing during conversations, while men prefer assertive speech patterns expressed through argumentative and dominant language that researchers have attributed to male dominance found in westernized society (Leaper & Smith, 2004; Tannen, 1991). Furthermore, many of these assertive, male communicative
styles may replicate in online environments (Savicki, Kelley, & Lingenfelter, 1996a; Selfe & Meyer, 1991). As a whole, these gendered trends are based on studies from westernized cultures and may not reflect other cross-cultural norms of gendered behaviors.

Cross-cultural research has identified both distinct gender differences, while also acknowledging the role of androgynous behaviors in social groups. Therefore, men and women may exhibit different or similar communicative patterns outside of the U.S., both of which would be dependent on the culture and region (see Best & Williams, 1997 for a review of cross-cultural gender norms). Some researchers have even argued for a re-focusing of gender as an explanation of differences between individuals and instead towards identification of similarities in behaviors, with a more precise identification of the ways in which behaviors vary based on the power dynamics and social structures of environments (Fine & Gordon, 1989; Hyde, 2005; Shields & Dicicco, 2011; Stewart & McDermott, 2004). The enactment of one’s gender may fluctuate across environments as a reflection of opportunities for social interactions with others. Individuals may perform more feminine or masculine behaviors as a result of the other individuals in the environment and the opportunities the environment provides for interaction. As a result of a more complex understanding of the dimensionality of gender, researchers should also view and measure gender using a scaled approach, as gender exists on a spectrum of attitudes and behaviors (Bem, 1981).

Gendered expressions become particularly salient during adolescence and emerging adulthood when varied identities are “tried out” to determine a match between identity and the individual’s personality, preferred behaviors, and motivations/desires for social interaction before an individual commits to a given identity (Arnett, 2000; Erikson, 1963;
Luyckx, Goossens, & Soenens, 2006). Adolescents struggle between identity and role confusion, a conflict in need of resolution for psychological growth (Erikson, 1963). As adolescents begin to choose their developmental pathway, they may also take more risks as a way for them to develop an understanding of their identity (Lightfoot, 1997; Waterman, 1982); such risks may be expressed through their online expressions, which may not conform to offline gender norms. However, this identity experimentation may re-emerge in adulthood as individuals are afforded additional freedoms and opportunities to behave in ways that no longer conform to offline societal expectations.

The interpretations of one’s gender and the subsequent enactment of behaviors are further complicated by the varied affordances of online environments. Our online expressions may align or diverge from our offline identity, where offline behaviors may be replicated, hindered, or enhanced during online interactions.

**Offline and Online Identities**

Individuals who experience barriers to identity expression offline may benefit from the variety of social opportunities available online. In research conducted with shy individuals, greater shyness has been associated with fewer friends on Facebook (Birnie & Horvath, 2006; McKenna, Green, & Gleason, 2002; Orr et al., 2009; Sheeks & Birchmeier, 2007). However, Shaw and Grant (2002) found that participation in chat rooms resulted in decreased loneliness and depression, in addition to increased social support. This illustrates an online compensation or poor get richer hypothesis (Kraut et al., 1998; 2002) where online interactions compensate for offline difficulties or offline social deficits (Kuss & Griffiths, 2011). The Internet can then serve to liberate individuals with these deficits due to the online opportunities for trial-and-error.
The Internet may also serve as a tool that either heightens offline strengths, labeled the *rich get richer* (Kraut et al., 1998; 2002) or *social enhancement hypothesis* (Pempek, Yermolayeva, & Calvert, 2009), or heightens offline deficits, termed the *poor get poorer* hypothesis (van den Eijnden, Meerkerk, Vermulst, Spijkerman, & Engel, 2009). These theories propose that strong offline personality features (positive or negative) are enhanced through online interactions. For example, women who are emotionally expressive offline may find more opportunities to express their feelings online, and consequently would strengthen these communicative patterns through their online interactions. However, women who struggle to behave assertively with others during their face-to-face interactions may struggle to a greater extent when online, feeling further confined by their offline gender roles when engaging with others online. As a third hypothesis, online behaviors may also act as a direct extension of our offline behaviors (see Birnie & Horvath, 2006; Kendall, 1998; Kennedy, 2006 for examples); as such, the emotionally expressive woman would be just as expressive online as she was offline.

Aiding in the aforementioned identity experimentation, many online environments also allow users the opportunity to select their online identity through the use of profiles, choice of username, selecting of avatars, and/or additional identifiable characteristics. There is significantly less choice in one’s level of anonymity on environments such as Facebook, where individuals are asked for their full names, location, age, and other identifiable characteristics than Wikipedia where users are asked for a pseudo-name (username) and each user may choose to populate or not populate their Wikipedia profile. Users may add profile pictures on each of these environments, although Wikipedians often do not include pictures on their user pages.
The affordances of each of these online environments allow for differing levels of identity selection and experimentation, which may further result in certain sites hosting greater conformity towards offline gender identities and associated behaviors (i.e., Facebook). Some researchers have found that in comparison with anonymous online spaces, individuals present a more realistic interpretation of themselves on nonymous (public) environments (Ellison et al., 2006; Zhao, Grasmuck, & Martin, 2008). Nonymous environments include those where users provide limited profile information for others to access. On semi-onymous online spaces, such as Facebook, one’s self-presentation may not align with how one presents oneself in the offline environment. Similarly, individuals may present themselves differently depending on whether the online environment is nonymous or anonymous in nature (Zhao, Grasmuck, & Martin, 2008). In the context of gender, communicative patterns have been studied extensively offline. However, research has only begun to specify gendered communication in online environments (i.e., Soukup, 1999; Valkenburg, Shouten, & Peter, 2005; Weiser, 2000, Zhao, Grasmuck, & Martin, 2008) and research is needed to identify how gendered expression may fluctuate in varying types of online environments.

Each of the aforementioned online/offline theories describes how enactments of gendered behaviors may replicate or transform from offline to online environments. However, Haraway (1991) warns that the socially constructed dichotomy of gender becomes more complicated online, where the self and identity are transformed through the use of computer-mediated tools. During online engagement, individuals bring their offline cultural practices and understandings into the online world and gendered perspectives/behaviors from offline environments may pose limitations upon or enhance how individuals communicate
online (Davidson & Martellozzo, 2013). Instead of a direct replication of our offline behaviors, researchers are beginning to find that traditional notions of femininity and masculinity may in fact be transformed through individuals’ online engagement (Manago, 2013).

**Gender Fluidity Online**

The anonymity available online allows individuals to try-out gendered communication (e.g., assertive speech) in a *safe space* where consequences for their behaviors may be less severe than offline consequences (Shaw, 1997; Turkle, 1996). Individuals are able to manipulate their identities through agentic choices online, without the commitment to an identity that offline environments may require. This *gender fluidity* is an advantage to the online environment (Armentor-Cota, 2011) and research has found that adolescents may experiment with identity during their online social interactions (Valkenburg, Shouten, & Peter, 2005).

In addition, the freedom to try out identities online may also result in unique consequences if these behaviors fail to align with those consistent with a given gender. For example, an individual who selects a female avatar online may choose to lead a group or dominate an online chat session during a game. These more dominant, assertive behaviors may be viewed as masculine behaviors, and as such, they may experience negative consequences such as derogatory comments or references to *bossy* behaviors due to the misalignment of their behaviors with their female online appearance. The varied online environments afford researchers new ways of exploring gendered expressions (Anderson et al., 2012), particularly in the context of how gender enactment might replicate or transform through online interactions.
Current Research

Research has suggested that women enact more emotionally expressive and interpersonally oriented behaviors when online (Boneva, Kraut, & Frohlich, 2001; Joiner et al., 2012; Morris, 2013; Weiser, 2000; Yang, Brown, & Braun, 2013). Contrasting this feminine style of communication, men appear to use more instrumental or task-oriented behaviors while online (Boneva, Kraut, & Frohlich, 2001; Morris, 2013). Given these offline differences in communicative patterns, online variations may also exist and likely reflect the affordances of specific online environments. Gender may be enacted more strongly through one’s behaviors and participation in specific online environments, such as SNSs. This enactment may bring offline gender roles and offline power dynamics into the online environment.

A recent study of Wikipedia editing behaviors revealed a gender gap in which women were editing at significantly lower volumes than men (Collier & Bear, 2012; Eckert & Steiner, 2013; Glott, Schmidt, & Ghosh, 2010; Hill & Shaw, 2013; Lam et al., 2011; Pande, 2011). Some of the potential reasons underlying this editing gap include gender differences in Internet familiarity and use among highly skilled individuals (Hargittai & Shaw, 2015), the contentious nature of Wikipedia favoring men (Collier & Bear, 2012; Lam et al., 2011; Laniado et al., 2012), gender differences in social motivation and desire to give back to the greater good, and female orientations towards feminine communicative patterns, where women contribute more during discussions online versus actual Wikipedia editing (Lam et al., 2011).

The Wikipedia mission statement centers on the empowerment and engagement of people around the world with a goal of effective dissemination (see Wikimedia Foundation
Mission Statement, 2015; Wales, 2016), even though issues of gender inequality on Wikipedia are well documented through survey research (i.e., Collier & Bear, 2012). This documented gender disparity suggests a persistence of online injustice surrounding participation from women and men on Wikipedia. In online discussions, women may engage in less discussion or may be targeted for their online critiques.

Similar forms of injustice towards women online have been found on other sites. For example, in a review of the comments left on The Guardian website, researchers found that their opinion writers who were female (compared with those that were male) experienced the greatest levels of harassing behaviors through comments left on article posts (Gardiner et al., 2016). In addition, the 10 regular writers who received the least amount of online harassment were all men. For example, one of the female journalists reported on an abortion clinic demonstration and received the following comment: you are so ugly that if you got pregnant, I would drive you to the abortion clinic myself. In addition, a form of dismissive trolling illustrated in comments such as, calm down dear, targeted women. This online harassment was not limited to targeting gender, but harassment often targeted ethnic and sexual orientation minorities as well. Furthermore, these trolling behaviors represent a unique form of discrimination found online. Due to the nature of many online environments, these behaviors are often hidden under a veil of anonymity for the antagonist. Trolling can be found in abusive comment posts on news articles, but also in sites that do not require users to identify personal information in a profile (i.e., Wikipedia). Gender inequality appears to be particularly pervasive in online environments and may be more prevalent on anonymous sites such as gaming sites (see Thacker & Griffiths, 2012), discussion forums (Herring, Job-Sluder, Scheckler, & Barab, 2002) or other online collaborative spaces (i.e., Wikipedia).
These widespread online inequalities may impact how women participate in certain collaborative environments and may underlie the Wikipedia gender gap.

While a wealth of interventions have been proposed to address the Wikipedia gap (see https://meta.wikimedia.org/wiki/Grants:IdeaLab/Inspire), the majority of the prior research focuses on self-reported survey data or content analyses of Wikipedia editing and thus lacks a systematic examination of how gender disparities in collaborative editing arise. This lack of research identifying the actual underlying mechanisms of the Wikipedia gender gap may prevent the gap from closing, as interventions designed to address the gap may miss these underlying mechanisms. These issues have led to surface-level interventions that only target specified groups of women and potentially neglect to include the majority of potential female editors of varying ages, ethnicity, and professional affiliations. For example, Wikipedia edit-a-thons, which target women or Wikipedia articles on women, have been implemented in major cities. While beneficial in improving the content of Wikipedia articles, these edit-a-thons often include mostly current female Wikipedians. Interventions informed by systematic analyses of the mechanisms underlying the gender disparity could broaden their focus to include a wider range of potential and current female Wikipedians by removing barriers that currently prevent women from editing on Wikipedia.

While Wikipedia represents a potentially anonymous online environment, Facebook represents a more nonymous online environment where users are asked to populate their profile with personal characteristics such as gender. Current research suggests that women fail to participate in more anonymous online spaces, such as Wikipedia, but are more actively using Facebook. A comparative exploration of gender identity and gendered expressions on both sites would highlight the unique affordances of these varied environments, in addition to
clarifying how gender is translated into online spaces. Each of the studies in this dissertation explored online gendered behaviors in consideration of the affordances of two unique online environments. Study one assessed online social behaviors in a nonymous environment, while study two explored social behaviors in a more anonymous, simulated online space. Study one measured gender as a binary variable (male versus female) and study two compared the binary gender approach against a more dimensional approach to gender. Study one identified specific gender differences in the ways that men and women use Facebook. An online survey with closed- and open-ended response options asked participants about their social connection patterns, including the size of their friend networks and how/when they utilize the *block* and *un-friend* functions on Facebook.

Study two explored gendered behaviors on a collaborative, public editing environment to determine if anonymity and gendered behaviors replicate in an editing task. Expanding upon the binary measure of gender in study one, study two used a scaled measure of gender to explore individual behaviors during a public editing task. In addition, the gendered behaviors identified in the nonymous online environment of study one (on Facebook) were again explored in a potentially anonymous environment where participants were asked to take part in a public, collaborative editing task, similar to Wikipedia editing. This particular environment was chosen due to the recent gender gaps identified in online editing, identifying male Wikipedians as the prominent information contributors on this public editing site (see Eckert & Steiner, 2013; Glott, Schmidt, & Ghosh, 2010; Hill & Shaw, 2013; Lam et al., 2011; Pande, 2011). Furthermore, study two also sought to identify how beliefs about how others perceive one’s work that are based on the perceived gender may guide personal editing behaviors.
The current research sought to highlight gender differences and similarities in the ways that men and women communicate in collaborative online spaces. Both of these studies sought to clarify the motivations behind online social behaviors and potential barriers to effective use of online spaces. In study one, the identification of gender-specific communicative patterns on Facebook could assist researchers in implementing and improving the accessibility and usability of this site (and other SNSs) for men and women. Similarly, the results from study two may clarify the underlying mechanisms driving collaborative behaviors online environments, while also identifying opportunities and guiding interventions that have the potential to close the gender divide in these collaboration spaces.
CHAPTER TWO

Study One: Communicative Patterns on Facebook Predicted by Gender

As emerging online environments, social network sites (SNSs) such as Facebook are frequently used by college-aged students (Madden et al., 2013). In addition, a recent study found that 92% of adults on SNSs used Facebook (Hampton, Goulet, Rainie, & Purcell, 2011), which was cited as the most popular SNS in 2013 (Duggan & Smith, 2013). As an increasingly popular online tool, the current study explores the communicative patterns of men and women on the SNS, Facebook.

Similar to offline contexts, women report more expressive behaviors online via email and more interpersonally oriented and active behaviors on Facebook (Boneva, Kraut, & Frohlich, 2001; Joiner et al., 2012; Morris, 2013; Weiser, 2000; Yang et al., 2013). These behaviors may be heightened in environments that emphasize social engagement such as Facebook, in which women may be more likely to maintain the integrity of their online social network. As a form of online relationship maintenance, women show a heightened preference for technology-mediated communication such as text messaging, SNSs, video chats, and phone calls when compared to men (Kimbrough, Guadagno, Muscanell, & Dill, 2013). Contrasting women, research has found that men communicate more instrumentally when reaching out to friends/family and are more task-oriented in their online behaviors such as posting facts/statements, news articles, and entertaining messages (Boneva, Kraut, & Frohlich, 2001; Morris, 2013; Savicki, Kelley, & Lingenfelter, 1996).

As a result, men may be less concerned with the maintenance of their social network and status online, but more attentive in keeping up with current information, perhaps communicating only necessary information with friends and family. The maintenance of
one’s online social network may reflect the expression of social grooming behaviors, a phenomenon that serves to help individuals bond with others while also establishing their online status (Tufekci, 2008). As such, individuals with limited social grooming skills may also engage in fewer SNS maintenance behaviors, such as blocking or unfriending behaviors (pruning). Therefore, gender differences in the use of SNSs may also reflect differences between men and women in their online grooming skills and/or reflect differences in the cultural norms governing how we present ourselves in online spaces.

**Gendered Use of Social Network Sites**

Women report more frequent use of SNSs more generally when compared with men (Barker, 2009; Joiner, 2012; Reich et al., 2012), including more use of Facebook specifically (McAndrew & Jeong, 2012; Morris, 2013; Thompson & Lougheed, 2012). Studies have found that both genders use Facebook, although women engage in slightly more use when compared with men (76% of women; 66% of men; Duggan & Smith, 2013). Men and women use SNS’s to maintain relationships (Ellison, Steinfield, & Lampe, 2007; Morris, 2013), while women appear to engage in more maintenance of their friend networks than men (Barker, 2009; Lenhart & Madden, 2007; Muscanell & Guadagno, 2012). Men report reaching out to unknown others at a greater intensity than women (Haferkamp, Elmber, Papadakis, & Kruck, 2012; Lenhart & Madden, 2007; Muscanell & Guadagno, 2012; Raacke & Bonds-Raacke, 2008; Weiser, 2000), but are also more likely to adapt to women’s communication preferences when interacting with a woman (i.e. mobile phones, Instant Messenger; Yang et al., 2013).

Research has also found that men use more *general* information seeking strategies than women (Haferkamp et al., 2012; Yang et al., 2013), while women engage in more *social*
information seeking such as *keeping tabs* on friends (McAndrew & Jeong, 2012) and browsing profile pictures of others (Haerkamp et al., 2012). In exploring the size of friend networks, contradictory results have found that women report more friends on Facebook than men (McAndrew & Jeong, 2012; Pempek et al., 2009), but also that men might have larger friend networks on Facebook and MySpace when compared with women (Raacke & Bondes-Raacke, 2008). These differences in results across studies may be partially accounted for by changes in SNS use and the general increase in popularity of SNSs from 2008 through 2012, although more recent studies (beyond 2012) have not yet explored the size and maintenance of social networks in the context of gender. Additionally, due to the nature of the results reported, the differentiation between participants’ friend networks on Facebook and those on MySpace were unclear in the Raacke and Bondes-Raacke (2008) study.

**Connection Strategies as Gendered Behavior**

Through exploratory factor analyses, Ellison, Steinfield, & Lampe (2011) identified three ways in which individuals connect on Facebook: *a) initiating contact, b) maintaining contact, and c) information seeking*. Each of these *connection strategies* describes dimensions of social behaviors that are not mutually exclusive, and maintaining contact has been cited as the primary motive behind SNS use (boyd & Ellison, 2007). Initiating contact behaviors include the use of SNSs to meet people. Maintenance behaviors represent activities that individuals engage in on SNSs to maintain their pre-existing relationships. Finally, information-seeking behaviors include activities that are used to learn more about people from offline connections, and these may include both social information-seeking behaviors and non-social behaviors. Men and women may use these connection strategies as
opportunities to express their offline gender or perhaps as opportunities to explore behaviors that defy offline gender stereotypes (i.e., men engaging in more feminine behaviors).

If they closely adhere to offline gendered communicative patterns during online social interactions, women may orient more towards socially harmonious online environments (i.e., connection strategies) while also seeking out opportunities to communicate their emotions (Leaper & Smith, 2004; Tannen, 1991). Men may report using more instrumental communicative approaches to express their dominance online (Leaper & Smith, 2004; Tannen, 1991). Similarly, if offline characteristics are strengthened online (rich get richer or poor get poorer), women’s use of emotion-based communication may strengthen online.

Researchers are beginning to identify gender differences during online interactions and specifically in chat rooms (Jackson et al., 2001; Soukup, 1999). In a 2001 study, Jackson and colleagues found that women reported emailing more frequently than men and men used the web (more generally) more frequently than women. The authors concluded that women were engaged in more interpersonal communication via email when compared with men. However, the more complex understanding of connection strategies (beyond simply information seeking) suggests that the authors’ original inferences, drawn from more general measures of web use, may need revising. Connection strategies prioritize the measurement of interpersonal behaviors, whereas web use can consist of a variety of social or non-social behaviors.

