

Similar Gaps, Different Origins? Women Readers and Editors at Greek Wikipedia

Ioannis Protonotarios, Vasiliki Sarimpei, Jahna Otterbacher

Social Information Systems, Open University of Cyprus, Nicosia CYPRUS
ioannis@protonotarios.eu, vasiliki.sarimpei1@st.ouc.ac.cy, jahna.otterbacher@ouc.ac.cy

Abstract

As a global, multilingual project, Wikipedia *could* serve as a repository for the world's knowledge on an astounding range of topics. However, questions of participation and diversity among editors continue to be burning issues. We present the first targeted study of participants at Greek Wikipedia, with the goal of better understanding their motivations. Smaller Wikipedias play a key role in fostering the project's global character, but typically receive little attention from researchers. We developed two survey instruments, administered in Greek, based on the 2011 Wikipedia Readership and Editors Surveys. Consistent with previous studies, we found a gender gap, with women making up only 38% and 15% of readers and editors, respectively, and with men editors being much more active. Our data suggest two salient explanations: 1) women readers more often lack confidence with respect to their knowledge and technical skills as compared to men, and 2) women's behaviors may be driven by personal motivations such as enjoyment and learning, rather than by "leaving their mark" on the community, a concern more common among men. Interestingly, while similar proportions of men and women readers use multiple language editions, more women contribute to English Wikipedia in addition to the Greek language community. Future research should consider how this impacts their participation at Greek Wikipedia.

Introduction

Small Wikipedias play a key role in the project's global character, contributing to the Foundation's mission to "empower and engage people around the world¹." However, most research to date has focused on the larger Wikipedias. Fichman and Hara (2014) note that since more than 80% of Wikipedia is written in non-English languages, research taking a global perspective on the project is much needed. They highlight the fact that, as a sociotechnical environment rich with potential cross-cultural variations, it provides a chance to learn a great deal about the nature of human collaboration.

Indeed, empirical studies of non-English Wikipedias provide growing evidence of cross-cultural differences, including variations on collaboration processes, as well as the resulting content of Wikipedia entries. For instance, some

researchers have used Hofstede's (1991) cultural dimensions (Power Distance, Individualism, Masculinity, and Uncertainty Avoidance) to examine differences in editing behaviors across Wikipedias. Pfeil, Zaphiris and Ang (2006) compared editing patterns on the entry, "Game," across four Wikipedias. They found that Wikipedians from cultures with a high Power Distance (e.g., France/French edition) were less likely to edit others' contributions as compared to Wikipedians from cultures with a lower Power Distance (e.g., Germany/German). In a similar vein, Hara, Shachaf and Hew (2010) found that Wikipedians from Eastern cultures (at the Japanese and Malay Wikipedias) tend to be more polite on Talk Pages, as compared to Wikipedians from Western cultures.

It is also becoming increasingly clear that what constitutes a Neutral Point of View (NPOV) is sensitive to culture and/or language, with salient content differences documented across Wikipedias. For example, Callahan and Herring (2011) studied a corpus of biographical entries of famous American and Polish scientists at the English language and Polish language Wikipedias. Entries at the English language community were consistently longer and more positive as compared to those at the Polish community. They explained that such differences are not intentional; rather, they reflect economic and political histories of two different cultures. Coverage of topics also varies across language editions; Hecht and Gergle (2010) found that 74% of topics across the 25 Wikipedias they studied appeared in only one language edition.

Despite the growing number of cross-cultural differences documented across Wikipedias, one characteristic shows up time and time again as being common to all editions – a substantial gender gap. Table 1 presents estimates of the gender gap, as reported over the last few years. The first four studies in the table report estimates of the gender gap across all Wikipedias, while the last two studies report the gap within regional Wikipedias (the French and Greek language editions). As can be seen, while there is some variation as to the magnitude of the gender gap, what is clear is that all estimates fall well below Wikipedia's stated goal of reaching a 25% share for women editors².

Unlike the other studies in Table 1, Massa and Ze-

Copyright © 2016, Association for the Advancement of Artificial Intelligence (www.aaai.org). All rights reserved.

