

If You Spoke as She Does, Sir, Instead of the Way You Do:¹ A Sociolinguistics Perspective of Gender Differences in Virtual Communities

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¹ Professor Henry Higgins in *My Fair Lady*'s adaptation of George Bernard Shaw's *Pygmalion*.

Abstract

This study examines virtual community quality through sociolinguistics theory. According to sociolinguistics, in oral discourse men communicate to establish superior social standing, while women communicate with the undertone of rapport, compassion, and empathy. The study shows that these differences carry over to the asynchronous written environment of virtual communities and affect men's and women's respective perceptions of community quality. Women go to virtual communities to give and to get social support and have a more favorable assessment of the capability of others. This pattern generally holds even when comparing mostly single-gender communities and mixed-gender communities. However, a closer look at these differences reveals a more complex picture, with undertones in mixed-gender communities being less than in their respective mostly single-gender communities.

ACM Categories: H.5.3, H.4.3, H.1.2.

Keywords:

Virtual Communities, Gender, Responsiveness, Community Quality, Social Support.

Introduction

The underlying social meaning of a communication is imbued with culture. This rich cultural background is an integral part of language and determines its underlying social message, beyond and sometimes in contrast to, the literal meaning of the words. However, this cultural richness can also result in misunderstandings when people in different cultures interpret the non-verbal part of the same message differently. Such cultural misunderstandings often occur also when communicating with a member of the opposite gender (Tannen, 1994; Yates, 2001). Although speaking what may seem on the surface as the same language, men and women unconsciously insert gender-specific social messages when they communicate (Herring et al., 1985; Tannen, 1994). It is the basic premise of sociolinguists that communication is interpreted through the prisms of culture, and that these cultural lenses apply to the differences between men and women just as they apply across cultures (Yates, 2001). One of the prominent gender-based cultural differences in language is that during *oral* discourse men, more than women, communicate to establish social standing, control the conversation, and exchange information, while women, more than men, communicate to create rapport (Kilbourne & Weeks, 1997; Tannen, 1994; Tannen, 1995). This tendency is common across cultures and has been discussed extensively by anthropologists (see Hofstede (1980) for details). Because of this distinctly different underlying communicational meta-message, men and women speak differently and with different underlying social objectives, even regarding exactly the same communication. This “cultural rift” can be so stark that men and women can communicate with each other clearly comprehending the literal meaning of the words in the same way, but totally misunderstanding the underlying social message conveyed by a member of the opposite gender (Tannen, 1994).

Whereas the preferred target of sociolinguistic research is oral discourse, research has also shown that at least to some extent these cross-cultural misunderstandings between men and women carry over to electronic media in listservs (email mailing lists that serve given communities) (Herring, 1996b; Stewart et al., 2001) and in the perception of social presence in email (Gefen & Straub, 1997) and online services (Gefen, 2003). Ethnographic studies likewise show that linguistic patterns of gender-based speech carry over to academic listservs. There too, men also attempt to dominate the conversation, are more self-promoting, post longer communications, and post messages that are more informative in nature, while women tend to bring up more personal issues (Herring, 1993; Herring, 1996a). Even in Computer Mediated Communication (CMC) that support distance-learning programs, men tended to access the CMC more to obtain information while women more to interact with other students (Yates, 2001).

Yet to date, research has not examined whether the different underlying social objectives that are so prominent in oral communications, and which apply to certain computer-based communications, also apply to virtual communities. Virtual communities are places on the Internet where people with similar interests communicate regularly for some duration in an organized way. The communities are usually based on some common interest, such as fly fishing, pregnancy, or wine tasting (Ridings et al., 2002). The essence of a virtual community is the asynchronous written conversation between its members, which usually can be viewed by other members and, in the case of some communities, is often archived and searchable. Members read the conversation and add to it, preserving and expanding the community. Typically, the nature of the conversations in virtual communities is very informal, unguarded, and straightforward, much as in oral discourse among friends, except that many behavioral and communicational cues, such as controlling airtime and interrupting, are impractical. Extrapolating from sociolinguistics, the informal means of communication in a virtual community should lead men and women, because of the ingrained gender differences in communication patterns, to assess certain aspects of what makes a virtual community successful differently. The objective of this study is to present a sociolinguistics perspective of what contributes to virtual community success. Specifically, this study is interested in uncovering factors that contribute to the success of single gender as well as mixed gender virtual communities.

