

Help is on the Way: Patterns of Responses to Resource Requests on Facebook

Cliff Lampe

University of Michigan
School of Information
105 S. State St
Ann Arbor, MI 48109
cacl@umich.edu

Rebecca Gray

Michigan State University
409 CommArts Building
East Lansing, MI 48824
rebecca.a.gray@gmail.com

Andrew T. Fiore

Facebook
Menlo Park, CA
atfiore@fb.com

Nicole B. Ellison

University of Michigan
School of Information
105 S. State St
Ann Arbor, MI 48109
enicole@umich.edu

ABSTRACT

Research suggests that social network sites can support social capital exchanges, which are often triggered by requests for assistance, such as seeking recommendations or asking for favors. Responsiveness to these requests for help is important to study because these interactions have the potential to affect users' overall satisfaction with the experience of using SNSs, signal social grooming functions that are an essential part of relationship maintenance, and affect social capital processes. In this paper, we study a corpus of public status updates posted to Facebook (N=7,466) in order to identify the pattern of responses to status updates that attempt to mobilize resources from the poster's Facebook network. Findings suggest that mobilization requests are treated differently than other kinds of posts; posts that attempt to mobilize help receive more comments than non-mobilization attempts. Additionally, responses occur more quickly and are shaped by the type of support requested (e.g., a recommendation vs. a favor). These findings help us better understand the role of help-seeking behaviors in the social capital conversion process as it unfolds via social media.

Author Keywords

Social Search, Facebook, Social Network Sites, Social Capital, Mobilization, LIWC.

ACM Classification Keywords

H.5.2 [Information Interfaces and Presentation]: User Interfaces - Interaction styles.

INTRODUCTION

People engage in a wide range of activities on social network sites (SNSs) like Facebook. One of those activities is using the status update feature of the site to broadcast requests for help from their network. Related to studies of

“Social Search” [1], we examine how users use SNSs to mobilize resources, including emotional support, opinions, social coordination and physical assistance with tasks. While recent research has examined various types of mobilization requests – requests for help, information, or other kinds of support – broadcasted via Facebook, in this paper we examine the *patterns of responses* to mobilization attempts. One rough measure of the effectiveness of using social network sites as a platform to receive help is whether requests receive any responses at all, and if so how many and when do they receive them. Requests for help on Facebook are important to study because they instantiate *social capital in action*. Social capital describes the benefits that people receive from social interactions with others, and research shows that levels of perceived social capital are related to SNS use [6, 11, 16, 25].

Using a large collection of public status updates from Facebook, we show that responsiveness to mobilization attempts differs significantly in a number of ways from responsiveness to posts that are not mobilization requests: responses differ in prevalence, in how quickly they are contributed, in the extent to which they are contributed by the original posters themselves, and in their linguistic composition. The heightened level of engagement associated with these mobilization requests suggests that successful identification of these posts may eventually lead to systems that better facilitate the exchange of resources between individuals online – and the social capital accrual embodied in these exchanges.

LITERATURE REVIEW

Previous studies have shown that receiving comments or other forms of feedback in online interactions is important for sustained participation in social media and online communities. For example, Usenet researchers found that almost a third of posts received no responses at all, which had negative effects on future posting behavior [3]. On Slashdot, receiving either replies or votes as feedback was highly predictive of both whether someone posted in the future and how quickly they did so [15]. Additionally, feedback from other users has been found to be important for sustained interaction in Wikipedia [2] and other user generated content sites [23].

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than ACM must be honored. Abstracting with credit is permitted. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee. Request permissions from permissions@acm.org.
CSCW'14, February 15–19, 2014, Baltimore, Maryland, USA.
Copyright © 2014 ACM 978-1-4503-2540-0/14/02...\$15.00.
<http://dx.doi.org/10.1145/2531602.2531720>

Whether or not a user receives feedback is perhaps even more salient in a sociotechnical system like Facebook – especially when the post is an explicit request for help – where “other users” are typically people with whom one has a pre-existing relationship [14] and the exchange is archived, visible, and associated with users’ real names (as opposed to pseudonyms). Given the above research, in the case of SNSs, we assume that receiving replies to posts requesting help or action is useful to the poster and generative of the reciprocal exchanges that create social capital. Additionally these exchanges can be understood as forms of social grooming, helping to maintain and develop interpersonal relationships between site users. In the next section, we review the literature on social capital, social grooming, and social search, which helps us understand why individuals would turn to social media for variable information needs but does not generally focus on the interpersonal dimensions of these exchanges.

Social search

“Social Search” research examines how people use online tools to seek information from others, as opposed to use of a formalized resource like a search engine [1]. Much of this work examines social search via SNSs like Facebook or Twitter. Past research has identified higher levels of trust between known contacts and expected personalization of responses as motivations for posting questions to friends on SNSs as opposed to other Q&A sites where responses come from unknown others [20]. Additional motivations found by Morris et al. [20] for asking questions via SNSs were: the belief that search engines wouldn’t work to answer subjective questions, the desire to connect socially with responders, the feeling that results are already “filtered” and relevant, and, in some cases, the consequence of search engine queries that had not yielded useful results. Social search via social network sites is also generally associated with positive outcomes, such as fast turn-around time for receiving support, by those who seek information in these ways [22, 24]. Compared with other media, such as the telephone, SNSs enable individuals to broadcast their needs to large portions of their social networks with one action [10].

Conversely, there are many reasons why people might be reluctant to share some kinds of information needs with their social networks, such as privacy concerns. Individuals may be reticent to broadcast information or other needs to their network because of the personal information this invariably discloses, which can present barriers to accessing social capital in these online contexts [30]. Balancing the desire to share information and concerns about controlling one’s disclosures can be executed via strategies such as Friending behaviors, using privacy settings to manage the audience, and selective disclosures [12]. Stutzman et al. [24] found that privacy attitudes and behaviors affected disclosure behaviors and that disclosure activities affected perceptions of social capital. Second, individuals may not

wish to burden their network with multiple requests or appear, in the words of one participant in a related study, too “needy” [26]. Third, people may not seek information or help regarding topics that are at odds with one’s self-presentational goals. For example, Newman et al. [21] found that people were unwilling to post messages about health-related issues on Facebook because they were considered potentially embarrassing. Finally, individuals may question the sincerity of support responses to messages broadcast through public channels such as Facebook [26].

