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Web-network Social Capital: Exploring Network Actions and Benefits for Online News Community Members

Jeremy Littau[*]

This research introduces a new measure of social capital for users of online news communities by applying social capital concepts used to measure networks in real-world communities. "Web-network" social capital measures the strength of ties created online for the benefit of engagement that is non-local. Using the concept of the "networked individual" as a theoretical tool, this research sampled users of news sites that offered online community forums for comment. The results show that traditional social capital measures rooted in local community increase both local forms of engagement and engagement in causes that are more national than local.

Work regarding civic ties and engagement by researchers such as Putnam (2000) tends to look at people's relationships with others in the community, in conjunction with media variables such as news use, as a predictor of their civic behavior both in their hometown and nationally. Others have looked at how online community joining has increased the tendency to participate in one's own local community (Norris, 2002). This research attempts to study those two concepts together more explicitly by examining the growing trend of news sites that offer online forums for community conversation and are built around niches (whether they be local geography or topics of interest).

Despite concerns scholars have voiced about the potentially isolating effects of heavy Web use (Ng & Wiemer-Hastings, 2005; Becker & Mark, 1999), the ease of joining online communities has led to people being engaged in places far away with those they've never met as the Web has evolved to include more social and networked forms of communication, particularly on news sites that cater to niche interests. At the center of this divergence is the question of how and when the use of social networks online isolates users, enhances offline actions, or represents a new type of engagement. Recent research on Americans' Internet use from the USC Annenberg School for Communication adds to the picture. In 2013, about 62% of Americans

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reported some type of activity in an online community, defined as a range of uses from specific sites built to cater to user interests to social media sites such as Facebook or dating sites. This percentage reflects accelerated growth from the 2009 version of the study, wherein only 15% of respondents reported the same type of activity (Center for the Digital Future, 2009). In addition, 76% of respondents in the 2013 study reported that online involvement has not detracted from their offline community participation, and 33% of online community members reported taking an offline action due to some online activity at least once a month (Center for the Digital Future, 2013).

The purpose of this research is to understand the relationship between online community participation on online news sites that offer community forums, specifically by examining the benefits that come with that type of network engagement via a rethinking of social capital research. Whereas past research tends to focus on online participation for offline benefit, this study also is interested in understanding actions that are specifically about benefiting the online community itself. Such actions can be a stabilizing force for the community itself as well as a driver of continued engagement with the news content. News use in particular is highly correlated with community engagement (Beaudoin & Thorson, 2004; Shah et al., 2001b), so a logical next step would be to understand the role news communities themselves play. Traditional social capital measures, which measure network strength and attempt to assess community engagement, are inadequate for understanding how online communities are built and maintained. Understanding how communities built around news exchange work would help create new communities and improve existing ones. Given that both engagement with news and involvement in one's community (whether local or virtual) is a byproduct, it is a question worth exploring for news practitioners.

Literature Review

Online media in the age of the "networked individual"

Internet use among Americans is higher than it has ever been, with time spent online at 20.4 hours per week on average. Most of the distribution of time spent seems to be clustered with either light or heavy users of the Internet, with light users reporting an average of 2.8 hours per week compared to 42 hours per week for heavy users. While some forms of Internet use can take place via web pages, self-reports of use of online communities has been on a steady rise the past few years (Center for the Digital Future, 2013).

The term "community" as applied to online (or "virtual") worlds has undergone a steady evolution as the Web has evolved from a static product to one that is more interactive . Wellman and Gulia (1999) note that offline communities are traditionally defined in terms of geographic space but that online communities that exist have complicated the picture because of the Internet's ability to transcend local ties. Thus came attempts to define "virtual" forms of community, which consist of organizations of people made possible by communication technology. Rheingold (1994, p. 58) was the first to define virtual community, saying it is a group of people who "exchange words and ideas" through a technologically created medium such as an online bulletin board, but this definition was not specific enough given the rapid development in ways people communicate online via different social offerings. Others have added layers of refinement by describing other features and uses. Virtual community is community enabled by the use of a networked communication technology, bonding people along

lines other than geography (Hiltz & Wellman, 1997). While virtual community does not preclude bonding along geographic lines, other factors that aid in the formation of virtual communities include shared interests, purpose, goals, and values. Early research explored geographic features and boundaries (Preece, 2000; Dennis, Pootheri & Natarajan, 1998) as well as characteristics that make up interpersonal relationships such as shared traits or affiliations (Haythornthwaite & Wellman, 1998; Preece, 2000; Wellman, 1997). Preece (2000, p. 3) defines online community as "any virtual social space where people come together to get and give information or support, to learn, or to find company" and notes that it exists independent of geographic borders.

The "locality" in this sense is in the shared interest, not in the geographic sense of place, and it is important to news organizations because they traditionally have organized themselves by geographic region. As one would find in a real-world community, the common bond is a shared interest and the existence of norms and protocols that govern virtual community life (Brint, 2001; Wilson & Peterson, 2002) as well as information exchange. Porter (2004, para. 10) defined virtual community as "an aggregation of individuals or business partners who interact around a shared interest, where the interaction is at least partially supported and/or mediated by technology and guided by some protocols or norms." Ridings and Gefen (2004) note two other factors that are critical in defining virtual community. The first is that the collection of people must be defined as more than having a virtual space to visit; there must be clear structures that facilitate community norms and building long-term relationships with one another. Second, in virtual communities people form an attachment to the group such that they visit often.

For the purpose of this research, a study by Ridings, Gefen and Arize (2002) offers a definition of virtual community that seems the most complete and flexible given the different types of community that have emerged on the web, and indeed it is commonly used among those who research virtual community. Ridings et al. define virtual community as "groups of people with common interests and practices that communicate regularly and for some duration in an organized way over the Internet through a common location or mechanism" (p. 273). This definition is far-reaching and flexible enough to encapsulate participation in many types of Web-based communities, from bulletin boards to social networks such as Facebook.