¹https://wikimediafoundation.org/wiki/Mission_statement

²https://en.wikipedia.org/wiki/Gender_bias_on_Wikipedia

	Readers		Editors	
	Men	Women	Men	Women
UNU-MERIT Survey (Glott, Schmidt, and Ghosh 2010)	68.9	30.5	86.7	12.7
Wikimedia Foundation Survey (2011)	56.0	44.0	90.0	9.0
Wikipedia Gender Gap Revisited (Hill & Shaw, 2013)			84.0	16.0
Massa & Zelenkauskaitė (2014)			82.6	17.4
Bourdelloise & Vincente (2014) (French Wiki)	61.5	38.5	81.4	18.6
Greek Wiki survey (2015)	62.5	37.5	85.2	14.7

Table 1: Estimated percentage of participants by gender.

lenkauskaitė (2014) did not rely on survey data but rather, they studied editors' profiles in order to estimate the gender gap. Specifically, they studied the 27 language communities with at least 20,000 active editors. They found that, of editors who disclose their gender, 17.4% are women. It is, of course, well known that users are often reluctant to disclose their gender online; in fact, women may even opt for a male or gender-neutral name as to avoid unwanted attention or harassment (Herring 1999). Indeed, Massa and Zelenkauskaitė estimated that only 4.85% of participants at the English Wikipedia disclosed their gender, as compared to 22.58% of participants at the Russian language edition. Nonetheless, it is of interest that their study produced estimates close to those of Hill and Shaw (2013), who developed a technique for correcting previous survey estimates for non-response bias.

Another intriguing aspect of the Massa and Zelenkauskaitė study is that they demonstrated a correlation between culture and the gender gap. In particular, they examined estimates from the 2011 UNESCO report on "Women in Science"³. Arguing that UNESCO's definition of *researchers* as "professionals [who engage] in the conception or creation of new knowledge, products, processes, methods and systems, as well as in the management of these projects," is much in sync with Wikipedians' conceptions of their role, they compared women's participation in research with their share of Wikipedia editorship, across a number of different regions and language editions.

There appears to be a moderate, negative correlation between the Wikipedia gender gap and women's participation in research. Table 2 provides examples from Massa and Zelenkauskaitė's results, showing some of the Wikipedias with relatively small/large gender gaps. Their results suggest

³<http://www.uis.unesco.org/FactSheets/Documents/fs14-women-science-2011-en.pdf>

Region / Wikipedia	% women researchers	% women editors
Slovenia/Slovenian	35.1	39.9
Estonia / Estonian	41.7	38.1
Lithuania/Lithuanian	51.4	36.2
Malaysia / Malay	37.7	31.3
Brazil / Portuguese	48.0	25.9
Portugal / Portuguese	43.0	25.9
Germany / German	23.2	15.2
Austria / German	26.4	15.2
Korea / Korean	15.6	13.9
Turkey / Turkish	36.3	13.6
Iran / Persian	26.6	11.1

Table 2: Wikipedias with relatively small/large gender gaps (Massa and Zelenkauskaitė 2014)

that the gender gap is sensitive to cultural factors and underscore Fichman and Hara's call to researchers to venture beyond the largest communities in order to better understand who participates at Wikipedia and why.

Case study: Greek Wikipedia

In the spirit of better understanding the global nature of the Wikipedia project and community, and in order to understand how issues of diversity and representation differ across cultures and languages, the current study focuses on a small Wikipedia. We present the first targeted study of Greek Wikipedia⁴ readers and editors. While Greek Wikipedia participants have provided their data in previous multi-edition studies (e.g., the 2010 UNU-MERIT survey reported 113 Greek Wiki respondents), to our knowledge this is the first study to focus specifically on this community using a Greek language survey instrument. In addition, it can be noted that the community was not included in the Massa and Zelenkauskaitė study, due to its small size.

Greek Wikipedia can be described as a regional Wikipedia; topics of both international and local interest are covered, and are often documented with local, Greek-language sources (Otterbacher 2014). At the time of writing, it ranks 52nd in size among the 281 language editions known to be currently active⁵. It contains a total of 114,860 entries and has 855 active users (i.e., registered editors who have made one or more edits in the last month)⁶. The small size of the community is not unexpected, given that Modern Greek itself is not a widely spoken language, being associated primarily with Greece, Cyprus and the Greek diaspora.