More recently, researchers have broadened the focus from how people use SNSs to meet information needs via question asking to the more general question of how individuals mobilize their online networks to access a broader set of resources. An analysis of several thousand public status updates on Facebook by Ellison et al. [9] confirmed the presence of multiple types of mobilization requests beyond information-seeking attempts. As adapted from Morris et al. [22], these fell into the following categories: Recommendation, Factual Knowledge, Social Coordination, Favor/Requests, and Opinion/polls. Past research has demonstrated that response patterns can vary based on characteristics of the post as well as of the poster himself or herself. For example, Wang et al. [27] found that the topics of status updates on Facebook were related to the number of responses they received. Liu and Jansen [19] studied responses to posts on the popular Chinese SNS Sina Weibo, examining factors like network sizes of posters and content of the post. They found that posters with more followers tended to receive more comments to their posts, that mentioning people in the post garnered more comments, and that topics like “Entertainment” negatively affected whether the post would receive comments.

From the work reviewed above, we have an understanding of why people might turn to their social networks as opposed to a traditional search engine or another less personalized forum when in need of information or support. But the social search literature is less clear about why individuals expend the time and effort to respond to these requests. For insight into this issue, we turn to the literature on social capital and social grooming.

Social capital and social grooming

Sustained social interactions generate resources that can be considered from a social capital framework. Social capital as a theoretical construct provides insights into social processes, such as reciprocity expectations, that help explain why people attend to the requests of those in their network. Social capital [5, 7] describes the ability of individuals or groups to access resources embedded in their social relationships and interactions within a network. Specifically, Lin et al. [18] defines social capital as the “investment in social relations with expected returns in the marketplace” (p. 19). These “expected returns” speak to the reciprocal nature of social capital exchanges. Facebook use and perceptions of social capital have been linked in the

research literature [6, 11, 16, 25]. Within the context of Facebook, we see asking for help via a status update as an explicit signal meant to start the reciprocal exchanges that drive social capital accrual.

Beyond serving to connect individuals with the kinds of support or information they need, posting and responding to questions on SNSs can also serve important social grooming functions [8] because they signal that individuals are paying attention to those in their network [11]. For instance, Burke et al. [6] found that certain kinds of communication on Facebook were more closely related to social capital than others; specifically, engaging in directed communication with Facebook Friends (e.g., sending and receiving messages) was related to increases in social capital, whereas lurking and broadcasting activities (e.g., posting status updates and sharing photos) were not. The latter behaviors do not serve as signals of attention in the way that directed messages do.

Drawing from the social grooming literature, Ellison et al. [10] recently proposed a variable they call Facebook Relationship Maintenance Behaviors ('FRMB,' called Signals of Relational Investment (SRI) in earlier work such as Lampe et al. [17]). FRMB activities include responding to requests expressed via status updates, presumably with provisions of social, informational, or emotional support, or wishing a Facebook Friend 'Happy Birthday' on their Timeline. In a system like Facebook, where non-verbal attention cues such as eye contact or nodding in assent are not visible, social grooming activities such as "liking" a comment or answering a question may serve relationship maintenance purposes. Ellison et al.'s [10] findings highlight: "... the importance of actively managing, grooming, and maintaining one's network, suggesting that social capital is not generated simply by the existence of connections on a SNS, but rather is developed through small but meaningful effort on the part of users as they engage in relationship maintenance behaviors such as responding to questions, congratulating or sympathizing with others, and noting the passing of a meaningful day."

The social aspects of answering requests are noted in other work as well. Gray et al. [13] found that individuals on average rated the comments they received in response to Facebook posts as satisfying (7.5 on a scale of 1-10). In fact, close ties' responses were associated with lower usefulness ratings but still very high satisfaction ratings, suggesting that just the sheer contribution of a response – irrespective of how "useful" the information was – was meaningful to the person seeking help or information.

In light of the literature reviewed above, we believe the examination of response patterns to mobilization requests is important for several reasons. First, whether or not a request for help receives any responses from one's network may significantly affect the ways in which people experience the efficacy of seeking help through their online social connections and thus has implications for their future

behavior (as well as potentially affecting those who witness the exchange). Second, examining responsiveness to requests may help us better understand the mechanism behind social capital exchanges via social media, representing "social capital in action." As described above, responding to requests for help may play a broader social role than the immediate fulfillment of a request for help by offering a type of "social grooming" [8] that enables relationship development. Finally, although research has demonstrated an empirical link between social capital and Facebook use, the specific mechanisms behind social capital generation via Facebook are less understood. While we don't measure social capital directly, if there is no response to requests for help on Facebook, that would have serious consequences for the value of social capital generated on the site.

Given the above literature on social search, social capital, and social grooming, we ask:

RQ1: What are the differences between mobilization and non-mobilization status updates in terms of user characteristics, the level of response to these posts, and characteristics of the responders?

RQ2: How do response levels to mobilization requests vary by the a) subtype of mobilization and b) the cost level of mobilization?

RQ3a: What user and post characteristics predict whether or not a post will receive a response?

RQ3b: What user and post characteristics – as well as mobilization subtypes – predict whether or not a mobilization post will receive a response?

METHODS

In order to address the questions raised above, we first developed a coding scheme to identify status updates that were mobilization attempts and then coded them into sub-categories. Subsequently, we trained a classifier on the coded status updates and used it to obtain a larger sample of these updates as well as their associated response/comment data and anonymized characteristics of the actors involved in the conversations. We analyzed this dataset comparing mobilizations to non-mobilizations across various characteristics of users and thread engagement.

Sampling and coding of posts

For the initial coding, a total of 40,000 status updates were drawn from two samples of Facebook posts with "Public" privacy settings, meaning they were visible to anyone with a Facebook account, made in August 2012. The first was a random sample of 20,000 status updates stratified by their posters' recent activity to ensure representation of less active users.