Through online observations, Soukup (1999) found evidence that offline communicative patterns replicated in online environments that were either male- or female-dominated. In this study, male-dominated rooms were characterized by authoritative,
aggressive, dominance-displaying patterns of communication. In female-dominated rooms they found more initiating contact strategies and emotional expressions, when compared with male-dominated rooms. This study suggests that patterns of communication may specifically depend upon the online group dynamics (same gender or mixed gender).

**Maintaining contact behaviors.** Both genders engage in maintaining contact behaviors (Ellison et al., 2007; Morris, 2013), although there may be gender differences in the frequency at which these behaviors occur. In a 2009 study, Barker found that women used SNSs more often to maintain their friendships with individuals they knew from offline contexts when compared with men, while men used these sites more often than women for social compensation designed to fulfill their needs online that remained unmet in offline environments. These results support the *rich get richer* hypothesis for women and the *social compensation* hypothesis for men. Expanding upon Barker’s study, Muscanell and Guadagno (2012) also found that female college students engaged in more maintaining contact behaviors on SNSs (MySpace and Facebook) than men. Research suggests that both genders maintain contact with others online, although women appear to engage in these behaviors at a greater intensity than men.

**Initiating contact behaviors.** Pew Research found that girls used SNSs more often to maintain contact with friends and that boys were more likely to use these sites to initiate contact with new friends (Lenhart & Madden, 2007). Other studies have found that men were more focused on initiating contact behaviors (generally) on MySpace and Facebook when compared to women (Muscanell & Guadagno, 2012) and men used SNSs as a method of reaching out to others for dating purposes more often than women (Haferkamp et al., 2012; Muscanell & Guadagno, 2012; Raacke & Bonds-Raacke, 2008; Thelwall, 2008; Weiser,
2000). However, these survey questions are often asked at a broad level, such as, \textit{what reason(s) do you use online social networking sites the most} (Muscanell & Guadagno, 2012). Few studies have identified the specific Facebook behaviors linked with these \textit{reaching out} strategies. Surprisingly, even though Muscanell and Guadagno (2012) found that men were more likely to report using SNSs to reach out to others for dating purposes and to make friends (more generally), they also found that when compared with men, women reported that they sent out more friend requests than men to initiate contact. Therefore, an identification of the specific behaviors of men and women online may more accurately represent or may clarify how men and women use SNSs. If men are favoring SNSs for dating purposes, SNSs might serve as low-stakes environments for men to initiate contact, in which the consequences of a rejection are minor compared with the shame that might occur offline. Research is still needed to identity the motivations for connection strategies (romantic partner versus friend-seeking) as these would more clearly link intentions with actual behavior.

For women, studies are beginning to identify sequences of communication during relationship development that begin with Facebook-initiated contact, moving to instant messaging, then to an exchange of phone numbers, and ending with face-to-face meetings (Yang et al., 2013). Unlike women, men did not report this sequence, citing online conversations and phone calls as \textit{feminine}. However, when interacting with women online, men in this study adhered to more female-oriented communicative strategies (i.e. instant message). This willingness to adopt feminine communication preferences suggests that behaviors might also be re-structured to accommodate the other gender during cross-gender interactions.
Information seeking behaviors. Men appear to use the Internet to gather news and information more generally (Weiser, 2000; Yang et al., 2013). In addition, studies have found that men are more likely than women to search for new friends and potential romantic partners on SNSs via information seeking behaviors. Women report that they spend more time keeping tabs on the activities of others and searching through profiles (and pictures) of current friends (Haferkamp et al., 2012; McAndrew & Jeong, 2012). Although the authors did not label these behaviors as such, these results suggest that women may engage in more socially guided information seeking on Facebook with known others (i.e., photo-browsing of friends’ profiles), while men engage in more general information seeking. As such, men may be seeking information for a variety of purposes. Men have reported using SNSs more often for entertainment purposes or for passive activities such as video watching and reading messages (Helsper, 2010; Joiner et al., 2012; Weiser, 2000; Yang et al., 2013). Contrasting men, women appear to be using SNSs for interpersonal communication and more active behaviors such as picture posting, commenting on others’ posts, and sending private messages (Joiner et al., 2012; Weiser, 2000; Yang et al., 2013). With this increased activity and monitoring of online networks, women may also engage in more pruning behaviors on Facebook, such as blocking and unfriending others.

Blocking/Unfriending behaviors. Blocking and unfriending behaviors serve to disconnect an individual from others by removing another individual from one’s online social network. Without explicitly exploring gender, Sibona and Walczak (2011) identified that the top reasons for unfriending were unimportant posts, posting frequency (too much), polarizing posts, inappropriate posts, everyday life posts, and religion. Research has also extended beyond Facebook to include SNS use more generally. For example, Pew data finds that 27%
of SNS users (more generally) have unfriended or blocked someone who was flirting with them in a way that made them feel uncomfortable, and women were more likely to block or unfriend someone who had been flirting with them in a way that made them feel uncomfortable (Smith & Duggan, 2013). In addition, recent research of participants of SNSs (more generally) found that 22% of users also reported that they had unfriended or blocked someone that they had been in a relationship with (Smith & Duggan, 2013). These blocking/unfriending behaviors may help maintain one’s privacy when on a SNS and represent a form of social pruning available to individuals on Facebook.

In regards to gender, research finds that women may be more concerned than men about the information posted about them on Facebook and may be more careful about privacy-related behaviors such as posting pictures of themselves, untagging pictures, and monitoring who they unfriend (Hoy & Milne, 2010). For example, a recent study found that women were more likely than men to choose the only me option when asked who could post on their timeline (Ongun & Demirag, 2014). In addition, women were more likely to restrict who could send them a friend request to friends of friends versus everyone (Ongun & Demirag, 2014). These privacy behavior orientations suggest that women may be more likely to not only maintain their social networks, but also to prune their social networks through blocking and unfriending behaviors. However, research has not clearly explored these behaviors on Facebook in the context of gender and the motivations behind engaging in these disconnection behaviors.

Overall, the current theories on gendered communication suggest that societal pressures for individuals to conform to gendered behaviors (Bussey & Bandura, 1999; Goffman; 1959) might begin to explain how men and women communicate online (Birnie &
Horvath, 2006). In consideration of these theories, the affordances available online may allow more communicative freedom in which women and men can engage in social patterns that differ from their offline (socially-accepted) behaviors.

**Study One Research Questions**

This first study sought to clarify gender differences in the ways that men and women use Facebook by specifying gender-specific online behaviors to a deeper extent than the prior literature. The following research questions were evaluated:

1. With a stronger, and more relationship-based communication style (Leaper, 1994; Leaper & Ayers, 2007; Leaper, Tenenbaum, & Shaffer, 1999; Tannen, 1991), are women more likely to prune and maintain their online social networks?
   a. What are the differences in the ways that men and women connect with others and/or maintain their social networks on Facebook?
   b. Are there differences between men and women in their frequency and reasons behind blocking/unfriending others on Facebook?
   c. Do women have larger, more expansive online social networks illustrated through a larger number of identified friends on Facebook?

**Methods**

**Participants.** College students were recruited from a subject-pool at a large, public university. This particular college enrolls approximately 14,300 students each year, with 13,300 undergraduate students and 1,000 graduate and professional students (College of Staten Island College Portrait, n.d.). In 2014, the majority of students on this campus identified as women (55%), while 45% identified as men. In addition, this campus contains a relatively large amount of diversity in its student population each year. In 2014, just over half...
of the students identified as White (54%), and other prominent ethnicities included 17% as Hispanic, 14% as African American/Black, 12% as Asian, and 2% as International. Although the average student age is 22 years old, the age of students on this campus range dramatically and almost ¼ of undergraduates in 2014 were attending part-time. Consequently, the overall student population represents a relatively diverse campus of working-class students (45% of undergraduates are low-income).

Students who did not have a Facebook page were excluded from analyses. As a method of controlling for potential outliers in the data due to age differences, individuals above the age of 25 were also excluded from data analysis. A total of 538 college students (285 women, 253 men) were included in the study with ages ranging from 18 to 25 ($M = 19.17, SD = 1.68$). Participants’ ethnicities were not mutually exclusive and included 49% ($n = 257$) Caucasian/White, 47% ($n = 118$) Hispanic/Latino, 13% ($n = 68$) African American/Black, 23% ($n = 58$) Asian, 9% ($n = 22$) Middle Eastern, 5% ($n = 13$) as an other ethnicity (i.e., multiracial), 6% ($n = 15$) of students did not respond, 4% ($n = 9$) Filipino, 2% ($n = 5$) Indian, and 1% ($n = 3$) Native American.

**Procedure.** This study was approved by the IRB at the university and participants completed the survey through SurveyMonkey online software (see Appendix A for instrument). Participants were asked a series of questions about their demographics, methods by which they connect with others on Facebook, friending behaviors, and blocking/unfriending behaviors.

**Facebook connection strategies.** The Facebook Connection Strategies Scale was used to identify strategies that students used to connect with others via Facebook (Ellison et al., 2011) through three dimensions: 1) Initiating Contact behaviors describe the use of
Facebook to meet unknown others with whom the individual has had no prior, offline connection, 2) Maintaining Contact behaviors include using Facebook to maintain ties with close others, and 3) Information Seeking behaviors include an individual’s use of Facebook to learn more about people’s activities in offline contexts.

**Friending and unfriending behaviors.** The following questions assessed friending behaviors: 1) How often do you send a friend request? 2) Without a response, how often do you send 2 or more friend requests to the same person? 3) How often are your friend requests accepted? Responses were given on a 7-point Likert scale ranging from *Never* to *More than a Couple Times a Day*. Students were then asked survey questions as to whether they had ever blocked and/or unfriended others and whether they had ever been blocked and/or unfriended by someone on Facebook. These questions were following by open-ended questions asking why they had engaged in the behavior.

A qualitative analysis based in a grounded theory approach was used to analyze all of the open-ended questions on the survey. The research team reviewed all responses for a given question and then developed coding schemes in which codes were not mutually exclusive. A coding dyad then collaboratively coded a subset of responses (approx. 20-50 responses) to check for agreement and consistency. As a final step, each coder in the dyad independently coded 20% of the data (approx. 80-100 responses) and the percent agreement was calculated. The percent agreement for these codes ranged from 99% to 100%. Qualitative analyses were then run using chi-square tests to compare the binary categorization of men and women. See Table 1 for coding scheme.

**Table 1**

*Coding Scheme for Responses to: Have You Ever Blocked or Un-Friended Someone?*
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cited an Ex, Gendered, or Sexual Behaviors</td>
<td>Response referenced an ex, <em>male</em> or <em>female</em>, and/or made reference to sexual behaviors (i.e. <em>he asked me dirty questions so I blocked him</em>)</td>
</tr>
<tr>
<td>Due to Stalking or Repetitive Behaviors</td>
<td>Response referenced stalking or repeated behaviors from the other person</td>
</tr>
<tr>
<td>Due to Cruelty, Abuse, Mean, or Gossip Behaviors</td>
<td>Response referenced that the other person was cruel, rude, mean, gossiping, or abusive in some manner</td>
</tr>
<tr>
<td>Due to Incompatibility or Annoying Behaviors</td>
<td>Response referenced that the other person was blocked because they were <em>incompatible</em> or annoying the participant</td>
</tr>
<tr>
<td>Due to Over-Sharing or Drama</td>
<td>Response referenced that the other person was sharing too much information on Facebook</td>
</tr>
<tr>
<td>Friendship Was Over or Had a Fight</td>
<td>Response referenced that the friendship was over or the participant had a fight with the person being blocked</td>
</tr>
<tr>
<td>Don’t Know or Talk to Anymore</td>
<td>Response referenced that the participant didn’t talk to the person being blocked</td>
</tr>
<tr>
<td>Due to Spamming or Hacking</td>
<td>Response referenced that the person being blocked was trying to hack into the participant’s account or sent spam to the participant</td>
</tr>
</tbody>
</table>

Participants were also asked the following open-ended questions: 1) How do you find and contact a new friend on Facebook? 2) How do you decide whether to accept a friend request? See Tables 2 & 3 for the coding schemes.
Table 2

*Coding Scheme for Responses to: How Do You Find and Contact a New Friend on Facebook?*

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Write on Their Wall or Message Them</td>
<td>Participant indicated that they wrote on the walls of others or private messaged others on Facebook</td>
</tr>
<tr>
<td>Look at Mutual Friends or People You May Know</td>
<td>Participant indicated that they would use the automated <em>mutual friends</em> and <em>people you may know</em> functions on Facebook</td>
</tr>
<tr>
<td>Friend Request or Add Them as a Friend</td>
<td>Participant indicated they would send a friend request or attempt to add them as a friend on Facebook</td>
</tr>
<tr>
<td>Look Them Up or Search for Them Online</td>
<td>Participant indicated they would use the Facebook or an alternative site’s (i.e., Google) search function to find people</td>
</tr>
<tr>
<td>I Don’t Search or They Only Add Me</td>
<td>Participant indicated that they did not search for anyone and/or waited for others to add them on Facebook</td>
</tr>
<tr>
<td>Other Strategies Used</td>
<td>Participant’s strategy did not fit the aforementioned categories; these may include the use of phones/texts, asking for Facebook information in person, and/or liking someone’s message on Facebook</td>
</tr>
<tr>
<td>Don’t Know</td>
<td>N/A</td>
</tr>
</tbody>
</table>
**Coding Scheme for Responses to: How do you Decide to Accept a Friend Request?**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>If I Know Them</td>
<td>Participant indicated that they would accept requests from people they already knew</td>
</tr>
<tr>
<td>If We Have Mutual Friends</td>
<td>Participant indicated that they would accept requests if the requester had mutual friends with the participant</td>
</tr>
<tr>
<td>Based on Their Profile Page</td>
<td>Participant identified that they view some component of the requester’s profile page</td>
</tr>
<tr>
<td>Based on Their Appearance</td>
<td>Participant identified that they accept requests based on the appearance of the requester</td>
</tr>
<tr>
<td>Don’t Accept Requests</td>
<td>Participant indicated that they do not accept friend requests</td>
</tr>
<tr>
<td>Accept All Requests</td>
<td>Participant indicated that they accept all friend requests</td>
</tr>
<tr>
<td>Other</td>
<td>Participant gave a response that did not fall into the aforementioned codes</td>
</tr>
</tbody>
</table>

Mann-Whitney U Tests were used to analyze the quantitative data due to a significant skew in the variables and because prior studies recommend the use of this non-parametric test for significantly skewed variables (McKnight & Najab, 2010). The following scales and items were analyzed with Mann-Whitney tests: Connection strategies scales and friending behaviors such as number of friends, how often friend requests were sent and received, and how often the participant accepted friend requests. Both medians and mean rankings were included in the results due to the varying shapes of the variable distributions. With varying distributions of the variables, a comparison of median values did not provide sufficient
information to clearly perceive the differences between two samples (i.e., men’s and women’s maintaining contact strategies). However, a comparison of the mean ranking values between two groups on a given variable often more clearly highlighted how the groups differed, particularly since the Mann Whitney actually assesses mean rankings (McKnight & Najab, 2010). Also, due to the analysis of multiple codes and the potential for inflation of significance, only p-values less than or equal to .001 were considered significant. Trends, indicated with a p-value greater than .001 and less than or equal to .05, were reported when found.

**Results**

**Facebook connection strategies.** Results revealed a trend where women \((Mdn = 19, Mean \ ranks = 282)\) engaged in more maintaining contact strategies on Facebook \((U = 29041.50, p = .002)\) than men \((Mdn = 18, Mean \ ranks = 242)\). Similarly, a trend was found with the information seeking scale, favoring women \((Mdn = 12, Mean \ ranks = 281)\) as more likely to engage in these behaviors than men, \((Mdn = 12, Mean \ ranks = 243; U = 35693.50, p = .004)\). However, there was no difference attributable to gender for the total scores obtained from the initiating contact scale \((U = 32360.50, p = .338)\).

**Friending behaviors.** When asked how many friends they had on their Facebook network, women reported more friends \((Mdn = 500, Mean \ ranks = 273; U = 26158.50, p = .001)\) than men \((Mdn = 400, Mean \ ranks = 229)\). There was no difference in the frequency at which participants reported sending friend requests \((U = 31468.00, p = .085)\). However, men \((Mdn = 0, Mean \ ranks = 281)\) reported that they more frequently sent out two or more friend requests to the same individual on Facebook \((U = 30406.50, p = .001)\) when compared with women \((Mdn = 0, Mean \ ranks = 249)\). There were no gender differences in the frequency by
which their friend requests were accepted by others \((U = 32639.50, p = .779)\) and the frequency at which they accepted friend requests \((U = 34711.00, p = .801)\), although women \((Mdn = 3, Mean \text{ ranks} = 283)\) reported that they received friend requests more frequently than men \((Mdn = 3, Mean \text{ ranks} = 241; U = 28932.00 \ p < .001)\).

An open-ended question asked participants how they found and contacted a new friend on Facebook. Women were more likely to search for others online \((p < .001)\), while men more frequently reporting using an alternative contact method such as asking for a person’s Facebook information in person or via phone \((p < .001;\) Table 4; see Table 2 for coding scheme).

Table 4

Responses to: How Do You Find and Contact a New Friend on Facebook?

<table>
<thead>
<tr>
<th>Code</th>
<th>(X^2)</th>
<th>Men (n)</th>
<th>Women (n)</th>
<th>(p)-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Write on Their Wall or Message Them</td>
<td>1.16</td>
<td>55</td>
<td>73</td>
<td>.282</td>
</tr>
<tr>
<td>Look at Mutual Friends or People You May</td>
<td>.07</td>
<td>45</td>
<td>53</td>
<td>.793</td>
</tr>
<tr>
<td>Friend Request or Add Them as a Friend</td>
<td>.52</td>
<td>18</td>
<td>25</td>
<td>.472</td>
</tr>
<tr>
<td><strong>Look Them Up or Search for Them Online</strong></td>
<td><strong>15.14</strong></td>
<td><strong>100</strong></td>
<td><strong>160</strong></td>
<td><strong>&lt; .001</strong>*</td>
</tr>
<tr>
<td>I Don’t Search or They Only Add Me</td>
<td>.49</td>
<td>15</td>
<td>13</td>
<td>.482</td>
</tr>
<tr>
<td><strong>Other Strategies (i.e. ask for Facebook information in person, like a message)</strong></td>
<td><strong>12.75</strong></td>
<td><strong>23</strong></td>
<td><strong>6</strong></td>
<td><strong>&lt; .001</strong>*</td>
</tr>
<tr>
<td>Don’t Know</td>
<td>.01</td>
<td>1</td>
<td>1</td>
<td>.935</td>
</tr>
</tbody>
</table>

*Note. \(N = 537; n = 17\) missing responses; categories were not mutually exclusive.
Participants were asked via an open-ended question how they decided whether to accept a pending friend request. Most of the codes developed did not differentiate between male and female participants. However, women were more likely to report that they’d decide based on whether they and the friend requester had a friend in common ($p < .001$; Table 5; see Table 3 for coding scheme).