Conceptual and Theoretical Framework

The study centers on community quality, the dependent variable of the study, which is the degree to which other participants' postings are perceived to be relevant, helpful, and useful (Davison, 1997). Perceived community quality is hypothesized to be affected by the respondent's need to give and to get social support as well as by the capability and responsiveness of the other participants. Social support is listening to other's problems and providing advice, even if only a shoulder to cry on (Deeter-Schmelz & Ramsey, 1978). Capability is an assessment of the quality of other participants' contribution to the discussion topics. Responsive participation,

adapted from research on IT implementation (Gefen & Keil, 1998), deals with other participants' timely response to postings. The research model is shown in Figure 1.

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Gender differences in communication represent contrasting underlying social objectives that men and women insert into communication. These gender differences have a negative impact on the quality of the conversation because of cross-gender miscommunication (Tannen, 1994). If these differences carry over to virtual communities, they should affect the value the virtual community to its members. The basic premise of this study, extending the logic of previous research (Gefen & Straub, 1997; Herring, 1996a; Venkatesh & Morris, 2000; Yates, 2001), is that gender differences in oral discourse are the result of socialized differences and should therefore occur also within the informal written communication of virtual communities.

Although gender differences in communication are a matter of degree rather than dichotomous differences, there are some recurring patterns. By and large, women communicate to create rapport and affinity, much more than men do. Their communication tends to be tentative, less forceful than men's, and socially oriented towards creating a group where all the participants are involved (Tannen, 1994; Weatherall, 1998). Characteristically, women's communication emphasizes two-way cooperation (Coates, 1986) and network-oriented collaboration (Kilbourne & Weeks, 1997; Tannen, 1995), combined with intimacy and support for other group members and a tendency to create consensus, as opposed to men's greater inclination to win the conversation and get the facts right (Tannen, 1994). Women's communication is also characterized by more complimentary and cooperative behavior toward group members (Coates, 1986; Yates, 2001). All these characteristics are part of the underlying feminine social message in communication - creating rapport and a social knitting with others. Consistent with this underlying meta-message, women's speech is also more emotional than men's (Hawkins & Power, 1999; Mulac et al., 1998). This increased emotional expression coupled with the social ties it creates allows women to exchange social support through conversation more effectively. It is important to note that the exchange of social support is in both directions, that is, women will communicate to both give others solace as well as get solace from others.

In contrast to the socially equalizing and inclusive underlying meta-message in women's speech, men, more than women, seek to protect and increase their social standing and independence through communication (Tannen, 1994; Tannen, 1995). As a result, because discussing one's problems with others might be interpreted as displaying weakness and so imply an inferior social standing, men tend to rely less on discourse as a source of social support (Tannen, 1994). Moreover, men's communication is, by its very nature, more report-talk oriented. It is about the exchange of facts and information (Tannen, 1994). It is about categorical references (Preisler, 1987), and about quantitative examples (Mulac et al., 1998), by far men use communication in a way which is less conducive to emotional support. Supporting this classification, research has found that men's speech shows more signs of aggressiveness: competitive phrases are more likely to appear in men's speech (Coates, 1986; Kilbourne & Weeks, 1997; Tannen, 1995), men will interrupt others in a conversation more often (Anderson & Leaper, 1998; West & Zimmerman, 1983; Zimmerman & West, 1975), and men will attempt more than women to dominate the conversation (Herring, 1993; Holmes, 1992). Tannen (1994) summarized these differences regarding oral communication as Report-talk by men compared with Rapport-talk by women, which consequently can lead to a breakdown in cross-gender communications.