Status updates in this sample were hand-coded as mobilization requests (1) or non-mobilization requests (0) using a coding scheme developed by Ellison et al. [9], who

Mobilization category	Functional definition <i>Examples (created for this research based on observed patterns)</i>
RECOMMENDATION	A subjective, open-ended request for suggestions, or, in the case of referrals/social connections, a request to be referred or introduced to a specific person. <i>“What movie should I watch tonight?”</i> <i>“Can anyone recommend a good local plumber?”</i>
FACTUAL KNOWLEDGE	A question posed that assumes and expects a correct answer; objective as opposed to subjective. <i>“Does anyone know where “Grease” is playing in town?”</i> <i>“What’s the weather going to be like for the game tomorrow?”</i>
SOCIAL COORDINATION	A search for others with similar agendas or motives or for company (an invitation), with an assumed goal of collaboration or meeting. <i>“Who wants to get together after the conference for some drinks?”</i> <i>“Where should we meet before the concert Saturday?”</i>
FAVOR/REQUEST	A request for help or action from one’s network for any number of things including physical assistance, needed items, or emotional support. <i>“I need to get to the airport tomorrow morning and my car is on the fritz. Who can give me a ride pretty please?”</i> <i>“Can anyone loan me their copy of Romeo and Juliet this weekend? I need to read it for class.”</i>
OPINION/POLL	A request for an opinion to be given in reaction/response to a status update, a vote or a choice between two alternatives to be made, or a general solicitation of what people are doing. <i>“What do people think of Proposition 4?”</i> <i>“Chicken pot pie or beef stew for dinner?”</i>

Table 1: Mobilization categories from Ellison et al. [9]

defined a mobilization request as “a request for action related to provisions of social, informational, or other forms of support or assistance.” Two coders were trained on a subset of 2,000 status updates and reached 90% agreement before moving on to code the rest of the posts as mobilizations or non-mobilizations. Within the first sample, 6.2% of status updates were coded as mobilization requests.

The second sample of 20,000 status updates was drawn by oversampling on likely mobilization requests as determined by a preliminary logistic regression text classifier trained on the coding of the first sample. This sample was subsequently coded using the same scheme as the first sample, with 21.5% of status updates determined by human coders to be mobilization requests.

For the posts in these samples, we used scripts to collect additional data about the responses, including “likes” and comments, accumulated as of April 2013 (approximately 8 months after the original postings). We filtered out posts that were removed by user or administrative actions between the original sampling and the subsequent data collection because information about responses to them could not be retrieved. These constituted approximately 14% of posts. Next, we used a refinement of the coding scheme to differentiate mobilization requests from linguistically similar yet conceptually distinct “lightweight” pseudo-mobilizations that did not seek meaningful support and thus could be considered unconnected to social capital

(e.g., “Like my status”). These pseudo-mobilization posts (N = 1175) were excluded from analysis.

We then constructed from the remaining posts a sample approximately balanced between mobilization and non-mobilization status updates. To do so, we started with all available mobilization requests from both samples (N = 3589) and then drew an approximately equal-sized random sample of non-mobilization status updates (N = 3877), yielding a final dataset with 48.1% of status updates coded as mobilization requests and 51.9% as non-mobilization.

Explanatory variables

For the present analysis, we collected the following explanatory variables for each post in our balanced sample. Unless otherwise noted, the data are derived from Facebook server logs.

- Whether the post was a mobilization request (human-coded)
- Level of effort (“cost”) required to fulfill the request (human-coded), ranging from 1 (lowest) to 3 (highest)
- Type or category of the mobilization (human-coded): Recommendation, Factual knowledge, Social coordination, Favor/request, and/or Opinion/poll
- Age of the poster and commenters
- Gender of the poster and commenters

Variable	<i>t</i> statistic (df)	Mobilization <i>M</i> (<i>SD</i>)	Non-mob. <i>M</i> (<i>SD</i>)
Poster’s age	−.972 (7430)	33.02 (15.31)	32.67 (15.45)
Poster’s num. of Facebook Friends	−3.775 (7259) ***	582.47 (750.10)	518.01 (712.38)
Poster’s Facebook visitation frequency (# days of 28)	−1.063 (7337)	22.29 (7.99)	22.08 (8.01)
Num. of comments (not incl. original poster comments)	−12.686 (6418) ***	2.34 (4.24)	1.26 (3.00)
Num. of commenters	−11.516 (6830) ***	1.61 (2.81)	.94 (2.22)
Num. of likes	6.396 (6934) ***	2.34 (4.85)	3.22 (6.98)
Fraction of commenters living within 20 mi of poster†	−.4178 (3091)	.511 (.428)	.505 (.440)
Num. of comments made by original poster	−11.236 (6214) ***	.91 (1.99)	.47 (1.33)
Num. of comments “liked” by original poster†	−.830 (3023)	.79 (2.11)	.72 (2.44)
	Mann-Whitney <i>U</i>	Mobilization median	Non-mob. median
Minutes to first response†	1560441 ***	16.25	25.43
Median minutes between comments†	902653.5 ***	18.80	28.75

Table 2: *T*-tests and Mann-Whitney *U* tests comparing user characteristics and responses to mobilization requests and non-mobilization requests. For *t* and *U* statistics, * = *p* < .05, ** = *p* < .01, * = *p* < .001. † indicates that only posts with at least one**

- Friend count of the poster and commenters
- Facebook visitation of the poster and commenters (number of days out of 28 that the user visited Facebook around the time of the original post)
- Time between original post and first comment (minutes)
- Number of comments made on the post
- Number of distinct people commenting on the post
- Number of people who liked the post
- Distance between the poster’s city-level home location and each commenter’s city-level home location
- Counts of words in the post and comments matching selected categories from the Linguistic Inquiry and Word Count software [22]

Individuals who posted status updates were on average 32.84 years old (median = 27), 52.19% female, had an average of 549.10 Friends on Facebook (median = 317), and logged into Facebook an average of 22.18 days out of the most recent 28 days (median = 27).

To classify the kinds of mobilization requests, we applied a typology adapted from Morris et al. [20] and used by Ellison et al. [9], which categorizes mobilizations as one or more of the following: recommendation, factual knowledge, social coordination, favor/request, and opinion/poll. (See Table 1 for an appropriated set of definitions and examples of the categories.) We also utilized the coding scheme utilized in Ellison et al. [9] to categorize mobilization requests by the amount of effort required on the part of potential post-viewers to respond to the request. Two human coders applied a cost code to each status update identified as a mobilization. They coded a subset of the

same 400 mobilization requests first, and upon reaching 90% agreement, divided and coded the remaining mobilization requests independently. The amount of effort required to respond has been divided into three levels (1, 2, and 3) and differentiates the cost of mobilization by how easily others can respond to the original poster’s need. A question that can be answered directly on the post thread would be a 1, a response by another mediated channel or elsewhere within the Facebook platform would be a 2, and a request that necessitates responders to perform an offline action would be a 3.