Table 5

**Responses to: How Do You Decide to Accept a Friend Request?**

<table>
<thead>
<tr>
<th>Code</th>
<th>$X^2$</th>
<th>Men (n)</th>
<th>Women (n)</th>
<th>$p$-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>If I Know Them</td>
<td>2.96</td>
<td>169</td>
<td>209</td>
<td>.085</td>
</tr>
<tr>
<td><strong>If We Have Mutual Friends</strong></td>
<td><strong>21.36</strong></td>
<td><strong>40</strong></td>
<td><strong>94</strong></td>
<td><strong>&lt; .001</strong>*</td>
</tr>
<tr>
<td>Based on Their Profile Page</td>
<td>2.22</td>
<td>16</td>
<td>28</td>
<td>.136</td>
</tr>
<tr>
<td>Based on Their Appearance</td>
<td>3.00</td>
<td>16</td>
<td>9</td>
<td>.083</td>
</tr>
<tr>
<td>Don’t Accept Requests</td>
<td>6.81</td>
<td>6</td>
<td>0</td>
<td>.009</td>
</tr>
<tr>
<td>Accept All Requests</td>
<td>3.59</td>
<td>13</td>
<td>6</td>
<td>.058</td>
</tr>
<tr>
<td>Other</td>
<td>.78</td>
<td>18</td>
<td>15</td>
<td>.377</td>
</tr>
</tbody>
</table>

*Note. $N = 536$; $n = 15$ missing responses; categories were not mutually exclusive.*

Blocking behaviors. When asked whether they had ever blocked or un-friended someone on Facebook, women ($n = 210$) were more likely to report that they had ($X^2 (1, N=537) = 30.29, p < .001$) when compared with men ($n = 129$). Participants were also asked to report the reasons why they had blocked/unfriended someone; women were more likely to report that they had blocked/unfriended due to stalking or repetitive behaviors ($p < .001$), while men were more likely to report that they hadn’t blocked, didn’t know why they had blocked, or didn’t provide an example ($p < .001$; Table 6; see Table 1 for coding scheme).
Table 6

Responses to: Have You Ever Blocked or Un-Friended Someone? If so, why?

<table>
<thead>
<tr>
<th>Code</th>
<th>$X^2$</th>
<th>Men (n)</th>
<th>Women (n)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cited an Ex, Gendered, or Sexual Behaviors</td>
<td>5.15</td>
<td>20</td>
<td>40</td>
<td>.023</td>
</tr>
<tr>
<td>Due to Stalking or Repetitive Behaviors</td>
<td>16.55</td>
<td>12</td>
<td>44</td>
<td>&lt; .001*</td>
</tr>
<tr>
<td>Due to Cruelty, Abuse, Mean, or Gossip Behaviors</td>
<td>5.33</td>
<td>8</td>
<td>22</td>
<td>.021</td>
</tr>
<tr>
<td>Due to Incompatibility or Annoying Behaviors</td>
<td>5.42</td>
<td>26</td>
<td>49</td>
<td>.020</td>
</tr>
<tr>
<td>Due to Over-Sharing or Drama</td>
<td>.04</td>
<td>6</td>
<td>6</td>
<td>.839</td>
</tr>
<tr>
<td>Friendship Was Over or Had a Fight</td>
<td>2.48</td>
<td>17</td>
<td>30</td>
<td>.116</td>
</tr>
<tr>
<td>Don’t Know or Talk to Anymore</td>
<td>.61</td>
<td>6</td>
<td>10</td>
<td>.434</td>
</tr>
<tr>
<td>Due to Spamming or Hacking</td>
<td>.05</td>
<td>8</td>
<td>10</td>
<td>.817</td>
</tr>
<tr>
<td>Didn’t Know the Person</td>
<td>.93</td>
<td>9</td>
<td>15</td>
<td>.334</td>
</tr>
<tr>
<td>Other (i.e. to limit access)</td>
<td>2.66</td>
<td>9</td>
<td>19</td>
<td>.103</td>
</tr>
<tr>
<td>Don’t Know Why or No Example</td>
<td>33.29</td>
<td>128</td>
<td>75</td>
<td>&lt; .001*</td>
</tr>
</tbody>
</table>

Note. N = 537; n = 19 missing responses; categories were not mutually exclusive.

Discussion

Results from study one replicated many of the prior findings in regards to communication strategies, but also expanded upon these studies to include more nuanced detail about the frequencies at which specific behaviors on Facebook were utilized by each gender. Overall, men and women did not greatly differ in their uses of Facebook and the volume of use. However, women were more active on Facebook and reported engagement in
more general maintenance behaviors of their social networks through the use of pruning and relationship monitoring.

**Connection strategies.** Consistent with prior studies, women engaged in more *general* Facebook behaviors (McAndrew & Jeong, 2012; Morris, 2013; Thompson & Lougheed, 2012) with a trend towards women engaging specifically in more maintaining contact behaviors on Facebook (Barker, 2009; Lenhart & Madden, 2007; Muscanell & Guadagno, 2012). Women’s reliance on *mutual friend networks* when deciding whether to accept a friend request further emphasized their dependence on their maintained friend network. These maintaining behaviors were also highlighted through the questioning on friending behaviors. Similar to other studies (McAndrew & Jeong, 2012; Pempek et al., 2009), women reported more friends on Facebook than men.

With regards to information seeking, there was a trend towards women being more likely to gather and monitor information presented by others online, which contradicts prior research favoring men as the information seekers (Weiser, 2000; Yang et al., 2013). The finding of a trend where women engaged in more profile browsing of friends and strangers (a form of information seeking), in addition to following up on offline connections through the use of Facebook, supports prior research findings that women spend more time *keeping tabs* on their pre-existing social networks (Haferkamp et al., 2012).

**Friending behaviors.** The lack of gender differences in the frequency of friend requests sent, the frequency at which requests were accepted, and the initiating contact scale suggests that both genders are using (or not using) Facebook to initiate contact with unknown others online to the same extent. Even so, there were gender differences in how people were reaching out to known and unknown others (initiating contact), suggesting that specific
contact methods may differ by gender. The similarities between men and women may reflect more recent trends towards deeper understanding of online privacy settings and the general rise in concerns regarding online data use (Rainie & Madden, 2015). Men’s reports of sending two or more friend requests to the same individual more frequently than women and women’s reports that they received friend requests more frequently than men suggest that men may be initiating contact with others on Facebook in ways that are not captured by Ellison et al.’s (2011) scale.

In addition, this frequent friend requesting by men may reflect gender differences in understanding of Facebook social norms. As an illustration of this, when participants were asked about their blocking/unfriending (pruning) behaviors, women were more likely to report that they had blocked/unfriended someone due to stalking or repetitive behaviors, while men were more likely to report that they hadn’t been blocked, didn’t know why they had been blocked, or didn’t provide an explanation as to why they had been blocked.

Consistent with the prior literature, it appears that women are more attuned to blocking/unfriending behaviors, and perhaps additional privacy settings on Facebook (Hoy & Milne, 2010; Ongun & Demirag, 2014).

The current results suggest that privacy-related behaviors may be practiced in part due to increased concerns about receiving harassing behaviors from others online, as research has already highlight that women actively engage in blocking or unfriending behaviors when they receive unwanted sexual advances (Smith & Duggan, 2013). Women may implicitly (or explicitly) communicate their gender online, in which more feminine communicative styles may attract harassment from predators or men, more generally (Herring, 2000). These
specific communication styles may communicate characteristics about an individual such as gender, attractiveness, youth, confidence, etc.

Women may also pay stronger attention and adhere more closely to social norms when compared with men as a result of their invested interest in maintaining and pruning their online social networks. Facebook social networks are publicly available and the maintenance of one’s network requires consistent attention, including positive feedback for those in the network that exhibit favorable behaviors (i.e., sending a like) and negative feedback to those who exhibit less favorable behaviors (i.e., blocking a friend who likes every status update). These social grooming behaviors as identified by Tufekci (2008), and conceptualized by Dunbar (1998) and Goffman (1956), provide users with opportunities to connect with others and display status in online environments. As a form of self-presentation, the maintenance of one’s social network communicates to others that he/she has the resources (i.e., time, knowledge) required to maintain such a time-consuming task. Facebook, in particular, allows for varying types of social maintenance ranging from friend requesting to friend blocking, all of which provide users with public impression management opportunities. Therefore, the adherence and active engagement in online social norms provide one avenue by which men and women can strengthen their online relationships with others, a socially harmonious behavior that is often favored by women (Leaper & Smith, 2004; Tannen, 1991).

Women also rely on their current online social networks to guide their future friending behaviors, as was illustrated in responses when women were asked how they’d decide whether or not to accept a friend request. Women seemed to rely more heavily on their online social networks for guidance in the current study. Men in this study favored more
traditional contact methods such as asking for Facebook information in person, whereas women were more likely to use their pre-existing online network to reach out to other people. However, the current study did not identify whether men and women were seeking out information about another man or woman and their motivation for reaching out to that individual (i.e., romantic intentions).

The current study highlights the potential replication of offline behaviors (i.e., relationship maintenance) into online environments, which may reflect the replication of offline power structures (Fine & Gordon, 1989; Hyde, 2005; Shields & Dicicco, 2011; Stewart & McDermott, 2004) in certain online environments such as Facebook. Women in particular, may be more prone to harassment-like behaviors on some mixed-gender environments such as Facebook (see current study) or through the posting of comments on news articles (i.e., Gardiner et al., 2016). As such, administrators of these online spaces might consider how privacy settings can be uniquely tailored to each individual user, a direction that Facebook has recently attempted.

Expanding upon the results from this study, the social grooming behaviors such as blocking/unfriending behaviors and both the maintenance and reliance on one’s mutual friend network (Goffman, 1956; Tufekci, 2008) were favored more so by female users when compared with men. These findings suggest that social maintenance norms on Facebook may vary by gender. As such, designers of SNSs might consider additional ways in which users can effectively monitor their online social networks (i.e., visual network representations, diagrams) and share information with others. The expansion of SNSs beyond Facebook and into Twitter, Instagram, and Pinterest, all suggest an industry-wide recognition of the need to modify and adapt the online environment to the traits of the individual user. Furthermore,
researchers of these sites should consider opportunities and affordances of SNSs in the context of participants’ gendered expressions and the offline social norms associated with gender.
CHAPTER THREE

Study Two: Gender Identity and Collaborative Editing

In comparison with the female-preferred Facebook environment (McAndrew & Jeong, 2012; Morris, 2013; Thompson & Lougheed, 2012), Wikipedia represents a male-dominated online environment based on self-reported gender (Eckert & Steiner, 2013; Glott, Schmidt, & Ghosh, 2010; Hill & Shaw, 2013; Lam et al., 2011; Pande, 2011). The scarcity of women on Wikipedia presents researchers with an opportunity to contrast this collaborative space with others where women are more actively contributing (i.e., Facebook), especially as a wealth of research has identified that men tend to dominate computer-based environments (see Prinsen, Volman, & Terwel, 2007). As such, a comparison of gendered behaviors on these two networks would allow researchers to explore the affordances of both male-dominated and female-dominated online spaces.

Both Facebook and Wikipedia provide users with opportunities for social interactions and forms of collaboration, but allow for different types of collaboration. As an informal setting, Facebook allows users to connect with others to form a social network by which individuals can exchange information via posts, likes, and media sharing. Contrasting Facebook, users of Wikipedia often collaborate with unknown others, particularly other Wikipedia users who are outside their personal social network. The differences in level of anonymity of others on each network also afford researchers an opportunity to explore how online identity might perpetuate offline, gendered behaviors into different types of online spaces.

Expanding on the results from the binary gender categories presented in study one, study two also took a dimensional approach to gender identity in order to highlight unique
communicative patterns on a simulated Wikipedia, collaborative editing task. This study explored gendered behaviors and communicative patterns in the context of online editing behaviors, including interactions with other editors, and how editing may reflect the editing environment (positive versus neutral peer comments) and one’s perceptions of other editors in that environment.

**The Wikipedia Gender Gap**

As a core mission of the online encyclopedia, Wikipedia, administrators highlight the potential of the site as a source of empowerment for contributors. The site also seeks to facilitate engagement from individuals *around the world* (Wikimedia Foundation Mission Statement, 2015; Wales, 2016). However, the prevalence of gender inequality found on Wikipedia suggests that this online collaborative environment may lack the democratic processes originally identified in their mission.

Research has found inequalities in the overall volume of editing behaviors, revealing that less than 10% of Wikipedians contribute over 90% of the total number of contributions on the English Wikipedia site (Ortega, Gonzalez-Barahona, & Robles, 2008). In addition to this more general inequality, the identification of a gender disparity, in which men edit at greater volumes on the English Wikipedia, was revealed in recent Wikipedia surveys and subsequent research (Eckert & Steiner, 2013; Glott, Schmidt, & Ghosh, 2010; Hill & Shaw, 2013; Lam et al., 2011; Pande, 2011). Only 22.7% of U.S. Wikipedians on the English Wikipedia self-identify as female relative to those who identify as male (Hill & Shaw, 2013), a number that increased only slightly (after more precise data analysis) from the original estimate of 17.8% female Wikipedians in the Wikimedia Foundation Survey (see Glott, Ghosh, & Schmidt, 2010).
Recent research highlights the persistence and prevalence of the Wikipedia gender gap beyond the English Wikipedia. A 2016 study conducted by Mass & Zelenkauksaite found that in comparison with self-identified male users, women represented a smaller percentage of Wikipedians in almost all of the current Wikipedia online encyclopedias (across cultures). Some of the Wikipedia environments with the smallest proportion of female users were Hindi, Bengali, Persian, and Chinese. Even in consideration of these findings, it remains unknown as to how gender is performed in this public, collaborative space and how this might influence how men and women actively engage on Wikipedia. Research is needed to identify the specific gendered forms of communication found in specific online spaces. Furthermore, as Soukup (1999) found in her studies of online chatrooms, offline communicative patterns might be replicated in certain online environments that are either male- or female-dominated. Consequently, additional variables, such as the mixed gender nature of the collaborative group or the characteristics of the participants in the discussion, might interact with the potential relationship between gender and online editing behaviors.

Underlying Motivations for Editing

Researchers also attribute online participation in the Wikipedia community to personal motivation, cultural and linguistic factors, and antecedents of participation (Okoli, Mehdi, Mesgari, Nielsen, & Lanamaki, 2012). In regards to personal motivation, previous research has uncovered that Wikipedians express a strong desire to give back in an effort to enhance public knowledge of complex phenomenon, have heightened intrinsic motivation, and have heightened altruistic behaviors and motivations (Baytiyeh & Pfaffman, 2010; Cho, Chen, & Chung, 2010; for a review see Jullien, 2012; Kuznetsov, 2006; Nov, 2007; Okoli et
Prior studies indicate that women are more altruistic than men, specifically when the cost of the altruistic behavior is expensive (Andreaoni & Vesterlund, 2001). Wikipedia editing may be considered one of these less-costly endeavors, and as such, this finding implies that women would be more active in Wikipedia editing. However, the current gender gap contrasts this altruism literature, suggesting that even if women have a strong desire to contribute on Wikipedia, they may experience barriers when attempting to do so.

Similar to altruistic behaviors, social motivation or the desire to interact with others may also underlie gender differences in collaborative editing on Wikipedia. Women with greater social motivation may express interest in online editing, but may also experience barriers when they attempt to edit. Individuals with limited social motivation and high civic engagement attitudes may want to contribute to the online community, but may feel ill equipped to effectively communicate with others online. Potential contributors’ social motivation may work against the gender gap as women seek to interact with others on Wikipedia, although current research suggests that women may choose to engage in more discussions at the expense of their actual editing behaviors (Lam et al., 2011).

There may be certain environmental restraints or social dynamics, such as forced interactions with those who use dissimilar communicative patterns that prevent groups of individuals from Wikipedia editing. It is unclear if the desire to give back to the greater good or motivation for social behavior online may differ by gender. Potential gender differences in many of these characteristics have not yet been identified on Wikipedia, which is likely due to the use of unstandardized measures or a lack of exploring and reporting of gender in data analyses (see Okoli et al., 2012 for a full review).
Studies also suggest that the gender gap may be fueled by gender differences in Internet familiarity and Internet use for highly skilled individuals (Hargittai & Shaw, 2015), which often favor men. In younger age groups, studies find that boys report via surveys more confidence in regards to their computer-based skills when compared with girls, are more attracted to computer-based environments, and express more dominance in these spaces (Comber, Cholley, Hargreaves, & Dorn, 1997; Underwood, Underwood, & Wood, 2000). Survey research conducted by Bear and Collier (2016) \((N = 1,598)\) on Wikipedia found that women also reported less confidence in their editing expertise and greater discomfort with editing when compared with men. In addition, women reported a greater internal, negative response to critical feedback from other Wikipedians than men. Both the lack of confidence in expertise and discomfort with editing were significant predictors of the number of articles edited by all of the participants in this study.

As novice editors begin editing on Wikipedia, they may receive positive or negative feedback from other, unknown editors. The nature and reception of this feedback might guide whether/how these novice editors make future edits on the site. Research has used edit revert-detection methods on Wikipedia data from the Main Namespace area, an area that includes a set of Wikipedia pages whose names begin with a specific word (Lam et al., 2011). For example, all of the article pages on Wikipedia begin with Main/Article. This study explored whether an editor’s contributions on Wikipedia were their first edits or if they had edited more than once to identify whether female or male editors were more likely to have early edits reverted on Wikipedia (Lam et al., 2011). Results revealed that women are more likely to have their edits reverted on Wikipedia, but also that novice women were just as likely as novice men to leave Wikipedia after an edit reversion. The greater number of reverted edits...
might then result in fewer women continuing their editing on Wikipedia articles.

**Explaining the gap: Contentious nature of Wikipedia.** When women begin editing on public sites, such as Wikipedia, they may also encounter a largely male-biased editing community. In examining Wikipedia discussions, researchers found evidence of emotional homophily (or our desire to be associated with similar others); Wikipedians with specific communicative styles tend to engage with similar (versus dissimilar) others (Laniado, Kaltenbrunner, Castillo, & Morell, 2012). Laniado and colleagues (2012) found that Wikipedia users sent and received more messages from users who communicate in a similar style, such as matching communicative styles based on the valence of the communication (i.e., happiness, satisfaction, and hope versus sadness, dissatisfaction, and despair). Consequently, women may limit or refrain from larger contributions to public editing sites that are dominated by male or anonymous users as a result of the forced interactions with those who communicate in ways that are dissimilar from themselves. These barriers may also parallel those experienced by other “out-groups” who have a strong desire to contribute on Wikipedia, but feel too disconnected from the current community of online participants.

Research conducted with surveys of 40,699 English Wikipedia editors also found that women might avoid contentious or controversial discussions on Wikipedia (Collier & Bear, 2012). Women were more likely to report that a conflict with another Wikipedia contributor resulted in the halting of their participation on Wikipedia (Collier & Bear, 2012). In addition, women were 31% more likely than men to identify that the fear of being criticized was a significant reason for not wanting to be more active on Wikipedia. This self-reported avoidance of conflict and criticism may result in differences in editing behaviors by female Wikipedians when compared with their male counterparts.
In another study using a content analysis approach to explore English Wikipedia talk pages, researchers measured the emotional valence and content of Wikipedia discussions using the Affective Norms of English Words assessment; this measure allowed researchers to assess the valence, level of arousal, and level of dominance found in conversations on Wikipedia (Laniado et al., 2012). Results indicated that women were more oriented towards discussions with a positive tone and received more positive comments on their user talk pages. The majority of the prior research, most of which relies on content analyses of Wikipedia articles and talk pages (Lam et al., 2011; Landiado et al., 2012) or self-report surveys (Collier & Bear, 2012), suggests that women on Wikipedia may favor a socially harmonious style of communication parallel to that found in offline environments (Leaper & Smith, 2004; Tannen, 1991).

