Motivation for Participation in Online Neighborhood Watch Communities: An Empirical Study Involving Invitation Letters

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Abstract—This paper presents a three-part experiment designed to investigate the motivations of users of a community safety and neighborhood watch social networking website. The experiment centers around an intervention into the invitation system that current users employ to invite nonmembers to join the site, and involves several versions of an invitation email which differ by expressing one of four possible motivations for using such a site. The research presented investigates how potential users' choice of whether or not to join the site is affected by the use case presented by the invitation. It also includes an investigation of the motivations of current users of the site, as reported in an online survey. The experiment yielded no significant difference in responses to the emails. Overall, invitations that included a specific motivation slightly outperformed those which did not, but not to a statistically significant degree. We conclude that although users have specific motivations for using the site, as reported in the survey, attempting to increase response rates to invitation emails by suggesting use cases of the site is surprisingly unlikely to be successful.

Index Terms—online communities, social media, community safety, neighborhood watch, participation, motivation, invitations

I. INTRODUCTION

With the increasing popularity of social networks, it is becoming increasingly important for the administrators of those networks to understand the motivations their users have for joining and staying active in the community. By understanding the motivations non-users have for joining such sites, administrators are able to create more effective and more persuasive appeals to potential users. By understanding the motivation of long-term users to continue to participate, administrators are better able to retain them. This paper concerns a small subset of online social networking sites, those created around community safety and neighborhood watch (e.g. [6], [8], [9], [17].) The unique characteristics of such sites suggest that many users may share common motivations, and that those motivations may differ from those present in other social networking sites. In this paper, the primary focus will be on the users' initial motivations for joining such a site. The presented experiment investigates the motivations of users in one such site, Nation of Neighbors [9]. By using a set of potential motivations derived from previous work in the area, the experimenters developed a set of emails which express different reasons for joining the community, and observed what effect the different motives have on the

response rates. These effects were compared against survey data, which include the self-reported motivations of current users of the site.

II. BACKGROUND / MOTIVATION

Nation of Neighbors was founded in 2005 in Jefferson Country, WV in response to a rash of robberies that included the home of founder Art Hanson. In the wake of the burglary, Art began discussing the issue with other victims and other members of the community, and realized that if there had been a system in place for discussing crime and suspicious activity in their neighborhood, they may have been a way to prevent some of the crimes, or at least to be more aware of the community's situation, and thus more vigilant. Eventually, thanks in part to the cooperation within the community, the perpetrators were apprehended, and some of the stolen property was recovered. From this early beginning, Art, along with Ron Sikerica, built a portal for discussing crime and security issues in the community; it was eventually renamed Nation of Neighbors and expanded to communities nationwide.

Like other neighborhood watch tools, Nation of Neighbors is organized into communities based on geographic locations, and the site enables users to discuss crime, suspicious activity, and other topics related to local safety and security. The main page for each community can contain a short piece of introductory text written by the community's administrators, a picture, activity and membership information, a map showing the boundaries of the community, and links to the community's administrators' pages. Additionally, Nation of Neighbors allows local law enforcement to join the community in order to monitor the information that is posted there, and if a sheriff's office or local police department has joined the site, there is a link to their website on the community's main page. This capability is unique to Nation of Neighbors. A sample community page is presented in Figure 1.

The main user functionality of the site is filing a "report" by clicking the "File a Report" button present on every Nation of Neighbors page. The user is then prompted to choose a category for the report, enter additional details, and choose the date and location associated with the report.

The user can also add a police contact, or additional files. When this is done, the report receives its own webpage where its details are listed, along with a map showing the location
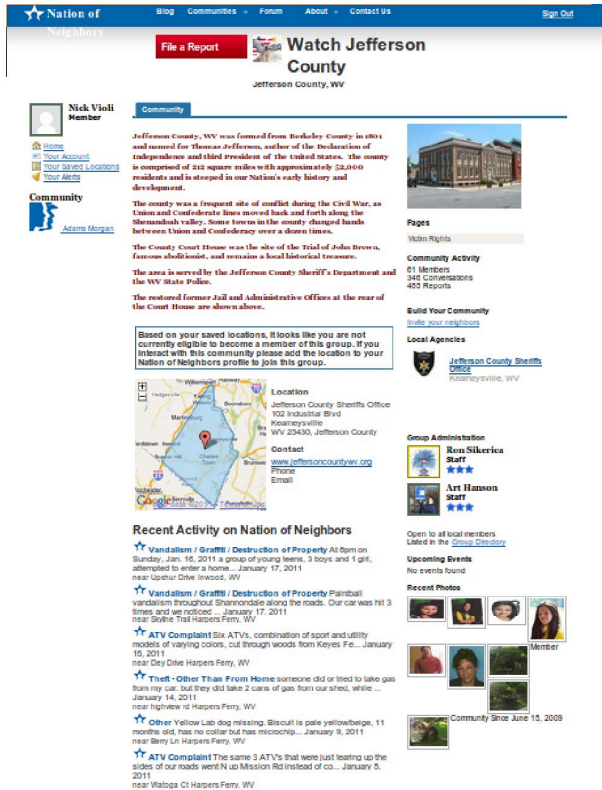
Fig. 1: Nation of Neighbors Community Page