RESULTS

Our first research question (*RQ1*) asked about the differences between mobilization and non-mobilization status updates in terms of user characteristics, the level of response to these posts, and characteristics of the responders. Table 2 shows comparisons between mobilizations and non-mobilizations across these characteristics. While there was no difference in the age of Facebook users who posted mobilization requests in our sample or how active they had been in the past month on the site, they had slightly more Friends on average than the authors of the non-mobilization status updates. Mobilization posts had significantly more comments, more unique commenters per post, and fewer Likes than non-mobilization posts. The percentages of people who lived within 20 miles of the poster were no different between different types of posts. Facebook status updates that were mobilization requests not only received more comments on average than non-mobilization requests, but also there was a shorter median time to receive the first comment for these posts. Mobilization posts that received more than one

comment also had shorter median times between comments than non-mobilization posts. (We used median times for these measurements to manage outlying response times.) Lastly, posts differed in the degree of engagement of the status update posters themselves within the comment threads. Mobilization threads included more comments from the status posters themselves; however, mobilizations and non-mobilizations did not significantly differ in the number of comments that were liked by the original posters.

Linguistic features of mobilization posts and comments

Table 3 contains comparisons of linguistic differences in the original posts and responses across these mobilization and non-mobilization status updates. As described above, these differences are detected using comparisons of word frequencies with the Linguistic Inquiry and Word Count (LIWC) text analysis software. LIWC has a variety of dictionaries (word lists) that contain words whose presence in text has been shown to signify different emotions expressed in the text [22]. We used LIWC to provide some insight into the content of the responses to requests for help. While LIWC only provides a very high-level view of word prevalence in responses, it does give some sense of the general types of words used when responding.

For this analysis, we chose five LIWC dictionaries:

- SOCIAL: This dictionary includes both nouns and verbs that indicate social processes. Examples include *mate, talk, they, and child*.
- POSEMO: Short for “Positive Emotion” and a subset of “Affective Processes,” this dictionary contains words like *love, nice, and sweet*.
- NEGEMO: Short for “Negative Emotion” and a subset of “Affective Processes,” this dictionary contains words like *hurt, ugly, and nasty*.
- TIME: A subset of the “Relativity” dictionary, this group of terms includes *end, until, and season*.
- ASSENT: This set of words includes terms commonly used to signal agreement. Examples include *agree, OK, and yes*.

The Social dictionary was selected because requests for help might include more words pertaining to social relationships, such as in a recommendation request seeking advice about a particular relationship. Given that requests for help can not only be used to mobilize resources, but also to signal the need for emotional support, we expected more Positive Emotion and Negative Emotion words in mobilization status updates and comments. For example, a mobilization request that expresses a problem may contain more negative emotion words, whereas the responses received from Friends may either echo the negative sentiments or respond using positive words in attempt to comfort the poster. We included “Time” words because mobilization attempts might be more likely to include urgency or the need to perform an action within a specified time period (e.g., “I need a dog sitter Saturday!”). Assent was selected because the words in this dictionary are

LIWC category	t statistic (df)	Mob. M	Non-mob. M
ORIGINAL POST TEXT			
Social	-14.340 (7436) ***	9.7%	6.8%
Posemo	8.560 (6238) ***	3.3%	4.6%
Negemo	5.209 (6352) ***	1.3%	1.8%
Time	3.949 (7027) ***	4.1%	4.7%
Assent	2.500 (6612) *	0.7%	0.9%
Word count	1.365 (7054)	29.0	30.6
COMMENT TEXT (EXCLUDING ORIGINAL POSTER)			
Social	2.587 (2847) **	8.6%	9.4%
Posemo	6.661 (2447) ***	6.2%	9.1%
Negemo	3.386 (2814) **	1.7%	2.4%
Time	1.022 (2762)	3.2%	3.4%
Assent	1.200 (2733)	3.1%	3.5%
Word count	-5.234 (3521) ***	60.8	42.7

Table 3: T-tests comparing linguistic attributes of mobilization requests and non-mobilization requests. Mean word counts and percentages of words belonging to each

closely associated with providing opinions or answering questions. The word “yes,” for example, is typically the response to a question and would be more expected in response to a mobilization request/question than a non-mobilization status update.

Occurrences of words in the selected LIWC dictionaries were measured as a percentage of all words in the text of each status update and in the combined text of all comments on each update. For example, a 25-word status update with 5 of its words in the Social dictionary would receive a score of 20% for that category. Because for the present work we are primarily interested in qualities of comments and commenters in the aggregate, for the comment text LIWC analysis, we applied the LIWC dictionaries to the combined text of all comments on a status update rather than applying them to comments individually.

The original mobilization status updates were much more likely to include words in the social dictionary. However, comments to mobilization status updates were less likely than comments to other types of status updates to include Social words. Both original mobilization updates and comments to them were significantly less likely to include either Positive or Negative Emotion words compared to other types of status updates. This might be because these posts are more likely to be filled with words that are more factual, presenting the need, than emotional. Or it could be that interacting around a need is already making oneself vulnerable, so less emotion words mitigate that vulnerability. Mobilization updates had slightly lower percentages of both Assent and Time words, but there were

no differences in the appearance of these words in responses. There were no overall differences in the number of words per status update for these mobilization status updates compared to other types of status updates, but responses to mobilization updates included quite a few more words, commensurate to our finding that they had more posts overall.

While we did not conduct a detailed analysis of the content of the responses to mobilization requests, LIWC analysis sheds some light on some of the tone of these posts compared to non-mobilization updates. While differences in the words used by responders to mobilization and non-mobilizations updates are only modest (a few percentage points different), there is a trend where responders use fewer social and emotion words in responses. At a high level, this shows there are content differences between posts that request help, not just a difference in amount or speed of posting.

Differences between types of mobilizations

As described above, previous research has categorized status updates that request help according to the type of resource mobilized and the costliness to respondents of fulfilling the request [9]. Tables 4a and 4b show the prevalence of the category and cost labels in our data.

Responses by type of mobilization

We examined how responses to mobilization requests vary by category (RQ2a) and cost level (RQ2b) of the request. To this end, we conducted analyses of variance, or the analogous Kruskal-Wallis non-parametric test for variables with highly skewed distributions, on posts that were assigned to only one category of mobilization (N = 3451). We found that mobilizations of different categories vary significantly in the number of comments they receive, $F(4, 3446) = 14.92, p < .001$, in the number of commenters who participate in the thread, $F(4,3446) = 14.68, p < .001$, and in the receipt of likes on a post, $F(4, 3446) = 4.902, p < .05$ (see Table 5 for Bonferroni post-hoc corrections showing how the categories differed across these kinds of engagement).

