Favors from Facebook Friends: Unpacking Dimensions of Social Capital

Yumi Jung, Rebecca Gray
Michigan State University
409 Comm Arts Building
East Lansing, MI 48224
[jungyum1, grayreb2]@msu.edu

Cliff Lampe, Nicole B. Ellison
University of Michigan
105 S. State St
Ann Arbor MI, 48109
[cacl, enicole]@umich.edu

ABSTRACT
Past research has demonstrated a link between perceptions of social capital and use of the popular social network site, Facebook. Williams' Internet Social Capital Scales, based on Putnam's formulation, tap into sub-dimensions of social capital that have not been broadly used yet may enlighten our understanding of the different ways in which connecting with others online can facilitate access to resources embedded within our social relationships. In this study, we segment Williams' Internet Social Capital Scales into various sub-dimensions using factor analysis and explicate the distinct facets of social capital through a lab experiment in which Facebook users (N=98) request a small favor from their Facebook network. We find that some sub-dimensions play a significant role in getting favors from Facebook friends while bonding and bridging social capital do not significantly predict responses to favor requests.

Author Keywords
Social capital; Favor asking; Facebook network

ACM Classification Keywords
H.5.3. Information interfaces and presentation (e.g., HCI): Group and Organization Interfaces.

INTRODUCTION
Social media tools can support how people build, maintain, and benefit from social relationships. In CHI and related fields, one way these relational benefits have been measured is through the construct of social capital [5, 14, 19]. Social capital is a conceptual framework that considers the resources held by those in one's social network and which are available to an individual [3, 8, 22]. Researchers have argued that social network sites (SNSs) such as Facebook reduce the transaction costs of maintaining a larger (and potentially more diverse) social network, enable individuals to engage in relationship maintenance activities with their connections, and facilitate the extraction of resources from the network [9, 11, 15].

One important characteristic of social capital is its ability to be converted into other kinds of benefits such as educational and health outcomes [23]. Previous social capital literature has explored social capital as related to hierarchical social status such as income, social class, or performance (e.g., academic or job performance). However, there are many everyday life situations that can also be framed as outcomes of social capital, such as getting small favors from friends and acquaintances. In this study, we create an opportunity for participants to request help from their network in a way that renders these offers of assistance visible – and thus measurable – in an attempt to capture one outcome of social capital in everyday life.

Another contribution of this study stems from our efforts to break down the social capital variable to its simplest components or sub-dimensions. Most of the work examining the role of social media and social capital has focused on the use of perceptual measures, primarily the Internet Social Capital Scales (ISCS) developed by Dmitri Williams [33]. The questions used in surveys have often collapsed social capital into two major dimensions, which may be missing more fine-grained nuances of the overall concept. Since Putnam [22] integrated several lines of research in his popular book *Bowling Alone*, researchers have focused on bridging social capital, a type of social capital which often results from distant ties within a network, and bonding social capital, which is associated with closer relationships. Although Williams' [33] survey scales, based on Putnam's work, are often used, his discussion of the sub-dimensions of social capital has not been broadly utilized. We believe they provide a thoughtful approach to studying the different ways our social relationships provide resources, and thus explore them here.

In this paper, we examine an artificially induced instance of social capital conversion – a task in which people asked their Facebook Friends for a favor – in order to document its relationship to social capital measures. In exploring this relationship, we show how social capital, which has typically been measured as two main dimensions, actually contains multiple facets. We identify distinct facets of social capital through a factor analysis and show that considering these multiple facets may help scholars better understand the way in which online behaviors mediate access to social resources embedded in one's social

network, thus enabling them to design social computing systems that capitalize on these social capital dynamics.

LITERATURE REVIEW

Social capital describes the benefits individuals can access through their social network; these benefits can include emotional support, material support, and novel information [3, 8, 16, 22]. Thus, the constitution of one's social network is directly related to one's level of perceived social capital. The relationship between perceived social capital and activities with one's online social network have been examined in many social media studies [5, 6, 14, 26, 31].

Putnam [22] identified different components of social capital – bridging and bonding social capital – that describe resources that can be mobilized from different types of social network connections or relationships. As previously mentioned, bonding social capital is related to strong ties, like a connection between similar kinds of people such as family and close friends, and is associated with access to meaningful social and emotional support. Bridging social capital is associated with interactions with weak ties, such as casual friends and acquaintances [32]. Weak ties are more likely to be bridging ties, connecting dispersed clusters, and are more likely to represent access to the novel, diverse perspectives and information [20, 22] that are hallmarks of bridging social capital.