Nevertheless, another study uncovered evidence that Wikipedia articles with a greater concentration of female editors were also more controversial (or argumentative) in nature and that women were more likely to be indefinitely blocked on Wikipedia due to vandalism or other infractions (Lam et al., 2011). In their study, Lam and colleagues (2011) noted participants’ self-reported gender (via their user pages) and explored the edit protection status of articles that had a high concentration of male or female editors. Strongly protected articles often contain disputes, vandalism, or controversies, all of which are more likely to display contentious communicative patterns. Edit-protected articles are also restricted from further editing by new or anonymous editors, as these two types of editors are commonly the culprits of the vandalism/spam on the article (Lam et al., 2011). Results indicated that in comparison with the male-dominated pages, more of the female-dominated pages were flagged as protected on Wikipedia (5.20% of the female articles, 2.39% of the male articles.
However, the researchers did not examine whether these particular articles held significantly more disputes than other, non-protected articles; it is possible that these particular articles simply contained more acts of vandalism.

These results suggest that the highly concentrated, female-edited articles may actually contain more controversies and tensions than the male-dominated articles. As a result of this conflicting research, additional studies are needed to more clearly identify whether in fact women are favoring more socially harmonious behaviors or online environments, in parallel with their offline behaviors. There is a limited understanding of how identity is actually enacted on Wikipedia during user interactions with similar and dissimilar others, particularly in the context of performing or doing gender.

**Explaining the gap: gender socialization and public conduct.** The ways in which we edit may vary based on our gender identity. Prior research has found that offline communicative patterns may be replicated in online environments such as chatrooms and particularly in those that are male- or female-dominated (Soukup, 1999). Research has found that male-dominated rooms were often more aggressive, with frequent displays of dominance during communication, while the female-dominated rooms illustrated more relationship-based communicative strategies such as reaching out to new people and expressing emotions (Soukup, 1999). In a public editing space, readers review the content of an article and writing style, making implicit assumptions about the author(s) of the text. A potential female editor who is reviewing an article may prefer editing in an environment that provide more welcoming communication with similar others.

**Explaining the gap: more discussion and less content editing.** A recent study by Lam and colleagues (2011) found that women tend to contribute more often via User and
User Talk Pages. The main function of these pages centers on discussion and conversation with others, which are socially-oriented behaviors more often attributed to feminine communicative styles. As women are contributing on user talk pages, they also edit to lesser extent on main articles and article talk pages, which focus on discussions of article content (Lam et al., 2011). This trade-off may result in women contributing to the content of Wikipedia articles to a lesser extent, and contributing to a greater extent in discussions with other Wikipedians.

Explaining the gap: inequality in leisure activity. As another potential explanation for the gap, the gender inequality in leisure activity and time allocated for such activity has persisted over the years (see Bittman & Wajcman, 2000 for a review). Over time, as women have taken on the roles of working-parent and unpaid (or second shift) family caregiver, time constraints have tightened on their amount and quality of their leisure time (Bittman & Wajcman, 2000). With decreasing opportunities for recreational activities, women may also find fewer opportunities for unpaid, online collaborative endeavors, such as those found on Wikipedia-like environments. Restraints on time and resources may prevent women from actively contributing on Wikipedia, particularly on a regular basis, even if they have a heightened interest in contributing to the public dissemination of knowledge.

Explaining the gap: harassment targeting women. Women’s desire to contribute on Wikipedia may also be hindered by the prevalence of harassment directed towards women in online environments (see Gardiner et al., 2016, Herring, 2000). Women may feel unwelcome on certain Wikipedia spaces, such as article pages, and may refrain from contributions due to their perceptions of other Wikipedians or their actual interactions with other Wikipedians. Many of these potentially unwelcoming spaces have not been studied in the prior Wikipedia
literature, even though online harassment directed towards women has been studied on other online, collaborative sites such as gaming environments and discussion forums (Gardiner et al., 2016; Herring, 2000; Herring, Job-Sluder, Scheckler, & Barab, 2002; Thacker & Griffiths, 2012).

Overall, the explanations for the gender gap on Wikipedia have included both intrinsic (i.e., personality factors, avoidance of contentious environments) and extrinsic factors (i.e., inequality in leisure activity, harassment towards women). In addition to these potential contributors, how editors perceive other Wikipedians may also influence editing behaviors in collaborative environments.

**Perceptions of Other Editors**

The stereotypes associated with our given identity may contribute to how we collaborate with others online, grounded in a self-fulfilling prophecy model (Merton, 1948). In addition, the reception of our behaviors online may reflect how others in the online community react to our identity expressions. Ghavami and Peplau (2012) identified unique attributes associated with varying identities, such as the perpetuated stereotype that Asian American women are intelligent, quiet, and short. As an enactment of her offline identity, these Asian American female stereotypes likely influence how an Asian American woman behaves online. In turn, the community’s reception of that identity is based on the pre-conceived stereotypes and, consequently, Asian American women may experience online power dynamics that parallel those from offline environments. In consideration of these online power dynamics, one’s gender identity and the gender of other editors may influence how a person engages in online, collaborative tasks. Perceptions of one’s peers and other potentially influential variables should be considered in collaborative editing research, as
motivations for online collaborative editing may be driven by both individual-level and environmental factors.

**Motivations for Editing on Wikipedia**

Recent research conducted by Crowston and Fagnot (*under review*) found that motivation to participate in an online community may vary based on the stage of participation: Initial, Sustained, and Meta. When a passive user decides to participate in an online community, labeled as the *initial* participation phase, they need an awareness of the online content (*attention*), understanding of the need for contributions (*impetus to respond*), and they can then evaluate whether the benefits of contributing outweigh the costs (*positive evaluation*) for the user (Crowston & Fagnot, *under review*). Our gender identity (and gendered expressions) may influence how we edit. However, additional editing motivations may underlie this relationship, such as whether one’s initial edits are positively or negatively received by others in the community. If a user does not feel that their contribution was positively received, they may refrain from future editing. Research has yet to fully identify the motivations and barriers to online contributions, particularly when individuals consider whether to make an initial contribution to a public, collaborative site.

**Study Two Research Questions**

In order to effectively explore and develop interventions for the gender gap, researchers should consider how the gap might reflect offline inequalities and the potential influence of the in-group/out-group dynamic present in the environment. Research is needed to more comprehensively understand the barriers to editing, including how offline communicative patterns may translate into online behaviors. Likely due to the difficulty of assessing and manipulating online environments, none of the prior studies have used
experimental research methods to identify the underlying mechanisms of editing behaviors in the context of participant’s self-reported gender. On Wikipedia in particular, there are limited opportunities for researchers to manipulate the online space to study these mechanisms in the context of actual editing behaviors. Consequently, the current study used a simulated, public collaborative environment to assess these mechanisms and editing behaviors in a controlled environment.

Instead of editing on Wikipedia, participants in the current study edited a Word document, in which they were told that four of their peers had previously edited the document. Participants saw the edits of their peers through the use of tracked changes, where each peer was given a unique username. All of the “peer edits” were actually conducted by the research team, allowing the team to manipulate and control the usernames and contributions of the peer editors. Participants were also told that they would be contacted in 1-2 weeks and then given the choice to further edit the document after others had made additional edits (see Procedures section for manipulation details).

In an effort to simulate the public nature of Wikipedia and other online collaborative spaces, participants were also told that the document would be publicly posted in their college newsletter and that the research team would be creating a website on cyberbullying (the topic of the editing essay) where the edited document would be prominently featured for others to read. Through this experimental manipulation and proxy environment, offline spaces such as Word documents with tracked changes might facilitate similar patterns of communication when compared with online collaborative environments. Similarly, as college students are increasingly accessing collaborative, online environments inside and outside of college classrooms (see Shane-Simpson et al., 2015), college students from a public
university were chosen to take part in the collaborative editing task.

Overall this study explored gendered editing behaviors in a public, collaborative editing environment, in addition to barriers that men and women may encounter when editing in mixed-gender groups. This second study explores the following research questions:

1. Is gender identity (assessed both dimensionally and categorically) related to unique patterns of editing behaviors in the context of public, collaborative editing tasks?

2. Do potential gender differences in experience with online editing, civic attitudes and behaviors, social motivation, or prosocial behaviors underlie gender differences in students’ editing behaviors?

3. Do students have expectations about how other peer editors will evaluate their work that are attributable to the gender of the other editors?

Methods

Participants. A total of 203 participants were recruited for this study from a subject pool at a large university in exchange for three research credits. Participants in study two were recruited from the same university described in study one and consequently, the overall student population at this campus includes a relatively diverse campus with many working-class students (45% of the undergraduates are low-income).

Throughout the recruitment phase, the primary researcher closely monitored the subject pool posting to ensure that approximately half of the participants self-identified as female. In addition, the first 40 participants were excluded from the later analyses due to an administrative error that may have weakened the manipulation for the first 40 participants (see Procedures, p. 63). As a method of controlling for potential outliers in the data due to age differences, only those participants between the ages of 18-25 were included in the
subsequent analyses ($M = 18.85; SD = 1.22$). This resulted in a sample of 144 participants, of which 76 identified as male and 68 as female.

Participants’ ethnicities were not mutually exclusive categories and included 39% ($n = 56$ out of 144) Caucasian/White, 34% ($n = 49$) Hispanic/Latino, 10% ($n = 15$) African American/Black, 8% ($n = 12$) Asian, 4% ($n = 6$) Middle Eastern, 4% ($n = 6$) other ethnicity (i.e., mixed), and 2% ($n = 3$) as Indian. In regards to sexual orientation, the majority of participants identified as Straight/Heterosexual (93%; $n = 134$ out of 144), while others identified as Other ($n = 6$; i.e., pansexual), Bisexual ($n = 5$), I don’t know ($n = 5$), or Lesbian, Gay, or Homosexual ($n = 2$).

**Demographic form.** Participants were asked to complete a short, paper-based survey of demographic information; this was referred to as their Demographic Form (see Appendix B). This form was described as an opportunity for participants to generate a profile that would be connected with their edits. Their peer editors and the public readers of the essay would then be able to view their profile information. In this form, each participant was asked for his or her age, ethnicity, major, and grade point average, and then asked whether they wanted each of these attributes connected with their essay editing. Participants were also asked for their gender (identified as self-reported gender in analyses) and username, which would be linked with their essay edits.

Finally, the demographic form prepared participants to begin considering what they knew and felt about cyberbullying, the topic of the essay they were asked to edit. These prompts included: a) *Examples of cyberbullying include...* b) *Cyberbullying is happening more and more online, especially on sites such as...* c) *We can do a lot to prevent and intervene in attempts at cyberbullying. For example, we could...* and d) *I think cyberbullying*
is different from face to face bullying because... (note - you may also argue that it is similar to face to face bullying).

**Online survey.** The following variables were assessed via an online survey, which was administered through Qualtrics survey software (see Appendix B).

**Internet familiarity and accessibility.** The research team adapted a series of three question based on the original items used by Hargittai and Shaw (2015) to assess participants’ Internet familiarity and accessibility. Participants were asked to rate their level of agreement on a 5-point Likert scale from *Agree* (5) to *Disagree* (1). The following statements were used: 1) I have regular access to the Internet at my home (Internet accessibility); 2) I have regular access to the Internet at my college (Internet accessibility); 3) I feel comfortable using the Internet and online environments more generally (Internet familiarity). For these three items the Cronbach’s alpha was relatively low at $\alpha = .26$.

**General and specific Internet use.** Participants were asked four questions that assessed their general Internet use on an average day, such as how much time they spent sharing information on the Internet and how much time they spend connecting with others on the Internet (see Appendix B). Participants were also asked how much time they spent on the Internet (more generally). As a prominent SNS, Facebook use was also explored through a series of four questions, which asked about the average amount of time spent on specific Facebook activities (i.e., how much time do you spend looking for information on Facebook?). As a comparison, Wikipedia use was also explored with a series of six questions, such as, *how much time do you spend using Wikipedia?*

**Online connection strategies.** The questions used to assess online connection strategies were adapted and generalized from the Facebook Connection Strategies Scale
(Ellison, Steinfield, & Lampe, 2011). This scale included three subscales: 1) Initiating-Contact Subscale, 2) Information Seeking Subscale, and 3) Maintaining Contact Subscale.

**Use of online sites for social information.** As an expansion and clarification of the Ellison, Steinfield, and Lampe (2011) Connection Strategies Scale, four items assessed participants’ use of online sites for social information gathering. Participants were asked to rate their level of agreement on four statements. A sample statement included, *I use online methods to learn more about other people living near me.*

**Civic attitudes and behaviors.** Participants’ civic attitude and civic engagement were assessed through items developed by Raynes-Goldie and Walker (2008) and modified by the current researcher to reflect modern online environments. For example, an original item stated: *I read news online.* This statement was then modified to include current SNSs: *I read news online through a news site or through a social media network (Facebook, Twitter, etc.)*. Responses were given on a 4-point Likert scale ranging from *NA/Never* (1) to *Often* (4), and items from this measure were totaled into a Civic Total score. Items in this total scale were moderately high in internal consistency (α = .75).

**Autistic traits.** Items that assess social motivation and restricted interests (and repetitive behaviors) were used from the Social Responsiveness Scale 2- Adult (SRS 2-Adult; Constantino & Gruber, 2012). This measure has been used to assess autistic traits in adult populations and explores an individual’s social motivation, social awareness, social cognition, social reception, and restricted interests and repetitive behaviors. Although each of these subscales were included in the survey, the social motivation subscale was used in the subsequent analyses due to the hypothesis that this variable may influence editing behaviors and/or may underlie editing behaviors that differ by gender. Responses were ranked on a 4-
point Likert scale ranging from *almost always true* (4) to *not true* (1). The Cronbach’s alpha for these items was relatively high at $\alpha = .91$.

**Prosocial behaviors.** Prosocial behaviors were assessed using 13 of the 23 items in the original prosocial measure developed by Carlo and Randall (2002). This subsection of items was chosen based on their perceived relevance for the college-aged population from which the sample was drawn. Sample items included, 1) I help people best when I am being watched, and 2) it is most fulfilling to me when I can comfort someone who is very distressed. Responses were provided on a 5-point Likert scale ranging from *describes me greatly* (5) to *does not describe me at all* (1). The Cronbach’s alpha for these items was moderately high at $\alpha = .77$.

**Gender.** Gender was explored from Bem’s (1981) scaled perspective of femininity and masculinity as opposed to the traditional binary approach asking whether they are *male* or *female*. Bem’s sex roles inventory has been previously validated as an assessment of gender roles (Holt & Ellis, 1998). Using a scaled approach to examine gender allowed participants an opportunity to choose their degree of femininity, masculinity, and androgyny. This also gave more detail in which the research team could explore gender-based details in the context of participants’ other self-reported characteristics. Test-retest reliability has been assessed with Bem’s Sex Role Inventory and the measure has demonstrated consistently high reliability over time (Bem, 1998).

There is a growing recognition that women (over time) are increasingly orienting themselves towards more *masculine* behaviors and more androgynous behaviors, which reflects the contemporary understandings of gender (see Martin, Cook, & Andrews, 2016; Twenge, 1997). Therefore, the reporting of the results for the *masculine* and *feminine*
behaviors of each participant were tempered based on historical changes in masculinity and femininity. A subsection of the original, traditionally masculine or feminine, traits were selected based on whether these traits were still identified as gender-specific in current westernized society. The following items were used to provide a Masculine Traits score: Dominant, Assertive, Leadership, Willing to Take a Stand, Independent, Self-Sufficient, Strong Personality, Willing to Take Risks, Aggressive, Masculine, and Defends Own Beliefs. These items were used for the Feminine Traits score: Eager to Soothe Hurt Feelings, Compassionate, Affectionate, Gentle, Understanding, Tender, Loves Children, Takes into Account Other People’s Feelings, Warm, Sympathetic, and Feminine. The following were some of the original inventory items that were excluded: Ambitious, Athletic, and Individualistic. The internal consistency was assessed for both the masculine and feminine traits. Reliability was relatively high at $\alpha = .82$ for masculine traits and at $\alpha = .84$ for feminine traits.

**Editing expertise.** Two questions were developed to explore participants’ editing expertise and peer perceptions of expertise: *How much did you feel like an expert on the topic you were asked to edit? Which of the other editors (your peers) did you feel had the most expertise about the essay topics?*

**Attitudes and stereotypes about peer editors.** Participants’ pre-conceived attitudes and stereotypes about identity characteristics, such as gender, were also included in a series of questions asking participants to rate their peer editors. Participants were asked about characteristics that described each peer editor (i.e., talkative, submissive), the gender of the peer editor, and how they felt each editor would evaluate their own work. These questions
asked about each of the four peer editors: MrFootballFan, MsTrouble\textsuperscript{1}, Cheerios4Life, and AnonymousOne. These four peer editor names were chosen after piloting a longer list of potential names with a group of undergraduate, graduate, and faculty researchers to identify a feminine name, masculine name, gender-neutral name, and anonymous name.

\textit{Additional demographic information.} As a compliment to the demographic form data, two additional demographic questions were asked in the online survey. Participants were asked to identify their sexual orientation and their highest level of education completed (Appendix B).

\textit{Collaborative essay editing.} The primary researcher in this study wrote the collaborative editing essay under the disguise of the peer editor pseudonyms. Content and writing style for the essay were based on the researcher’s prior pedagogy experiences in assigning a similar essay in repeated sections of a Human Development class in the same university system. Although direct text was not directly taken from prior students, the work of prior students was used as a guide to the types of references, writing style (i.e., sentence structure), and breadth of coverage that was consistently turned into the researcher each semester. As such, the essay was meant to reflect the varying skill levels and limited breadth of content coverage often found in high-stakes undergraduate student writing assignments.

The essay included four sections: Definition and Prevalence (fact-based section), Subjective Experiences and Interpretation (opinion-based section), Conclusion, and References. The fact-based and opinion-based sections of the essay were included as an

\textsuperscript{1} Each of the peer editor usernames was collaboratively identified as feminine, masculine, gender-neutral, or anonymous by the research team. However, the primary researcher notes that the username \textit{MsTrouble} may be a particularly charged username due to the \textit{Trouble} piece of the name.
opportunity to explore whether women and men contributed or deleted more heavily from the section that more closely reflected the gendered communicative patterns for each participant. Prior studies on computer-mediated collaborations, specifically in educational settings, suggest that women produce more written information online that is opinion-based (Savicki, Kelley, & Lingenfelter, 1996b; Savicki, Kelley, & Oesterreich, 1999) versus fact-based. An opportunity to edit an opinion-based section was included in the Subjective Experiences and Interpretation section of the essay. It was further hypothesized that men would add more characters into the fact-based portion of the essay, catering to a more information-oriented communicative style.

Eight versions (referred to as conditions) of the cyberbullying essay were created by the research team and assigned to participants. Each participant was randomly assigned to one of two peer feedback versions of the essay. The first version included peer edits that were constructive in nature. For example, a peer editor commented that an edit, “sounds important, but might be better in the last section of the paper.” Each comment in the constructive feedback essay began with a positive affirmation and then provided a suggestion for improving the essay. The following figures illustrate the definition and prevalence sections of the four constructive essays (condition 1-4).
Definition and Prevalence

I think that cyberbullying should be abolished and has no place on our online social networks. A total of 9% of students have been cyberbullied while in grades 6-12 (Stopcyberbullying.gov, 2015). Cyberbullied people may also feel so bad that they might commit suicide (Berger, 2011). Cyberbullying takes face-to-face bullying and places it online. They might be cyberbullied because of their physical appearance, low intelligence, or because they don’t make many friends. Cyberbullying can happen for a long time when others don’t know its happening still.