Among posts that received at least one comment, mobilization subtypes did not differ significantly from one

Mobilization category	Including those labeled as multiple categories	Excluding those labeled as multiple categories
Recommendation	171 (4.8%)	160 (4.6%)
Social coordination	364 (10.1%)	315 (9.1%)
Favor request	1374 (38.3%)	1259 (36.5%)
Opinion/poll	1324 (36.9%)	1233 (35.7%)
Factual knowledge	496 (13.8%)	484 (14.0%)
TOTAL	3589 (100%)	3451 (100%)

Table 4a: Frequencies of Mobilization Categories

Cost Level	Frequency
1	2487 (69.3%)
2	540 (15.0%)
3	562 (15.7%)

another with regard to the median distance between commenters and the original poster, Kruskal-Wallis $\chi^2(4) = 8.985, n.s.$ They did vary significantly, however, in the median time that passed between comments, Kruskal-Wallis $\chi^2(4) = 15.066, p < .01$, with post hoc Mann-Whitney tests revealing a significant difference only between social coordinations (median = 10.4 min) and favor/requests (median = 25.8 min). Factual knowledge, opinion/poll, and recommendation requests did not differ significantly from each other or from social coordination or favor/request posts in median time between comments. Mobilization subtypes also differed in how quickly they received their first comments, Kruskal-Wallis $\chi^2(4) = 14.337, p < .01$. Bonferroni-corrected post hoc Mann-Whitney tests revealed that favor/request posts received first responses significantly later (median = 24.1 min) than factual knowledge requests (median = 12.1 min). There was no pairwise significant difference between any two of opinion/polls (median = 15.2 min), recommendations (median = 22.5 min), social coordinations (median = 15.8), and the other subtypes in time to first response.

Number of Comments <i>M(SD)</i>		Number of Commenters <i>M(SD)</i>		Number of Likes <i>M(SD)</i>	
Recommendation _a	4.06(5.45)	Recommendation _a	2.81(3.94)	Opinion/poll _a	2.70(5.78)
Factual knowledge _b	2.80(4.18)	Factual knowledge _b	2.33(2.72)	Social coordination _{ab}	2.60(3.66)
Opinion/poll _b	2.51(4.53)	Opinion/poll _b	1.73(2.88)	Favor request _{tab}	2.26(4.69)
Social coordination _b	2.44(3.53)	Social coordination _{b,c}	1.46(1.84)	Factual knowledge _{cab}	2.00(4.17)
Favor request _c	1.74(3.90)	Favor request _c	1.26(2.77)	Recommendation _b	1.16(2.90)
Cost level 1 _a	2.74(4.62)	Cost level 1 _a	1.92(3.14)		
Cost level 3 _b	2.08(3.83)	Cost level 3 _b	1.26(1.99)		
Cost level 2 _c	0.67(1.78)	Cost level 2 _c	0.48(1.11)		

Table 5: Means of engagement metrics across mobilization subcategories and cost (effort) levels. Note. Means having no letter in common in their subscripts differ significantly at $p < .05$ after adjustment with Bonferroni’s procedure.

Predictors	Block 1	Block 2
	EST. (S.E.) O.R.	EST. (S.E.) O.R.
Gender	-.077 (.048) .926	-.070 (.048) 0.932
Age	.010 (.002) *** 1.010	.009 (.002) *** 1.009
# Friends	.000 (.000) 1.000	.000 (.000) 1.000
Freq. of site visits	.036 (.003) *** 1.037	.037 (.003) *** 1.037
Post word count		.002 (.001) *** 1.003
Constant	-1.22 (.097) *** .294	-1.26 (.098) *** .283
Likelihood ratio test vs. null model	$\chi^2(4) = 183.82$ ***	$\chi^2(5) = 206.15$ ***
Likelihood ratio test vs. previous model	—	$\chi^2(1) = 22.32$ ***
Prediction accuracy (vs. null model)	57.5% (+5.2%)	58.2% (+5.9%)

Table 6: Binary Logistic Regression Predicting Response Instance among Mobilization and Non-Mobilization Posts. Coefficient estimates, standard errors, and odds ratios are

Response by cost of mobilization

Engagement with mobilization requests also varied significantly with the level of effort required to complete the requests (RQ2b). The number of comments (excluding those made by the original poster) differed significantly by cost level, $F(2, 3448) = 53.46, p < .001$ as did the number of commenters on posts, $F(2, 3448) = 62.93, p < .001$ (see Table 5 for means and Bonferroni post-hoc significance tests). When examining the relationship between cost levels and timing of comments on those posts that received at least one, we found no significant difference between cost levels and the median time between comments, Kruskal-Wallis $\chi^2(2) = 4.763, n.s.$ However, posts of different cost levels did differ significantly in terms of time to the first comment, Kruskal-Wallis $\chi^2(2) = 16.568, p < .001$, with post hoc Mann-Whitney tests using Bonferroni’s correction showing a significant difference between cost levels 1 (median = 14.7 min) and 2 (median = 34.0 min). Cost level 3 (median = 22.0) did not differ significantly from the other levels. Finally, the median distance between status posters and respective commenters did not vary significantly by cost, Kruskal-Wallis $\chi^2(2) = 1.622, n.s.$

Response by user characteristics

Our next research question considered whether users’ characteristics and the content of the status updates were related to whether or not the post receives a response/comment from another Facebook user, regardless

of its identification as a mobilization request or not (RQ3a). To answer this question, we coded all the original posts that received zero responses with “0” and those that received one or more comments with “1” and conducted a binary logistic to see which characteristics increased our ability to predict this response outcome. The user characteristics included in the first block of the model were the poster’s age, gender, friend count, and site use. The second block added a characteristic of the status updates, the word count of each post. The overall percentage of responses that the model was able to predict accurately was 58.2% with the inclusion of these personal and post characteristics, as compared to 52.3% with the null model. Table 6 summarizes the impact of the various predictors of receiving a response in the model and also provides likelihood-ratio tests of model fit. Odds ratios are given to characterize the increase or decrease in the odds of receiving a response associated with an increase in a predictor; these show that a one-year increase in age is associated with a 1% greater likelihood of receiving a comment on a status update, while each additional day on which the poster visits Facebook predicts a 3.7% greater likelihood of his or her post receiving a comment.

