Social Capital and Knowledge Exchange in Hybrid Virtual Communities for Patients with Multiple Sclerosis: Preliminary Results

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SOCIAL CAPITAL AND KNOWLEDGE EXCHANGE IN HYBRID VIRTUAL COMMUNITIES FOR PATIENTS WITH MULTIPLE SCLEROSIS: PRELIMINARY RESULTS

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Abstract

This study investigates knowledge exchange in a Hybrid Virtual Communities (HVC) for patients with multiple sclerosis, that is a group of people with shared interests who meet face-to-face to exchange information or provide emotional support, but also coordinate or share information in a “virtual” or online environment. Using discourse analysis and semi-structured interviews, I examine a face-to-face Multiple Sclerosis aquatics group and their virtual interactions. The investigation entails analysis of six months of e-mail dialogues between members and nineteen semi-structured interviews. Using the theoretical foundation of social capital (Jacobs 1960), network capital (Wellman and Frank, 2001) and a social support framework created by Drentea and Moren-Cross (2005), communications are classified as community building, emotional support, and instrumental support. The present research helps to explain the process of building and maintaining social support and exchanging knowledge in a patient-centric HVC.

Keywords: Hybrid virtual communities, social support, social capital, knowledge exchange
**Introduction**

The use of information technology in conjunction with health-related issues has exploded in the last decade. Hybrid Virtual Communities (HVC) have emerged in which groups of people with shared interests meet face-to-face to exchange information or provide emotional support, but also coordinate or share information in a “virtual” or online environment. Some assert that “rather than replacing face-to-face contact, computer mediated communication adds to it, filling gaps between the fuller range of information and emotion in interpersonal encounters,” (Wellman 2005). Others caution that time spent on the internet can cause individuals to retreat into an artificial world, thus decreasing social support (Nie, Hillygus, and Erbring, 2002; Di Maggio, Hargittai, Neumann, and Robinson 2001). Social support has been linked with better health (House, Landis, Umberson 2001). However, it remains unclear whether virtual interactions via the Internet augment or decrease social support (Eastin and LaRose 2005), nor what types of knowledge are exchanged in these settings. While some work has been done along this line, most studies examine purely virtual environments. There is a paucity of studies that investigate HVCs. This study investigates how social support is fostered in a HVC of patients with multiple sclerosis (MS) and what types of knowledge exchanges lead to its development.

Both health care providers and health care recipients, such as individuals with MS, are utilizing technology in new and creative ways. MS is a degenerative autoimmune disease that affects the central nervous system. Because of this, MS patients, along with other autoimmune diseases or aging in general, may develop problems (e.g., inability to walk or drive) that make it more challenging to get out and socialize in face-to-face settings. MS patients also may have symptoms that make interaction with computers more difficult (e.g., double vision or hand tremors). Thus, the virtual component of interactions can be very important, but can also be fraught with difficulties.

Using discourse analysis and semi-structured interviews, I examine a face-to-face multiple sclerosis (MS) aquatics group and their virtual interactions. The investigation entails analysis of six months of e-mail dialogues between members and nineteen semi-structured interviews. Using the theoretical foundation of social capital (Jacobs 1960) and a social support framework created by Drentea and Moren-Cross (2005), communications are classified as community building, emotional support, and instrumental support. The present research helps to explain the process of building and maintaining social support and exchanging knowledge in a HVC.

**Literature Review**

**Hybrid Virtual Communities**

A community can be described as a group in which individuals come together based on a common purpose, obligation, or interest. (Rothaermel and Sugiyama, 2001). It is not a group of individuals that simply have chains of one-on-one relationships, but rather, have relationships that “crisscross” and reinforce one another. To be considered a community, members must have some level of shared values, mores, meanings, and shared historical identity (Etzioni and Etzioni, 1999). Virtual communities, where individuals come together through an electronic communication medium not bound by space and time, have been popularized by the internet. In just the category of health care alone, Yahoo groups listed over 100,000 entries. While not all may meet the definition of a virtual community, this provides an indication of popularity of environments where people meet virtually to share ideas and interact. These communities are socio-technical systems that evolve and become more complex over time (de Moor and Weigand, Hans, 2007, Koh, Kim, Butler and Bock, 2007).

While a great deal of research has been done on “pure virtual” communities, relatively little has been written on hybrid environments in which group members meet both face-to-face (FTF) as well as virtually. Hybrid communities merge physical and virtual realms, resulting in a community that is neither wholly virtual nor completely physical.

Hybrid communities allow the unique strong points of each environment to make up for weaknesses of the other. For example, the “virtual” aspect of a hybrid system, uses computer mediated communications (CMC), and provides the advantage of better memory capabilities than pure FTF environments. FTF interactions, on the other hand, provide the strength of a higher level of interpersonal knowledge than exclusive CMC systems (Etzioni and Etzioni, 1999).