Methodology

The study was conducted by students and faculty of the Open University of Cyprus. Two survey instruments were created, based on the 2011 Wikipedia Readership and Editor

⁴<https://el.wikipedia.org/>

⁵https://en.wikipedia.org/wiki/List_of_Wikipedias

⁶Ibid.

surveys, in the Greek language. More specifically, the Editors survey consisted of three sections. The first consisted of six demographic items. The second section contained 10 questions that gauged their level of participation. Questions in the first two sections used closed-form responses. The third section contained 11 open-form items, which focused on respondents' motivations for participating, as well as their understanding of and feelings toward social norms in the community.

The Readership survey also consisted of three sections, all of which consisted of closed-form questions. The first contained five demographic questions. The second section posed 12 questions to respondents in order to gauge their experiences as Readers as well as their extent of participation. Finally, the third section aimed to understand readers' reasons for using Wikipedia and for not deciding to edit, as well as their views toward Wikipedians (i.e., editors) and the process of editing entries.

Recruitment of participants

A banner was placed at the Greek Wikipedia landing page during the first two weeks of December 2015. When a potential participant clicked on the banner, this brought him or her to a prescreening item; those who indicated that they had an active account at Wikipedia and had made *at least one edit at Greek Wikipedia*, were directed to our Editors' survey, while all others were directed to our Readership survey. We also recruited Editors for participation in semi-structured interviews; however, our current study focuses on the analysis and presentation of our survey data, and in particular, the items that shed light on the demographic characteristics of Greek Wikipedians and readers, their motivations for editing, and/or reasons for not editing.

Responses

We received a total of 359 responses to our Readership survey, and 78 responses to our Editors survey. For the purposes of the current analysis, we have removed the data of respondents who did not disclose their gender. This left a total of 344 Readers (215 men; 129 women) and 61 Editors (52 men; 9 women).

While it is difficult to gauge the population size of Greek Wikipedia readers, based on the figure of 855 active editors, we can say that we reached just over 9% of them. Of these, 78% disclosed their gender in survey responses. In addition, it must be noted that our very small sample of women editors (n=9 of an estimated 126 active women editors) means that we should interpret the results concerning gender differences among editors as being of an exploratory nature. Researchers have previously found that non-response bias led to overestimation of the Wikipedia gender gap (Hill and Shaw 2013). This is likely an issue in our study as well. However, unlike in the Hill and Shaw study, we are currently unaware of another survey that could be used in order to calculate a correction; this should be addressed in future work.

Readers and Editors at Greek Wikipedia

Table 3 presents the distribution of readers and editors by age and gender. Our estimates of the gender gap among

Age (years)	Readers		Editors	
	Men n=215	Women n=129	Men n=52	Women n=9
<16	12.8	4.7	8.2	
16-20	6.4	5.5	8.2	
21-35	21.8	21.2	27.9	6.6
36-50	12.5	4.1	29.5	4.9
51-65	5.8	1.7	11.5	1.6
>65	3.2	0.3		1.6
ALL	62.5	37.5	85.3	14.7

Table 3: Percent of respondents in each age/gender group.

# Edits	Men (n=52)	Women (n=9)
1 to 10	4 (7.7%)	2 (22.2%)
11 to 100	7 (13.5%)	0
101 to 1,000	8 (15.4%)	2 (22.2%)
1,001 to 10,000	12 (23.1%)	2 (22.2%)
>10,000	16 (30.7%)	1 (11.1%)
NA	5 (9.6%)	2 (22.2%)

Table 4: Number of total edits made by editors (count and %).

readers and editors are comparable to previous estimates, as shown in Table 1. As expected, the gender gap is much more pronounced among editors as compared to readers.

We found a substantial number of young women readers, as 35 (27% of all women reader respondents) reported being under the age of 20. However, all of our women editor respondents were older than 20 years. Five of our nine women editors were 36+ years old. These findings resonate with the 2011 Editor Study report, which states that "editors are older than believed," with 28% indicating their age as 40+ (p. 19). Likewise, a large fraction of editors (41%) report being men who are 36+. However, we also find younger men contributing, with 16% of editor respondents being men under 20 years old. Among readers, the age distributions for men and women were similar, with the mode response being the 21-35 years age group.