One example of social capital in action is getting help or information from someone in one's social network when in need. Asking questions is a way of seeking information on SNSs [15, 18], and SNS users can request favors from their online social network by broadcasting requests via status updates. As described above, previous research has found a positive relationship between social capital and SNS use. Most of these studies have examined *perceptions* of social capital, as opposed to actual instances of resource exchange. This is due in large part to the difficulty of translating social capital dynamics to an experimental, artificial situation. This study examines an actual instance of social resource mobilization to examine the effects of social capital more empirically.

Stefanone et al. [25] explored this question by conducting an empirical study about users getting help from their Facebook networks. The study measured perceived bridging and bonding social capital using Williams' online social capital measures [33] to look at the relationship between social capital and support from Facebook friends in the form of help on class-related tasks. In the study, there was no significant relationship between either form of perceived social capital and getting support from their online social networks [25]. Possible reasons for the lack of significant relationships between social capital and receipt of support from Facebook Friends include the closeness of these Friends with the participants (participants were instructed to ask both closest and weakest ties for help). These individuals may or may not represent their

larger networks. For instance, social capital support (measured here as a response to a request for help) from mid-range ties in one's network was not assessed.

The insignificant relationship might also be due to the fact that sub-dimensions of social capital were not considered. We believe that unpacking the bonding and bridging dimensions of social capital to consider other instrumental aspects of the concept, in order to see what specific factors affect the responsiveness of one's network when asking favors, represents a useful approach to this issue.

In past research on the measurement of social capital, Williams [33] created a measure of online social capital by merging different dimensions of social networks based on Putnam's [13, 22] conceptual criteria for social capital. Williams' Internet Social Capital Scales consists of two ten-item scales (bonding and bridging) that encompass multiple dimensions of the concepts. Williams' bridging social capital measure consists of four different conceptual dimensions: *outward looking, contact with a broad range of people, a view of oneself as part of broader group,* and *diffuse reciprocity with a broader community* [13, 33]. His bonding social capital measure consists of another four dimensions: *emotional support, access to scarce or limited resources*, *ability to mobilize solidarity*, and *out-group antagonism* [33]. Because each sub-dimension has a different conceptual orientation, different dimensions might have different effects on certain outcomes. For example, although all the three sub-dimensions of bonding social capital are related to a higher level of closeness, *social resources for emotional suppor*t and *access to limited resources* might be different. In the same way, there is a possibility that *emotional support* affects getting favors while the *ability to mobilize solidarity*, a different dimension of bonding social capital, does not.

Most social media studies of social capital employ the simpler bridging and bonding scales and typically do not acknowledge or make use of the sub-dimensional measures. Ferlander [12] pointed out that "although social capital is seen as a multidimensional concept, most empirical studies rely on one-dimensional measures" ([12], p.119). Although Williams developed the sub-dimensions of the bonding and bridging social capital scales conceptually, he only statistically distinguished between the two factors of bridging and bonding social capital; he did not statistically confirm the groupings of the sub-dimensions.

To tease apart and assess the different dimensions of these forms of social capital in relationship to an empirical social capital outcome (performing a favor), this study employs both ways of measuring social capital, using the bonding and bridging measures as well as the sub-dimensions of bonding and bridging social capital as separate variables. Specifically, this study looks at the relationship between perceived social capital and getting responses to a favor

request, as well as the relationship between each sub-dimension of social capital and the number of responses.

H1: Bridging and bonding social capital will be positively associated with the number of responses to a favor request on Facebook.

RQ1: How do different dimensions of social capital relate to the number of responses to a favor request on Facebook?

Facebook-specific Variables

Actual Friends
Early work on the relationship between social capital and Facebook use employed a measure of Facebook use that aggregated the number of total Friends on the site, time on the site, and six attitudinal measures. This aggregate measure, Facebook Intensity (FBI), was positively predictive of both bonding and bridging social capital perceptions among a sample of college undergraduates [27]. Later work employed a different measure and examined both the number of "total Facebook Friends" and the number of "actual" Facebook Friends; "actual" friends assessed users' perceptions of how many of their total connections on the site could be considered actual friends, or more meaningful ties [11]. This work found that the number of "actual" friends on Facebook was predictive of perceived bridging social capital, whereas "total" friends was not. As we expect perceptions of bridging social capital to be positively related to the number of responses individuals receive to their favor request, we similarly expect "actual" friends to be a significant positive predictor of the number of responses received. Thus, we predict:

H2: Participants with more actual Facebook friends will receive more favor responses from their Facebook network.