Scholars such as Putnam (1995) have famously argued that online associations have the potential to balkanize people rather than bring them together, but there is evidence to support the idea that the Internet can bring people together. The Internet's relatively short history does show that the first adopters to any new communication technology trend often have been people who are marginalized due to holding a minority viewpoint or because they are a particular minority group in real-world culture (Rodzvilla, 2002), but the Internet also plays a strong role in bonding people of like interests, beliefs, and life experiences together (Norris, 2002) and has the power to create bridges between disparate groups due to egalitarian discourse online (Lin, 2007) or to accomplish other types of goals. For example, adolescents have reported finding greater social satisfaction and connection online, and people with disabilities also have used the Web to create social connections that are difficult in everyday life (Hasselbring & Glaser, 2000). Similarly, in virtual gaming worlds players accomplish tasks together in cooperation for mutual benefit (Ducheneaut *et al.*, 2006). As it relates to online communities, online community members tend to be highly social and possess strong communication skills (Lee & Lee, 2010).

In thinking about people and how they interact both online and offline, the notion that these are separate experience arguably is a false dichotomy. Rainie and Wellman (2012) argue for the concept of the "networked individual" in an era where much of our web interaction is socially connected. In their model, which provides a theoretical layer to understanding Internet

use from a networked perspective, individuals do not exist solely offline or online. Instead, individuals shift with ease between online and offline spaces, often occupying both at the same time. Offline community life and online community life are constantly interfacing with one another even while serving as discrete modes of communication at times. In this view, while online communities do represent a new type of public that is distinct from offline publics, they are not distinct by the fact that they are separate. Instead, the conclusion from Rainie and Wilson is that we need to define online vs. offline community according to their respective functions, the actions one takes in those communities, and the locus of who is affected by those actions.

To do so requires examining network characteristics and outcomes, and the framework used for this study is the concept of social capital. Popularized by Robert Putnam in *Bowling Alone*, social capital is the idea that communities gain strength and work better when people take advantage of social ties to work together for mutual benefit in the form of civic engagement behaviors such as voting, volunteering, or aiding others in need (Putnam, 2000). The core benefit is that people gain a sense of efficacy needed to change their communities for the better when they are empowered to help others through social relationships. People's attitudes toward institutions such as government are key markers of social capital, but so is a person's use of news for democratic purpose and association with civic groups because the latter creates networks necessary for exchange and reciprocity (Putnam, 1995, 2000).

Social capital research has two distinct scholarly streams of progression. The first path, which invokes Bourdieu (1986) and Coleman (1988), focuses on networks between people as a type of roadway for reciprocity. In Bourdieu's view, economic transaction is still the building block of societal relations, but it is built within a system of social exchange. He defines social capital as networked obligations ("connections") that in certain circumstances can be converted to economic capital. Coleman builds on Bourdieu's thinking as it relates to the use of social capital in the transmission of resources. He defines social capital as a network or social structure that allows for certain actions by actors to take place within that system. For Coleman, the benefit of social capital is that it allows a person in a community to access resources via weak-tie affiliations that they do not have via their own bonded networks (Coleman, 1988). Social capital, which he calls the changes in relationships between people that facilitate action, benefits everyone in a community when it is invested, and the benefit is that it gives people in that community access to physical and human capital. Similarly, Lin (2001, p. 6) defines social capital as "investment in relationships with expected returns" by using network relationships to serve as ways of helping and vouching for one another in economic or idea exchange.

A second stream made famous several years later by Putnam (2000) takes a less-networked approach and homes in more on the idea of generalized trust (Foley & Edwards, 1999). In the Putnam conception of social capital, a "virtuous circle" exists between norms, networks, and social trust that spur participation in one's community in a self-feeding way. Network is merely a variable in social capital, not the basis of the concept itself (Putnam, 2000). This conception combines networks and participation efforts into a definition of social capital that is distinctly different from the Bourdieu and Coleman conception because engagement then becomes a measure of networks rather than an outcome variable. Unlike the Bourdieu/Coleman branch of research, which sees engagement as an outcome of social capital created by networks (engagement is a dependent variable predicted by social capital), Putnam tends to argue that engagement is a sign of social capital. This different conception of the relationship between networks and engagement is one reason why scholars have argued that social capital is an ill-defined concept in scholarship (Edwards & Foley, 1998).

The drawback to Putnam's approach is there is no measure of network quality embedded in his conception. Merely having trust networks are a factor leading an individual around the virtuous circle, in Putnam's conception, but this relationship doesn't include measures of network importance, cohesion, type, or quality. In doing so, this conception assumes that networks lead to other factors on the virtuous circle without looking at the factors of how or why. This is why scholars have attempted to understand networks better, and in doing so treat community engagement as the outgrowth of strong, high-quality networks. This research will operate under the same principle and use Coleman's conception of social capital.

Within the concept of social capital are two distinct forms: bridging and bonding. Bonding social capital exists between members of groups, binding together small homogeneous units such as families, ethnic groups, or religious communities. Bridging social capital consists of heterogeneous ideological and social connections between members of separate bonded groups that provide an avenue for both groups to benefit via a transfer of knowledge or resources (Putnam, 1995). Bridging social capital works because of these "weak-tie" relationships that exist between bonded members, allowing a members of a bonded community to share resources using the social connection created by the weak-tie bridge (Granovetter, 1973). The Internet is good at making weak-tie connections and diversifying a person's real-world connections, but it also is useful in bonding groups in online community environments (Norris 2002; Hampton, Lee & Her, 2011). An even better predictor is news use. Researchers have found a consistent link between news use and social capital in communities both at the local and regional level, particularly for print and Internet-based sites (Beaudoin & Thorson, 2004; Shah *et al.*, 2001b)

As noted earlier, most scholarship looks at social capital with offline forms of engagement as an outcome variable. Shah *et al.* (2002) found that time spent online had positive relationships with engagement in the form of volunteerism and associations. Others pointed to clear signs that reciprocity was not only happening online, but also that it was serving the purpose of bringing people together across geography for offline action (Wellman *et al.*, 2001; Wellman & Hampton, 1999). Shah found the same use differences that helped determine whether television use was positively or negatively correlated with social capital (entertainment vs. information seeking) also applied to the Web, and in fact that generations that were heavily criticized by Putnam as low social capital generators actually were showing more signs of using the Web to connect socially with others in prosocial offline ways (Shah et al., 2001a; Shah et al., 2001b). Still, there seems to be some real-world influence that is necessary to connect social capital with online community use. Lee and Lee (2010) found that key markers such as trust were missing in online community users unless they possessed high amounts of it in the real world, underscoring Rainie and Wellman's argument that the online and offline self influence one another.