I was bullied when I was in middle school and it haunted me into my college years. The guys who used to bully me often did so after school, before we got on the bus to go home. They were not always physically aggressive, but teased me about the clothes I wore and the way I spoke. Studies have found that most people who are cyberbullied have similar experiences. They are teased because of their clothing and personal appearance.

Subjective Experiences and Interpretation

Figure 1. Constructive essay condition one.

Definition and Prevalence

I think that cyberbullying should be abolished and has no place on our online social networks. A total of 9% of students have been cyberbullied while in grades 6-12 (Stopcyberbullying.gov, 2015). Cyberbullied people may also feel so bad that they might commit suicide (Berger, 2011). Cyberbullying takes face-to-face bullying and places it online. They might be cyberbullied because of their physical appearance, low intelligence, or because they don’t make many friends. Cyberbullying can happen for a long time when others don’t know its happening still.

I was bullied when I was in middle school and it haunted me into my college years. The guys who used to bully me often did so after school, before we got on the bus to go home. They were not always physically aggressive, but teased me about the clothes I wore and the way I spoke. Studies have found that most people who are cyberbullied have similar experiences. They are teased because of their clothing and personal appearance.

Figure 2. Constructive essay condition two.
Definition and Prevalence

I think that cyberbullying should be abolished and has no place on our online social networks. A total of 9% of students have been cyberbullied while in grades 6-12 (Stopcyberbullying.gov, 2015). Cyberbullied people may also feel so bad that they might commit suicide (Berger, 2011). Cyberbullying takes face-to-face bullying and places it online. They might be cyberbullied because of their physical appearance, low intelligence, or because they don’t make many friends. Cyberbullying can happen for a long time when others don’t know its happening still.

I was bullied when I was in middle school and it haunted me into my college years. The guys who used to bully me often did so after school, before we got on the bus to go home. They were not always physically aggressive, but teased me about the clothes I wore and the way I spoke. Studies have found that most people who are cyberbullied have similar experiences. They are teased because of their clothing and personal appearance.

Subjective Experiences and Interpretation

Figure 3. Constructive essay condition three.

The second version of the essay only included neutral feedback from the peer editors, neglecting the positive affirmation component. Contrasting the peer editor comment previously described, a comment in the neutral feedback essay version might state, “This might be better in the last section of the paper.” The following illustrates the four definition and prevalence sections of the neutral essay version (conditions 1-4).
Definition and Prevalence

I think that cyberbullying should be abolished and has no place on our online social networks. A total of 9% of students have been cyberbullied while in grades 6-12 (StopCyberbullying.gov, 2015). Cyberbullied people may also feel so bad that they might commit suicide (Berger, 2011). Cyberbullying takes face-to-face bullying and places it online. They might be cyberbullied because of their physical appearance, low intelligence, or because they don’t make many friends. Cyberbullying can happen for a long time when others don’t know its happening still.

I was bullied when I was in middle school and it haunted me into my college years. The guys who used to bully me often did so after school, before we got on the bus to go home. They were not always physically aggressive, but teased me about the clothes I wore and the way I spoke. Studies have found that most people who are cyberbullied have similar experiences. They are teased because of their clothing and personal appearance.

Subjective Experiences and Interpretation

Figure 5. Neutral essay condition one.

Definition and Prevalence

I think that cyberbullying should be abolished and has no place on our online social networks. A total of 9% of students have been cyberbullied while in grades 6-12 (StopCyberbullying.gov, 2015). Cyberbullied people may also feel so bad that they might commit suicide (Berger, 2011). Cyberbullying takes face-to-face bullying and places it online. They might be cyberbullied because of their physical appearance, low intelligence, or because they don’t make many friends. Cyberbullying can happen for a long time when others don’t know its happening still.

I was bullied when I was in middle school and it haunted me into my college years. The guys who used to bully me often did so after school, before we got on the bus to go home. They were not always physically aggressive, but teased me about the clothes I wore and the way I spoke. Studies have found that most people who are cyberbullied have similar experiences. They are teased because of their clothing and personal appearance.

Figure 6. Neutral essay condition two.
Definition and Prevalence

I think that cyberbullying should be abolished and has no place on our online social networks. A total of 9% of students have been cyberbullied while in grades 6-12 (Stopcyberbullying.gov, 2015). Cyberbullied people may also feel so bad that they might commit suicide (Berger, 2011). Cyberbullying takes face-to-face bullying and places it online. They might be cyberbullied because of their physical appearance, low intelligence, or because they don’t make many friends. Cyberbullying can happen for a long time when others don’t know its happening still.

I was bullied when I was in middle school and it haunted me into my college years. The guys who used to bully me often did so after school, before we got on the bus to go home. They were not always physically aggressive, but teased me about the clothes I wore and the way I spoke. Studies have found that most people who are cyberbullied have similar experiences. They are teased because of their clothing and personal appearance.

Subjective Experiences and Interpretation

Figure 7. Neutral essay condition three.

Definition and Prevalence

I think that cyberbullying should be abolished and has no place on our online social networks. A total of 9% of students have been cyberbullied while in grades 6-12 (Stopcyberbullying.gov, 2015). Cyberbullied people may also feel so bad that they might commit suicide (Berger, 2011). Cyberbullying takes face-to-face bullying and places it online. They might be cyberbullied because of their physical appearance, low intelligence, or because they don’t make many friends. Cyberbullying can happen for a long time when others don’t know its happening still.

I was bullied when I was in middle school and it haunted me into my college years. The guys who used to bully me often did so after school, before we got on the bus to go home. They were not always physically aggressive, but teased me about the clothes I wore and the way I spoke. Studies have found that most people who are cyberbullied have similar experiences. They are teased because of their clothing and personal appearance.

Subjective Experiences and Interpretation

Figure 8. Neutral essay condition four.

As a means of controlling for order effects and potential editing bias resulting from the specific types of edits made by the peer editors, a given sequences of peer edits and original text additions were assigned to specific peer editor username for each version of the essay using a Latin square. This controlled for potential effects of editor contributions on participant interactions. For example, the added text from MrFootballFan in essay condition one was rotated in essay condition two, so that MsTrouble instead added the same text in
essay condition two. Whether the original peer contribution added *fact* or *subjective*
information was also sequenced across the peer editors, in which each editor contributed the
same amount of fact and subjective information into the essay. The final definition and
prevalence section of the essay (fact-based portion) included 164 words, the subjective
experiences and interpretation (opinion-based portion) included 317 words, the conclusion
contained 183 words, and the references section included 28 words.

Similarly, the same sequence of peer edits made by MrFootballFan in essay
condition one (i.e., comment, grammar correction) was assigned to MsTrouble in essay
condition two. These sequences rotated to each peer editor username for each essay condition
and were made throughout the essay, resulting in eight total conditions of the essay. This also
resulted in eight comments made in each essay and twelve additional edits from the peer
editors. The following illustrates this rotation for the peer editing assignments:

- MrFootballFan: Grammar correction, grammar correction, incorrect fact, and opinion
  or fact misplaced;
- MsTrouble: Grammar correction, opinion or fact misplaced, grammar correction, and
  incorrect fact;
- Cheerios4Life: Incorrect fact, grammar correction, opinion or fact misplaced, and
  grammar correction; and
- AnonymousOne: Opinion or fact misplaced, incorrect fact, grammar correction,
  grammar correction.

Content added to the original essays was also rotated to each peer editor so that each
peer editor added at least a few sentences to each essay section. For example, in the
definition and prevalence essay section (essay condition two) AnonymousOne provided the
first two lines of text, followed by MsTrouble, Cheerios4Life, and then MrFootballFan. The female peer editor did not contribute to the comments/edits in that section. In the subjective experiences and interpretation section of essay condition two, the initial writing began with MrFootballFan, then continued to AnonymousOne, Cheerios4Life, and then ended with MsTrouble. MrFootballFan did not contribute to the comments/edits in this particular section. In the conclusion, Cheerios4Life added the first two sentences, followed by MsTrouble, AnonymousOne, and then MrFootballFan. The conclusion excluded Cheerios4Life and MsTrouble in the comments/edits. MsTrouble and AnonymousOne originally added text into the references, with no comments/edits included in this section.

The relatively high number of edits made by the peer editors in each section of the essay, illustrated through the use of tracked changes, may have resulted in participants’ inability to identify which of the peer editors actually wrote the initial text for each section. In the definition and prevalence section of essay condition two, it would then appear that MsTrouble did not contribute to this section at all, even though she had written some of the initial text. Consequently, participants may have felt that a certain peer editor did not contribute to a given section of the essay, unless that peer editor made explicit edits or comments.

**Procedure.** After providing their consent to participate, each student completed the paper-based demographic form, was instructed to engage in the editing task for 30 minutes, and they were then asked to complete the online survey. After completing the demographic form, participants were shown a computer screen with a half-written draft of an essay on cyberbullying. The researcher’s script explained that the essay had already been edited by the participant’s peers, the participant would have an opportunity to make further edits in the
next few weeks or so, and the final version of the essay would be posted publicly to the college newsletter and onto a website that the research team was creating about cyberbullying (see Appendix B for writing prompt).

The researcher also explained to the participant how the tracked changes were used in the Word essay and how the participant could further edit in the document using tracked changes, including the comments function. As a comprehension check for participant understanding, the researcher asked the participant to make a few practice changes in tracked changes (i.e., could you add a comment?).

Due to an administration error, the first 40 participants in the full sample received a weaker form of the essay manipulation. Although each participant chose a unique username to be linked with their editing behaviors, the username for each of the first 40 participants was not linked with their edits (via Word’s tracked changes). Consequently, this may have lessened the potential effects of seeing and using one’s own username on editing behaviors. Consequently, the results section was analyzed with only the dataset where the manipulation was the strongest (e.g., exclusion of the first 40 participants); the demographics of participants reported reflect this sample excluding the first 40 participants.

Each participant essay was coded to identify the number of characters added and deleted, in addition to the number of comments added. A coding dyad collaboratively analyzed a subset of essays (approximately five essays) to check for agreement and consistency in the procedures. As a final step to calculate the reliability, each coder in the dyad independently analyzed 20% of the data to calculate the percent agreement (40 essays). This consensus coding method resulted in a 100% percent agreement in the coding. The number of addition and deletions for each section were coded as a method of assessing
whether participants were more likely to add/delete material from fact-based (Definition and Prevalence section), opinion-based (Subjective Experiences and Interpretation section), and the concluding (Conclusion) portions of the essay. The number of comments in the fact-based section was also explored as a supplemental comparison of potential gender differences (direct edits versus comments).

## Analytic Plan

Descriptive statistics were run on each of the variables to identify data characteristics such as kurtosis and skew. Due to a significant skew in many of the variables, square root transformations were used to correct the skew (see Table 7).

Table 7

*Descriptive Information about Variables Prior to Square Root Transformations on Editing Behaviors*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Men M (SD)</th>
<th>Women M (SD)</th>
<th>Range</th>
<th>Skew</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civic Total</td>
<td>22.08 (4.39)</td>
<td>20.49 (4.04)</td>
<td>9-32</td>
<td>.23</td>
<td>.26</td>
</tr>
<tr>
<td>Prosocial Behaviors</td>
<td>37.24 (7.36)</td>
<td>41.02 (8.13)</td>
<td>13-65</td>
<td>.23</td>
<td>1.69</td>
</tr>
<tr>
<td>Social Motivation</td>
<td>9.45 (4.07)</td>
<td>9.88 (4.37)</td>
<td>1-21</td>
<td>.55</td>
<td>-.05</td>
</tr>
<tr>
<td>Time Spent on Internet</td>
<td>2.64 (1.56)</td>
<td>3.13 (1.71)</td>
<td>1-5</td>
<td>.20</td>
<td>-1.67</td>
</tr>
<tr>
<td>Time Spent on Wikipedia</td>
<td>1.22 (.72)</td>
<td>1.44 (.85)</td>
<td>1-5</td>
<td>3.29</td>
<td>11.81</td>
</tr>
<tr>
<td>Male Total</td>
<td>43.66 (5.12)</td>
<td>39.75 (7.36)</td>
<td>20-50</td>
<td>-.53</td>
<td>.97</td>
</tr>
</tbody>
</table>
GENDERED EXPRESSIONS ONLINE

<table>
<thead>
<tr>
<th></th>
<th>Female Total</th>
<th>Added Definition and Prevalence</th>
<th>Deleted Definition and Prevalence</th>
<th>Comments in Definition and Prevalence</th>
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<tbody>
<tr>
<td></td>
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<tr>
<td></td>
<td>41.45 (5.75)</td>
<td>199.43 (206.15)</td>
<td>55.09 (91.08)</td>
<td>1.01 (1.66)</td>
</tr>
<tr>
<td></td>
<td>45.37 (5.78)</td>
<td>255.91 (243.53)</td>
<td>78.53 (105.34)</td>
<td>1.07 (.94)</td>
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<tr>
<td></td>
<td>27-55</td>
<td>0-1144</td>
<td>0-572</td>
<td>0-11</td>
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<td></td>
<td>-.11</td>
<td>2.22</td>
<td>6.96</td>
<td>21.22</td>
</tr>
</tbody>
</table>

Note. N = 76 men, 68 women.

After normalizing the editing variables, the analyses explored the total scores for masculine traits and feminine traits from Bem’s Sex Role Inventory and then compared the traditional, binary genders (male versus female) to identify if these variables related to specific editing behaviors. Correlations were first identified and were followed by comparisons between genders. Due to the multiple correlations in the matrix, these results were evaluated at the ≤ .001 alpha level. After identifying the correlations, the more advanced linear models were then run and evaluated at the ≤ .05 alpha level. In this initial set of analyses, editing behaviors in both the Definition and Prevalence, in addition to the Subjective Experiences and Interpretation sections were included. However, the later models focused on the Definition and Prevalence section due to its more consistent alignment with the Wikipedia article-editing environment (i.e., fact-based information).

Results

**Gender differences in key variables.** Pearson’s correlations identified which variables were associated with editing behaviors, including gender assessed dimensionally. The following variables were included in this analyses: Age, Editing Experience, Civic Total
civic behaviors and attitudes), Social Motivation, Prosocial Behavior, Time Spent on Internet (daily), Time Spent on Wikipedia (daily), Male Traits, Female Traits, Added in the Definition Section (number of characters), Deleted in Definition Section (number of characters), Added in Subjective Section (number of characters), Deleted in Subjective Section, Added in Conclusion (number of characters), Deleted in Conclusion (number of characters), Comments Added into Definition, Comments Added into Subjection Section, and Comments Added into Conclusion.

Binary gender differences were also analyzed with the aforementioned variables as outcome variables to determine if relational and categorical approaches to gender yielded similar associations with outcome variables. These key variables were analyzed in order to identify which variables should be included as covariates in the later models.
Table 8

Pearson’s Correlations Among Editing Behaviors, Predictors, and Editing Behaviors in the Fact-Based Section of the Essay

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<tbody>
<tr>
<td>1. Age</td>
<td>-</td>
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<td>-.019</td>
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<td>.197</td>
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<td></td>
</tr>
<tr>
<td>14. Perception of MsTrouble</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td>.661*</td>
<td>.629*</td>
<td></td>
<td></td>
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<tr>
<td>15. Perception of Cheerios</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.621*</td>
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<td></td>
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<tr>
<td>16. Perception of Anonymous</td>
<td>-</td>
<td></td>
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</tbody>
</table>

Note. Asterisks mark significant correlations at the \(p \leq .001\) level; \(N\)’s = 140-144.
The majority of these results indicated only trends towards a relationship between variables (at the .001 level) and the number of significant correlations were limited. Both the trends and correlations are included in the following results. The few significant correlations were all positive and included Added and Deleted Characters ($p < .001$; Table 8). All of the perceptions of other editor variables were also positively correlated with each other ($p < .001$), suggesting that if a participant felt that one of the other editors would rate them positively that they also felt all of the other editors would rate them positively.

In regards to the trends, civic total scores were negatively associated with prosocial behaviors ($p = .003$) and positively associated with both the number of characters added into the fact-based section of the essay ($p = .010$) and male traits ($p = .003$). Male and female traits were positively correlated ($p = .046$). Prosocial behaviors were positively related to the number of characters deleted in the definition ($p = .015$) and negatively related to male traits ($p = .011$). Social motivation was negatively correlated with male traits ($p = .006$), but positively correlated with daily Internet use ($p = .012$).

Wikipedia use was positively related to Internet use ($p = .021$), age ($p = .018$), and negatively related to the number of characters deleted in the fact-based section of the essay ($p = .024$). In addition, characters deleted from this section were positively correlated with participants’ experience with online editing ($p = .036$).

Independent t-tests were used to identify whether men and women (from a binary perspective) differed in their Civic Total scores (civic attitudes and behaviors), Prosocial Behaviors, Social Motivation, Time Spent on the Internet, Time Spent on Wikipedia, and Online Editing Experience. Each of these factors could potentially influence participants’
editing behaviors and were chosen based on the prior literature identifying key factors that might influence a relationship between Wikipedia editing and gender. These analyses identified only a gender difference trend in civic scores \( t(142) = 2.26, p = .024; \) Table 9, favoring men. Trends towards gender differences were also identified in prosocial behaviors \( t(142) = -2.93, p = .004), favoring women.

Table 9

* Differences in Potential Editing Predictor Variables and Editing Behaviors Based on Self-Reported Gender

<table>
<thead>
<tr>
<th>Variable</th>
<th>Men M (SD)</th>
<th>Women M (SD)</th>
<th>t-test</th>
<th>p-value</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civic Total</td>
<td>22.08 (4.39)</td>
<td>20.49 (4.04)</td>
<td>2.26</td>
<td>.025</td>
<td>142</td>
</tr>
<tr>
<td><strong>Prosocial Behaviors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Motivation</td>
<td>37.24 (7.36)</td>
<td>41.02 (8.13)</td>
<td>-2.93</td>
<td>.004</td>
<td>142</td>
</tr>
<tr>
<td>Time Spent on Internet</td>
<td>9.45 (4.07)</td>
<td>9.88 (4.37)</td>
<td>-0.62</td>
<td>.537</td>
<td>142</td>
</tr>
<tr>
<td>Time Spent on Wikipedia</td>
<td>2.64 (1.56)</td>
<td>3.13 (1.71)</td>
<td>-1.78</td>
<td>.078</td>
<td>142</td>
</tr>
<tr>
<td>Online Editing Experience</td>
<td>2.64 (1.75)</td>
<td>3.13 (1.74)</td>
<td>-1.64</td>
<td>.103</td>
<td>142</td>
</tr>
<tr>
<td><strong>Male Traits</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Characters Added in Def</td>
<td>43.66 (5.12)</td>
<td>39.75 (7.36)</td>
<td>3.66</td>
<td>&lt; .001</td>
<td>142</td>
</tr>
<tr>
<td>Characters Deleted in Def</td>
<td>41.45 (5.75)</td>
<td>45.37 (5.78)</td>
<td>-4.07</td>
<td>&lt; .001</td>
<td>142</td>
</tr>
<tr>
<td>Comments Added in Def</td>
<td>5.32 (5.21)</td>
<td>6.58 (5.98)</td>
<td>-1.35</td>
<td>.180</td>
<td>142</td>
</tr>
<tr>
<td>Comments Added in Sub</td>
<td>.69 (.74)</td>
<td>.85 (.60)</td>
<td>-1.42</td>
<td>.157</td>
<td>141</td>
</tr>
<tr>
<td>Characters Added in Sub</td>
<td>11.81 (8.21)</td>
<td>11.72 (9.00)</td>
<td>.07</td>
<td>.947</td>
<td>142</td>
</tr>
<tr>
<td>Characters Deleted in Sub</td>
<td>5.14 (5.92)</td>
<td>5.34 (6.11)</td>
<td>-.20</td>
<td>.841</td>
<td>142</td>
</tr>
<tr>
<td>Comments Added in Sub</td>
<td>.66 (.71)</td>
<td>.61 (.68)</td>
<td>.48</td>
<td>.635</td>
<td>142</td>
</tr>
</tbody>
</table>
Note. $N = 76$ men, 68 women for each t-test. Def = Definition and Prevalence section of the essay. Sub = Subjective Experiences and Interpretation section of the essay.