Different combinations of communities can be easily envisioned. For example, in the health care setting, a quarterly meeting for a patient community which reviews the latest research on the disease management can be held solely in a FTF environment but also could be followed by, or entirely substituted with, online presentation and discussion. Fiol and O’Connor (2005, p. 20) discuss hybrid environments and define the “degree of virtualness” as the extent of face-to-face contact among members, which encompasses the amount as well as the frequency of contact.
Social Capital

The modern roots of social capital can be traced to Jacobs (1960). Social capital has been defined as “the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit” (Nahapiet, and Ghoshal, 1998, p. 243). Social Capital Theory suggests that social capital, the network of relationships possessed by an individual or a social network and the set of resources embedded within it, greatly influence the extent to which interpersonal knowledge sharing occurs (Chiu, Hsu, and Wang, 2006). Closely related is network capital which is a form of social capital in which relations with friends, neighbors, relatives and workmates supply social support. Network capital provides “companionship, emotional and material aid, goods and services, information and a sense of belonging,” (Wellman and Frank, 2001, p. 233).

Some researchers disagree on whether the time spent on the internet leads to social isolation or social capital (e.g., DiMaggio et al., 2001; Nie et al., 2002). One main debate is over the time spent on the internet. Some evidence shows time displacement, meaning users will displace face-to-face interaction, leading to a decrease in socializing within and outside the home. Wellman (2005) argues that participation in virtual communities will complement, rather than replace, FTF interaction. Drentea, and Moren-Cross (2005) found support for the creation of social capital on the Web in the case of a virtual community of new mothers. Social capital was created or augmented by three categories of social support: community building, emotional, and instrumental.

Knowledge Exchange

Knowledge exchange occurs when an individual disseminates his acquired knowledge to other members (Ryu et al., 2003). Prior research has highlighted the various factors that affect individual’s willingness to exchange knowledge, such as incentive systems, costs and benefits, extrinsic and intrinsic motivation, organization climate, and management championship (e.g., Bock et al., 2005, Kankanhalli et al., 2005, Wasko and Faraj, 2005).

There has been rising interest in examining the factors that enable or deter knowledge sharing behavior in the virtual communities. Using a web-based survey Hsu et al., (2007) investigated determinants of knowledge sharing behaviors in virtual communities using Social Cognitive Theory as their theoretical basis. Their findings show that personal outcome expectations have significant influence on knowledge sharing behavior. Their findings also reveal that the development of mutual trust in virtual communities is dependent on the establishment of more rudimentary types of trust (economy-based, information-based, and identification-based trust.). Yli-Renko et al. (2001) examined the effects of social capital on knowledge acquisition and exploitation in young technology-based firms. Wasko and Faraj (2000) examined how individual motivations (reputation and enjoyment of helping) and social capital influence knowledge contribution in electronic networks of practice. Chiu et al. (2006) identified the motivation underlying individuals' knowledge sharing behavior in professional virtual communities. In contrast, this study investigates knowledge exchanged in a HVC which is not organizationally related, but is instead patient-centric.

Methodology

Semi-structured interviews of current and former members and discourse analysis were used to collect data from a face-to-face MS aquatics group that also interacted virtually. The MS aquatics group meets for one hour three times a week for exercise. Attendance averaged twelve individuals per session but ranged from six to eighteen. The investigation consisted of nineteen semi-structured interviews and analysis of six months of e-mail dialogues between members. Three of the regular attendees were not interviewed because they did not have multiple sclerosis. Each interview lasted from twenty to forty minutes and was tape recorded. The audio tapes are currently being transcribed. Notes were also taken at the time of the interviews and short answer or descriptive data was entered into an interview database. The demographic data gleaned from the interviews is described in the Preliminary Analysis section. Further analysis of the interviews will be available at the conference.

Using dialog analysis, the contents of each email were classified in Drentea and Moren-Cross’s (2005) social support framework consisting of emotional support, community building and instrumental interactions. A single email might contain multiple social support types. One hundred eighteen emails were analyzed in total.
Preliminary Analysis

Demographics

89% of those interviewed were female. This is not surprising because multiple sclerosis predominately attacks women. MS is usually not diagnosed until an individual reaches adulthood. In this group, the average age was somewhat older, 54. Only two of those interviewed were single. More than half of the interviewees retained their ability to walk with little (cane only) or no assistive devices; 32% used walkers; 10% wheelchairs/scooters. Seventy-four percent were still able to drive (some with hand controls), 26% no longer drove. Driving and/or having transportation to the FTF meetings was a major issue for many of those who no longer drove.