Williams (2006) found support for the existence of both online and offline social capital that contains both bridging and bonding forms. In this conception, offline social capital is offline engagement for offline benefits and online social capital is engagement in online community for offline benefits. This research attempts to expand on Williams' work. Rainie and Wellman (2102) argue that online and offline community are distinct elements even as they are intertwined. If this is true, then we should be able to identify a type of social capital that is created online for the benefit of an online community. This research seeks to uncover that variable, called "web-network social capital."

The research reported here uses the conceptions found in Williams, but for the sake of

clarity the variables are renamed. The "offline" social capital that Williams used will be "local community social capital" for this research, while the "online" version will be "Web-local social capital" to emphasize the ties that are created online for offline benefit in local community, as illustrated in the following figure:

Comparison of local community, Web-local, and Web-network social capital			
	Local community	**Web-local**	**Web-network**
Relationships formed …	Locally	Online	Online
Benefits of formed relationships exist …	Locally	Locally	Online

The reason for this renaming is that "Web-network social capital," will be introduced in this study as a way of distinguishing online ties created for the benefit of online networks and communities. These concepts inform the following research question.

> RQ1: Is web-network social capital a concept that is distinct from offline and online forms of social capital?

Social capital and local engagement

This network approach is how Williams (2006) conceived of the relationship between online media and social capital. By extending on the work Norris (2002) did, Williams conceived of social capital much as Coleman did by noting that it was explained by network ties via bridging and bonding. Williams then measured bridging and bonding within both online and offline contexts, accounting for results that show social capital can be created in both contexts and that these network ties can be separate from one another.   Online community users report more involvement in clubs and volunteer organizations than non-online community users (Center for the Digital Future, 2009), and thus those who use these communities who report high levels of local-community and Web-local should report higher levels of different types of engagement as their media usage creates stronger and wider social bonds via social capital. The following hypotheses, then, will serve to examine whether the measures used in this study are in line with past findings.

> H_{1a}: There is a positive relationship between local community bonding social capital and local civic engagement in virtual communities.

> H_{1b}: There is a positive relationship between local community bridging social capital and local civic engagement in virtual communities.

> H_{2a}: There is a positive relationship between Web-local bonding social capital and local civic engagement in virtual communities.

> H_{2b}: There is a positive relationship between Web-local bridging social capital and local civic engagement in virtual communities.

These hypotheses, based on the past research previously discussed, will be used for two purposes. First, they test to see whether relationships that have been previously found in online research apply to online communities. Second, they are a test of whether social capital as it exists in the real world applies to these online settings. In that way, these hypotheses are the beginning of an argument about how social capital exists in virtual communities and offer a way of determining face validity to the Web-network social capital construct that will be discussed in the next section.

Social capital and distance engagement

One additional problem comes in differentiating engagement behaviors Putnam (2000) noted as types of "checkbook democracy." He posited that a weaker form of engagement is affiliation in national groups that do advocacy but require no commitment beyond a donation. The ease of joining such groups, he argued, meant it was a form of joining but not as meaningful as joining in a local community. At the same time, recent presidential election cycles showed a new type of trend on the Web, that of people volunteering to staff phone banks for candidates in faraway districts or donating money to candidates for whom they could not vote due to regional location (Banks, 2009). In addition, research has shown that reciprocity between people who have never met in the real world but know one another online is taking place in the context of Web communities. Traditional social capital research has not been able to capture this type of non-local civic engagement, but it seems as if this is fundamentally distinct from checkbook democracy.

This research proposes that behaviors that constitute this non-local type of civic engagement be added to Putnam's checkbook democracy measure to split out some types of engagement from traditional community-based ones. One of these non-local indices is based on non-geographic political and cause-based work (distance activism) and one is based on acts of reciprocity and aid through distance (distance helping). The following hypotheses examine these relationships.

H_{3a}: There is a relationship between Web-local social capital (both bridging and bonding) and distance helping in virtual communities.

H_{3b}: There is a relationship between Web-local social capital (both bridging and bonding) and distance activism in virtual communities.

H_{4a}: There is a positive relationship between Web-network social capital (both bridging and bonding) and distance helping in virtual communities.

H_{4b}: There is a relationship between Web-network social capital (both bridging and bonding) and distance activism in virtual communities.

Method

This research employed an online survey method that sampled users from four different niche online news communities. The specific communities used were chosen because they tend to

transcend geography, and thus the topic and theme for the site was more important than the location. Past research has shown strong gravitation to topics such as politics, parenting, sports, and religion, among others (Porter, 2004; Preece, 2000, 2001) and this served as the starting point in choosing sites. The survey sampled users from a political Web community, a parenting Web community, a religion Web community, and a sports Web community. All of the sites used in this study tend to draw mostly users from the United States, according to the sites' Webmasters, but within that context the sites draw users from many parts of the country. The sites contain both a mix of content and community discussion through forums that users can use to interact with one another via the Web. This mixture was a key characteristic of the sites chosen, as we were interested in news sites that had a forum for community conversation, not merely sites that were entirely built around a forum.

A key methodological problem with online surveys is that they are a convenience sample, and thus not always an accurate look at the population being studied (Williams & Monge, 2001). To mitigate this problem, the method used for this study employed a random sampling technique by contacting individual members of the community in order to solicit responses in coordination with a message from the site operators so that users would know it was coming from a trusted source. From this we generated a response rate statistic. The number of surveys filled out served as the numerator, while the number of potential participants served as the denominator.

Responses to the survey (N=582) were generated over a six-week period, across the four sites. The response rate for the four sites, based on using only the randomly selected participants as outlined in the methods section, was 32.1%, which represents 582 responses from 1,808 selected users. Several variables were scales constructed from several items. All of these scales were analyzed using exploratory factor analysis (EFA) with Varimax rotation, and values below an absolute value of 0.6 were not included in the scale. Only factors with an Eigenvalue greater than 1.0 were accepted for analysis. The indices also were tested for reliability using Cronbach's alpha, with a minimum threshold of 0.7 required for a reliable scale.