Relational maintenance and reciprocity on Facebook
Reciprocity is a key facet of social capital. The expectation of reciprocity is an inherent component of building social capital, although expectations can be violated [21]. One way in which social capital is maintained is through social grooming activities and other relationship maintenance behaviors that signal attention to one's network. Facebook is an effective context for performing these kinds of social interaction because it enables individuals to engage in social grooming with a larger network than might otherwise be possible [9]. Ellison et al. [11] test the role of a variable labeled "Signals of Relational Investment (SRI)," which captures the propensity to perform Facebook-enabled reciprocal relational maintenance behaviors, such as answering a question posed to one's network or writing "Happy Birthday" on a Friend's Wall. The performance of these signals of relational investment positively predicted bridging social capital in other work [11], thus we expect:

H3: Participants' propensity to perform signals of relational investment will be positively related to the number of responses to a favor request.

Question-Asking and Favor Requests on Facebook
Beyond the number of Friends to whom one is connected online and the relational maintenance behaviors one reports performing, we wonder what effect previous experience asking help of one's network may have on the reception of later favor requests. Although no extant research has looked at how the frequency with which one asks questions or favors of her network impacts the success of subsequent requests, we believe the routine or frequent performance of these behaviors may lead to more fruitful outcomes for favor-askers. It may be that frequently asking questions of one's network leads to greater overall visibility in the News Feed according to the algorithm used by Facebook to prioritize posts [2]; thus, more frequent posters may be more likely to receive responses when posting a request for a favor on the site. Another possibility is that frequently asking questions may give individuals experience that makes them more effective question-askers over time. This experience may translate to the realm of getting help with favors and thus lead to more success (a higher number of responses). Thus, we ask:

RQ2: Does the frequency of asking for help on Facebook impact the number of responses one receives to a favor request on the site?

Rhetorical features of online requests and network responsiveness
Although network structure, closeness with others, and other behaviors on Facebook may serve as meaningful predictors of the extent to which Friends will respond to an online favor, past research suggests that the actual *way* in which one asks for help may impact the responses one receives from his or her network. Burke, Joyce, Kim, Anand and Kraut [4] examined rhetorical properties of messages posted on Usenet, finding that actual requests were more likely to receive responses than were non-requests. More recently Teevan, Morris, and Panovich [29] explored the effects of various question characteristics on response quality, quantity, and speed within Friend networks on Facebook. When information-seekers targeted specific audiences in their requests, kept questions brief, and utilized question marks, the Facebook users obtained faster, higher-quality responses [29].

In the present study, in which participants were asked to request a small online favor of their Facebook friends, we similarly expect that particular characteristics of the favor request may be more or less instrumental in eliciting responses. Thus we explore the relationship between the number of strategies that participants use and the number of responses participants receive from their network.

H4: Participants who use more strategies are more likely to get a higher level of responses from their Facebook networks.

Finally, we are interested in both identifying the types of rhetorical strategies that participants use and determining

which of these strategies are most effective at gaining responses from one's network.

RQ3: What types of strategies are most effective for getting a higher level of responses from Facebook networks?

METHOD

Data collection

Data presented in this paper were collected as part of a larger research study of SNS-enabled information-seeking. Non-faculty staff at a large, public Midwestern university were invited in October-November 2011 and February-March 2011 to complete an online survey about their use of online communication tools, which explored many aspects of (and attitudes toward) Facebook use, question-asking in SNS settings, and dimensions of social capital. Of the 3150 staff members invited to take the survey, 666 participated (21% response rate), and 106 of the survey respondents were recruited to participate in a lab study, based on self-reports of performing question-asking behavior on Facebook. All participants received a minimum of $10 in Amazon.com credit but had the opportunity to receive up to $15 (described below).

During the lab session, participants were asked to post a status update asking their Facebook Friends to do them the "favor" of filling out a brief questionnaire, provided in a hyperlink. In order to incentivize participants, prior to posting the survey/favor request in a status update, participants were informed that for each of the first 10 responses they received, they would receive an additional $0.50 on their Amazon card (amounting to an additional incentive of up to but not exceeding $5). Participants were able to write whatever they chose to encourage their Friends to click on the link and complete the survey and were also given a copy of the survey for reference. Our rationale for choosing a short questionnaire to serve as the "favor" was that – unlike a question, which may require specific knowledge to answer – any Facebook Friend could perform the favor task.