We then ran a binary logistic regression to predict whether or not a post would receive at least one response among mobilization posts only and added mobilization categories as predictors in the third block of the regression (RQ3b). The overall percentage of response vs. no-response outcomes that this mobilization-specific model was able to accurately predict with user characteristics, post characteristics, and mobilization categories was 62.8%, as compared to 56.4% for the null model (see Table 7). The five mobilization categories were entered into the model using deviation contrasts; thus, their coefficient estimates and odds ratios represent the difference in response between posts with the category in question and the mean of category mean responses with other IVs held at their base levels. Of interest: the chance of getting a response was substantially higher for factual knowledge and recommendation requests, and the chance for favor/requests substantially lower, as compared to mobilizations overall.

DISCUSSION

This paper explores a specific slice of Facebook activity – patterns of responses to broadcasted communications that request resources from one’s network. We believe that these interactions can offer insight into social capital dynamics on SNSs and other online contexts where individuals are engaging with large numbers of primarily known ties. Our dataset of public post content and user characteristics allows us to document and describe the dynamics of resource requests and provisions in this specific online context. Because Facebook is a common platform used by over one billion individuals, we assume some of the behaviors witnessed on Facebook will

Predictors	Block 1	Block 2	Block 3
	EST. (S.E.) O.R.	EST. (S.E.) O.R.	EST. (S.E.) O.R.
Gender (M)	-.179 (.070) * .836	-.170 (.071) * .844	-.202 (.072) ** .817
Age	.009 (.002) *** 1.009	.008 (.002) *** 1.008	.007 (.002) ** 1.007
Number of Friends	.000 (.000) 1.000	.000 (.000) 1.000	.000 (.000) 1.000
Frequency of site visits	.033 (.004) *** 1.034	.034 (.005) *** 1.034	.027 (.005) *** 1.028
Post word count		.002 (.001) 1.002	.004 (.001) ** 1.004
Factual knowledge†			.207 (.093) * 1.230
Favor/request†			-.754 (.069) *** .470
Opinion/poll†			-.113 (.069) .893
Recommendation†			.603 (.154) *** 1.828
Social coordination†			— — 1.059
Constant	-.691 (.143) ***	-.728 (.144) ***	-.342 (.152) *
Likelihood ratio test vs. null model	$\chi^2(4) = 75.434$ ***	$\chi^2(5) = 79.827$ ***	$\chi^2(9) = 209.234$ ***
Likelihood ratio test vs. previous model	—	$\chi^2(1) = 4.393$ *	$\chi^2(4) = 129.407$ ***
Prediction accuracy (vs. null model)	57.2% (+0.8%)	58.0% (+1.6%)	62.8% (+6.4%)

**Table 7: Binary logistic regression predicting whether or not mobilizations would receive at least one comment. Coefficient estimates, standard errors, and odds ratios are provided for each term.
† Deviation contrasts with social coordination as the base level.**

propagate to other sites, as users see positive outcomes and then replicate them through a social learning process.

This work differs from early work in this area in that we study a specific kind of activity, not overall use. In contrast to early scholarship on the effects of Internet use, researchers have moved from global measures of Internet use (e.g., minutes online) and have instead focused on specific kinds of behaviors that are more strongly correlated with outcomes of interest. For example, Bessièrè et al. [4] found that overall use of the Internet was associated with higher levels of self-reported depression, but when they examined different kinds of use, other patterns emerged. Specifically, communicating with friends and family online had a negative relationship with depression, while communicating with weaker ties such as those met online was positively related to depression. Research examining

Facebook use and social capital reveals similar patterns. Ellison et al. [11] identified three "connection strategies" and find that social information-seeking, where people are using the site to learn more about people with whom they share some offline connection, is more predictive of social capital than other uses such as meeting new people. Similarly, Burke et al. [6] found that directed communication had a stronger relationship with social capital than broadcasted communication or passively consuming content on the site.

Taken as a whole, this stream of research suggests that access to a particular site or the Internet in general is not as meaningful as the specific kinds of activities and interactions that are taking place. This is true for Facebook as well. We believe that asking and answering resource requests on SNSs represent a kind of activity that may be

critical for social capital development and maintenance. Earlier work has documented that these requests take place [10]. However, for social capital exchanges to occur, it is critical for the network to respond. Are requests for help being answered or not? Our findings show that Facebook updates that are seeking to mobilize resources within social networks do indeed lead to different types of interactions than other kinds of broadcasted posts.

Number and kind of responses

For mobilization posts in our sample, 56% received at least one comment. We found that mobilization posts received more comments than non-mobilization posts and, similarly, received comments from more unique users. This suggests that users do attend to posts that request resources differently than they attend to posts that do not contain evidence of need.

Taken in conjunction with other work in this area, our findings suggest productive avenues for future research seeking to determine the relationship between different kinds of actions on Facebook and higher-level concepts such as social capital. For instance, Burke et al. [7] find that directed communication is more predictive of social capital than broadcasting or lurking, suggesting that interaction (as indicated by comments and other responses) is critical for social capital accrual and maintenance. Future work building on these two streams of research could examine the social capital implications of broadcasting a request that doesn't receive any responses (as happened with 44% of the mobilization requesters in our sample).

Interestingly, non-mobilization posts did receive more likes than mobilization requests. One explanation is that users may be less inclined to “like” the post of a friend who is expressing a need or asking for help, as this may be perceived as unhelpful or even inappropriate when posters are seeking more meaningful support or sharing negative news. Non-mobilization posts, such as those sharing updates or good news, may be more appropriate to “like” as opposed to a time-intensive comment.

Although recommendation posts were the least prevalent subcategory of mobilization posts, they received more responses than any other type of mobilization request and over two times the number of responses of non-mobilization posts. Previous work has suggested, in keeping with our finding, that recommendations may be less prevalent because they require specific shared characteristics to answer [10], limiting the potential respondent pool. The low number of potential respondents may be related to the high number of responses, in that feeling like one is part of a smaller, more exclusive group of those who could help diminishes the by-stander effect and increases the chances that one will help. In this way, a recommendation request may help activate particular nodes of a network that have expertise in an area, helping them realize the value of their response. Recommendation

requests may receive more responses in part because they typically require only a relatively low-effort written response, as opposed to promises of material items or offline assistance. Favor requests, which demand more commitment from the responder, received the fewest comments, perhaps because an early commenter met the need, eliminating the need for additional responses. Unlike recommendations, where “more is better,” many favor requests may only need one person to provide assistance. Interaction around some types of requests may have moved to a different channel, like private message or email, which our methods do not enable us to assess.