associated with the report, and other events which have been reported in the vicinity. On this page, users can discuss the filed report (see Figure 2). Additionally, all reports are listed on the community's main page in reverse-chronological order.

Similar to many other social networking sites, Nation of Neighbors allows current users to send emails to other people they would like to invite to participate in their community. Since nearly all interaction on the site focuses on local issues, this system is most commonly used to send invitations to his or her friends, neighbors, and acquaintances living nearby, or to members of a pre-existing neighborhood watch program which is affiliated either offline, or using an email list or other online tool. Examples of a community using another site devoted to local neighborhoods, and one using an online messageboard tool are presented in Figures 3 and 4.

Because of the narrow focus of sites like Nation of Neighbors, it is probable that many of the site's users are motivated to participate by similar goals, and furthermore that these motivations might differ from those driving the use of other types of social networking sites. Two of the most important features which differentiate these neighborhood watch / community safety sites are the implicit overlap of online and offline connections, and the fact that they concern the personal and property safety of the users and the users' friends and neighbors. Previous research on the intrinsic motivations for participating in activities for social good are likely to be applicable to the users of these sites.

Prior to any intervention, the emails generated by the online

invitation system read,

> I'm a member of Nation of Neighbors. I thought you might be interested in joining us, so here's an invitation to become a member.

The goal of the main experiment was to observe the effect on the acceptance rate of modifying this text to emphasize one of a group of potential underlying motivations. By comparing the response rates to emails offering different and distinct motivations, the experiment hinted at the reasons potential users have for joining the community. Additionally, a survey which includes a number of questions regarding users' motivations for participating in the site was presented to all Nation of Neighbors users. These two studies are designed to enable comparison of the reasons non-users have for joining the site to the self-reported motivations more longstanding users have for continuing to participate. Thereby, this research attempts to present a holistic picture of the motivation of users at different points in their affiliation with the site.

III. RELATED WORK

The 2002 paper by Batson et al [1] provides a framework of sources of motivation in prosocial communities. In this paper, the authors identify four possible motivations for community involvement: egoism, altruism, collectivism, and principlism. They conclude by suggesting that "strategies that combine appeals to either altruism or collectivism with appeals to principle may be especially promising." A number of other authors have contributed work on the motivations of users in various social networking websites and in various situations. Joinson explored the motivation of Facebook users [11], identifying seven unique uses and gratifications. DiMicco, et al. investigated users' motivations for using social networking sites at work [4], finding that professionals use internal social networks to connect personally with coworkers, advance their career, and campaign for projects of interest. Burke, et al. studied how specific interactions with new users can maximize their future contributions [3]. They tested four mechanisms for affecting contribution levels: social learning, singling out, feedback, and distrubtion. In a similar vein, Beenen, et al. explored what design principles affected user contribution [13]. They found that "individuals contributed when they were reminded of their uniqueness and when they were given specific and challenging goals." Finally, Preece, et al. investigated what motivates technology-mediated social participation [15], creating a framework of four distinct levels of participation: reader, contributor, collaborator, and finally leader.