Some of these linguistic communicational patterns have been found also in virtual communities, where content analysis of messages, but not actually asking participants as done in this study, has found that in communities with higher proportions of men, messages contain more fact oriented language (Savicki et al., 1996), suggesting that gender-specific speech patterns and linguistic preferences may apply in virtual communities just as they do in oral discourse (Mulac et al., 1998; Preisler, 1987; Savicki et al., 1996). These content differences seem to be replicated in part also in email where women, when relating to family, tend to use email more than men do to maintain social relationships (Boneva et al., 2001). Women are also more likely than men to have formed a personal relationship via CMC (Parks & Floyd, 1996). Thus there is a contrast in the *underlying social objective* in informal communication for men, where it is geared more toward social power, and for women, where it is geared more toward rapport. Extending these findings by assuming that this *underlying social objective* applies also to virtual communities, it is hypothesized that:

H₁: Women, Significantly More Than Men, Will Wish to Get Social Support From Their Virtual Community.

H₂: Women, Significantly More Than Men, Will Wish to Give Social Support to Their Virtual Community.

Men's tendency to establish and maintain their social standing through oral discourse should also increase their tendency to downplay the capability of others as a way of increasing their own relative social standing (Kilbourne & Weeks, 1997; Tannen, 1995). Increased skills, knowledge, and qualification of others may jeopardize ones' own social position in the community. As such, men, overly conscious of their social standing, may wish to downplay the capability of others as a way to increase their own relative standing in the group (Tannen, 1994). Research that examined the content of virtual communities supports this proposition. Herring (1996a), examining academic virtual communities, found that women's messages tended to be more supportive of others, whereas men's tended to be more critical and oppositional.

H₃: Women Will Assess the Capability of Others in the Virtual Community More Favorably than Will Men.

Social support through discourse is generally important to women but much less so for men (Tannen, 1994). As argued by previous research (Gefen & Straub, 1997), this is an ingrained social need which goes beyond the medium (Tannen, 1994). Extrapolating this social tendency to virtual communities, it is hypothesized that this tendency will carry over to the informal written discourse of virtual communities.

H₄: Getting Social Support Will Be More Important for Women in Their Assessment of Virtual Community Quality.

What makes a virtual community a community is that people respond to each other's postings. Accordingly, the quality of a virtual community should, at least in part, be determined by how relevant, helpful, and useful participants find others' postings. Logically, if women achieve more social support through a virtual community, as hypothesized in H₁ and H₂, and also appreciate the capability of other participants more highly, as hypothesized in H₃, then women should also see more value in the virtual community.

Another reason why women should sense more quality in the virtual community is that its asynchronous nature generally supports their discourse pattern better than it does men's. A virtual community makes it easier for all members to take part in the conversation, as generally women more than men prefer to do in discourse (Tannen, 1995), and it is immune to controlling the conversation by one party through interruptions, as generally men more than women prefer to do in discourse (Anderson & Leaper, 1998; Coates, 1986). Accordingly,

H₅: Women, Significantly More Than Men, Will Sense that Their Virtual Community Has Better Quality.

The research model also contains responsive participation of other members as a control variable because virtual community quality, as in discourse in general, requires the participation of the others.

Method

Virtual communities provide an ideal setting to test theories about gender differences in CMC, especially complex CMC where established groups have norms and conventions. Asynchronous virtual communities have been used in past gender differences research (Savicki et al., 1996; Sussman & Tyson, 2000). In this study a cross-sectional survey of virtual community members was conducted to test gender perceptions, underlying social objectives, and quality of the community. Because this study tested actual membership perception regarding gender differences in active virtual communities, external validity of the results is maximized.

The data were collected with a survey that was posted on the Internet. Requests for participation were posted directly in active virtual communities. Past research on the topic has been mostly ethnographic, analyzing content (e.g. Herring (1996b), Savicki et al. (1996), and Yates (2001)), rather than survey based research dealing with perceptions. Survey research provides a more statistically objective method of analyzing correlations among latent constructs. The virtual communities were chosen at random. There was no deliberate pre-selection of communities. The next section describes the survey development and subsequent data collection.