Variable	Mean (*SD*)
Actual friends	102 (105)
Frequency of asking help	2.88 (.73)
Signals of Relational Investment (SRI)	4.09 (.50)
N of strategies	3.08 (1.17)
Bridging Social Capital	3.77 (.49)
Bonding Social Capital	3.68 (.56)
New variables from bridging social capital	
Outward-looking	3.98(.48)
Broader group	3.80(.63)
New people	3.41(.95)
New variables from bonding social capital	
Individual benefit	3.86 (.50)
Collective action (More sacrifice)	3.52 (.66)

Table 1: Sample characteristics

The favor questionnaire was comprised of 9 items, including questions about the connection between the responder and the participant (e.g., relational closeness, relationship type), expectations of reciprocity, Facebook use, and education level. One of the items also asked the favor respondents to fill in the name of the person that asked them to complete the questionnaire. This allowed us to link the data from the favor survey to the participant data in the main survey. Note that filling out the questionnaire was low effort and was likely to take only a few moments of the favor doers' time, although we did ask them to add a Facebook application before accessing the online questionnaire to help link the data.

A total of 98 lab participants completed this task, posting the request and survey link on Facebook. Participants were 73.2% female, an average of 42.7 years old, and 85% had obtained a Bachelor's degree or higher.

Measures

Facebook use.

Actual friends is a 1-item measure created by Ellison et al. [10] which asks: "Approximately how many of your TOTAL Facebook friends do you consider actual friends?" Participants had an average of 102 (*SD* = 105) actual Facebook Friends. Table 1 shows average and mean values of each variable.

Frequency of asking for help was measured with two items: "How often do you use Facebook to (1) ask questions of your Facebook friends? (2) ask your Facebook friends for favors?" Each item was asked with a 5-point scale (1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Very often). The items were averaged and inter-item correlation for the two is .56. Using the inter-item correlation is recommended when a variable has two items, and 0.5 is considered a good value [30].

Signals of Relational Investment (SRI) This 5-item scale (alpha = .78, *M* = 4.09, *SD* = 0.50) has been used in previous work, and it measures the extent to which participants report signaling attention to specific Facebook Friends in their network. The items capture users' perceptions of the extent to which they respond to Friends' posts and reach out to offer support. One of the items also probes how likely participants are to post "Happy Birthday" on their Friends' Walls, which represents another method of signaling that one is paying attention to specific Friends. Example items include "When I see someone asking a question on Facebook that I know the answer to, I try to respond" and "When I see someone asking for advice on Facebook, I try to respond."

Social capital

The Facebook social capital measure was adapted from Williams' [33] Internet Social Capital Scales. The wording of each item was adjusted to the Facebook context, and both bonding and bridging social capital were assessed.

Factors		Items	Factor loading	Alpha
Bridging social capital				
Outward-looking	1	Interacting with people in my Facebook network makes me interested in things that happen outside of my town.	.709	.74
	2	Interacting with people in my Facebook network makes me want to try new things.	.721	
	3	Interacting with people in my Facebook network makes me interested in what people unlike me are thinking.	.566	
	4	Talking with people in my Facebook network makes me curious about other places in the world.	.524	
Broader group	5	Interacting with people in my Facebook network makes me feel like part of a larger community.	.869	.79
	6	Interacting with people in my Facebook network makes me feel connected to the bigger picture.	.888	
	7	Interacting with people in my Facebook network reminds me that everyone in the world is connected.	.633	
	8	I am willing to spend time to support general Facebook community activities.	.457	
Meeting new people	9	Interacting with people in my Facebook network gives me new people to talk to.	.965	.69
	10	Through my Facebook network, I come in contact with new people all the time.	.721	(inter-item correlation)
Bonding social capital				
Individual benefit	1	There are several people in my Facebook network I trust to help solve my problems.	.633	.76
	2	There is someone in my Facebook network I can turn to for advice about making very important decisions.	.829	
	3	There is no one in my Facebook network that I feel comfortable talking to about intimate personal problems.	(Not included)	
	4	When I feel lonely, there are several people in my Facebook network I can talk to.	.561	
	5	If I needed an emergency loan of $500, I know someone in my Facebook network I can turn to.	.621	
	7	The people I interact with in my Facebook network would be good job references for me.	.561	
Collective action (More sacrifice)	6	The people I interact with in my Facebook network would put their reputation on the line for me.	.888	.76
	8	The people I interact with in my Facebook network would share their last dollar with me.	.858	
	9	I do not know people in my Facebook network well enough to get them to do anything important.	.413	
	10	The people I interact with in my Facebook network would help me fight an injustice.	.523	

Table 2 Sub-dimension variables from bridging and bonding social capital

Bridging social capital (alpha = .81 *M* =3.77, *SD* = .49) is a 10-item scale that captures the extent to which participants feel they have access to new information and diverse perspectives within their Facebook social network. Example items include: "Interacting with people in my Facebook network makes me want to try new things" and "Interacting with people in my Facebook network makes me feel connected to the bigger picture."