Independent variables

Three independent variables measuring the types of social capital proposed by this research were used in this study (local community social capital, Web-local social capital, and Web-network social capital). Each of these variables consisted of multi-item indices for the factors of bridging and bonding, consistent with past research, and the questions used to build each are found in the appendix.   The local community social capital and Web-local social capital scales come from Williams (2006), and the Web-network social capital scale was created by using the questions and making them specific to online networks only.

Local community social capital is defined as the degree to which people were connected socially to people in their local community. It had two facets consistent with the literature, "bonding" and "bridging" and is consistent with Williams' version of offline social capital.   Bonding is typified by such questions as, "The people I interact with in my neighborhood or community would be good job references for me." Bridging is typified by such questions as, "Interacting with people in my neighborhood or community gives me new people to talk to." The variable based on this construct was measured using a 5-point Likert scale. EFA found two factors that accounted for 65.03% of the variance and values under 0.6 were discarded (see Appendix 1 for the questions). Reliability scores for local community bonding (a = .92) and local community bridging (a =.94) were both acceptable using the .70 threshold.

Web-local social capital (IV/DV_2) was defined as the degree to which people are connected socially to people in their online community in ways that bring offline benefit and is based on Williams' version of online social capital. What distinguishes this version from the local community social capital construct is that while the benefits come to people in terms of improved trust and contentment in the context of their home community, the networks and relationships that facilitate these benefits are created in online contexts similar to what Norris (2002) found. Consistent with the local community version of this measure, it has two facets found in the literature, "bonding" and "bridging." *Bonding* is typified by such questions as "When I feel lonely, there are several people on this community site I can talk to." *Bridging* is typified by such questions "Interacting with people on this community site makes me interested in things that happen outside of my town." This variable was measured using a 5-point Likert scale. Factor analysis for Web-local social capital was performed using the same method as the method for local community social capital. EFA found two factors that accounted for 62.67% of the variance and values under 0.6 were discarded (see Appendix 1 for the questions). Reliability scores for Web-local bonding (a = .94) and Web-local bridging (a = .92) were both acceptable using the .70 threshold.

The final independent variable used for this research is the new construct being tested in this research. **Web-network social capital** (IV/DV_3) was defined as the degree to which people are connected socially to people in their online community in ways that bring benefit to the online community in which they participate. What distinguishes this Web-network social capital from the other two versions being measured in this research is that it examines the networks of relationships that exist within the context of that online community in order to see what civic-type behaviors exist that might help build and maintain that online community. Consistent with both the Web-local and local community versions of this measure, Web-network social capital maintains two facets consistent with the literature, "bonding" and "bridging." Web-network social capital from bonding comes from the results of relationships that help people find connections with groups or individuals that share common traits such as common ideals, beliefs, or interests that form the common reason for their Web community's existence. It is typified by such questions as, "There are several people on this community site I trust to help solve problems I am having with the site." Web-local social capital from bridging comes from the result of relationships that expose the person to a set of ideas or people outside their own Web community and indicate interest in what other Web communities are doing. It is typified by such questions as, "Interacting with people in this community site makes me interested in things that are happening in other Web communities" and "Interacting with people in this community site gives me new people to read about on the Web." This variable was measured using a 5-point Likert scale. Because this is a new variable being tested in this study, factor analysis and reliability results are contained in the next section as the answer to RQ_1.

Dependent variables

The final two variables are purely dependent variables used to test the hypotheses and the ultimate goal of the model: local engagement and distance engagement.

Local engagement was defined as actions done within a local community that help others or further civic or democratic goals. The measurement in this case would scale different types of democratic or pro-social behaviors and is split among three different facets:

participation in community activities, work on community projects, and activism within the community. This variable was measured using a 5-point Likert scale. EFA resulted in three factors accounting for 64.68% of the variance. The first factor, called "community issues," grouped questions related to working in local politics or working to create change in communities using awareness and the political process. The second factor was related to involvement and work in organizations such as churches or charities, and thus the factor was called "service." The third factor grouped questions about helping neighbors or socializing with them, and thus this social bonding variable was labeled "neighbors" due to the strength of connections being measured in this index. "Voting" loaded as a fourth separate factor as a single item measuring voting frequency. Reliability scores for community issues (a = .88), service (a = .79), and community (a = .81) were both acceptable using the .70 threshold.

  Distance engagement was defined as actions done that help others or further civic or democratic goals in places other than where a person lives. The measurement in this case was split between two different facets: involvement in issues of national interest and giving to national causes or campaigns. This variable was measured using a 5-point Likert scale. EFA found two factors that accounted for 58.00% of the variance. The first factor grouped contributions or work done for national campaigns, issue advocacy, or candidates in regions other than the participants' local home, and the factor was named "distance activism" to account for this. The second factor encompassed the aspect of helping others financially or otherwise when the only bond between the helper and the person being helped is that the connection was forged first online. Thus the variable was named "distance helping." Reliability scores for distance activism (a = .87) and helping (a = .79) were both acceptable using the .70 threshold.

Results

This study attempts to determine the existence of Web-network social capital as a distinct concept. **RQ$_1$** asked whether Web-network social capital is distinguishable from Web-local social capital. The results indicate there is support for these scales. EFA on the 20 Web-network questions (10 for bonding and 10 for bridging) along with the 40 questions for the local community and Web-local social capital scales showed that each of these three types of social capital was distinct from one another and that each factor split along bridging and bonding facets. Table 1 indicates these six factors accounted for 64.50% of the variance and provided the first evidence that Web-network social capital is a separate construct from the other two measures of social capital and describes something new about online communities. A separate EFA on just the Web-network bridging and bonding factors, done in order to confirm that these two facets were indeed separate from one another simply in the context of the construct Web-network social capital, found that these factors accounted for 57.32% of the variance that emerged in the factor analysis. Thus, support was found for the notion of Web-network social capital having bonding and bridging factors through this exploratory factor analysis.