Measures

Existing scales were adapted where possible, new scales were developed where not. The scales were pretested with experienced virtual community members, followed by a pilot study (n=70) to validate and refine the scales. All of the items, except where noted, were measured with 7 point Likert-type scales ranging from strongly disagree (1) to strongly agree (7). The items are shown in Table 1. Capability of Others was adapted from Jarvenpaa et al. (1998). The original scale measured perceptions of trust in ability in the context of organizational teams in an experimental setting in which students took part in an online exercise with other students. Responsive Participation of Others was based on the notion of being responsive to the requests of others. This new scale was based on the themes of what constitutes responsive participation as suggested by previous IT research (Gefen, 2000b). This 3-item scale refers to the timeliness and quantity of responses to posts. Quality of Responses was assessed with a new three-item scale, based on Wang and Strong's (1996) framework of data applicability and helpfulness and on Davison's (1997) instrument of discussion quality in meetings. The items deal with the relevance and helpfulness of responses. Coming to Give Social Support and Coming to Get Social Support scales were adapted from Deeter-Schmelz and Ramsey (1978), which was based on the work of House (1981). Minor wording changes were made in order to make the items applicable to the virtual community environment. Consistent with their use by Deeter-Schmelz and Ramsey (1978), these seven point Likert responses were anchored with the terms "not at all" to "a lot." In addition, data were collected about self-reported participation, such as the number of hours spent in the community and the number of posts made, partly based on Hiltz (1984).

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Sampling Procedure

It is important to evaluate communities by traffic volume and quantities of users (Witmer et al., 1999) in order to exclude inactive communities or communities where true interaction between people does not exist, and to make sure the community is large enough to generate a sample for research studies. Bulletin board-type virtual communities were chosen for this study. This type of community is asynchronous, and, therefore, easier for researchers to observe and contact. The following criteria were used to assess communities for possible inclusion in this study:

- (1) The bulletin board had at least 10 postings a day for each of three randomly chosen days.
- (2) The bulletin board had at least 15 different individuals posting during those three days.
- (3) At least 80% of postings had at least one reply per day for each of those three days.

A list of 79 communities that met the above criteria was compiled from search engine results for generic search terms such as "boards," "communities," "discussions," and "forums." Using random number generation, 40 of these boards were selected for this research. A message explaining in general terms that research on the assessment of virtual communities was being conducted was posted on each of these virtual communities. The message also stressed that the privacy of the respondents would be strictly kept, that only aggregate data would be published, and that postings would not be traced. The message then invited participation in the survey through a link to the survey's URL.

Data Collection

A total of 579 usable responses from 39 different communities were received within two weeks. Responses without a declared gender or which came from lurker participants were discarded. Lurkers were identified based on their self reported lack of postings. (Lurkers are community members who read the community messages but do not post new messages or respond to the posts of others. Lurkers were excluded from the sample because the questions dealing with coming to the community to give and to get social support were not relevant to them.) Since it is unknown how many members were in each community, traditional response rate calculation is impossible. The rate of survey completion per visit to the survey URL was 61%, and the rate of usable surveys per visit was 58%. Descriptive statistics are shown in Table 3. These demographics match known Internet user demographics, a procedure used in similar Web-based survey research to establish external validity (Bellman et

al., 1999). The majority of the sample were male (62.7%), married (59.4%), in their 20s, 30s, and 40s (77.2%), and members in their virtual communities for 12 months or less (64.0%). Over half (54.3%) of the respondents had at least a four year college degree. Because the majority of English speaking Internet users are in the United States, and because the survey was posted in English on English-language communities, the majority of the respondents were Caucasian (91.0%) and located in the United States (92.2%).

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Each of the communities was assessed as being mostly-men, mostly-women, or mixed based on the distribution of male and female respondents to the survey, as shown in Table 4. Independently, this classification was verified by examining the actual postings in the virtual communities and classifying them by gender using clues such as the poster nicknames, signatures, and the content of the messages. Messages without a gender-identifying name were classified whenever possible through content. A message such as “My wife says” was taken to be posted by a man, and so on.

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Results

Measurement Model

The first stage in the data analysis was to verify the psychometric properties of the scales, namely convergent and discriminant validity through factorial validity, and reliability. The VARIMAX rotated Principal Components Factor Analysis is shown in Table 5. As shown in Table 5, the five factors, corresponding to the five constructs, explain over 83% of the variance. All the items reflecting each construct load together highly on one factor and much lower on all the other factors. Item communality indicates that this factor loading explains most of the variance of each measurement item, showing convergent and discriminant validity (Hair et al., 1998). Reliability coefficients, measured with Cronbach's Alpha, were above the .80 threshold (Nunnally & Bernstein, 1994). The item Qunotinf, being worded in the negative, was reversed for the analyses.