Not surprisingly, differences were identified in Male Traits ($t(142) = 3.66, p < .001$), with men reporting more masculine traits, and in Female Traits ($t(141) = -4.07, p < .001$), with women reporting more feminine traits. Even so, there were limited differences in mean scores between women and men for each of these gendered trait scores, supporting a more flexible understanding of gendered expressions (Martin, Cook, & Andrews, 2016). There were no differences in social motivation, the Internet use variables (i.e., Time spent on the Internet, Time on Wikipedia), and editing experience.

Overall, when gender was measured as a continuous variable, it did not greatly differ from the results of a binary comparison. As a result, the subsequent analyses focused only on gender as a binary variable. A data-driven approach was used for the subsequent models, in which the aforementioned predictor variables were excluded from the later analyses due to their lack of correlational significance at the .001 alpha level.

**Editing behaviors, essay condition, and gender.** Analyses focused on the editing behaviors specifically in the fact-based section of the essay (Definition and Prevalence). This particular essay section was chosen due to its more Wikipedia-like nature of evidence-based information sharing, particularly in comparison with the other essay sections that included personal experiences rather than just facts (i.e., subjective information, conclusions). These preliminary models were designed to explore whether editing behaviors in this section of the essay were determined by the essay condition, essay version, and gender of the editor.
A repeated measures general linear model examined predictors of characters added and characters deleted in the fact-based section of the essay (additions and deletions were the two levels of a within-subjects variable). Between-subjects independent variables in this model included the essay version (Constructive or Neutral), self-reported gender (male or female), and essay condition (1-4 Latin square rotation of edits made by peer editors). This initial analysis revealed a significant main effect of characters added and characters deleted ($F(1, 128) = 119.56$, $p < .001$), where participants added more characters ($M = 12.85$, $SD = 7.83$) compared with deletions ($M = 5.92$, $SD = 5.60$). However, gender was not significant ($F(1, 128) = .666$, $p = .416$).

There was also an interaction between gender, essay condition, and essay version, ($F(3, 128) = 3.25$, $p = .024$).

When further analyses split the data by essay condition, the interaction between gender and essay version (Constructive versus Neutral) remained only in the second essay condition ($F(1, 31) = 8.79$, $p = .006$). This interaction was not apparent in the first essay condition ($F(1, 30) = .29$, $p = .594$), third essay condition ($F(1, 27) = 1.75$, $p = .197$), or fourth essay condition ($F(1, 40) = .12$, $p = .733$). Within the second essay where the interaction remained, the female peer editor (MsTrouble) did not edit or comment in the fact-based section of the essay and this was the only essay condition that excluded the female editor in the comments and edits of this section. As discussed in the Methods (p. 63), the female peer editor had actually added some of the original text in this section. However, it was likely that the participants may have been unable to identify who wrote the original text for the essay due to the relatively high number of edits made in each section.
The second condition-only data was further split by essay version (Constructive versus Neutral) to identify if men and women differed in editing behaviors based on the type of essay they were given. In the neutral version of the second condition essay, men and women differed in their editing behaviors, \(F (1, 15) = 4.77, p = .045\). Men added more characters \((M = 16.23, SD = 9.43)\) when compared with women \((M = 7.89, SD = 5.06)\). Therefore, men edited more than women in the presence of male, gender-neutral, and anonymous peer editors in a portion of an essay purportedly written by a woman in the essay lacking positive affirmations.

*Figure 9. Neutral essay condition two with male participant.*
Figure 10. Neutral essay condition two with female participant.

In the constructive essay version with essay condition two, there was a trend in the opposite direction, \((F(1, 16) = 4.03, p = .062)\), where women added more characters into the fact-based essay section \((M = 15.48, SD = 9.19)\) than men \((M = 8.66, SD = 6.26)\).

Therefore, women trended toward editing a portion of an essay purportedly written by a woman more in the presence of male, gender-neutral, and anonymous peer editors when the essay contained positive affirmations from peer editors.
Figure 11. Constructive essay condition two with female participant.

Figure 12. Constructive essay condition two with male participant.

Comments added, essay condition, and gender. An additional general linear model, with the same independent variables, was run with the number of comments added to the fact-based essay section as the dependent variable. There was an interaction between gender and condition, \( F(3, 128) = 2.78, p = .044 \).

Each essay condition (1-4) was then explored to identify exactly which essay(s) contained the interaction. Most of the essay conditions did not reveal a gender main effect: Condition one \( F(1, 30) = .93, p = .342 \), condition two \( F(1, 31) = .15, p = .559 \), and condition three \( F(1, 27) = .02, p = .867 \). However, essay condition four revealed a main effect of gender on comments added \( F(1, 40) = 4.24, p = .001 \). In comparison with men \( (M = .49, SD = .56) \), women \( (M = 1.11, SD = .58) \) were more likely to add comments into the fact-based essay section \( t(42) = -3.61, p = .001 \). In this essay
condition (see p. 48 and 50), both MrFootballFan and Cheerios4Life added comments, while MsTrouble only deleted information from the fact-based section.

**Perceptions of peer editors.** The following analyses explored how participants viewed the peer editors in the context of gender and essay condition.

**Gender perceptions and traits of peer editors.** Each participant was asked about the gender of the four peer editors in the essay, to identify which traits (from Bem’s Sex Roles Inventory) they would associate with each peer editor, and which of the peer editors held the most expertise. For this last question, chi-square tests did not reveal any significant patterns of favoring certain peer editors over others. As such, this analysis section reports descriptive information about these peer editor perceptions.

Not surprisingly, the majority of participants (96%; \( n = 138 \) out of 144; \( p < .001 \)) identified MrFootballFan as male (3%; \( n = 4 \) out of 144 selected female; \( p < .001 \)). The majority of participants identified MsTrouble as female (88%, \( n = 127 \) out of 144; \( p < .001 \)), although 4% (\( n = 6 \) out of 144; \( p < .001 \)) selected male. In regards to Cheerios4Life, participants were split between identification of this peer editor as male (43%; \( n = 62 \) out of 144; \( p = .113 \)) and female (44%; \( n = 64 \) out of 144; \( p = .211 \)). The final peer editor, AnonymousOne, was most often identified as male (63%, \( n = 91 \) out of 144; \( p = .002 \); 24%, \( n = 34 \) out of 144 selected female; \( p < .001 \)). However, there was no difference in how male and female participants identified AnonymousOne, \( (t (142) = - .463, p = .644) \).

**Perceptions of how peers would evaluate one’s own editing.** A general linear model examined if participants felt the four peer editors would evaluate their work differently depending on participant gender, essay condition, and essay version. As
discussed in the methods section, the actual contributions of each editor were counterbalanced across essays so any effects of editor name are attributable to the name itself rather than the editor’s behaviors. The dependent variables in the model were participant perceptions of how each of the peer editors’ would rate the participant’s own editing, while independent variables in this model included essay condition, gender, and the essay version. The total essay contribution score was also entered into the model as a covariate; this variable consisted of all of the additions, deletions, and comments in the essay (across all essay sections).

In this initial analysis, a main effect of editor perceptions was identified \((F (3, 124) = 3.43, p = .019)\). Participants felt that Cheerios4Life would rate them more positively than AnonymousOne \((p = .013)\). However, most of the post hoc tests were not significant \((p ‘s > .05)\). Participants felt that AnonymousOne \((M = 3.74, SD = .92)\) would rate their own editing most poorly, followed by MrFootballFan \((M = 3.78, SD = .93)\), MsTrouble \((M = 3.81, SD = .96)\), and then Cheerios4Life \((M = 3.88, SD = .88)\) received the highest rating. However, there were no additional effects for gender \((p = .964)\), essay condition \((p = .314)\), essay version \((p = .634)\), or total essay contribution \((p = .100)\). Since the total essay contribution score was not related to perceptions of the peer editors, this variable was removed as a covariate in additional analyses.

Results from the initial model also revealed an interaction between peer editor evaluations, gender, and essay version (constructive vs. neutral), \((F (3, 124) = 3.66, p = .014)\). The data was split by gender to identify the relationships between these variables, in which the interaction between editor perceptions and essay version remained only as a
trend for women ($F (3, 58) = 2.65, p = .057$) and did not remain for men ($F (3, 66) = 1.50, p = .222$).

Although post hoc tests exploring differences between the peer evaluations and essay version were not significant ($p’s > .05$), women in the constructive essay version felt that the neutral peer editor (Cheerios4Life) would rate them more positively ($M = 4.03, SD = .83$) than those in the neutral condition ($M = 3.68, SD = .91$). Women in the neutral condition also felt that MsTrouble would rate their own editing more positively ($M = 3.82, SD = .83$) than those in the constructive condition ($M = 3.79, SD = .88$). The mean differences in the ratings of MrFootballFan and AnonymousOne were minimal for female participants in both essay versions.

**Discussion**

In the more Wikipedia-like environment (neutral comments and lacking a female presence in a fact-based section of the essay) men and women differed in editing behaviors, where men added more characters compared with women. However, there was a trend where women added more characters than men in the positive editing environment that lacked a female peer editor. Women were also more likely than men to add comments into the fact-based section of the essay, specifically in the essay condition where the male and gender-neutral peers had added comments, while the female peer only deleted information. In regards to the peer editors, AnonymousOne was most often identified as male and participants felt that AnonymousOne would rate their own editing more negatively than the gender-neutral peer (Cheerios4Life).

**Key factors that influence editing behaviors.** Overall, the comparison of the categorical (male versus female) and dimensional approach to gender (male traits versus
female traits) did not reveal significantly different results. Consequently, the traditional, binary approach to gender was used in the higher-level statistical models. Similarly, none of the potential underlying variables in the relationship between gender and editing behaviors were identified as significant in correlations and t-test analyses (i.e., social motivation, prosocial behaviors) at the appropriate alpha level (.001). However, trends were identified in the correlational data, which point towards the need for future studies to explore these variables as potential motivators towards editing behaviors.

In regards to gender, there was a trend where men reported heightened civic scores, indicating increased attitudes and behaviors towards contributing to the greater good or larger society. Therefore, men may experience a stronger drive towards the dissemination and sharing of knowledge through a publicly accessible venue such as Wikipedia. In comparison, there was a trend where women reported greater prosocial behaviors or actions that assist others. These similar constructs suggest that both men and women may have a strong desire to contribute on public editing sites.

Research has also found that editors on Wikipedia have a heightened desire to give back to the greater good (Baytiyeh & Pfaffman, 2010; Cho, Chen, & Chung, 2010; Jullien, 2012; Kuznetsov, 2006; Nov, 2007; Okoli et al., 2012; Shroer & Hertel, 2009). In fact, results from this study found a trend where participants who deleted more also reported greater prosocial behaviors and those that added more characters held greater civic attitudes and behaviors. This identifies an opportunity on Wikipedia where altruistic and civic behaviors may be translated through Wikipedia-editing. As such, editing interventions could be framed around giving back to the community to further motivate new Wikipedia editor participant and to encourage sustainability in editing behaviors.
over time. Furthermore, the current results suggest that men and women do not greatly differ in their desire to give back and also that these variables (or similar constructs) may minimally account for the recently identified relationships between gender and editing behaviors on Wikipedia (i.e., Eckert & Steiner, 2013; Glott, Schmidt, & Ghosh, 2010; Hill & Shaw, 2013). Even so, the lack of gender differences in these potentially motivating behaviors suggest that other variables related to gender may more strongly underlie the gender gap.

**Gender and editing behaviors.** Prior research highlights how offline and online patterns of communication may vary by gender, in which women communicate through relational-based or experiential approaches in order to maintain social harmony, while men use more instrumental or task-oriented behaviors while online (Boneva, Kraut, & Frohlich, 2001; Joiner et al., 2012; Morris, 2013; Leaper, 1994; Leaper & Smith, 2004; Leaper, Tenenbaum, & Shaffer, 1999; Prinsen, Volman, & Terwell, 2007; Volman & van Eck, 2001; Weiser, 2000; Yang, Brown, & Braun, 2013). As a reflection of these findings, the collaborative essays in the current study were designed in such a way that the first essay section relied on fact-based information, catering more towards the traditionally masculine communicative style of information.

Findings from the current study indicate that male and female college students edit to the same extent with fact-based material, traditionally thought to cater more strongly towards men in certain environments (i.e., Facebook; Yang, Brown, & Braun, 2013). These results highlight a potential shift in masculine and feminine communication styles in collaborative spaces, perhaps lending support towards more androgynous or gender-neutral behaviors. These initial results may or may not support the rich get richer/
social enhancement (Kraut et al., 1998; 2002; Pempek, Yermolayeva, & Calvert, 2009) or replication hypotheses, where individuals are thought to transfer their offline behaviors (i.e., communicative patterns) into the online space depending on whether clear differences in gendered communication are apparent offline. Indeed, the prior literature has indicated historical trends from differences to more similarities between the genders in offline spaces (Hyde, 2005). This has been reflected in results from re-validation attempts of Bem’s Sex Role Inventory, which suggest that the historical differences between masculine and feminine traits found when the measure was originally created and validated in 1974 are perhaps lessening over time in favor of more gender-neutral or androgynous behaviors (see Twenge, 1997 for discussion on Bem’s Sex Role Inventory).

These results also suggest that the ways in which researchers define and explore gender identity in certain online spaces may need a more flexible-identity or dual-identity approach, where individuals adopt both masculine and feminine roles (Martin, Cook, & Andrews, 2016). Certain environmental conditions appear to encourage editors to contribute in different ways, and male and female college students appear to require different and unique environmental conditions for effective editing to occur.

**Editing behaviors and editing environment.** Interestingly, male and female college students differed in the types of editing environments where they made the most edits. In the current study, the neutral essay (without positive peer comments) more closely modeled the Wikipedia environment, when compared with the constructive essay. Consistent with some of the prior Wikipedia-editing research, women favored the positive, more supportive collaborative environment (Collier & Bear, 2012; Laniado et al., 2012) over the more neutral environment, particularly in the apparent absence of
another female peer editor. Although this was not a general pattern, this finding was found in a specific essay condition that was most similar to the actual, male-dominated, Wikipedia editing environment (neutral essay, condition two). Even though the female peer editor had provided the original text in this essay section and condition, the participants in the current study may have overlooked her contributions as a result of the relatively high number of edits made in the essay.

These findings validate the results from Laniado and colleagues (2012) who found initial evidence of emotional homophily on Wikipedia. This is where editors tend to engage with other editors who exhibit similar patterns of communication. Contrasting the female college participants, the male students made more edits in the neutral version of the second essay condition, suggesting that male college students (compared with female students) may feel more comfortable editing in spaces that lack positive affirmations and spaces that exclude female contributors (i.e., essay condition without a female editor).

Overall, these findings suggest that women may actually avoid Wikipedia editing environments, and other online collaborative spaces, if those environments are more neutral than positive in nature. This affirms prior research suggesting that certain offline communicative patterns may replicate in specific online environments (Soukup, 1999), and as such, female editors (when compared with men) may be more likely to seek out socially harmonious (Leaper & Smith, 2004; Tannen, 1991) online environments during more collaborative information generation (i.e., Wikipedia). Results from both of the current studies provide seemingly contradictory results, which both support offline gender replication online and gender transformation online. These findings highlight the
need for researchers to examine more nuanced online behaviors in the context of the specific affordances of each online environment, as online spaces such as Facebook and Wikipedia appear to provide opportunities for both gender replication and gender transformation.

These results further highlight the important role of positive peer editor behaviors and positive editing environment in encouraging novice Wikipedians to contribute to collaborative editing. Crowston and Fagnot (under review) clearly identified the significance of editing stage, in which new editors require an awareness and understanding of the editing content, but also require a positive evaluation from their peer collaborators. This need for a supportive space may be particularly salient for novice female editors. As such, Wikipedia and other collaborative editing environments should strongly consider the best practices in supporting novice editors for sustained engagement.

A deeper exploration of participants’ commenting behaviors revealed unique patterns of editing that were dependent on the essay condition, which ultimately reflected varied combinations of peer editor behaviors (i.e., comments, additions, deletions). In the essay where both MrFootballFan and Cheerios4Life added comments, while MsTrouble only deleted information, female college students were more likely than male students to add comments. This contrasts the findings from essay condition two (neutral essay version), which illustrated that female college students edited less than male students when the female peer editor also had edited less. The absence of a female peer editor actively contributing to the essay (MsTrouble, condition four) may have influenced how comfortable the female students felt with commenting versus active editing (i.e., adding
or deleting information). In consideration of the prior research, which has identified how Wikipedians are more likely to interact with those who communicate in similar styles (Laniado et al., 2012), women may refrain from active editing in an environment where men are the active editors. Instead, female college students in the current study engaged in more discussions than male students with the other editors via the comments function.

These behaviors may also reflect participants’ uncertainty about how their peer editors or the public may view edits. Comments (versus edits) may have been used as a more distanced form of editing in the fact-based section and may serve as a safe opportunity to actively engage with the collaborative task, providing opportunities for participants to suggest changes to the essay without making any actual edits on the work of others. This type of engagement with the essay also suggests that more neutral or negative collaborative environments may contain less edits, more generally, but may instead include more comments from women about how/what to edit.

Although the quality of edits were not assessed in this study, participants in the constructive environment may have felt welcome to contribute in a meaningful way towards the content of the essay instead of commenting or making suggestions about changes in the essay. Further data analysis from the current study will explore the quality of edits in the context of the participant gender and essay section. The lack of positive reinforcement in the neutral condition and the prevalence of editors who were viewed as male also more closely reflect the current Wikipedia editing environment, where it remains more common for editing to occur in environments with limited positive reinforcement from peer editors. As such, the Wikipedia gender gap is not likely to close without measures taken that facilitate more discussion about editing on controversial
pages (similar to comments) and include more opportunities to positively affirm other editors after editors have made substantial edits to an online article.

**Editing behaviors and perceptions of peers.** The anonymous peer editor was most often identified as male, even with the exclusion of varying traits attributed to each of the peer editors. This may reflect current westernized cultural norms towards the identification of *other* as male versus female. Participants also felt that this anonymous peer editor would also evaluate their edit less positively than the other peer editors. Consequently, anonymous online users, such as those dominating sites like Wikipedia, may be viewed as more critical of others who join the collaborative space. Building on research findings that novice editors need to feel valued by others in the collaborative community (Crowston & Fanot, *under review*), individuals interested in contributing to a Wikipedia article full of anonymous peer editors may feel that their edits will be reverted or criticized by others, thereby leading them to refrain from contributing to the site.

When participants in the current study were asked how the other editors would evaluate their work, participants reported that the gender-neutral peer editor would evaluate their own editing more positively than the anonymous peer editor. These findings should be considered in the context of the aforementioned preferred editing environments for each gender. There is a current need to cultivate more positive peer collaborative spaces, particularly where anonymous individuals are potentially widespread (i.e., Wikipedia). These combined results highlight the importance of a female editor presence for women and the need for more positive (versus neutral) peer collaborative spaces. The ways in which editors perceive their peers (i.e., anonymous or gendered) may also impact how one edits in these collaborative spaces.
**Editing behaviors on Wikipedia.** Interestingly, many of the findings in study two may parallel those found on Wikipedia, where self-reported female Wikipedians represent less 25% of the overall contributors on the site. For instance, male students in comparison with female students edited more in the absence of a female editor and edited more in the neutral editing environment. The lack of female editors and the prevalence of neutral comments (versus constructive comments) from other editors are also found on many Wikipedia environments (i.e., article talk pages). In contrast, the types of environments in study 2 in which the female college students edited more than male college students did not reflect the characteristics of current Wikipedia environments.