Level of Participation

Respondents who took our Editor Survey also answered questions concerning the intensity of their participation at Wikipedia. Table 4 shows the distribution of responses concerning the number of total edits made. The men who responded to our survey are very active according to their self-reports, with more than half having made more than 1,000 edits. In contrast, only three women editors reported this degree of activity. Likewise, as shown in Table 5, men participants reported creating more new entries, with over half having created more than 50 entries.

Table 6 details the language editions that respondents report using. Given that the English edition is the largest, we focus on respondents' participation in this community. What is of particular note is that fact that while men and women report similar rates of reading at English Wikipedia, that

# New entries	Men (n=52)	Women (n=9)
0	2 (3.9%)	0
1 to 10	15 (28.8%)	5 (55.6%)
11 to 50	7 (13.5%)	3 (33.3%)
51 to 100	4 (7.7%)	1 (11.1%)
>100	23 (44.2%)	
NA	1 (1.9%)	

Table 5: Total new entries made by editors (count and %)

	Readers		Editors	
	Men n=215	Women n=129	Men n=52	Women n=9
English	67.9	69.0	59.6	77.8
German	5.1	1.6	1.9	
French	2.8	3.9	1.9	
Italian	0.9	3.1	1.9	
Spanish	0.9	2.3		
Finnish		0.8	1.9	
Norwegian		0.8		
Russian		0.8		
Japanese	0.5			
Latin	0.5			
Turkish	0.5			

Table 6: Percent of respondents who participate in other language communities.

women editors are more active at the English Wikipedia as compared to men. The difference is not statistically significant; however, we believe it warrants further investigation. The 2011 Editor Survey also reports that the majority of editors worldwide contribute to more than one edition, with 76% editing in English (pp. 32-33).

Reasons for not contributing

We now consider possible roadblocks inhibiting readers at Greek Wikipedia from becoming editors. Table 7 details the most common responses to the closed-form question “*What are the reasons you have not yet edited an entry at Wikipedia?*” Respondents were asked to choose as many answers as apply. In Table 7, answers are ordered by decreasing significance in the differences by gender (i.e., magnitude of the test statistic), per the Z-test for two population proportions.

As can be seen, there are some salient differences between the responses of men and women readers. Lack of technical skills, but also information to contribute, appears to be an issue. Consistent with previous research (Collier and Bear 2012), responses suggest that women may have less confidence in their skills as compared to men respondents.

A difference that is arguably less expected is that women more often reported being satisfied to participate as readers, without any intention of evolving onto the role of editors. It can be noted that in the 2011 Readership Survey, this reason is cited as being the most prominent one for not editing; however, a gender breakdown is not provided. Many community designers aim to create mechanisms to encourage

	Men n=215	Women n=129	Z
I didn’t realize that Wikipedia can be edited	5.1	13.2	-2.66*
I am satisfied with the role of reader	18.6	28.7	-2.32*
I don’t know how to edit	10.7	17.1	-1.70*
Lack of information to contribute	24.2	31.0	-1.38
Fear that my contributions will be deleted	10.2	7.8	0.74
It’s too difficult to edit	7.9	6.2	0.59
Fear of making a mistake	36.3	38.0	-0.32
Don’t want to edit others’ work	23.3	24.8	-0.32
Lack of free time	30.7	31.8	-0.21
I lack the proper qualifications	7.0	6.2	0.29
Not needed; others do the work	10.2	10.1	0.03

Table 7: Top reasons why readers haven’t become editors (% participants) (*p<.05)

readers to evolve in their participation, gradually increasing their responsibilities such that they could eventually take on leadership roles (Preece and Shneiderman 2009). As such, this result is rather troubling in light of Wikipedia’s aim to close the editorship gender gap.

As explained by Collier and Bear (2012), the difference in the amount of free time that men and women have at their disposal has often been cited as a possible reason for the Wikipedia gender gap. For instance, they note that even in relatively progressive households where both heterosexual partners hold university faculty positions, that household labor falls more on women than men (Suitor, Mecom, and Feld 2001). Nonetheless, Collier and Bear’s study did not support the hypothesis that lack of free time prevents women from editing at Wikipedia.