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Hypotheses Testing

Constructs were then created from the average of the measurement items of each factor. The data in Table 6a support hypotheses H₁, H₂, H₃, and H₅. Women, significantly more than men, came to the virtual community to get and to give social support, perceived others as more capable, and thought more highly of the quality of the virtual community. There were no significant gender differences in the perception of the responsive participation of others or in self-reported participation. Also when the virtual communities were separated into mostly men, mostly women, or mixed, in a post hoc analysis shown in Table 6b, these results mostly hold.

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H₄ was examined with a stepwise linear regression, with Quality of Responses by Others (Community Quality) as the dependent variable and Responsive Participation by Others, Capability of Others, and Coming to Get Social Support as the independent variables. The hypothesis was supported. Although getting social support is a

significant predictor of community quality also for men, men's standardized coefficients is half that of women's and is only significant in mixed communities. Also in agreement with sociolinguistics, men were influenced mostly by the capability of others, in accordance with their emphasis on report talk and on establishing social standing, while women were influenced twice as much as men by the desire to get social support.²

In a separate post hoc analysis, which was run because many communities tended to be mostly single gender, the preceding hypothesis was reexamined comparing between men and women in mixed gender communities and comparing women in mostly women communities with men in mostly men communities. The same pattern as found in the communities as a whole emerged when comparing mostly-men and mostly-women communities (Table 6 column C), with stronger gender differences in single-gender communities. Throughout Table 6b, column A is larger than column D and column B is larger than column F, except for capability of others. These differences, shown in columns E and G, are significant. These data are also presented in a graph in Figure 2.

The data, however, show a more complex pattern than was hypothesized based on a straightforward application of sociolinguistics. The effect of getting social support on the assessment of community quality, H_4 , while supported when examining mostly-men as compared with mostly-women virtual communities (Table 7, column 3 versus column 4), shows the exact opposite pattern in mixed-communities (Table 7, column 5 versus column 6). The data also show that despite the significant effect of getting social support on men's assessment of community quality in mixed-gender communities and not in mostly-men communities, men go to mostly-men communities significantly more than they go to mixed-gender communities to get social support and assess community quality as higher in mostly-men communities (see Table 6b columns A, D, and E). The Discussion section elaborates on this.

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Discussion and Conclusions

Summary of Results

Before discussing the results, a caveat is called for. As explained by other sociolinguistics-based research on gender and IT usage (Gefen, 2000a; Gefen, 2003; Gefen & Straub, 1997; Venkatesh & Morris, 2000), not all men are of one kind and all women of another. Rather, it is our claim, and the claim of sociolinguistics, that on average men and women differ in their communication styles. Indeed, across cultures women are characterized as being more nurturing while men as more assertive (Costa et al., 2001; Feingold, 1994). Obviously, there are exceptions.

The data both extend and expand sociolinguistics as applied to IT adoption. Extending the conclusions of sociolinguistics (Herring, 1993; Tannen, 1994; Yaeger-Dror, 1998; Yates, 2001) to virtual communities, this study shows that even though virtual communities are a asynchronous written medium, there are significant differences between men and women in their assessment of the proposed underlying social objectives, and, as a result, also in their assessment of community quality. Thus, sociolinguistic conclusions based on oral discourse (Tannen, 1994) also apply to virtual communities, even though virtual communities are more culturally lean (Chidambaram & Jones, 1993; Parks & Floyd, 1996; Sproull & Kiesler, 1986; Sproull & Kiesler, 1991) and even though airtime control strategies which typically signify social power (Coates, 1986; Edelsky, 1993) do not apply to virtual communities. Women, significantly more than men, go to virtual communities to offer and receive compassion and believe others are more capable. Women also thought more highly of the quality of the conversation. Gender-related undertones were stronger in mostly single-gender as opposed to mixed-gender communities. Interestingly, the difference in the amount of self-reporting contribution to the discussion and communication time by men and by women was mostly insignificant, with men and women adding new threads and responding to existing ones about the same, although men in mostly-men communities tended to spend more time online than women in mostly-women communities and men in mixed communities. Thus, survey data from a wide range of active virtual

² Implicit in the research model is that gender affects the assessed quality of a virtual community through its effect on capability and social support of others, rather than directly. This implicit hypothesis was examined and supported with the standard mediator test (Baron & Kenny, 1986), shown in Table 8.

communities corroborate past ethnographic CMC (Herring, 1993; Herring, 1996a) and distance learning (Yates, 2001) sociolinguistic research. Gender socialization is so ingrained that it manifests itself also into what could have been a gender neutral medium.