Table 1. Demographics of Interviewees

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender:</td>
<td>89% female</td>
<td>11% male</td>
</tr>
<tr>
<td>Average age:</td>
<td>54</td>
<td></td>
</tr>
<tr>
<td>Marital status:</td>
<td>89% married</td>
<td>11% single</td>
</tr>
<tr>
<td>Mobility devices:</td>
<td>10% wheelchair/scooter</td>
<td>21% cane</td>
</tr>
<tr>
<td></td>
<td>32% walker</td>
<td>37% none</td>
</tr>
<tr>
<td>Able to drive?:</td>
<td>74% yes</td>
<td>26% no</td>
</tr>
</tbody>
</table>

Discourse Analysis

The results of analyzing and categorizing the virtual discourses are shown in Table 2. Each of the social support categories are discussed below.

Table 2. Knowledge Exchanged by Social Support Category

<table>
<thead>
<tr>
<th>Social Support Category:</th>
<th>Community Building</th>
<th>Emotional Support</th>
<th>Instrumental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge Exchange Type:</td>
<td>Schedule</td>
<td>Personal</td>
<td>Inspirational</td>
</tr>
<tr>
<td>Frequency:</td>
<td>13</td>
<td>22</td>
<td>36</td>
</tr>
<tr>
<td>Percentage:</td>
<td>11%</td>
<td>19%</td>
<td>31%</td>
</tr>
</tbody>
</table>

Community Building

Knowledge exchanged in the community building category was pragmatic knowledge (Alavi and Leidner, 2002) and revolved around ensuring that all members were informed of the schedule and opportunities to meet either FTF or via special virtual programs. If the regularly scheduled FTF class was not to be held or rescheduled, an email would be sent. Thus, this type of explicit knowledge was immediately useful to community members. For example:

JUST A REMINDER! THERE IS NO CLASS MON. ANNA’S TAKING A VACATION DAY, BUT WE WILL MEET WED.
**Ryan - Hybrid Virtual Communities**

I have a dr.'s appointment Wed. so I will not be there, SO if anyone would like to get wet Mon. let me know & I'll check to see if we can have our own 'class'. JUST LET ME KNOW!!

**Emotional**

Of the dialogues between community members, emotional support was the most prevalent type of interaction. This is consistent with Drentea and Moren-Cross's (2005) findings. In these data, the knowledge exchanged was social, and could be categorized into three subtypes: personal, inspirational, and humorous. In terms of personal emotional support, members wrote about frustrations, stresses, or concerns about themselves, family members, or current or former community members. For example, one interaction stated:

Please pray for my father. He will have surgery the 18th for cancer. He's doing fine & handling things pretty well. My brother lives next door to my parents, so he & my sister-in-law will do what they need to do for my mom when he can't, but just pray they've caught this early!! Thanks!!

Inspirational and humorous discourses tended to be forwarded from other sources. The interviews revealed that these types of exchanges, although not initially created by community members were often valued as "encouraging", "uplifting" or "entertaining". At times, though, some members felt they received "too many forwarded emails" and therefore the individual contents were not appreciated.

**Instrumental**

Explicit knowledge related to drugs, diet, or other health related concerns was exchanged via email in only about 6% of the interactions. One possible explanation of the low frequency of these exchanges is that much of this type knowledge was shared in FTF interactions. During each FTF meeting, group members engage in “circle time” where all categories of support are verbally exchanged. The email interactions tended to provide follow-up or additional details of what was exchanged in the FTF environment. Thus, the types of knowledge exchanges in a HVC may be different than a purely virtual environment. An example of the health-related exchange follows:

Some of you were at the Dr S--- event. She talked about the importance of eating "color", eating "raw"(Unprocessed) eating organic and eating to keep a healthy PH balance. The following charts are an agricultural study showing how the mineral contents in organic fruits and veggies are so much higher than none organic and what food to eat to keep a healthily PH balance (the foods in green keep your PH a healthy alkaline state).

Non-health related emails contained knowledge that the sender felt would be useful to others in the community. For example:

**INFORM EVERYONE!**

Emails with pictures of Osama Bin-Laden hanged are being sent and the moment that you open these emails your computer will crash and you will not be able to fix it!

**Conclusions**

Unlike much other information systems research, this research investigates HVC rather than purely virtual ones. While the majority of knowledge exchanged in the MS hybrid community was not “health-related” in terms of specifically related to drugs or disease, many of the exchanges promoted emotional support, which is critical to well being. The present research provides rich, descriptive data and helps to explain the process of building and maintaining social support and exchanging knowledge in a HVC.
REFERENCES


Ryan - Hybrid Virtual Communities