There has been a significant amount of work regarding invitations to social networking sites and other social activities. One focus has been on the effects of introductions and requests on the level of participation of the invited user, and the success of subsequent online conversation [2]. Harper et al. found a significant increase in participation from users who received a personalized introduction, and one that emphasizes social interaction [10], and Freyne et al. found a similar increase when appeals to add friends and take other actions were included early in the signup process [7]. More generally, Kraut
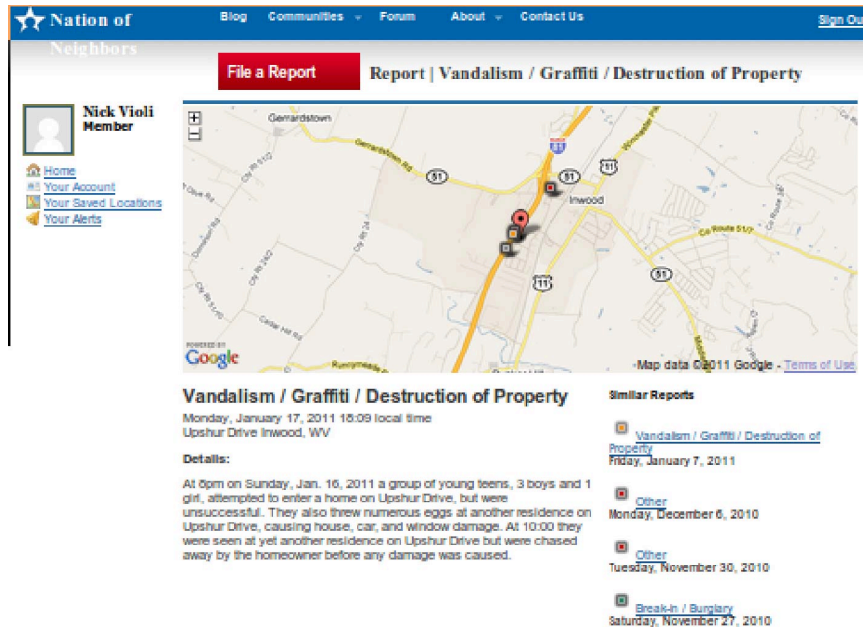
Fig. 2: Report in a Nation of Neighbors Community

Fig. 3: Community Page on i-Neighbors

and Resnick offer an overview of the challenges involved in recruiting new members, and various problems related to new members in a forthcoming book [12]. On the recruitment side, they suggest considering the differences between recruiting via word of mouth and impersonal channels, and they extol the benefits of "recruiting from social networks of existing members," and "making it easy for users to share content from a community site with their friends."

Additionally, many researchers have focused on using social networks to produce prosocial behavior, and actions that benefit the larger community. Mankoff, et al. found that "strong participation in social movements is most likely when activities can be easily integrated into daily life," suggesting that integrating prosocial feedback into commonly used sites is most likely to have the greatest effect on participation [14]. Additionally, they find that taking advantage of existing social networks through popular websites can create "motivational schemes that leverage group membership." Tidwell found a link between strong identification with an organization and increased levels of prosocial behavior, commitment, and satisfaction [16]. Finally, Ellison et al. studied the effects of overlapping online and offline social networks, finding that users of social networking sites who have offline relationships with their contacts use these tools more to strengthen extant relationships, and less to forge new ones [5].

IV. HYPOTHESIS

Based on Burke's findings [2], the author believes that invitations that offer a more personal use case will be easier to understand and more immediately affecting than those that present more abstract ideals. Furthermore, the author believes that invitations which emphasize the recipient's personal safety, as well as the safety of his or her individual friends and neighbors, will be more effective in recruiting potential members. By contrast, the author believes that the invitations which present safety and security as byproducts of more theoreticl concepts such as community and justice will be seen as less likely to affect the recipient's life directly.

Nation of Neighbors has invitation records for 16 months prior to the start of the experiment. The proportion of accepted invitations in this period will be used as the control condition against which the experimental conditions will be tested, and each of the modified emails will be compared to this value

Fig. 4: Community Page on Google Groups

using a two-tailed binomial test. The level of significance used will be $\alpha = 0.05$.

V. METHODOLOGY

After reviewing the literature, we determined that the theory of motivation presented by Batson et al.[1] was the most applicable for the purposes of the experiment. As stated previously, the authors lay out four potential motivations for members of communities organized for social good: egoism, altruism, collectivism, and principlism. As defined in [1], egoism is "serving the community to benefit oneself;" altruism is "serving the community to benefit one or more other individuals;" collectivism is "serving the community to benefit a group;" and princlipism is "serving the community to uphold moral principles."

Based on this framework, the experimenters wrote four different versions of an invitation email, each of which was designed to express one of the four motivations. The result is shown in Figure **??**, with the differences between them bolded.

Once the emails were completed, the experiment consisted of three main parts:

1) Pre-experiment interviews
2) Live experiment
3) Online survey

The first part of the experiment was designed to show that the email invitations indeed expressed the intended motivations. The experimenters conducted a small number of short interviews with members of the UMD community as follows: First, the interviewees were asked to read the text of the four potential email invitations, along with a control email (containing the text that was in use before the experiment), and then to offer their reactions, including what they thought was being expressed in each, and the differences between the implicit suggestions of each. Next, they were instructed to read the definitions of the four motivations as listed above, and they were asked which of the four motivations, if any, was being expressed by each of the email invitations.