Similarly, our data do not suggest that lack of free time contributes to the gender gap at Greek Wikipedia. Around one-third of men and women cited a lack of free time as a reason they do not participate as editors. Furthermore, readers were posed a follow-up question, “*Hypothetically, if you were to one day become a Wikipedia editor, how much time would you be willing to devote each week?*” to which responses showed no salient gender differences. The majority of men and women readers expressed willingness to volunteer up to two hours per week at Wikipedia, with very few being willing to volunteer more than two hours.

Readers were also asked to indicate which factors would make them more likely to contribute to Wikipedia. Table 8 shows the distribution of responses. As can be seen, the most salient difference here has to do with the feeling that one’s efforts will leave a lasting mark on the community. Twice as many men indicated that they would be more likely to contribute if they knew that their work would be kept and valued by others. In other words, our men readers were more concerned than women that their contributions could be reverted by others. Table 8 also reinforces the findings from Table 7,

	Men n=215	Women n=129	Z
Being confident that my contributions would be valued and kept	27.9	14.7	2.81**
Having deep knowledge or specialization in particular areas	48.4	62.8	-2.59**
A more friendly and usable editing environment	30.2	20.2	2.04*
Someone who could help show me how to contribute	39.1	45.7	-1.20
Compensation (symbolic or financial) for my work	16.7	19.4	0.26

Table 8: Factors/changes that would make contribution more likely (% participants). (*p<.05; **p<.01)

in that women readers may lack the confidence needed to contribute (i.e., feel that they do not have enough knowledge or information).

Images of Wikipedians

Finally, we gauged readers' views of "Wikipedians," as one's views of the members of a group can affect the extent to which he or she feels encouraged to join it (Antin 2011). First, readers were asked to indicate whether or not they had "*formed an image or opinion as to who the Wikipedia editors are.*" Slightly more men than women answered affirmatively (25% versus 18%, respectively). These respondents were invited to explain their views of Wikipedia Editors; 20 women and 34 men completed this field.

Several explanations (those of eight women and eight men) expressed the view that "anyone" could become a Wikipedia editor. Interestingly, we found no negative views of Wikipedians in the women's explanations. In contrast, three of the men's explanations were quite negative:

- "Very few [Wikipedians] are good, some are ideological fanatics who do a lot of damage and obviously, some are self-serving."
- "Entries are edited by users who do not understand the respective topic."
- "I would separate Wikipedians into two categories. The first consists of people interested in the dissemination of knowledge in society. They produce the highest quality and well-documented entries. The second set consists of those who try to use Wikipedia as a propaganda tool, promoting their own social, political and religious views, in the form of 'information.'"

One could venture to say that these readers have interpreted the openness of Wikipedia in a negative light, such that uninformed and self-serving individuals are allowed to contribute and possibly influence others. We could contrast such views against those described by Antin (2011),

who interviewed readers and "infrequent contributors" about their views on Wikipedians. Antin notes that the majority of participants in his study described a belief that because Wikipedia relies on voluntary contributions and participants' "intrinsic motivations," that its information is somehow "pure" and trustworthy. Given that our respondents provided only short answers in our current study, future work should probe such negative views of readers further.

Motivations for contribution

Our editors' survey posed open-ended questions to participants in order to learn about their motivations. Here, we explore their responses to the most general question posed, "*Why do you contribute to Wikipedia?*"

We first found all key words used by editors in their responses. We considered the entire corpus of answers provided by all editors; the men contributed a total of 1,397 words across their 52 responses, while women wrote a total of 219 words across nine responses. We stemmed all words in the corpus, and found the respective wordcounts across all 61 responses. We identified the sets of words in Table 9 as being the most frequently occurring content words. We then found the percentage of men and women editors that used each set of words in their answers. Because of the small number of women editors, we are unable to test for statistically significant differences and thus, we view these initial results as exploratory in nature, which can help guide our future work.

As can be seen, for most sets of key words, there were small differences between the percentage of men and women editors who used them. In their responses as to why they contribute, many editors mentioned values related to the Wikipedia project, such as it being a free and open resource; similarly, many used words relating to community values, the spirit of teamwork, and volunteering. According to Rafaeli and Ariel (2008), at Wikipedia "the rhetoric of community is to be found everywhere." Therefore, it is not surprising that we also found strong perceptions of community among our respondents. In addition, as expected, words relating to knowledge and information were mentioned equally as often by men versus women.