Although technology and editing skill-level was not directly assessed in the current study, the college students in this study were likely of a lower-skill level and included students who did not consistently edit on Wikipedia. Prior literature highlights a lack of gender editing differences in lower-activity Wikipedia editors (Antin, Yee, Cheshire, & Nov, 2011) and suggests that the gender gap might persist to a greater extent in higher-skilled editors (Hargittai & Shaw, 2015). However, the results from study two extend the findings of Hargittai and Shaw (2015) to also suggest that the gender gap in collaborative editing may persist to lower-skilled editors in addition to the higher-skilled editors in the context of the current college student population. Gender differences appeared in collaborative environments when exploring the neutral (versus constructive) editing environment. Men made more edits when women were perceived as absent from the collaborative space. Women, in comparison with men, added more comments when the peer editors were men or lacked a definite gender affiliation.
Editing behaviors in varied types of collaborative spaces. The specific gender composition of the editing environment has been studied more extensively on other types of collaborative spaces (i.e., educational computer-mediated settings). Although educational environments may lack the cultural norms and anonymous peer interactions of the Wikipedia space, this literature highlights how the gender composition of group work may facilitate or hinder the collaboration process. Findings from the prior literature on same- and mixed-gender group work in collaborative, computer-mediated educational environments may help to clarify the reasons behind the current Wikipedia gender gap.

In a review of the literature, Herring (2000) suggests that Internet users engage in culturally laden gendered communication online. Herring also identifies the importance of the characteristics of the online space when exploring gender differences online, such as synchronous versus asynchronous. Asynchronous environments, such as those found on Wikipedia, may show greater amounts of inequality in regards to participation from men and women (Herring, 2000). The prior literature on computer-mediated communication (CMC) also finds differing patterns of communication for men and women based on other characteristics of the space besides synchrony, such as gender composition of group-based environments (see Prinsen, Volman, & Terwel, 2007 for a review).

In comparing group composition among college students, studies have found differences in communication styles between male-only, female-only, and mixed-gender groups. Savicki, Kelley, and Lingenfelter (1996a) found that male-only groups included fewer individually-oriented pronouns (such as “I” or “me”), used more course or aggressive language, changed their opinions the least, and were least satisfied with the
group work when compared with female-only and mixed-gender groups. Female-only groups were most likely to use individually oriented language, change their opinions, and were most satisfied with their group work. These results also suggested that mixed-gender groups may produce the most communication, but also that female-only groups may feel more productive. The course language used by men illustrates how male-only groups may perpetuate and even heighten offline male stereotypes of dominance or aggression.

In another study by Savicki, Kelley, & Lingenfelter (1996b), researchers uncovered distinct patterns of communication in each comparison group: male-only, female-only, and mixed-gender. Male-only groups had the most tension (i.e., attacking an opposing opinion) in their messaging, followed by the mixed-gender groups and then the female-only groups. The male-only group communication also included more abusive language and members of these groups changed their opinions less than the female-only and mixed-gender groups. The female-only group communications contained more opinion-based information, followed by the male-only groups and then the mixed-gender groups. Similar to the findings from the aforementioned study, this study also highlights patterns of communication based on the gender composition of the group. Male-only groups used more tension (or dominance), while female-only groups used more opinion-based communication.

Focusing on mixed gender groups, researchers have also begun to clarify how the amount of participation and kinds of participation may vary based on gender. Selfe and Meyer (1991) conducted a study using asynchronous online conferencing, in which participants sent messages to a given address, these messages were later aggregated into a
longer document, and then this longer document was sent back to all of the participants. An exploration into the level and content of these messages revealed that men and higher-profile members of the community dominated the discussions and engaged in more assertive behaviors when compared with women and lower-profile individuals. Men also initiated three times as many topics as women and disagreed with others twice as often as women. Overall, male patterns of communication may parallel patterns found in higher-profile individuals of a given community and these patterns appear to represent offline, stereotypical male communicative styles (i.e., dominance, aggression).

Another study found that online discussions from college students were dominated by male students, but some of the less vocal students were also men (Carr, Cox, Eden, & Hanslo, 2004). The average number of turns taken in chat conversations was 18.5% higher for male than female students. In addition, female students focused more on collaboration and community building in their conversations, where messages from men included more adversarial styles of communication.

In one of the few studies to find equitable participation, McConnell (1997) found no significant differences in whether men or women directed asynchronous conversations in mixed-gender groups. However, researchers in this study also emphasized equitable contributions from student participants in the study and included their CMC as an integral part of their course. In addition to the McConnell study, a 2004 study conducted by Masters and Oberprieler also found no gender differences in more active (i.e., posting) versus passive (i.e., reading posts) participation in an online discussion forum, and a relatively high level of participation in the CMC occurred amongst students in the study. The researchers in this study emphasized the lack of rewards/punishments for
participation in the CMC, ensured that all of their students were literate with the technology, emphasized experiential and problem-based learning, and reduced the distinction between passive and active participation by emphasizing the importance of participation, regardless of whether students passively read posting or actively posted. They felt that each of these focal areas helped them to achieve a more equitable CMC environment.

Many CMC studies have identified specific patterns of communication in educational settings based on group gender dynamics and in comparing men and women in mixed-gender groups. Furthermore, some of the patterns identified in the prior literature on SNSs and Wikipedia were replicated into these educational environments (i.e., male dominance, female preference for opinion-sharing). In the CMC literature where equality in participation was demonstrated, the pedagogy environments often explicitly included themes of inclusiveness in class discussions (Prinsen, Volman, & Terwel, 2007). For example, McConnell (1997) explicitly discussed and encouraged equitable contributions from students during the CMC task. Consequently and in addition to the current inclusion of equality in the Wikipedia mission statement, administrators might also consider other, more explicit opportunities for this value to perpetuate into editor interactions. Interventions designed to communicate a value of social justice on Wikipedia may result in more widespread equality throughout both the article editing and user discussions.

Overall, results from the current study found that although some of the gendered communicative patterns from offline spaces replicated into the collaborative editing task, many of the gender norms from offline environments and other alternative social spaces
did not replicate. These results highlight a need for further research that seeks to more clearly define the reasons driving the gender gap on Wikipedia, as variations in gender communicative patterns appear more complicated in varied types of mixed-gender collaborative environments.
CHAPTER FOUR

General Discussion

Although the current studies found gender-specific communicative patterns on both Facebook and Wikipedia, the majority of the behaviors exhibited by participants were not gender-specific and online behaviors reflected more similarities than differences between men and women. Consequently, these studies support the conclusion that both gendered perceptions (study two) and gendered expressions (studies one and two) may replicate or transform in specific online environments, and that the characteristics and perceptions of the social environment by the participant should be considered. This research identified men and women’s social behaviors on both nonymous and anonymous online environments. Furthermore, there were unique affordances attributable to each site that may have fueled or guided some of the slight variations in how gender was expressed in these online spaces.

The results obtained from both study one and study two are situated within a relatively diverse sample of undergraduate college students, consisting of many part-time, working-class or low-income students enrolled in introductory level psychology courses. As such, these conclusions represent a unique population of college students and how they use online environments. The behavioral patterns identified in the current studies suggest that gender inequality may persist in certain online environments and gendered expressions in these environments may replicate from the offline space (Leander & McKim, 2003; Reich, Subrahmanyam, & Espinoza, 2012; Subrahmanyam et al., 2008; Williams, 2006).
Results from study one clarify this potential for replication of gender-specific behaviors such as relationship maintenance. The presence of the repetitive and stalking behaviors aimed at female college students on Facebook in study one begin to suggest that offline power dynamics and social structures may replicate into the online space (Fine & Gordon, 1989; Hyde, 2005; Shields & Dicicco, 2011; Stewart & McDermott, 2004). Results from study two further identified how certain collaborative environments may facilitate opportunities for individuals to engage in online gendered communicative patterns that may be more often favored by the other gender in other online environments. This was illustrated in the lack of differences between men and women in their editing of fact-based information in study two, behaviors that are thought to favor male communicative patterns. Overall, it appears that the ways in which we “do gender” may also transform through the affordances of varied online platforms (Manago, 2013), specifically through the varied dynamics of the social environment and one’s perceptions of these environments.

Building on these gender comparisons, the social grooming behaviors (Goffman, 1956; Tufekci, 2008) identified in study one’s Facebook interactions suggest that female college students are actively engaging in public self-presentation maintenance online through the use of friending and blocking behaviors. This finding indicates that social maintenance norms may vary by gender on Facebook or could reflect unique gender norms in online spaces where male college students are expected to post facts/statements as female college students spend more time monitoring their online social networks. The adherence to each of these online social norms likely affirms and/or strengthens one’s
online relationships with others (Tufekci, 2008), while also illustrating one’s resources in the online space.

Expanding upon study one, the findings from study two describe the potential for gendered behavior switching in certain online, collaborative environments and in the context of information-seeking or information additions made to online, collaborative knowledge. All of the participants in the current study were under the age of 25 and did not actively edit on Wikipedia, although they did represent the upcoming population of Wikipedian editors. Consequently, this shift in the expression of online gendered behaviors suggests that Wikipedia (as a public site) may also experience a shift in editor behaviors and gender characteristics in the upcoming years.

Certain collaborative spaces appear to facilitate a greater volume of editing behaviors for either men (i.e., neutral peer environments) or women (i.e., positive peer environments), and many of these editing patterns mirrored those found on Wikipedia. For instance, in the environment that lacked positive affirmations, male college students made more edits when women were absent from the environment. This particular environment more closely mirrors most Wikipedia editing environments, in which peer interactions may be more neutral (versus positive) in nature and these interactions would likely occur with more men than women on Wikipedia. Female college students added more comments, or engaged in more discussion, when working with men or peer editors that lacked a definite gender affiliation. The lack of gender affiliation is also a widespread Wikipedia-like characteristic, in which many editors on Wikipedia may choose more anonymous usernames over usernames that indicate a gender or other personal characteristics. In addition, the female college students edited to a greater extent
in more positive peer environments that included female peer editors, unlike the current Wikipedia editing space. Consequently, the Wikipedia environment, which often lacks positive affirmations from peers and is thought to be heavily male-dominated, may facilitate more discussions about articles (via talk pages) instead of actual editing on Wikipedia articles for female contributors to the site.

Results from the prior literature on computer-support collaborative learning environments (i.e., class discussion boards, small group online discussions) with same-gender and mixed-gender environments may further highlight barriers that men and women experience in collaborative editing environments. These studies have identified both benefits and disadvantages for women in these gendered environments (McConnell, 1997; see Prinsen, Volman, & Terwel, 2007 for a review; Savicki et al., 1996a), suggesting that further research is needed to clarify the types of online environments in which equal collaboration currently exists and is sustained over time. However, results from these studies currently suggest that offline patterns of communication and patterns found on some SNSs (i.e., Facebook) may replicate into additional CMC environments.

All of this prior literature and the current results from study two point towards a need for future studies that clarify how gender group dynamics might also underlie differences in editing behaviors in certain online environments, such as Wikipedia. Furthermore, these types of collaborative editing assignments are prevalent in many undergraduate college classrooms. Collaboration skills, and peer editing as a form of collaboration, are included in the American Psychological Association’s guidelines for undergraduate psychology skills (APA, 2013). As such, college educators are encouraged to embed these core skills into their psychology coursework as students advance through
their undergraduate psychology education. The results from study two clarify potential areas of inequality in undergraduate student collaborations, both in the offline and online environment. The differences in collaborative editing preferences between male and female college students suggest that in-class group work may also reflect some gender inequalities resulting from unique group dynamics and characteristics of the editing environment. Study two in the current research also found similarities between the editing behaviors of male and female college students. For example, men and women edited to the same extent with the fact-based material, which is often thought to favor more masculine communicative styles. In regards to the number of comments added, most of the essay conditions (aside from condition four) did not reveal a gender main effect in the linear modeling. Furthermore, the linear model predicting participants’ perceptions of how the peer editors would evaluate their own work did not identify any significant gender differences. Consequently, gender differences in editing behaviors in college classrooms may not vary if certain environmental conditions are met (i.e., encouraging comments in a peer evaluation assignment with peers of varying genders).

In consideration of the online contexts of collaboration, the replication of certain offline power structures in the current studies suggests that online discriminatory patterns and behaviors may persist in specific online environments beyond the classroom. These patterns of online injustice were represented on Facebook in study one through the repetitive and stalking behaviors identified by women and in the Wikipedia gender gap literature. All of this literature highlights the need for researchers to consider a transformative activist stance in studying the online cultural environment (Stetsenko, 2015). A societal change in how we contextualize online space, in addition to how we
characterize the users of online spaces as cultural change agents, could result from a deeper study into the nature of online inequality (and equalities) so researchers can locate effective opportunities for online collaboration. As has been expressed in the CMC research, a modification of the rules and expectations of a given online environment, including social norm expectations, may also result in greater equality across genders during mixed-gendered collaborations (McConnell, 1997; Prinsen, Volman, & Terwel, 2007).

**Limitations and Future Directions**

The current studies addressed the need for research that examines offline gendered communicative patterns in both anonymous and semi-nonymous online environments. However, limitations existed within both study one and study two, which should guide future research in this field.

Participants in study one completed an online survey in exchange for course credit and the use of a self-report data collection method. Results from this study reflect college students’ *perceived experiences* on Facebook, but these may not present accurate depictions of Facebook behaviors. Future studies should incorporate behavioral observational methods of data collection in more naturalistic settings (i.e., observe online actions).

As a result of this limitation, study two asked participants to complete an online survey, an offline demographic form, and incorporated behavioral observations through the use of the collaborative editing essay task. Even so, the use of a simulated collaborative editing task likely differed from the true Wikipedia environment specifically in regards to lacking the cultural norms and nuanced peer editor experiences.
that Wikipedians experience during editing. Wikipedia is a culturally laden environment with a substantial history of loyal contributors, who are relatively understudied in the current research. Participants who edited the collaborative Word document received course credit for their participation and lacked the reciprocal peer feedback environment that Wikipedia often provides. The editing task in study two was similar to Wikipedia in that it provided participants with a collaborative editing environment, required that participants generate (or not generate) a username that was linked with their edits, included a section of the essay centered on fact-based material, participants were told that the document would be made publicly available, and participants independently added information into the document (versus team-based editing). However, the task was dissimilar in requiring participants to create a paper-based profile (versus online profile), the editing occurred on a Word document with tracked changes instead of an online collaborative space, the study neglected to include an opportunity for participants to engage in reciprocal feedback from other editors, and the editing environment lacked the cultural norms and historical grounding of the actual Wikipedia environment. Future research should aim to more closely replicate the online editing environment and should explore online behaviors in more naturalistic, online settings (i.e., Facebook, Instagram, or Wikipedia) through real-time data collection techniques.

Both studies also included limitations surrounding the data collection instruments and research design. Study one identified the blocking and unfriending behaviors found on Facebook as they were preferred by each gender. However, due to the limitations of the question phrasing and limited survey completion time, the research team was unable to identify the gender of those who were blocked/unfriended and unable to differentiate
between blocking and unfriending behaviors. Future studies could identify whether a man or woman was blocked and whether men or women are more likely to block individuals of the same-gender or individuals of another gender. Future studies should also incorporate more contextual questions about where/when the blocking/unfriending behaviors occur.

In study two, the demographic measures were designed to reflect the types of information that Wikipedians can choose to provide via their user pages. Participants were asked to select any username, which could be gendered or not, similar to the Wikipedia environment. However, participants were directly asked for their gender and would not have been asked their gender on the actual Wikipedia space. Participants in the current study were not asked whether they wanted their gender linked with their editing, which may have helped to clarify how editors self-present their gender identity, in addition to their gendered expressions. This demographic information was also measured through a demographic survey form versus the creation of an actual profile. Future research might consider using a simulated online environment that asks participants to fill in their profile at the level that participants feel comfortable doing so.

In study two, the eight versions of the essay were created in such a way that the edits made by peers were counterbalanced throughout each of the essays. Each peer editor was also represented in their “initial edits” on the essay, or the sections of the essay where they added actual text versus comments or revisions to the work of others. In order to effectively represent each of the peer editors in these initial essay contributions, each of the peer editors did not make revisions to the sections of the essay where they had made their initial contributions. Consequently, and likely due to the relatively high
number of edits made in each section by the peer editors, participants in this study may not have identified which of the peer editors had written the initial text for each section. This resulted in the perceived “absence” of a peer editor from each of the sections (the section they initially wrote).

Although the current studies took a mixed methods approach, there is a significant need for qualitative research examining communication on Facebook and collaborative editing on Wikipedia through interviews, focus groups, and ethnographic research with participants of these online communities. A deeper qualitative approach could more thoroughly examine the underlying reasons and motivations for social network maintenance on SNSs. In addition, there is limited qualitative research exploring the potential barriers to Wikipedia editing for women. Research has also yet to describe the editing processes of other minority populations on Wikipedia. With the identification of the gender gap, there has been limited work exploring whether and how other populations may experience editing barriers when they attempt to engage on Wikipedia. Furthermore, it remains unknown whether barriers only exist on the article pages or if these barriers cross over into other Wikipedia domains (i.e., talk pages). Therefore, future research should seek to qualitatively explore these editing barriers by identifying how varying groups edit and sustain their editing behaviors over time.