Table 1

Factor loadings based on Principal Component Analysis with Direct Oblimin rotation for 60 items involving Local Community, Web-Local, and Web-network social capital (N = 582)

	Local Bridging	Local Bonding	Web-local Bridging	Web-local Bonding	Web-network Bridging	Web-network Bonding
LCBr1	.67					
LCBr2	.70					.52
LCBr3	.68					
LCBr4	.72					
LCBr5	.88	-.51				
LCBr6	.79					
LCBr7	.72					
LCBr8	.82					
LCBO1		.84				
LCBO2		.80				
LCBO3		.83				
LCBO4		.86				
LCBO5		.90				
LCBO6		.78				
LCBO7		.72				
LCBO8		.83				
WLBr1			.67			
WLBr2			.69			
WLBr3			.77			
WLBr4			.62			
WLBr5			.82			
WLBr6			.91			
WLBr7			.85			
WLBr8			.86			
WLBr9			.71			
WLBr10			.58			
WLBO1				.53		
WLBO2			.52	.67		
WLBO3				.83		
WLBO4				.76		
WLBO5				.79		
WLBO6				.83		
WLBO7				.90		
WNBR1					.83	
WNBR2					.66	
WNBR3					.74	
WNBR4					.83	
WNBR5					.82	
WNBO1						.77
WNBO2						.91
WNBO3						.90
WNBO4						.94
WNBO5						.74

The final step was to do a confirmatory factor analysis in order to determine whether the theoretical basis for these factors would hold up under more robust factor analysis testing. The CFA was done in AMOS 16.0 using only the loadings that were over .60 in the EFA run beforehand. The final Web-network social capital model presented two different factors (bonding and bridging) and was found to be a good fit without losing any questions from the EFA $(c^2 = 1.85$, df = 9, CMIN = 0.21, p > .05; GFI = 0.95; RMSEA = 0.01). Reliability tests found these

two facets to be above the .70 threshold. Thus, the results show support for the existence of Web-network social capital as a construct that is distinct from two other forms of social capital previously seen in mass communication research.

H$_{1a}$ predicted there is a positive relationship between local community bonding social capital and local engagement among users of virtual communities. Table 2 indicates this hypothesis was supported. Local community bonding (M = 3.38, SD = .95, N = 582) had a highly significant positive relationship with community issues (M = 2.25, SD = 1.15, N = 582; r(580) = .21, p < .01), service (M = 2.59, SD = 1.31, N = 582; r(580) = .26, p < .01), neighbors (M = 3.36, SD = .99, N = 582; r(580) = .49, p < .01), and voting (M = 4.48, SD = 1.08, N = 582; r(580) = .12, p < .01).

H$_{1b}$ predicted there is a positive relationship between local community bridging social capital and local engagement among users of virtual communities. Table 2 indicates this hypothesis was supported. Local community bridging social capital (M = 3.57, SD = .85, N = 582) also had a highly significant positive relationship with community issues (M = 2.25, SD = 1.15, N = 582; r(580) = .17, p < .01), service (M = 2.59, SD = 1.31, N = 582; r(580) = .26, p < .01), neighbors (M = 3.36, SD = .99, N = 582; r(580) = .33, p < .01) and voting (M = 4.48, SD = 1.08, N = 582; r(580) = .13, p < .01).

Table 2

Correlations between the measures of Local Community social capital and the measures of Local Engagement (N = 582)

	1	2	3	4	5	6
1. Local Community Bonding	1.00	.66**	.21**	.26**	.49**	.12**
2. Local Community Bridging		1.00	.17**	.26**	.33**	.13**
3. Local: Community Issues			1.00	.12**	.23**	.27**
4. Local: Service				1.00	.30**	.19**
5. Local: Neighbors					1.00	.17**
6. Local: Voting						1.00

** p < 0.01

The results of this hypothesis are in line with the literature that finds a strong relationship between social capital built in local communities and people's engagement in those communities. Recall from previous research that high social capital in local communities tends to predict civic activity. The results from these hypotheses serve as face validity for the measurements given that the results are in line with previous research.

H$_{2a}$ predicted a positive relationship between Web-local bonding social capital and local engagement in virtual communities. This hypothesis was partially supported. Web-local bonding social capital (M = 3.07, SD = 1.05, N = 582) was positively associated only with neighbors (r(580) = .08, p < .05) while it was negatively associated with community issues (r(580) = -.04, p < .01). Table 3 indicates web-local bonding was not significantly correlated with service or voting, although the relationship was approaching significance. **H$_{2b}$** predicted a positive relationship between Web-local bridging social capital and local engagement in virtual communities. Table 3 indicates this hypothesis was supported. Web-local bridging (M = 4.12,

SD = .65, *N* = 582) had a significant positive relationship with community issues (*r*(580) = .12, *p* < .01), service (*r*(580) = .08, *p* < .05), neighbors (*r*(580) = .16, *p* < .01), and voting (*r*(580) = .15, *p* < .01), although none of the three Pearson correlation figures was above .20.

The results of this hypothesis are in line with the finding of Norris (2002) that the ties created by Web-local bridging are more effective at creating engagement in local community than Web-local bonding. While the literature review noted that bonding can play a role in creating engagement in communities, it is considered a weaker predictor because it is a more insular form of networking than the weak ties created by bridges.

Table 3

Correlations between the measures of Web-Local social capital and the measures of Local Engagement (N = 582)

	1	2	3	4	5	6
1. Web-Local Bonding social capital	1.00	.45**	-.04**	.03	.08*	-.03
2. Web-Local Bridging social capital		1.00	.12**	.08*	.16**	.15**
3. Local: Community Issues			1.00	.12**	.23**	.27**
4. Local: Service				1.00	.30**	.19**
5. Local: Neighbors					1.00	.17**
6. Local: Voting						1.00

*** p < 0.01 ; * p < 0.05*

H₃ₐ predicted a relationship between Web-local social capital (bridging and bonding) and distance helping in virtual communities. This hypothesis was supported. Web-local bonding was positively correlated with distance helping (*M* = 2.90, *SD* = 1.26, *N* = 582; *r*(580) = .38, *p* < .01) as was Web-local bridging (*r*(580) = .31, *p* < .01). **H₃ᵦ** predicted a relationship between Web-local social capital (bridging and bonding) and distance activism in virtual communities. Table 4 indicates this hypothesis was not supported. Web-local bonding was negatively correlated with distance activism (*M* = 2.34, *SD* = 1.33, *N* = 582; *r*(580) = -.20, *p* < .01) but Web-local bridging was not associated with the dependent variable.