Bonding social capital (alpha = .78 *M* =3.68, *SD* = .56) is a 10-item scale that taps into perceptions of access to significant social and emotional support within their Facebook networks. Example items include: "When I feel lonely, there are several people in my Facebook network I can talk to," and "The people I interact with in my Facebook network would share their last dollar with me."

Sub-dimensions of social capital
To construct the bonding social capital measure, Williams [33] initially created 24-items representing five sub-dimensions: emotional support, access to limited resources, ability to mobilize solidarity, out-group antagonism, and homogeneity. He created 22 items for bridging social capital from four sub-dimensions: outward-looking, interaction with new people, part of a broader group, and diffuse reciprocity. Williams reduced both bridging and bonding to ten items each through exploratory factor analysis. Thus each scale for bonding and bridging social capital collapses these different conceptual sub-dimensions. Through this reduction process, all items from *ability to mobilize solidarity*, *homogeneity*, and *diffuse reciprocity* were excluded, so bonding and bridging social capital had three factors respectively.

In order to confirm sub-factors of the two-scale, 20-item measurement, we performed confirmatory factor analysis (CFA) based on the conceptual dimensions. CFA was conducted using AMOS 20.0 to examine the construct validity of a three factor-solution extracted from the original bridging and bonding social capital scales. The model fit was assessed by Chi-Square, CFI (comparative fit index) and RMSEA (root mean square error of approximation). The Chi-Square value is the basic measure for checking overall model fit, and CFI evaluates the model

by comparing the chi-square value to the chi-square of the null model. CFI is customized for a small sample size [28]. The RMSEA is a supplementary statistic of chi-square to assess model fit. The CFA model's fit is acceptable when ratio of χ^2 to df is less than 3.00, comparative fit index (CFI) is .95 or higher, and root mean square error of approximation (RMSEA) is between .06 and .08 [33].

Sub-dimensions of bridging social capital
The three-factor model showed a good fit with the data, χ^2 (32) = 46.16, χ^2/df=1.44, CFI= .95, and RMSEA = .068. Cronbach's alphas for sub-scales were .74 (outward-looking) and .79 (broader group) respectively. The third variable (meeting new people) consisted of two items and its inter-item correlation was .69.

Sub-dimensions of bonding social capital
The CFA model fit was not adequate with the three-factor model. The CFA modification indices in the present study suggested controlling correlations among item numbers 1, 2, 4, 5, and 7, and the modification suggested a two-factor model rather than three factors. See Table 2 for items in the two factors.

Modification is one of the functions in AMOS to suggest a better model fit. One item (No. 3 in the table) measuring emotional support was excluded because it had a very low factor loading value and reduced the reliability of the scale. The two-factor model showed a good fit with the data, χ^2(26) = 35.220, χ^2/df=1.35, CFI= .97, and RMSEA = .058. Cronbach's alphas for sub-scale were .76 (individual benefit) and .76 (collective action) respectively. After completing the CFA tests, we averaged items in each factor.

Among the three new variables from bridging social capital, the participants had an average scores in *outward-looking* of 3.98 (SD = .48), *broader group* of 3.80 (SD = .63), and *new people* of 3.41 (SD = .95). Regarding the two variables from bonding social capital, the participants had, on average, an *individual benefit* score of 3.86 (SD = .50) and a *collective action* score of 3.52 (SD = .66).

Rhetorical strategies to elicit responses
Content analysis was used to analyze the posts the favor-doers broadcasted to their network during the lab session. One of the authors made a first pass through the favor-asking posts and made a list of recurring rhetorical strategies utilized by participants to elicit responses from their network. The research team finalized six types of strategies through multiple iterations. Two members of the research team coded all of the posts using the categories. The two coders were allowed to assign multiple strategies to each post. Besides the rhetorical strategy coding, the aggregate number of strategies per post was counted to create a new variable, "number of strategies," for regression analysis. Cohen's Kappa was calculated for each strategy and the total number of strategies. The Kappa for all

categories was 1.0. Table 3 contains the categories and status update examples.