Only two sets of words suggest interesting differences with respect to their frequency of use by men and women. Women, more so than men, used words relating to enjoyment or pleasure. In addition, more women used words related to learning in their explanations of why they contribute to Wikipedia. Although we posed respondents with open-ended questions, our results resonate with those of previous studies. For instance, in the 2011 Editors Survey, respondents responded to a closed-ended item concerning the reasons they continue to edit. Frequent reasons cited included liking the idea of volunteering and sharing knowledge (71% of respondents), believing that information should be free (69%), and that editing is simply fun (60%). In an earlier study, Nov (2007) found that "fun" was the motivational factor most closely correlated to participants' levels of contributions at Wikipedia.

	Men n=52	Women n=9
Enjoyment / enjoy Pleasure / pleasing Ευχαρίστηση / Ευχαριστεί / Ευχαριστιέμαι Απόλαυση / Απολαμβάνω	5 (9.6%)	4 (44.4%)
Learning / learn Μαθαίνω/-εις Μαθήματα Εκμάθηση	6 (11.5%)	3 (33.3%)
Freedom / free Open Ελευθερία Ελεύθερο/-η Ανοιχτό/-ή	11 (21.2%)	1 (11.1%)
Community Wikipedians Group Βικιπαιδιστής/-ές Κοινωνία Κοινό Κοινόχρηστο Ομαδικότητα	7 (13.5%)	2 (22.2%)
Interest / interesting Ενδιαφέρον/-τα Ενδιαφέρει/-ουν Ενδιαφέρομαι	4 (7.7%)	1 (11.1%)
Volunteer/-ing Help/-ing Εθελοντισμός Εθελοντικό/-ή Προσφορά Συνεισφέρω Συνεισφορά	10 (19.2%)	2 (22.2%)
Knowledge Γνώση / Γνώσεις	(36.5%)	3 (33.3%)
Information / inform Πληροφορία/-ίες Πληροφορώ	6 (11.5%)	1 (11.1%)

Table 9: Counts (and %) of editors using sets of keywords in “why” responses.

Discussion

Inspired by recent work on the editorship gender gap in the context of a global Wikipedia, we presented a targeted study of a small, regional community. In our study of editors at Greek Wikipedia, women represented only 14.7% of respondents. This figure is arguably low as compared to other regional Wikipedias, as reported in Table 2. This is especially true if one takes into consideration that the proportion of women researchers in the corresponding regions (Greece – 36.7% and Cyprus 37.3%⁷) is close to the levels reported in Eastern European countries, which are often associated with smaller Wikipedia gender gaps. Like previous studies (e.g., Antin et al., 2011), we also found that men editors have higher activity levels; in our study, they reported mak-

⁷2015 UNESCO report on “Women in Science”, <http://www.uis.unesco.org/ScienceTechnology/Documents/fs34-2015-women/%20in/%20science-en.pdf>

ing more revisions as well as creating more new entries, as compared to women.

Given that all estimates of the gender gap still fall short of Wikipedia’s stated goal of a 25% editorship contribution for women, it is important to consider the reasons for this gap. The results of our readership and editor surveys at Greek Wikipedia confirmed that some previous findings resulting from research on all of Wikipedia also apply specifically to the Greek language community. For instance, we find no evidence that women have less free time to devote to the project, as compared to men. On the other hand, we do find that *lack of confidence* in what one knows – both in terms of information to contribute, but also in terms of the technical know-how required for editing, prevents more women readers from editing.

Beyond these known explanations, our study revealed some new insights with respect to women’s motivations for contributing to Greek Wikipedia. Taking the results of our readership and editor studies together, it appears that women more often read and/or edit Wikipedia for their own personal satisfaction and enjoyment. For instance, fear of one’s contribution being reverted was cited as a reason holding back men from editing, while women more often reported simply being happy to remain readers. Likewise, women editors, in their open-ended responses as to why they contribute to Wikipedia, more often used words related to enjoyment and learning, as compared to men. In sum, women’s motivations seem to be of a more personal nature, rather than relating to characteristics of the Wikipedia community and their acceptance from others.