Conclusion

Although the current studies found specific gendered communicative patterns on both Facebook and Wikipedia, the majority of the online behaviors were not gender-specific and online behaviors reflected more similarities than differences between men and women, supporting a more flexible understanding of gendered expressions online
(Martin, Cook, & Andrews, 2016). Some offline gender differences may replicate through certain online spaces, such as women favoring relationship maintenance (Facebook), orienting towards more harmonious behaviors/environments (Facebook and Wikipedia), and the replication of power dynamics from offline spaces (Facebook). Women also favored more positive collaborative environments and those that included at least one other female editor, while men more actively edited in a neutral environment lacking positive affirmations. Other gender differences appear to dissipate in certain social environments, illustrated by both women and men actively editing and collaborating to the same extent across conditions on a fact-based section of an essay. However, the current studies bring to the forefront how certain offline inequalities and power dynamics may replicate in online spaces. As such, a deeper exploration into the current gender inequalities online, such as those found on Wikipedia, would assist researchers and website administrators in developing effective interventions that seek to eliminate the persistent injustice found in certain online environments.
Appendix A

Study One: Online Survey

1. What is your age in years?

2. What is your sex?

3. What is your race/ethnicity?

*Please rate your likelihood to do the following:*

4. Browse the profiles of strangers on Facebook.
   - Very unlikely
   - Somewhat unlikely
   - Neither unlikely nor likely
   - Somewhat likely
   - Very likely

5. Contact a stranger using Facebook or by using information from Facebook.
   - Very unlikely
   - Somewhat unlikely
   - Neither unlikely nor likely
   - Somewhat likely
   - Very likely

6. Add a stranger as a Facebook friend.
   - Very unlikely
   - Somewhat unlikely
   - Neither unlikely nor likely
   - Somewhat likely
   - Very likely

7. Meet a stranger from Facebook face-to-face.
   - Very unlikely
   - Somewhat unlikely
   - Neither unlikely nor likely
   - Somewhat likely
   - Very likely

8. Browse the Facebook profile of someone from your class.
   - Very unlikely
   - Somewhat unlikely
   - Neither unlikely nor likely
   - Somewhat likely
• Very likely

9. Browse the Facebook profile of a close friend.
  • Very unlikely
  • Somewhat unlikely
  • Neither unlikely nor likely
  • Somewhat likely
  • Very likely

10. Contact a close friend using Facebook, or by using information from Facebook.
  • Very unlikely
  • Somewhat unlikely
  • Neither unlikely nor likely
  • Somewhat likely
  • Very likely

11. Add one of your close friends as a Facebook friend.
  • Very unlikely
  • Somewhat unlikely
  • Neither unlikely nor likely
  • Somewhat likely
  • Very likely

12. Meet one of your close friends face-to-face.
  • Very unlikely
  • Somewhat unlikely
  • Neither unlikely nor likely
  • Somewhat likely
  • Very likely

*Please rate your agreement with the following statements.*

13. I use Facebook to meet new people.
  • Strongly disagree
  • Somewhat disagree
  • Neither disagree nor agree
  • Somewhat agree
  • Strongly agree

14. I have used Facebook to check out someone I met socially.
  • Strongly disagree
  • Somewhat disagree
  • Neither disagree nor agree
  • Somewhat agree
  • Strongly agree
15. I use Facebook to learn more about other people in my classes.
   - Strongly disagree
   - Somewhat disagree
   - Neither disagree nor agree
   - Somewhat agree
   - Strongly agree

16. I use Facebook to learn more about other people living near me.
   - Strongly disagree
   - Somewhat disagree
   - Neither disagree nor agree
   - Somewhat agree
   - Strongly agree

17. How many friends do you have on Facebook?

18. How often do you send a friend request?
   - Never
   - Less than a couple times a year
   - A couple times a year
   - A couple times a month
   - A couple times a week
   - A couple times a day
   - More than a couple times a day

19. Without a response, how often do you send 2 or more friend requests to the same person?
   - Never
   - Less than a couple times a year
   - A couple times a year
   - A couple times a month
   - A couple times a week
   - A couple times a day
   - More than a couple times a day

20. How often are your friend requests accepted?
   - Never
   - Less than a couple times a year
   - A couple times a year
   - A couple times a month
   - A couple times a week
   - A couple times a day
   - More than a couple times a day
21. How often do you receive friend requests?
   - Never
   - Less than a couple times a year
   - A couple times a year
   - A couple times a month
   - A couple times a week
   - A couple times a day
   - More than a couple times a day

22. How often do you accept friend requests?
   - Never
   - Less than a couple times a year
   - A couple times a year
   - A couple times a month
   - A couple times a week
   - A couple times a day
   - More than a couple times a day

23. How do you decide whether to accept a friend request?

24. How do you find and contact a new friend on Facebook?

25. Have you ever blocked and/or unfriended another person on Facebook? If so, please provide an example of a time you did this.

26. Have you ever been blocked and/or unfriended by another person on Facebook? If so, please provide an example of a time you did this.
Appendix B

Demographic Form for Cyberbullying Essay

*Please take a few moments to fill out the following form. Note that you have the option to link your entire bio form profile with your edits, part of your profile with your edits, or to keep your profile separate from your edits (i.e., only username would be linked with your editing).*

1. What is your ID? _______________________

2. What is your age? _______________________
   Do you want to link your age with your edits?
   - Yes
   - No

3. What is your ethnicity? _______________________
   Do you want to link your ethnicity with your edits?
   - Yes
   - No

4. What is your gender?
   - Male
   - Female
   - Transgender or Gender Invariant
   - Other (please explain) _______________________

5. What is your major? _______________________
   Do you want to link your major with your edits?
   - Yes
   - No

6. What is your GPA? _______________________
   Do you want to link your GPA with your edits?
   - Yes
   - No

7. Would you like to provide any further information?

________________________________________________________________________
8. Please choose a username that **WILL BE** linked with your edits. You can choose any username, ranging from your real name to any made up (anonymous) name. Others who view the essay will see your username linked with your edits. What would you like to list as your username? _______________________

You're finished with the bio form portion of the study. The next few questions will help you to start thinking about concepts found in the essay you'll be editing.

9. Examples of cyberbullying include....

10. Cyberbullying is happening more and more online, especially on sites such as...

11. We can do a lot to prevent and intervene in attempts at cyberbullying. For example, we could....

12. I think cyberbullying is different from face-to-face bullying because.... (note - you may also argue that it is similar to face-to-face bullying)

You've reached the end of this portion of the study. Please let the researcher know that you're ready to start editing.
Study Two: Online Survey

Internet Familiarity and Accessibility
Please rate your level of agreement with the following statements:

1. I have regular access to the Internet at my home.
   - Agree
   - Somewhat Agree
   - Neither Agree nor Disagree
   - Somewhat Disagree
   - Disagree

2. I have regular access to the Internet at my college.
   - Agree
   - Somewhat Agree
   - Neither Agree nor Disagree
   - Somewhat Disagree
   - Disagree

3. I feel comfortable using the Internet and online environments more generally.
   - Agree
   - Somewhat Agree
   - Neither Agree nor Disagree
   - Somewhat Disagree
   - Disagree

Internet Use
4. On an average day, how much time do you spend on the Internet? (this may be via phone, tablet, computer, etc.)
   - I’m always on the Internet
   - More than 10 hours
   - 5-10 hours
   - 1-4 hours
   - Less than an hour

5. On an average day, how much time do you spend looking for information on the Internet?
   - I’m always looking for information
   - More than 10 hours
   - 5-10 hours
   - 1-4 hours
   - Less than an hour

6. On an average day, how much time do you spend sharing information on the Internet?
7. On an average day, how much time do you spend connecting with others on the Internet?
   - I’m always connected
   - More than 10 hours
   - 5-10 hours
   - 1-4 hours
   - Less than an hour

Facebook Use

8. On an average day, how much time do you spend using Facebook?
   - I’m always on Facebook
   - More than 10 hours
   - 5-10 hours
   - 1-4 hours
   - Less than an hour

9. On an average day, how much time do you spend looking for information on Facebook?
   - I’m always looking for information
   - More than 10 hours
   - 5-10 hours
   - 1-4 hours
   - Less than an hour

10. On an average day, how much time do you spend sharing information on Facebook?
    - I’m always sharing information
    - More than 10 hours
    - 5-10 hours
    - 1-4 hours
    - Less than an hour

11. On an average day, how much time do you spend connecting with others on Facebook?
    - I’m always connected
    - More than 10 hours
    - 5-10 hours
    - 1-4 hours
    - Less than an hour
Wikipedia Use

12. On an average day, how much time do you spend using Wikipedia?
   - I’m always on Wikipedia
   - More than 10 hours
   - 5-10 hours
   - 1-4 hours
   - Less than an hour

13. On an average day, how much time do you spend looking for information on Wikipedia?
   - I’m always looking for information
   - More than 10 hours
   - 5-10 hours
   - 1-4 hours
   - Less than an hour

14. On an average day, how much time do you spend sharing information on Wikipedia?
   - I’m always sharing information
   - More than 10 hours
   - 5-10 hours
   - 1-4 hours
   - Less than an hour

15. What has been your experience with online editing?
   - I have no experience
   - Some experience (I’ve edited something online a couple of times)
   - Moderate experience (I’ve edited online more than a few times)
   - Very experienced (I edit online regularly)

16. How often do you share your expertise online through blogs?
   - I’m constantly sharing my expertise online
   - More than two times a day
   - Once or twice a day
   - Once or twice a week
   - Once or twice a month
   - Almost never

17. How often do you share your expertise through social media?
   - I’m constantly sharing my expertise online
   - More than two times a day
   - Once or twice a day
   - Once or twice a week
   - Once or twice a month
Online Connection Strategies

18. How likely are you to browse the profiles of strangers online?
   - Very likely
   - Somewhat likely
   - Neither unlikely nor likely
   - Somewhat unlikely
   - Very unlikely

19. How likely are you to contact a stranger online or by using information obtained online?
   - Very likely
   - Somewhat likely
   - Neither unlikely nor likely
   - Somewhat unlikely
   - Very unlikely

20. How likely are you to add a stranger as an online friend? (via Facebook, Twitter, Instagram, etc.)
   - Very likely
   - Somewhat likely
   - Neither unlikely nor likely
   - Somewhat unlikely
   - Very unlikely

21. How likely are you to meet a stranger from online networks face-to-face?
   - Very likely
   - Somewhat likely
   - Neither unlikely nor likely
   - Somewhat unlikely
   - Very unlikely

22. How likely are you to browse an online profile of someone from your class?
   - Very likely
   - Somewhat likely
   - Neither unlikely nor likely
   - Somewhat unlikely
   - Very unlikely

23. How likely are you to browse the online profile of a close friend?
   - Very likely
   - Somewhat likely
   - Neither unlikely nor likely
   - Somewhat unlikely
• Very unlikely

24. How likely are you to contact a close friend online, or by using information obtained from online?
  • Very likely
  • Somewhat likely
  • Neither unlikely nor likely
  • Somewhat unlikely
  • Very unlikely

25. How likely are you to add one of your close friends as a friend on an online network?
  • Very likely
  • Somewhat likely
  • Neither unlikely nor likely
  • Somewhat unlikely
  • Very unlikely

26. How likely are you to meet one of your close friends face-to-face?
  • Very likely
  • Somewhat likely
  • Neither unlikely nor likely
  • Somewhat unlikely
  • Very unlikely

*Use of Online Sites for Social Information Seeking*
Pleas rate your level of agreement with the following statements.

27. I use online methods to meet people.
  • Strongly agree
  • Somewhat agree
  • Neither disagree nor agree
  • Somewhat disagree
  • Strongly disagree

28. I use online methods to check out people I have met socially.
  • Strongly agree
  • Somewhat agree
  • Neither disagree nor agree
  • Somewhat disagree
  • Strongly disagree

29. I use online methods to learn more about other people in my classes.
  • Strongly agree
- Somewhat agree
- Neither disagree nor agree
- Somewhat disagree
- Strongly disagree

30. I use online methods to learn more about other people living near me.
   - Strongly agree
   - Somewhat agree
   - Neither disagree nor agree
   - Somewhat disagree
   - Strongly disagree

**Civic Attitudes**

31. I use web sites, online communities, or online tools (message boards, Facebook, Twitter, etc.) to discuss current events or issues of importance to me with my friends.
   - Often
   - Sometimes
   - Rarely
   - Never

32. I make it a priority to stay informed about current events or issues important to me.
   - Often
   - Sometimes
   - Rarely
   - Never

33. When I am with my friends or family I discuss current events or issues of importance to me.
   - Often
   - Sometimes
   - Rarely
   - Never

34. I read news online through a news site or through a social media network (i.e., CNN.com, Times.com, Facebook, Twitter).
   - Often
   - Sometimes
   - Rarely
   - Never

**Civic Behaviors**

35. I attend protests or rallies.
36. I create media online (i.e., podcasts, videos, blogs) to get the word out about an issue.
   - Often
   - Sometimes
   - Rarely
   - Never

37. I participate in online protests.
   - Often
   - Sometimes
   - Rarely
   - Never

38. I vote in elections.
   - Often
   - Sometimes
   - Rarely
   - Never

39. I spread the word about political issues and current news events online via my social media network (Facebook, Twitter, Instagram, etc.).
   - Often
   - Sometimes
   - Rarely
   - Never

40. I contact politicians, governments, or authorities about issues important to me.
   - Often
   - Sometimes
   - Rarely
   - Never

Social Responsiveness Scale (SRS-Adult)
*Note that this scale was not included in the Appendix due to copyright access restrictions.

Prosocial Behaviors
Please indicate how much each statement does or doesn’t describe you.
100. I help people best when I am being watched.
   - Describes me greatly
   - Describes me well
   - Somewhat describes me
   - Describes me a little
   - Does not describe me at all

101. It is most fulfilling to me when I can comfort someone who is very distressed.
   - Describes me greatly
   - Describes me well
   - Somewhat describes me
   - Describes me a little
   - Does not describe me at all

102. When other people are around, it is easier for me to help people in need.
   - Describes me greatly
   - Describes me well
   - Somewhat describes me
   - Describes me a little
   - Does not describe me at all

103. I think that one of the best things about helping others is that it makes me look good.
   - Describes me greatly
   - Describes me well
   - Somewhat describes me
   - Describes me a little
   - Does not describe me at all

104. I get the most out of helping others when it is done in front of others.
   - Describes me greatly
   - Describes me well
   - Somewhat describes me
   - Describes me a little
   - Does not describe me at all

105. I tend to help people who are in real crisis or need.
   - Describes me greatly
   - Describes me well
   - Somewhat describes me
   - Describes me a little
   - Does not describe me at all

106. When people ask me to help them, I don’t hesitate.
   - Describes me greatly
- Describes me well
- Somewhat describes me
- Describes me a little
- Does not describe me at all

107. I tend to help others, particularly when they are emotionally distressed.
   - Describes me greatly
   - Describes me well
   - Somewhat describes me
   - Describes me a little
   - Does not describe me at all

108. It is easy for me to help others when they are in a dire situation.
   - Describes me greatly
   - Describes me well
   - Somewhat describes me
   - Describes me a little
   - Does not describe me at all

109. Most of the time, I help others when they do not know who helped them.
   - Describes me greatly
   - Describes me well
   - Somewhat describes me
   - Describes me a little
   - Does not describe me at all

110. I never hesitate to help others when they ask for it.
   - Describes me greatly
   - Describes me well
   - Somewhat describes me
   - Describes me a little
   - Does not describe me at all

111. One of the best things about doing charity work is that it looks good on my resume.
   - Describes me greatly
   - Describes me well
   - Somewhat describes me
   - Describes me a little
   - Does not describe me at all

112. I feel that if I help someone, they should help me in the future.
   - Describes me greatly
   - Describes me well
Bem’s Sex Roles Inventory (assessing gender)
Please rate yourself on each of the following items.

120. Dominant
- Never
- Rarely
- Neutral
- Often
- Always

121. Assertive
- Never
- Rarely
- Neutral
- Often
- Always

122. Has Leadership Abilities
- Never
- Rarely
- Neutral
- Often
- Always

123. Willing to Take Risks
- Never
- Rarely
- Neutral
- Often
- Always

124. Independent
- Never
- Rarely
- Neutral
- Often
- Always

125. Self-Sufficient
- Never
126. Strong Personality
   • Never
   • Rarely
   • Neutral
   • Often
   • Always

127. Willing to Take a Stand
   • Never
   • Rarely
   • Neutral
   • Often
   • Always

128. Defends Own Beliefs
   • Never
   • Rarely
   • Neutral
   • Often
   • Always

129. Eager to Soothe Hurt Feelings
   • Never
   • Rarely
   • Neutral
   • Often
   • Always

130. Compassionate
   • Never
   • Rarely
   • Neutral
   • Often
   • Always

131. Affectionate
   • Never
   • Rarely
   • Neutral
132. Gentle
- Never
- Rarely
- Neutral
- Often
- Always

133. Understanding
- Never
- Rarely
- Neutral
- Often
- Always

134. Tender
- Never
- Rarely
- Neutral
- Often
- Always

135. Loves Children
- Never
- Rarely
- Neutral
- Often
- Always

136. Takes into Account Other People’s Feelings
- Never
- Rarely
- Neutral
- Often
- Always

137. Aggressive
- Never
- Rarely
- Neutral
- Often
- Always
138. Warm
   - Never
   - Rarely
   - Neutral
   - Often
   - Always

139. Sympathetic
   - Never
   - Rarely
   - Neutral
   - Often
   - Always

Gender Self-Perceptions
140. Feminine
   - Never
   - Rarely
   - Neutral
   - Often
   - Always

141. Masculine
   - Never
   - Rarely
   - Neutral
   - Often
   - Always

Perceptions of Editing Expertise
142. How much did you feel like an expert on the topic you were asked to edit?
   - Great deal of expertise
   - Moderate level of expertise
   - Limited expertise
   - No expertise

143. Which of the other editors (your peers) did you feel had the most expertise about the essay topics?
   - Mr FootballFan
   - Ms Trouble
   - Cheerios4Life
   - AnonymousOne
   - None of the editors
Attitudes and Stereotypes about Peer Editors
For the following questions, please make an educated guess about some of the characteristics of your peer editors.

144. Which characteristic(s) do you feel describe Mr FootballFan? (please choose all that apply)
- Emotional
- Unemotional
- Talkative
- Quiet
- Sumissive
- Dominant
- Dependent
- Independent
- Feminine
- Masculine
- Intelligent
- Uneducated
- Aggressive
- Ambitious
- Lazy
- Arrogant
- Lacking Confidence

145. What is the gender of Mr FootballFan?
- Male
- Female
- Other (please specify) _______

146. Why did you pick that gender for Mr FootballFan?

147. How do you think Mr FootballFan will evaluate your work?
- Positively
- Somewhat positively
- Neutral
- Somewhat negatively
- Negatively

148. Why do you think that?

*Note that these Perceptions of Peer Editors questions were repeated for each for the peer editor usernames.

Demographic Information
The next few questions will ask you about some additional demographic information.

149. Which of the following do you identify as?
   - Straight or heterosexual
   - Lesbian, gay, or homosexual
   - Bisexual
   - Transsexual
   - I don’t know
   - Other (please specify) _____________

150. What is the highest level of education you’ve completed?
   - High School
   - Some Trade School
   - Some College
   - Associate’s Degree
   - Bachelor’s Degree
   - Master’s Degree
   - Doctoral Degree
   - Other (please specify) _____________
Information Provided about Writing Prompt

We’d like you to engage in a collaborative editing assignment with other students from CSI. This Word document contains a draft of a paper on cyberbullying that you will be writing and editing with other students from CSI who are participating in this study. Other students have already contributed to the Word document by adding their writing directly to the paper and by editing their peers’ work, as you will see in the tracked comments section. You and other participants in this study are working together to write an essay that defines and provides prevalence rates for cyberbullying (this should be factual), and then describes your subjective experiences and interpretations of cyberbullying.

The researcher illustrates how to view tracked comments and make changes in a Word document, if needed.

We’d like all of our student editors to come back to this document and make further edits if they see fit once all editors have had a chance to contribute. Consequently, you’ll be invited to make additional contributions or edits to the document in a few weeks. We’re planning to submit this document to the CSI newsletter, in addition to posting the document on a website we are creating about cyberbullying. We want the strongest final paper possible. In order to help us achieve the best possible paper, we need you to add your own writing directly into the document, to make edits on others’ work in track changes, and to review the edits made by others and if necessary respond to them. Please let us know if you need help figuring out how to add text or comments to the document.

In order to ensure that the factual portion of the essay is objective and well-cited,
you can research online to find and cite sources in the essay. Make sure that you don’t just copy word for word from the Internet without citing your sources. You can delete, modify, or add to the changes made by others. Please make sure that you use constructive feedback when leaving comments. You will be doing this editing task for 30 minutes. I’ll be back to check in on you every 5 minutes or so. While you’re participating in this study, be sure to focus on the task at hand. Please don’t use social networks and please put away your phone while working on this paper.

Comprehension Check (ask each participant to answer before they start)

1. To check your understanding of the instructions, would you mind showing me how you would make an edit in tracked changes?

2. How would you make a comment?

3. Make sure that you are paying attention to who is editing in the document. I’d strongly encourage you to take a few notes about the other editors since I’ll be asking you questions about them in the online survey.

4. And, what are you supposed to do for the next 30 minutes?
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