Strategy categories	Example	Number of posts & percent utilizing strategy
Thanks in advance*	"Thank you for helping me"	52 (53.1%)
Signal of brevity*	"Take a couple of minutes and do so!"	43 (43.9%)
Research study/science*	"I'm participating in a research study that is examining…"	27 (27.6%)
University mention*	"I'm in the process of going through a survey for the C Dept at [university]"	21 (21.4%)
Spam disclaimer*	"This isn't a spam"	81 (82.7%)
Money incentive mentioned*	"I will get $.50 in an Amazon cash (which is like Gold!!) for everyone of you complete the survey"	79 (80.6%)

*Yes = 1

Table 3: Favor-asking strategy categories

RESULTS

Effects on the number of responses
The dependent variable of this study was the total number of responses to the favor-asking posting. This is count data without negative numbers. Poisson regression was invented for analyzing count data. The assumption of distribution for Poisson regression is that the mean value should be close to the variance. But the present data contains evidence of overdispersion, which means variance is much higher than the mean value (M = 3.4, variance=12.5), so negative binomial analysis is a more appropriate choice.

We examined the correlation matrix for multicollinearity in Table 4. In this sample, no correlations above the value of r > .8 were identified. The variance inflation factors (VIFs) were below the critical value of 10 (highest VIF = 1.63), indicating no serious biasing effect. The tolerance statistic for all variables have values greater than 0.1 [34]. We therefore concluded that there was no significant threat to the validity of the regression analysis.

Table 5 shows the results from the negative binomial regression including both the original bridging and bonding social capital measures (model 1) and the sub-dimensions of social capital (model 2) as independent variables separately. Average marginal effect estimations are shown in Table 5. Model 1 includes the original Williams social capital measures, and the model is statistically significant (p = 0.035) with a Pseudo R^2 of 0.031. Model 2 includes the sub-dimensions of social capital as separate independent variables. The model is statistically significant (p = 0.045), with a Pseudo R^2 of 0.018.

Model 1							Model 2									
Variables	1	2	3	4	5	6	Variables	1	2	3	4	5	6	7	8	9
1 Actual friends	-						1 Actual friends	-								
2 F of asking help	.375**	-					2 F of asking help	.375**	-							
3 SRI	.387**	.250**	-				3 SRI	.387**	.250**	-						
4 N of strategies	.004	-.101	.204*	-			4 N of strategies	.004	-.101	.204*	-					
5 Bridging SC	.213*	.334**	.504**	.138	-		5 Outward looking	.129	.254**	.334**	.185	-				
6 Bonding SC	.238*	.195*	.259**	.128	.213*	-	6 Broader group	.214*	.278**	.443**	.168	.399**	-			
							7 New people	.127	.218*	.351**	-.067	.382**	.284**	-		
							8 Individual benefit	.164	.108	.184	.097	.147	.076	.046	-	
							9 Collective action	.241*	.195*	.307**	.116	.196*	.350**	.052	.479**	-

Table 4. Correlation matrices

In model 1, neither bridging nor bonding social capital has a significant effect on the number of responses, in effect failing to support *H1* which predicted a positive association between perceptions of bridging and bonding social capital and the number of responses to a favor request. In Model 2, the sub-dimensions *meeting new people* of bridging social capital and *individual benefit* of bonding social capital have significant relationships with *the number of responses*. The results show that sub-dimensions of social capital affect the number of responses to the favor differently. Some sub-dimensions have no significant impact on the response rate,

Independent Variable	Model1	Model2
	Average Marginal Effect (SD)	*Average Marginal Effect* (SD)
Actual FB friends	-.00 (.00)	-.00 (.00)
F of asking help	1.87* (.91)	1.78* (.86)
SRI	1.23 (1.14)	1.36 (1.15)
N of strategy	.96* (.46)	1.02* (.46)
Bridging Social Capital	-1.97 (1.35)	
Bonding Social Capital	.77 (.92)	
New variables from bridging social capital		
Outward-looking		-1.27 (1.13)
Broader group		.50 (.86)
New people		-.90˙ (.52)
New variables from bonding social capital		
Individual benefit		1.68* (.86)
Collective action		-1.07 (.78)
Constant	3.61 (.49)	3.63 (.48)
Log-likelihood value	-211.67	-208.46
Pseudo R^2	0.031*	0.018*
Likelihood Ratio	13.54	19.97
P-value	0.035*	0.045*

* $P < 0.001$, '***' ; $P < 0.01$, '**' ; $P < 0.05$, '*'; p<0.10, '˙'
* Coefficients are from a marginal effect analysis of the negative binomial regression.