Participation in global Wikipedia

The 2011 Editor Survey, conducted in 21 languages across the Wikipedia community, revealed that the English-language community is the most popular, with 76% of editors contributing to it (p. 31). The report cited a need to increase the diversity of editors, not only in terms of gender but also in terms of geographical location and language. Specifically, there is awareness that “English Wikipedia draws editors from other projects, sometimes at the expense of less mature projects,” (p. 30).

While the difference was not statistically significant, we found it intriguing that more women editors at Greek Wikipedia reported that they also edited at English Wikipedia, as compared to the men editors. We would like to further investigate their behaviors in order to learn what they contribute to each language edition, how often, and the extent to which their participation at English Wikipedia draws their attention away from the smaller community.

Limitations

Our study is, of course, subject to the same limitations of most surveys; as we recruited participants via a banner at the Greek Wikipedia landing page, participants needed to opt into our study. This means that participants are likely more invested in the Wikipedia project as compared to non-respondents and their behaviors and attitudes might not represent participants at large. In addition, it may mean that

we have underestimated the proportion of Wikipedia readers and editors who are women, if in fact women are less likely to participate in a survey (e.g., because they are less interested in Wikipedia as a project or community) (Hill and Shaw 2013). In addition, to date, we do not have observational data that reflect participants' actual behaviors at Wikipedia (e.g., frequency of use or edits made). In other words, we have taken respondents' self-reported behaviors at face value.

Conclusion

The mission of the Wikipedia project is to engage people around the world, and *could* become our most comprehensive repository of the collective knowledge of humankind. Nonetheless, the project is challenged by issues of participation and diversity, and some have claimed that only "some of all human knowledge" is being recorded (Forte et al. 2012).

In reality, while the gender gap has received much attention in recent years, it is only one of several gaps. Facilitating the creation of "quality content in native languages" is cited in the 2011 Editor Survey report as a goal for the community. However, to achieve this, we need to understand how the demographics of participants vary between regional communities, and the extent to which participation is driven by common motivations. Of course, gender differences must always be kept in mind; interestingly enough, many researchers approach gender itself as a form of culture, associated with particular social norms and language practices (Mulac, Bradac, and Gibbons 2001). Finally, the particular motivations to contribute to local Wikipedias, and the trade-offs between one's participation locally versus globally, at the "main" (i.e., English) Wikipedia, is an area ripe for future study.

Acknowledgements

We are grateful to the other student researchers involved in the project. In addition, special thanks go to the following administrators and bureaucrats at Greek Wikipedia, who enabled us to place the banner in order to recruit our participants: Konstantinos Stampoulis (geraki), Manos Kefalas (ManosHacker), Sotiris Kilafis (Sotkil) and FocalPoint. In addition, we thank the Workshop organizers for their constructive comments on an earlier draft of this paper.

References

Antin, J.; Yee, R.; Cheshire, C.; and Nov, O. 2011. Gender Differences in Wikipedia Editing. In *Proceedings of the 7th International Symposium on Wikis and Open Collaboration*, WikiSym '11, 11–14. New York, NY, USA: ACM.

Antin, J. 2011. My Kind of People?: Perceptions About Wikipedia Contributors and Their Motivations. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, CHI '11, 3411–3420. New York, NY, USA: ACM.

Bourdelloise, H., and Vicente, M. 2014. Wikipedia's contribution: a gender's question. *Global Wikipedia: International and cross-cultural issues in online collaboration*, Lanham (MD), Scarecrow Press.

Callahan, E. S., and Herring, S. C. 2011. Cultural bias in Wikipedia content on famous persons. *Journal of the American Society for Information Science and Technology* 62(10):1899–1915.

Collier, B., and Bear, J. 2012. Conflict, Criticism, or Confidence: An Empirical Examination of the Gender Gap in Wikipedia Contributions. In *Proceedings of the ACM 2012 Conference on Computer Supported Cooperative Work*, CSCW '12, 383–392. New York, NY, USA: ACM.

Fichman, P., and Hara, N. 2014. Introduction. In Fichman, P., and Hara, N., eds., *Global Wikipedia: International and Cross-Cultural Issues in Online Collaboration*. Lanham: Rowman & Littlefield Publishers, Inc.