Expanding the ideas suggested by sociolinguistics (Herring, 1993; Tannen, 1994; Yaeger-Dror, 1998; Yates, 2001), the data, however, show a more complex pattern. The effect of getting social support on the assessment of community quality, H_4 , while supported when examining mostly-men as compared with mostly-women virtual communities (Table 7, column 3 versus column 4), shows the exact opposite pattern in mixed-communities (Table 7, column 5 versus column 6). Combined with the analyses in Table 6b, the data imply that getting social support may after all be an important contributor also to men's assessment of community quality, but only when they expect it to be so, that is only in mixed communities where they interact with women. This would be in agreement with the underlying assumption of sociolinguistics (Herring, 1993; Tannen, 1994) that women communicate to create rapport. Nonetheless, men go to mostly-men communities significantly more than they go to mixed-gender communities to get social support and assess these communities' quality as higher in mostly-men communities (see Table 6b columns A, D, and E). This paints a slightly more complex, but arguably more realistic, picture of gender differences than sociolinguistics does. Realistically, men do seek social support in virtual communities, but they seek it more with other men who naturally communicate in the same communication culture and can presumably understand them better. But, extrapolating from the logic in sociolinguistics, seeking this social support among other men does not contribute to community quality because when a man seeks it among other men it implies social inferiority (Tannen, 1994). Arguably, feeling socially inferior by communicating should not contribute to one's assessment of community quality. On the other hand, seeking social support in mixed-gender communities should not imply as much social inferiority because, as shown in Table 6b, such behavior is more prevalent among women and should, as a result, be more common in mixed-gender communities.

Limitations

Although the data were collected from many virtual communities and an effort was made to cover a wide and random range of communities, the lack of a comprehensive list of communities, and hence the inability to create a truly random sample, poses limitations on the generality of the results and makes it impossible to assess whether the sample is truly representative. Moreover, because of language limitations, data were collected only from virtual communities that converse in English and almost all participants were American Caucasian. Whether these results apply to other culture requires additional research. With these caveats in mind, it is also important to note that the data were collected from active participants. There may also be some gender-bias with regard to the nature of the communities. For example, communities that are centered on "rapport" type interests, such as emotional support for cancer survivors, may only attract women. Men in our sample may have chosen not participate in these communities due to their interest in information exchange. Examining a larger sample in which some men would have also attended support-type communities could add to understanding of the "report" versus "rapport" processes.

Conclusions

Taken as a whole, the study shows that words are clearly more than a mere data communication channel. Language is a cornerstone of culture and one of its prominent defining characteristics. The same applies to the cultural differences in communication between men and women. Men and women speak differently, use language for conveying different underlying social messages, and accordingly also understand and assess messages in very different ways (Tannen, 1994). Bearing these conclusions in mind could contribute to better virtual community management and could, as with oral communication (Tannen, 1994), increase their quality while reducing cross-gender misunderstandings. Men and women may seek different things a virtual community, but ultimately, their assessment of its quality is not a direct consequence of gender but of conversation qualities that are mainly shared: capable caring participation of others.

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Table 1. Questionnaire Items on a 7 point Likert Scale

Coming to give social support	
	To what extent do you come to this bulletin board to ...
Ssothrbp	... listen to others' problems?
Ssothrcn	... show concern for others?
Ssothrav	... give others sound advice to deal with their problems?
Ssothrsq	... give others useful suggestions on getting through difficult times?
Coming to get social support	
	To what extent do you come to this bulletin board to find others who will ...
Sslisrbp	... listen to your problems?
Ssconcrn	... show concern for your problems?
Ssgetadv	... give you sound advice to deal with your problems?
Ssgetsug	... give you useful suggestions on getting through difficult times?
Responsive Participation by others	
Revery	The people on this bulletin board are very responsive to my posts.
Realot	I can always count on getting a lot of responses to my posts.
Requick	I can always count on getting responses to my posts fairly quickly.
Capability of others	
Abconfid	I feel very confident about the skills that the other participants on this bulletin board have in relation to the topics we discuss.
Abknowlg	The other participants on this bulletin board have much knowledge about the subject we discuss.
Abqualfd	The other participants on this bulletin board are well qualified in the topics we discuss.
Quality of Responses by others (Community Quality)	
Qurelevt	The responses to my posts are relevant for me.
Quhelpful	The responses to my posts are helpful.
Qunotinf	The responses to my posts are usually not the information I need. (Item reversed in the analyses.)