Table 5: Negative binomial regression predicting number of responses (N=98)

providing insight into *RQ1*, which asked "*how do different dimensions of social capital relate to the number of responses to a favor request?*" A one-unit increase in *individual benefit* leads to a 1.68 unit increase in a *number of responses* (β=1.68, $p<0.05$). *New people* had a marginal negative effect, so a one-unit increase in *new people* leads to a .90 unit decrease in a *number of responses* (β=-.90, p=0.05).

In both models, the effects of the *number of actual friends* and *SRI* are not significant, so *H2* and *H3* , which predicted a positive relationship between *number of actual friends* and the *number of favor responses* and between *SRI* and the *number of favor responses* respectively, are not supported.

The frequency of asking for help (*RQ2*) has a significant, positive effect on the number of responses in both models. A one-unit increase in the *frequency of asking for help* leads to a 1.87 unit increase in the *number of responses* on average (β = 1.87, p = 0.5) in model 1. In model 2, a one-unit increase in *frequency of asking for help* leads to 1.78 unit increase in the *number of responses* (β=1.78, $p<0.05$).

H4, which predicted a positive relationship between the *number of rhetorical strategies utilized* and the *number of responses* to a favor request, was supported. A one-unit increase in the *number of strategies* leads to a .96 unit increase in the *number of responses* on average (β=.96, p= 0.5) in model 1. In Model 2, a one-unit increase in the *number of rhetorical strategies* leads to a 1.02 unit increase in the *number of responses* (β=1.02, $p<0.05$).

Types of rhetorical strategies to elicit favors
Partial correlation was assessed to investigate *RQ3*, the relationship between types of strategies utilized and the number of responses received. Because the total number of responses is expected to relate to the total number of possible favor-doers, we controlled for *total Facebook friends*. Since the dataset has many zero responses (N=22; those who did not get any responses), the number of responses was recoded to a dummy variable to look at difference between zero-response group and non-zero response group (N=76; those with one or more respondent).

Strategy (Yes=1)	N of responses	Zero vs. non-zero responses (Zero=0)
Thanks in advance	.02	-.08
Signal of brevity	.02	-.13
Research study/science	.18	.05
University mention	.25*	.15
Spam disclaimer	.07	-.06
Money incentive mentioned	.13	.24*
Total N of strategies used	.28*	.06

Table 6: Partial correlation between strategies and continuous and binary coding of responses.

As shown in Table 6, the total number of rhetorical strategies utilized and, specifically, the mention of the university at which the study occurred, were positively correlated to the number of response. This could be because referencing a specific sub-cluster helps to reduce the cost for that network in deciding whether they should respond or not. This is similar to the "uniqueness" dimension that has been shown to be effective in reducing social loafing [17]. For zero vs. non-zero comparison, the money incentive mention strategy is related to the non-zero group. This result implies that each strategy has a different rate of responses, and the rhetorical strategies that are associated with eliciting at least a single response are not the same as those associated with eliciting *more* responses.

DISCUSSION
Social capital is a useful framework for explicating the value of our social networks, and consequently the value of the socio-technical tools, such as Facebook, that enable us to better maintain these connections. We see two main ways in which this study has expanded our understanding of the intersection of social capital and social computing systems. First, because social capital comprises a vast set of communication practices, resources, and structures within a social network [7], this study captures a specific outcome of social capital that is available to all members of one's network: getting a small favor from a Facebook Friend. We asked our participants to request a favor that anyone in their network could provide and then used the number of responses as an outcome of social capital. Second, we examine a common framework for understanding different types of social capital, bridging and bonding, and extend those concepts to include more nuances of that framework. We used Williams' [33] survey items which tap into individuals' perceptions of bridging and bonding social capital, but also examine the sub-dimensions of the Williams' [33] measures as potentially important predictors of relational outcomes and online behavior.