The correlations for distance helping were stronger than they were for forms of activism. The hypotheses did not predict a direction because of the nature of the Web-local social capital construct. These are online community users used to making connections online, but it was unclear whether those online ties would lead to online forms of engagement. It should be noted that Web-local bonding and bridging both are highly correlated (*r*(580) = .45, *p* < .01) and thus these factors are working together with each of the distance engagement variables.

Table 4

Correlations between the measures of Web-Local social capital and the measures of Distance Engagement (N = 582)

	1	2	3	4
1. Web-Local Bonding social capital	1.00	.38**	.45**	-.20**
2. Web-Local Bridging social capital		1.00	.31**	.05
3. Distance: Activism			1.00	.19**
4. Distance: Helping				1.00

*** p < 0.01*

H_{4a} predicted a positive relationship between Web-network social capital (bridging and bonding) and distance helping in virtual communities. Table 5 indicates this hypothesis was supported. Web-network bonding (*M* = 3.68, *SD* = .78, *N* = 582) was positively correlated with distance helping (*M* = 2.90, *SD* = 1.26, *N* = 582; $r(573) = .34$, $p < .01$) and Web-network bridging (M = 3.50, SD = .69, N = 582) also was positively correlated with distance helping ($r(580) = .15$, $p < .01$). H_{4b} predicted a relationship between Web-network social capital (bridging and bonding) and distance activism in virtual communities. Table 5 indicates this hypothesis was not supported. Web-network bonding was negatively correlated with distance activism (*M* = 2.34, *SD* = 1.33, *N* = 582; $r(573) = -.23$, $p < .01$) but Web-network bridging had no relationship with the dependent variable

Taken together, H$_3$ and H$_4$ seem to support that activity online is not necessarily strong for political engagement, but it is strongly associated with helping others that one meets online. Just as was the case with Web-local social capital, the stronger correlations were found with helping others whom a person meets online. The results indicate that the relationships built offline connect people to resources both within the community and beyond that network and that the result is that users of these communities are more likely to help people they meet online as a result of those connections.

Table 5

Correlations between the measures of Web-network social capital and the measures of Distance Engagement (N = 582)

	1	2	3	4
1. Web-network Bonding Social Capital	1.00	.34**	.23**	-.23**
2. Web-network Bridging Social Capital		1.00	.15**	.08
3. Distance: Activism			1.00	.19**
4. Distance: Helping				1.00

*** p < 0.01*

The question, then, is whether ties created offline via local community social capital behave in the same way. An additional analysis, examining the correlation between local community social capital and the distance engagement variables , as shown in Table 6, shows differences. In this analysis, distance activism ($M = 2.34$, $SD = 1.33$, $N = 582$) was positively correlated with local community bonding ($r(580) = .12$, $p < .01$) and local community bridging ($r(580) = .12$, $p < .01$). But for distance helping, it was positively correlated with local community bonding only ($M = 2.90$, $SD = 1.26$, $N = 582$; $r(580) = .14$, $p < .01$)

Given the results in H_3 and H_4 plus the extra analysis with local community social capital, it seems clear that these six social capital variables are behaving differently depending on whether the form of engagement is local or over distance due to online ties. Regression analysis was used as the next step in order to determine which forms of social capital were having the most impact on the distance engagement variables after accounting for demographics. The hierarchical regression employed entered demographic variables into the first block, followed by a block consisting of local community bonding social capital, local community bridging social capital, Web-local bonding social capital, Web-local bridging social capital, Web-network bonding social capital, and Web-network bridging social capital. A separate regression was run for each of the two distance engagement factors, activism and helping.

Table 6

Correlations between the measures of Local Community social capital and the measures of Distance Engagement (N = 582)

	1	2	3	4
1. Local Community Bonding	1.00	.66**	.12**	.14**
2. Local Community Bridging		1.00	.12**	.03
3. Distance: Activism			1.00	.19**
4. Distance: Helping				1.00

*** p < 0.01*

The final model, shown in Table 7, explained a strongly significant proportion of variance distance activism ($R^2 = .32$, $F(16, 553) = 15.95$, $p < .01$). Of the social capital constructs, the strongest predictor in the whole model was local community bonding ($b = .42$, $t(553) = 2.51$, $p < .01$) and Web-local bridging ($b = .18$, $t(553) = 2.51$, $p < .05$) also was a strong predictor. No other social capital indices were significant.

Table 7

Summary of hierarchical regression analysis for Demographics and Social Capital variables predicting the measures of Distance Activism (N = 582)

	Model 1 Demographics			Model 2 Social Capital		
	B	SE	b	B	SE	b
Demographics						
Gender (Female = 0, Male = 1)	.20	.11	.07	.23	.11	.08*
U.S. Citizen? (No = 0, Yes = 1)	-.45	.21	-.08*	-.52	.21	-.09*
Education	.10	.03	.11**	.08	.03	.09*
Employment	.04	.02	.07	.03	.02	.07
Income	.06	.02	.12**	.06	.02	.12**
Marital (Unmarried = 0, Married = 1)	-.03	.08	-.02	-.08	.08	-.04
Ethnicity	.11	.07	.06	.04	.07	.02
Time Online (Hours per day)	.01	.01	.02	.01	.01	.02
Posts per day	-.03	.01	-.12**	-.03	.01	-.12**
Age	.05	.01	.44**	.05	.01	.11**
Social Capital						
Local Community Bonding				.17	.07	.40**
Local Community Bridging				-.01	.08	-.01
Web-Local Bonding social capital				-.07	.08	-.05
Web-Local Bridging social capital				.28	.11	.12*
Web-network Bonding Social Capital				-.14	.12	-.08
Web-network Bridging Social Capital				.05	.09	.03
R^2		.53			.56	
Adjusted R^2		.29			.32	
F for R^2 change		22.31 (p < .01)			15.95 (p < .01)	