Receiving at least one response

In assessing the probability that a mobilization status update would receive any responses, we found that both user characteristics and request characteristics were important. Being a male mobilization requester was associated with a lower likelihood of receiving a response to requests. The biggest drivers of receiving responses were characteristics of the post itself – specifically: what *kind* of resources the post attempted to mobilize. In alignment with the analyses of variance, posts that were categorized as recommendations or factual knowledge requests increased the predictive accuracy of the model, ultimately enabling the prediction of receiving responses with accuracy well over chance. Whether or not posts receive responses has implications for both the ability of individuals to meet their resource needs as well as implications for the overall SNS user experience and perceived utility of posting requests in these spaces.

Time to receive responses

Mobilization threads are also notably different from non-mobilization threads with regard to the speed with which Friends of posters respond to the requests. Friends of mobilization posters respond more quickly, and less time passes between the comments received on the threads. At the surface level, this suggests that users are sensitive to the needs of their Facebook Friends and more likely to respond quickly to a call for help than to other kinds of posts.

Future Research and Implications for Theory

This work helps to forward our understanding of social capital processes in SNSs, but more work is needed to build upon this and other work in this area.

Our data do not allow us to discern whether these responses are, in fact, meeting the expressed or implied needs of the posters, and this is an important step future research should take. Interviewing or surveying help-seekers about the support they receive, similar to the methods used in Gray et al. [13], or examining data that may serve as proxies for satisfaction, such as the extent to which posters “like” the comments that others have provided, could help determine the extent to which requests are successful. We assume that most individuals posting a question would like an answer to

that question in addition to the other benefits (such as emotional support) they might receive.

Social capital theory does acknowledge that support can come in different forms [19], and it may be that messages that do not address the explicit need of posters likely perform other interpersonal functions, such as provisions of social support, and are conducive to social capital processes. Given the lack of other signals of attention (such as gaze) in the online environment, responses to requests can serve as a way to signal attention and engage in social grooming with one's ties, and research suggests that users are satisfied with responses regardless of their instrumental utility [13]. As Gray et al. [13] note, "asking a question acts as an invitation for a social exchange that may not happen on its own. In other words, answering a question on Facebook gives individuals an excuse to interact and to signal they are paying attention to their ties on the site."

One way in which comments to a public Facebook post differ from other channels through which support may occur (e.g., a phone call to a friend) is the increased visibility and persistence of these messages. This has implications for social capital dynamics and suggests that second-order effects need to be considered – the ways in which network members are affected by witnessing successful and unsuccessful mobilization attempts. Similarly, future work could examine the extent to which individuals change their behavior after receiving (or not receiving) assistance in response to a post, given that these failed attempts are visible in their history.

Of course, these visible and persistent social capital exchanges may lead to other interactions that are not visible or persistent. Past research suggests that posts may be triggers for phone calls, face-to-face meetings, or other interactions [26]. Any responses that are made through channels other than Facebook would not be captured here, and future methods should consider actions taken through channels other than Facebook in response to mobilization posts, through surveys or other methods.

Limitations

We do not include data about impressions (how many people saw a post), and past research shows that the degree to which others view a post is unequivocally linked with the amount of responses the post receives. Wang et al. [27] found that Facebook posts that received more views received more comments, even though the number of Friends the posters had was a negative predictor, which they attribute to the interplay between views and the Facebook News Feed algorithm that controls who sees which posts. There may be elements of the News Feed algorithm that privilege certain kinds of posts in a way that impacts the analyses we present here regarding engagement metrics. We do not know that all kinds of posts get equal visibility upon being broadcasted and furthermore how the visibility of posts may change after Friends begin to interact

with them. Future work should attempt to use the number of impressions (views) of posts as a control.

The fact that we used only public updates may affect the patterns we identify here, in that some kinds of exchanges are more likely to occur with restricted audiences. Because we hand-coded broadcasted status updates and were directly interacting with user-generated content via Facebook, we were limited to public updates to protect user privacy. Future work would ideally explore these questions using automated methods applied to private updates to look for any substantive empirical differences that may exist between limited-audience and public posts.

The deleted content mentioned in the description of our sample also presents problems for the generalizability of our study. We do not know if the deletions from the data set are due to user or to administrative actions; they may not be randomly distributed. For example, it may be that some user-deleted posts were removed because they received no responses and represented unsuccessful mobilization attempts, a potentially ego-threatening situation. As a recent Pew study found, "'likes' specifically seem to be a strong proxy for social status, such that teen Facebook users will manipulate their profile and timeline content in order to garner the maximum number of 'likes,' and remove photos with too few 'likes'" [21].

Broader implications

We find that people do respond more to mobilization status updates than they do to other types of updates on Facebook. We see this core finding as having multiple implications both for understanding Facebook and online interactions more generally.

Mobilization status updates and their responses may be an important factor by which Facebook users determine the usefulness of the site, and thus what their participation on the site should be. Consequently, SNSs where mobilization activity is occurring could explicitly support these activities through design decisions that highlight signals of social grooming, allow for better management of attention to requests for help, or enable new ways of responding to these requests.

People seek help in many different types of sociotechnical systems, such as discussion forums, Q&A sites, and SNSs. Our findings extend previous research showing that receiving responses is an important form of feedback in these systems. Besides encouraging future contributions, receiving responses may be an important form of social grooming that increases feelings of connectedness in an online community or social media site. However, we also show that different types of requests have different outcomes in how they receive responses. User characteristics can shape how likely a person is to receive responses to their requests. Given the different outcomes for types of help we've found, more attention to what type of resource is being requested could lead to more effective

ways for people to engage in this important type of online activity. In other words, focusing on responses to requests for help is applicable to many online systems where users have few cues about whether others are paying attention to them. Given the heterogeneity of responses to requests we found on Facebook, other sites may consider how requests for interactions by users are or are not being met.

CONCLUSION

Social network sites support a wide range of activities for participants, including ways to access and foster their relationships with other people. As people post in these sites, receiving feedback and acknowledgment from other users is an important mechanism by which people measure both their success and satisfaction. This is especially true for posts that are intended by people to mobilize resources from their networks online. By examining a large set of status updates that both intended to mobilize resources, and those that didn't, we found that mobilization requests get more responses than other kinds of posts. Additionally, we found there were significant differences in the likelihood that a mobilization update received a response based on the type of resource the person was asking for.

This work contributes to our knowledge of how people engage with one another in Facebook interactions and provides some initial insight into the responsiveness to requests for help that may exist in social network sites. This insight is important not only for understanding the role of Facebook as a space where people seek help, but also how these behaviors facilitate the social grooming that is key to maintaining relationships and generating social capital.