Forte, A.; Antin, J.; Bardzell, S.; Honeywell, L.; Riedl, J.; and Stierch, S. 2012. Some of All Human Knowledge: Gender and Participation in Peer Production. In *Proceedings of the ACM 2012 Conference on Computer Supported Cooperative Work Companion*, CSCW '12, 33–36. New York, NY, USA: ACM.

Glott, R.; Schmidt, P.; and Ghosh, R. 2010. Wikipedia Survey: Overview of Results. https://web.archive.org/web/20100414165445/http://wikipediasurvey.org/docs/Wikipedia_Overview_15March2010-FINAL.pdf. [Online; accessed 18-March-2016].

Hara, N.; Shachaf, P.; and Hew, K. F. 2010. Cross-cultural analysis of the Wikipedia community. *Journal of the American Society for Information Science and Technology* 61(10):2097–2108.

Hecht, B., and Gergle, D. 2010. The Tower of Babel Meets Web 2.0: User-generated Content and Its Applications in a Multilingual Context. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, CHI '10, 291–300. New York, NY, USA: ACM.

Herring, S. C. 1999. The Rhetorical Dynamics of Gender Harassment On-Line. *The Information Society* 15(3):151–167.

Hill, B. M., and Shaw, A. 2013. The Wikipedia Gender Gap Revisited: Characterizing Survey Response Bias with Propensity Score Estimation. *PLoS ONE* 8(6):1–5.

Hofstede, G. 1991. *Cultures and Organizations: Software of the Mind*. London: McGraw-Hill Education.

Lam, S. T. K.; Uduwage, A.; Dong, Z.; Sen, S.; Musicant, D. R.; Terveen, L.; and Riedl, J. 2011. WP:Clubhouse?: An Exploration of Wikipedia's Gender Imbalance. In *Proceedings of the 7th International Symposium on Wikis and Open Collaboration*, WikiSym '11, 1–10. New York, NY, USA: ACM.

Lang, R. 1993. Management Revue. *Management Revue* 4(1):62–65.

Massa, P., and Zelenkauskaitė, A. 2014. Gender Gap in Wikipedia Editing: A Cross Language Comparison. In Fichman, P., and Hara, N., eds., *Global Wikipedia: International and Cross-Cultural Issues in Online Collaboration*. Lanham: Rowman & Littlefield Publishers (May 15, 2014). 49–68.

Mulac, A.; Bradac, J.; and Gibbons, P. 2001. Empirical support for the gender-as-culture hypothesis. *Human Communication Research* 27(1):121–152.

Nov, O. 2007. What Motivates Wikipedians? *Commun. ACM* 50(11):60–64.

Otterbacher, J. 2014. Our News, Their Events?: A Comparison of Archived Current Events on English and Greek Wikipedias.

- In Fichman, P., and Hara, N., eds., *Global Wikipedia: International and Cross-Cultural Issues in Online Collaboration*. Rowman & Littlefield Publishers (May 15, 2014). 49–68.
- Pfeil, U.; Zaphiris, P.; and Ang, C. S. 2006. Cultural Differences in Collaborative Authoring of Wikipedia. *Journal of Computer-Mediated Communication* 12(1):88–113.
- Preece, J., and Shneiderman, B. 2009. The reader-to-leader framework: Motivating technology-mediated social participation. *AIS Transactions on Human-Computer Interaction* 1(1):13–32.
- Rafaëli, S., and Ariel, Y. 2008. Online Motivational Factors: Incentives for Participation and Contribution in Wikipedia. In Barak, A., ed., *Psychological Aspects of Cyberspace*. Cambridge University Press. 243–267. Cambridge Books Online.
- Suitor, J. J.; Mecom, D.; and Feld, I. S. 2001. Gender, household labor, and scholarly productivity among university professors. *Gender Issues* 19(4):50–67.
- Wikimedia. 2011a. Editor Survey 2011 - Meta, discussion about Wikimedia projects. https://meta.wikimedia.org/w/index.php?title=Editor_Survey_2011&oldid=15188039. [Online; accessed 18-March-2016].
- Wikimedia. 2011b. Research:Wikipedia Readership Survey 2011/Results. https://meta.wikimedia.org/w/index.php?title=Research:Wikipedia_Readership_Survey_2011/Results&oldid=3382707. [Online; accessed 18-March-2016].