* p < .05
** p < .01

The second regression looked at helping others online. The final model, shown in Table 8, explained a significant proportion of variance in distance helping ($R^2 = .27$, $F(16, 553) = 12.79$, $p < .01$). Of the social capital predictors in the final model, Web-network bonding ($b = .37$, $t(553) = 5.73$, $p < .01$) emerged as the strongest predictor in the whole model and also got positive prediction from Web-network bridging ($b = .16$, $t(553) = 2.80$, $p < .01$) and local community bonding ($b = .18$, $t(553) = 3.47$, $p < .01$). Local community bridging, on the other hand, was a negative predictor ($b = -.20$, $t(553) = -3.84$, $p < .01$).

Table 8

Summary of hierarchical regression analysis for Demographics and Social Capital variables predicting the measures of Distance Helping among online community users (N = 582)

	Model 1 Demographics			Model 2 Social Capital		
	B	SE	b	B	SE	b
Demographics						
Gender (Female = 0, Male = 1)	-.73	.11	-.27**	-.49	.11	-.18**
U.S. Citizen? (No = 0, Yes = 1)	.50	.22	.09*	.41	.21	.07
Education	.11	.03	.14**	.14	.03	.17**
Employment	.03	.02	.06	-.01	.02	-.01
Income	-.05	.02	-.10*	-.04	.02	-.08*
Marital (Unmarried = 0, Married = 1)	-.00	.08	-.00	-.01	.07	-.01
Ethnicity	.20	.07	.12**	.06	.07	.04
Time Online (Hours per day)	.02	.02	.05	.00	.01	.01
Posts per day	.04	.01	.19**	.02	.01	.08*
Age	-.04	.01	-.04	-.00	.00	-.03
Social Capital						
Local Community Bonding				.24	.07	.18**
Local Community Bridging				-.30	.08	-.20**
Web-Local Bonding social capital				-.19	.12	-.12
Web-Local Bridging social capital				.04	.08	.02
Web-network Bonding Social Capital				.45	.08	.37**
Web-network Bridging Social Capital				.31	.11	.16**
R^2	.39			.52		
Adjusted R^2	.15			.27		
F for R^2 change	10.15 (p < .01)			12.79 (p < .01)		

** p < .01
* p < .05

Discussion and Conclusion

Considering the context of this research, that it was conducted by surveying users of online community news sites, the results show there is promise in building places for community conversation into news sites. Past research already has shown a strong link between news use and social capital in local communities, and with the emergence of the Web-network social capital variable in this research it shows that giving people forums for comment and discussion beyond the comments section of a news story offers people another avenue for building and spending social capital. When news sites give users online community tools, they are cultivating a new type of audience that has different characteristics than its offline readership.

Given the strong link between news use and involvement in communities, the results here have several implications. First, giving local users some ability to participate on the site and get to know one another in a community forum could help local engagement. One way to think about this is as a step-ladder of engagement based on what past research has shown, where association with neighbors is considered the easiest form of civic engagement because you live in the same area and see one another; bonding and bridging were both positively associated with this construct. Next in the thread is voting, volunteering, or doing service in the community, and

while the Web-local bridging was positively associated with it, bonding was showed no relationship. The step that requires the most effort is activism, which requires a continuous investment of time, effort and attention to community issues. In this case, bonding is a negative predictor and bridging is a positive predictor. As one goes up the ladder, bridging takes on more importance as bonding's role decreases.

Second, the key finding in this research is that the new concept of "Web-network" exists as a way to describe the makeup of online communities, and the results of the final regressions show how it can help predict offline activity in concert with a user's local place of residence. Like the Web-local version of social capital, which consists of ties created online that extend into one's local community offline, Web-network social capital in online communities appears to work best when paired with local community social capital. While the Web-network and local community measures are distinct per the factor analyses, the final regression model shows that the two are working together to predict non-local forms of engagement. This also offers some validation to the theoretical layering offered by Rainie and Wellman (2012), which noted a distinct but intertwined relationship between the online and offline self. The web-network social capital generated by the online self is distinct from the local networks built in geographic communities, but they do influence one another and work together.

The final regressions suggest a window into how news sites can encourage online community behaviors that have an impact on faraway causes, a topic traditionally unexplored because so much social capital and news research is done at the local or regional level. The presence of a strong bonding predictor matches some of what Putnam (2000) notes when he talks about how the "checkbook democracy" that comes with giving money to causes rather than doing the harder work in local community is an indicator of insular ties that are akin to bonding rather than ties created across people groups in local community. Web-local bridging's presence is an indicator that people are using their online ties to get involved in causes outside their local community. While this might seem contradictory to the local community bonding argument, consider that it might be that these two variables work together when it comes to distance activism. Because the literature defines Web-local social capital as networks created online for the purpose of local offline action, perhaps in the case of distance activism the Web-local bridging in online communities serves as a bridge to resources online as well. That is, an unengaged person in a local community might not think to be involved locally or by distance even if they have only strong local community bonding in their network of relationships.

Web-local bonding, then, might work to spur a person to begin turning their attention outward. In a sense, local community social capital is a precursor to online forms of engagement (either helping or distance activism), Web-network social capital is the conduit that allows people to direct their offline resources toward reciprocity in the form of helping others online, while Web-local social capital is what helps users direct resources in the form of distance activism. Thus, a user of these communities enters having the trait of high local community social capital, but the networks and relationships created online via social capital allow the user to extend that trait to people they meet virtually and to treat online communities in a similar way to how they regard offline civic community. A person's Web-network social capital could be at work in online interactions while also serving as a conduit to online forms of helping that is a natural extension of a user's proclivity toward offline engagement.