ACKNOWLEDGMENTS

This work was supported by the National Science Foundation (HCC 0916019).

REFERENCES

- Ackerman, M., Adamic, L., Ellison, N., Gergle, D., Hecht, B., Lampe, C., Morris, M.R. and Teevan, J. Social media question asking workshop *Proceedings of the 2013 conference on Computer supported cooperative work companion*, ACM, San Antonio, Texas, USA, 2013, 297-298.
- Antin, J., Cheshire, C. and Nov, O. Technology-mediated contributions: editing behaviors among new wikipedians *Proceedings of the ACM 2012 conference on Computer Supported Cooperative Work*, ACM, Seattle, Washington, USA, 2012, 373-382.
- Arguello, J., Butler, B.S., Joyce, E., Kraut, R., Ling, K.S., Rose, C. and Wang, X. Talk to me: foundations for successful individual-group interactions in online communities *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, ACM, Montreal, Quebec, Canada, 2006, 959-968.
- Bessiere, K., Kiesler, S., Kraut, R. and Boneva, B.S. Effects of Internet use and social resources on changes in depression. *Information, Community & Society*, 11 (1). 47-70.
- Bourdieu, P. Forms of Capital. in Richardson, J.G. ed. *Handbook of Theory and Research for the Sociology of Education*, Greenwood Press, New York, 1983.
- Burke, M., Kraut, R. and Marlow, C. Social capital on facebook: differentiating uses and users *Proceedings of the 2011 annual conference on Human factors in computing systems*, ACM, Vancouver, BC, Canada, 2011, 571-580.
- Coleman, J.S. Social Capital in the Creation of Human Capital. *American Journal of Sociology*, 94. S95-S120.
- Donath, J.S. Signals in social supernets. *Journal of Computer Mediated Communication*, 13 (1). 12.
- Ellison, N., Gray, R., Vitak, J., Lampe, C. and Fiore, A., Calling All Facebook Friends: Exploring requests for help on Facebook. . in *7th annual International Conference on Weblogs and Social Media*, (Washington, DC, 2013), Association for the Advancement of Artificial Intelligence, forthcoming.
- Ellison, N., Vitak, J., Gray, R. and Lampe, C. Cultivating Social Resources on Social Network Sites: Facebook Relationship Maintenance Behaviors and Their Role in Social Capital Processes. *Journal of Computer Mediated Communication*.
- Ellison, N.B., Steinfield, C. and Lampe, C. Connection Strategies: Social Capital Implications of Facebook-enabled Communication Practices. *New Media & Society*, 13. 873-892.
- Ellison, N.B., Vitak, J., Steinfield, C., Gray, R. and Lampe, C. Negotiating Privacy Concerns and Social Capital Needs in a Social Media Environment. *Privacy Online: Perspectives on Privacy and Self-disclosure in the Social Web*. 19.
- Gray, R., Ellison, N.B., Vitak, J. and Lampe, C. Who wants to know?: question-asking and answering practices among facebook users *Proceedings of the 2013 conference on Computer supported cooperative work*, ACM, San Antonio, Texas, USA, 2013, 1213-1224.
- Lampe, C., Ellison, N. and Steinfield, C., Changes in Use and Perception of Facebook. in *ACM Conference on Computer-Supported Cooperative Work (CSCW)*, (San Diego, CA, 2008), ACM Press.
- Lampe, C. and Johnston, E., Follow the (Slash) dot: Effects of Feedback on New Members in an Online Community. in *International Conference on Supporting Group Work, GROUP '05*, (Sanibel Island, FL, 2005), ACM Press.
- Lampe, C., Vitak, J. and Ellison, N. Users and nonusers: interactions between levels of adoption and social capital *Proceedings of the 2013 conference on*

- Computer supported cooperative work*, ACM, San Antonio, Texas, USA, 2013, 809-820.
17. Lampe, C., Vitak, J., Gray, R. and Ellison, N., Perceptions of Facebook's Value as an Information Source. in *CHI - Conference on Human Factors in Computing*, (Austin, TX, 2012), ACM Press.
 18. Lin, N., Cook, K.S. and Burt, R.S. *Social capital: theory and research*. Aldine de Gruyter, 2001.
 19. Liu, Z. and Jansen, B.J. Factors influencing the response rate in social question and answering behavior *Proceedings of the 2013 conference on Computer supported cooperative work*, ACM, San Antonio, Texas, USA, 2013, 1263-1274.
 20. Morris, M.R., Teevan, J. and Panovich, K. What do people ask their social networks, and why?: a survey study of status message q&a behavior *Proceedings of the 28th international conference on Human factors in computing systems*, ACM, Atlanta, Georgia, USA, 2010.
 21. Newman, M.W., Lauterbach, D., Munson, S.A., Resnick, P. and Morris, M.E. It's not that i don't have problems, i'm just not putting them on facebook: challenges and opportunities in using online social networks for health *Proceedings of the ACM 2011 conference on Computer supported cooperative work*, ACM, Hangzhou, China, 2011, 341-350.
 22. Pennebaker, J.W., Francis, M.E. and Booth, R.J. Linguistic inquiry and word count: LIWC 2001. *Mahway: Lawrence Erlbaum Associates*.
 23. Sarkar, C., Wohn, D.Y. and Lampe, C., Predicting length of membership in online community everything² using feedback. in *Proceedings of the ACM 2012 conference on Computer Supported Cooperative Work Companion*, (2012), ACM, 207-210.
 24. Stutzman, F., Vitak, J., Ellison, N.B., Gray, R. and Lampe, C., Privacy in Interaction: Exploring Disclosure and Social Capital in Facebook. in *Sixth International AAAI Conference on Weblogs and Social Media*, (2012).
 25. Valenzuela, S., Park, N. and Kee, K.F. Is there social capital in a social network site?: Facebook use and college students' life satisfaction, trust and participation. *Journal of Computer-Mediated Communication*, 14. 875-901.
 26. Vitak, J. and Ellison, N.B. "There's a network out there you might as well tap": Exploring the benefits of and barriers to exchanging informational and support-based resources on Facebook. *New Media & Society*, 15 (2). 243-259.
 27. Wang, Y.-C., Burke, M. and Kraut, R.E., Gender, topic, and audience response: an analysis of user-generated content on facebook. in *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, (2013), ACM, 31-34.