Thus assured that the emails represented the desired motivations, the site's invitation functionality was modified to randomly choose one of the five emails to send to the invitee every time the invitation system was invoked. The following data were recorded for each invitation event:

- Date and time the invitation was sent,
- Which version of the invitation was sent,
- Date and time the invitee accepted the invitation and joined the site (if applicable).

The final phase of the experiment was to compare the motivations suggested by the email intervention phase with those self-reported by a sample of the Nation of Neighbors userbase. A 10-minute online survey was presented to the entire Nation of Neighbors community, and included a section regarding what factors influenced the user to join and continue to participate in the site. The motivation section consisted of four questions, closely resembling the four versions of the email. Each question presented a first-person statement of why the survey respondent uses Nation of Neighbors, and asks the respondent to rank their agreement with the statement on a five-point scale (strongly disagree, disagree, unsure, agree, strongly agree.) For example, the question corresponding to the altruism motivation read,

> I use Nation of Neighbors because it HELPS ME TO BE AWARE of crimes and suspicious situations in our neighborhood.

VI. RESULTS

A. Pre-Experiment Interviews

Pre-experiment interviews were conducted on four members of the UMD community. Before being provided with the four potential motivations, the interviewees were asked to read through the emails and give their opinions on the differences between them, and on what they thought about each one individually. Here is a sample of phrases used to describe the four emails:

- *egoism*: "selfish," uses the mentions of crime and suspicious activity as a "scare tactic," "missing emphasis on community."
- *altruism*: emphasizes "sharing, giving," emphasizes "contribution," may scare off people who want to participate in the community passively
- *collectivism*: emphasizes "personal connection to the community," emphasizes "working together", "discussions"
- *principlism*: emphasizes "justice," "social action," "more than [simply] reporting and being informed"

Egoism - I'm a member of Nation of Neighbors, a website that **helps me to be aware of** crime and suspicious activity in our neighborhood. It makes me feel good **to be connected with my neighbors and know that they might help me be safer too**.

Altruism - I'm a member of Nation of Neighbors, a website that **allows me to share information about** crime and suspicious activity in our neighborhood. It makes me feel good **to be able to help my neighbors and make their lives safer**.

Collectivism - I'm a member of Nation of Neighbors, a website that **allows our neighborhood to work together to report and discuss** crime and suspicious activity. It makes me feel good **that I am helping to build a connected, safer, more caring community**.

Principlism - I'm a member of Nation of Neighbors, a website that **allows its users to contribute to justice and safety in our neighborhood by reporting** crime and suspicious activity. It makes me feel good **to know I am joining a group of devoted citizens who are building a better community**.

Fig. 5: Emails used in the experiment

Version	Sent	Accepted	Accepted %
Egoism	58	19	32.76%
Altruism	68	23	33.82%
Collectivism	59	17	28.81%
Principlism	56	16	28.57%
Control	58	17	29.31%

TABLE I: Responses to the Five Email Versions

All four of the interviewees identified the "collectivism" invitation as the one they would most like to receive.

All four of the interviewees were able to successfully match each of the four emails with its intended motivation, and were able to identify the control.

B. Main Experiment

As previously stated, Nation of Neighbors had records for 16 months of invitation log data, in which all invitation emails used the pre-experiment wording. In this time period, 1,523 invitations were sent, and 423 were accepted, yielding a control acceptance rate of 27.77%.

In the course of the experiment, 299 invitation emails were randomly generated and sent, resulting in the following distribution: egoism: 58; altruism: 68; collectivism: 59; principlism: 56; control: 58. They received the following number of acceptances: egoism: 19 (32.76%); altruism: 23 (33.82%); collectivism: 17 (28.81%); principlism: 16 (28.57%); control: 17 (29.31%). A two-tailed binomial test was run on each of these data, using 27.77% acceptance rate as the null hypothesis, however no significant effect was found for any experimental condition. By combining all (non-control) experimental conditions into a single condition, a total of 241 emails were sent, and 75 were accepted (31.12%). Testing these data with a binomial probability test yields a lower p value than any of the individual conditions, but at 13.84% for the single-tailed version, the test still yields no statistically significant difference.