With Web-network social capital established as a concept, there are future research directions worth pursuing. First, past research has shown that motivations for using different types of media have played a role in determining how traditional social capital works. It would

be worthwhile to see how motivations for online news community use work with Web-network social capital. Second, this study aggregated results without attention paid to the topic that bound the user's particular community together. It could be that different communities behave differently when it comes to web-network social capital depending on the community's common interests (i.e. some communities might tend toward activism or helping others depending on topic). Third, it might be useful to further explore the concept of distance engagement now that it is a distinct variable from local forms within this strain of social capital research. Perhaps there are differences between helping other institutions and helping individuals met online. Finally, it might be that certain types of communities might be more or less prone to generating web-network social capital. Perhaps certain structures (such as chat, web forum, or diary-based formats) are better at creating this web-network social capital than others.

As with any research, this study has limitations. The sample pulled from users of news communities, and thus the results might not be indicative of all online community users. Second, because users were sampled after posting or commenting, it should be understood that this was a sample of active online community members. Because of this, the conception of what it means to be a community member is different than if a researcher were sampling a real-world population because in that case there would be a mix of active and non-active members.

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Appendix: Survey Questions

IV: LOCAL COMMUNITY SOCIAL CAPITAL (Measurement: 5-point Likert scale)

Factor 1: Local community bonding
1. There is someone in my neighborhood or community I can turn to for advice about making very important decisions.
2. There is no one in my neighborhood or community that I feel comfortable talking to about intimate personal problems. (reversed)
3. When I feel lonely, there are several people in my neighborhood or community I can talk to.
4. If I needed an emergency loan of $100, I know someone in my neighborhood or community I can turn to.
5. The people I interact with in my neighborhood or community would put their reputation on the line for me.
6. The people I interact with in my neighborhood or community would be good job references for me.
7. The people I interact with in my neighborhood or community would share their last dollar with me.
8. I do not know people in my neighborhood or community well enough to get them to do anything important. (reversed)

Factor 2: Local community bridging
1. Interacting with people in my neighborhood or community makes me interested in things that happen outside of my town.
2. Interacting with people in my neighborhood or community makes me want to try new things.
3. Interacting with people in my neighborhood or community makes me interested in what people unlike me are thinking.
4. Talking with people in my neighborhood or community makes me curious about other places in the world.
5. Interacting with people in my neighborhood or community makes me feel like part of a larger community.
6. Interacting with people in my neighborhood or community makes me feel connected to the bigger picture.
7. Interacting with people in my neighborhood or community reminds me that everyone in the world is connected.
8. Interacting with people in my neighborhood or community gives me new people to talk to.

IV: WEB-LOCAL SOCIAL CAPITAL (Measurement: 5-point Likert scale)

Factor 1: Web-local bonding
1. There are several people on [enter Web community site here] I trust to help solve my problems.
2. There is someone on [enter Web community site here] I can turn to for advice about making very important decisions.
3. When I feel lonely, there are several people on [enter Web community site here] I can talk to.
4. If I needed an emergency loan of $500, I know someone on [enter Web community site here]

I can turn to.

5. The people I interact with on [enter Web community site here] would put their reputation on the line for me.
6. The people I interact with on [enter Web community site here] would be good job references for me.
7. The people I interact with on [enter Web community site here] would share their last dollar with me.

Factor 2: Web-local bridging
1. Interacting with people on [enter Web community site here] makes me interested in things that happen outside of my town.
2. Interacting with people on [enter Web community site here] makes me want to try new things.
3. Interacting with people on [enter Web community site here] makes me interested in what people unlike me are thinking.
4. Talking with people on [enter Web community site here] makes me curious about other places in the world.
5. Interacting with people on [enter Web community site here] makes me feel like part of a larger community.
6. Interacting with people on [enter Web community site here] makes me feel connected to the bigger picture.
7. Interacting with people on [enter Web community site here] reminds me that everyone in the world is connected.
8. I am willing to spend time to support general [enter Web community site here] activities.
9. Interacting with people on [enter Web community site here] gives me new people to talk to.
10. On [enter Web community site here], I come in contact with new people all the time.

IV: WEB-NETWORK SOCIAL CAPITAL (Measurement: 5-point Likert scale)

Factor 1: Web-network bonding
1. There are several people on [enter Web community site here] I trust to help solve problems I am having with the site.
2. There is someone on [enter Web community site here] I can turn to for advice about the site
3. There is no one on [enter Web community site here] that I feel comfortable talking to about intimate personal problems. (reversed)
4. The people I interact with on [enter Web community site here] would put their reputation on the line for me if I was involved in a dispute on the site.
5. The people I interact with on [enter Web community site here] would help me freely if I had any questions.

Factor 2: Web-network bridging

1. Interacting with people on [enter Web community site here] makes me interested in things that are happening in other Web communities.
2. Interacting with people on [enter Web community site here] makes me want to be a part of other Web communities.

3. Interacting with people on [enter Web community site here] makes me interested in other Web communities are talking about.
4. Interacting with people on [enter Web community site here] makes me feel like part of a larger network of Web communities.
5. Interacting with people on [enter Web community site here] reminds me that everyone on the Web is connected.

DV: LOCAL ENGAGEMENT (Measurement: 1-5 semantic differential scale, Never to Regularly)

Factor 1: Community Issues
1. I work for local political campaigns
2. I help with local efforts to get petition signatures
3. I work to help raise awareness on important issues in my community

Factor 2: Service
1. I volunteer or work for a local charity.
2. I work on activities through my local church or service organization.
3. I attend religious services.

Factor 3: Neighbors
1. I help neighbors when they are in need.
2. I take care of my neighbors' children when the need arises.
3. I host or attend dinner parties with friends or neighbors

DV: DISTANCE ENGAGEMENT (Measurement: 1-5 semantic differential scale, Never to Regularly)

Factor 1: Distance Activism
1. I have contributed money to candidates running in areas outside my community even though I cannot vote for them
2. I donate to national or state political campaigns
3. I have campaigned for candidates running in areas outside my community even if I cannot vote for them
4. I am a member of a national issue-advocacy organization (such as the NRA or Sierra Club)
5. I donate money to national causes that I care about

Factor 2: Helping
1. I have helped out someone that I have never met in-person via the Internet
2. I have given money to help out someone I first met online