First, we examined the relationship between perceived social capital and the number of responses to a favor request using both measures of social capital: the original bridging and bonding scales, as well as the sub-dimensions of social capital developed through factor analysis guided by the conceptual distinctions articulated in Williams work. The relationship between favors and social capital was insignificant when using the standard bridging and bonding scales, so *H1* was not supported. However, we found an interesting answer to *RQ1*, which asked "*how do different dimensions of social capital relate to the number of responses to a favor request?* We found a significant relationship between the number of responses and one "revised" sub-dimension (*individual benefit*) of bonding social capital when we examined the more granular sub-dimension measures.

Given the cross-sectional nature of these data, we don't have empirical evidence that clearly illustrates why these differences might be occurring. Based on Burt's [7] work on the importance of communication behaviors in generating social capital, it could be that users who perceive higher levels of the *individual benefit* sub-dimension of bonding social capital are more likely to interact with their networks in ways that are able to generate more responses to favors. The type of favor requested may be another factor to consider. Filling out the survey is a simple task or favor that anyone can perform, as opposed to a task requiring more time, effort, expertise, or other resources.

Among the sub-dimensions of bridging social capital, there was a significant relationship between *meeting new people* and the number of favor-doers, but this was a negative association. Those who were more likely to perceive Facebook as an ideal place to interact with new people received fewer responses to their favor requests, perhaps because they were more likely to use the site as a way to interact with new and different kinds of people but not as a place to build up stores of reciprocal interactions with the same individuals over time.

The number of actual Facebook Friends and signals of relational investment (SRI) were not significantly related to the number of responses received, such that *H2* and *H3* were not supported. This was unexpected given previous work identifying a link between these variables and perceived social capital, and points to the importance of employing other measures. Because the favor required little time investment, expertise, or familiarity with the favor requestor and thus could be completed by anyone in one's Facebook network, it may be that "actual" friends were not important for this instance, although we would expect that SRI and actual friends might be associated with other kinds of informational or emotional support – instances in which more intimate knowledge of the support requestor is necessary to respond.

We also found that participants who reported a higher level of frequency of asking for help from their Facebook Friends were more likely to get a higher number of responses from their Facebook networks (*RQ2*). Asking questions and favors of one's network may be a way to utilize the "social lubrication" components of the site by engaging in

interaction with one's network. Additionally, individuals who frequently ask for help from their Facebook networks may be more skilled at framing their requests in ways that elicit more responses. Future research should explore these potential explanations using other methods.

Implications for Practice

We have shown that different types of perceptions of social capital can lead to different outcomes in terms of using a site like Facebook to ask for favors. Work in this area can help practitioners understand how they might construct tools that allow for relationship maintenance in such a way as to evoke the different aspects of social capital explicated here. For example, designers interested in supporting *individual benefit* effects for their users might provide tools that make instances of exchanged favors between other users more visible, or that help emphasize requests for help over other types of messages in the system.

Limitations

As with any work based on Facebook interactions, specific features of the system may influence our results. Because Facebook's Edge Rank algorithm selects which content appears in Friends' News Feeds, we do not know how many people saw the requests posted by our participants [2]. The reasons why some requests were more successful than others were most likely affected by the variables we measure here, but also may have influenced by their visibility in the News Feed of our participants' networks. As with other work similar to this, we are looking at relationships between variables, and do not have evidence of causal relationships. Additionally, those Friends who did see the favor requests may have been deterred from completing the survey because after clicking the link to the survey, they were directed to a Facebook application page that required them to "allow" or "deny" the application to download some basic data about them before continuing to the survey. We believe that this extra step may have reduced the number of responses received to the favor requests – albeit across all participants – as these applications are often associated with privacy risks to users [1]. Future research utilizing a similar design should forego the use of a Facebook application.

The task we chose, asking members of the network to fill out a survey, likely carries dependencies that would be different had another task been used. Capturing instances of social capital conversion in action has been a challenge for researchers in this area, and given the likely effects of the form of the favors that mark social capital conversion, more work needs to be done in this area.

CONCLUSION

Social capital is a way of framing positive outcomes from engagement with a social network, including contexts in which one's social network is mediated by information and communication technologies. Past scholarship on social network sites has articulated how the affordances of these socio-technical systems can shape the generation and expression of social capital [24]. Sub-dimensions of social capital allow for a better matching between technical and social affordances. In this paper, we've shown that social capital is multi-dimensional, and that different aspects of this concept may be associated with different types of outcomes in socio-technical systems. Social capital has proven to be a useful concept in understanding how technologies support relationships, and we are hopeful that expanding our understanding of this concept will lead to future insights regarding the design, deployment, and effects of socio- technical systems such as Facebook.

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