C. Survey of Current Users

Current Nation of Neighbors users filled out survey questions regarding their motivation for using the site. The results are presented in Figure 6 (n=102).
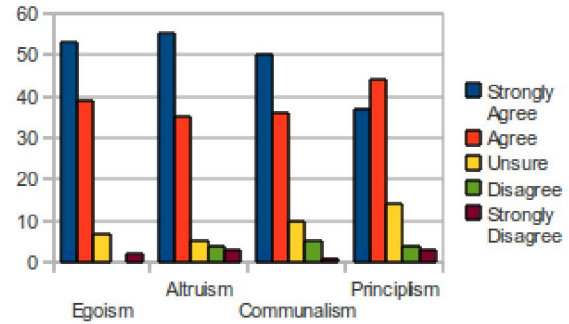

Fig. 6: Responses to Survey Regarding Site Use Motivation

As this chart shows, users identified more with the egoism, altruism, and collectivism motivations, with principlism receiving 13 fewer "Strongly Agree" responses than the next-lowest motivation, collectivism. With the "Strongly Agree" and "Agree" responses combined, principlism still received fewer of this combined response than any of the others. Altruism had the largest number of "Strongly Agree" responses, however it also received seven "Disagree" or "Strongly Disagree" responses, which was tied with principlism as the highest negative sentiment. By using the combination of "Strongly Agree" and "Agree" responses, egoism received the most favorable responses, while also receiving the fewest "Disagree" or "Strongly Disagree" responses.

VII. ANALYSIS

While we expected that the framework presented by Batson [1] and verified elsewhere would produce a meaningful effect observable as a significant difference between the four email versions, we were surprised to discover that this was not the case.

There are two possible explanations for such a lack of effect. First, it is possible that these four motivations are all equally persuasive. Second, and more likely, it is possible that the motivation proffered in the email invitation has little effect compared to other factors involved in the recipient's decision whether or not to join the site, such as the bond with the inviter.

From the survey results, which do show a strong bias in the responses to the four motivations, we can discern that

users of the site do indeed feel more affinity to some of the motivations than others. Taking both results together, we can conclude that although long-term users of the site have well-articulated motivations for its use, new users either do not feel a strong affinity to individual proffered motivations, or offering motivations in an invitation email does not affect the invitee's choice of whether or not to join. In either case, it seems fair to conclude that, at least in this limited experiment, this type of personalization of invitation text is not an important factor in the user's decision whether or not to join the site, and that this method of increasing the invitation response rate is not worthwhile for community administrators.

VIII. Conclusions and Future Work

While Batson provides a strong and convincing framework for the motivations of users of prosocial communities, expressing these motivations in email invitation text had no observable effect on the response rates to the invitations. Meanwhile, we reported that egoism, altruism, and collectivism motivate users of the site more than principlism, according to the self-reported results of a user survey.

The lack of significant effect in the email experiment may imply that there is another factor which more strongly determines whether or not the invitee will accept the invitation, and determining what this factor is will be an important step in extending and continuing this research. In the case of the "friend-of-a-friend" invitation system in Nation of Neighbors, it might be theorized that the bonds between the inviter and the invitee have the strongest effect on the invitee's decision, but it will also be important to control for other factors.

One further fact to consider when interpreting these results is the psychological difference between only being shown one of four possible motivations (as in the email experiment) as compared with being shown all four, and asked to compare them (as in the pre-experiment interview and user survey). Having each study participant only be shown one at a time may isolate their true reaction to the suggested motivation: as they are being asked to act on the one motivation they are being presented with, they are better prepared to evaluate it on its own merits. On the other hand, when all four motivations are presented side-by-side, the subject can compare them, and thus may feel a stronger affinity to one in contrast to the others, whereas perhaps he or she may have rated it lower if it had been presented on its own.

There are a number of intriguing questions presented by this experiment, and a number of directions in which to take future research. To be more certain that there is really no difference in response rates to the four proffered motivations, it would be helpful to repeat the experiment and vary the wording of the emails so as to remove any tangential effect caused by the wording, or any other irrelevant factor. Additionally, it would be helpful to conduct a series of interviews with people who received the invitation emails (both those who accepted the invitation and those who did not). Although the user survey provides us with some information on the users' self-identified motivations for using the site, it would be advantageous to hear the users themselves talk about their motivations. This may provide us with other motivations which we had not heretofore considered, and it would strengthen the link between email response rates and user motivations. Finally, it would be extremely interesting to compare the results reported here to the results of similar experiments run on other social networking websites. It would be very intriguing both to compare the motivations of Nation of Neighbors members to those of different neighborhood watch / community safety network members, as well as to compare the motivations of users of all such communities to users of different types of social networks.

IX. Acknowledgments

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