Table 2. Self Reported Participation Measures

Hoursonb	How many hours per week do you spend on this bulletin board (both reading messages and composing messages)?
Newthred	What is the average number of "new thread" posts you make a month (posts that are not in response to someone else)?
Postresp	What is the average number of responses you post to others' messages per month?

Table 3. Sample Demographics and Participation in the Virtual Community

Variable	Frequencies (Percentages)					
Gender	Male	363	(62.7%)			
	Female	216	(37.3%)			
Age	Under 20	44	(7.6%)	51 – 60	63	(10.9%)
	21 – 30	160	(27.6%)	61 – 70	17	(2.9%)
	31 – 40	151	(26.1%)	71 and over	3	(0.5%)
	41 – 50	136	(23.5%)			
Marital Status	Single	156	(26.9%)			
	Married	344	(59.4%)			
	Other	76	(13.2%)			
Ethnicity	Caucasian	527	(91.0%)	Hispanic	9	(1.6%)
	Asian/Pacific Islander	16	(2.8%)	Native American	9	(1.6%)
	African American	3	(0.5%)	Other	13	(2.3%)
Highest Level of Education	Grammar School	4	(0.7%)	Some College	183	(31.6%)
	High School	45	(7.8%)	Bachelor's	204	(35.2%)
	Vocational/Technical 2 yrs	30	(5.2%)	Master's	78	(13.5%)
	Professional (MD, JD, etc.)	16	(2.8%)	Doctoral	16	(2.8%)
Location	United States	534	(92.2%)	Europe	5	(0.9%)
	Canada	28	(4.8%)	Other	1	(0.2%)
	Oceania (Australia, New Zealand, etc.)	9	(1.6%)			
Hours in community per Week	Less than 1	36	(6.2%)	7 – 8	60	(10.4%)
	1 – 2	127	(21.9%)	9 – 10	32	(5.5%)
	3 – 4	131	(22.6%)	More than 10	99	(17.1%)
	5 – 6	94	(16.2%)			
Months in Community	Less than 1	26	(4.5%)	13 – 16	51	(8.8%)
	1 – 4	138	(23.8%)	17 – 20	38	(6.6%)
	5 – 8	128	(22.1%)	21 – 24	35	(6.0%)
	9 - 12	79	(13.6%)	More than 24	81	(14.0%)
Posts of New Threads per Month	0	62	(10.7%)	6	23	(4.0%)
	1	142	(24.5%)	7	20	(3.5%)
	2	86	(14.9%)	8	8	(1.4%)
	3	57	(9.8%)	9	4	(0.7%)
	4	63	(10.9%)	10 or more	70	(12.1%)
	5	44	(7.6%)			
Posts of Responses Per Month	0 – 1	40	(6.9%)	10 – 11	51	(8.8%)
	2 – 3	97	(16.8%)	12 – 13	29	(5.0%)
	4 – 5	79	(13.6%)	14 – 15	38	(6.6%)
	6 – 7	53	(9.2%)	16 – 17	12	(2.1%)
	8 – 9	37	(6.4%)	18 or more	143	(24.7%)

Note: percentages may total less than 100 due to missing data

Table 4. Community Classification

Code	Community Topic	Category	Men	Women	Total
Abortion	Debate on the issue of abortion	Mixed	3	1	4
Appraise	Real estate appraisal	Mixed	9	6	15
Bronx	Bronx neighborhood in New York City	Mixed	12	15	27
Catholic	Debate on Catholicism	Mixed	5	2	7
Cruise	Vacation cruising	Mixed	2	6	8
Entmoot	Fans of the author J. R. R. Tolkien	Mixed	8	5	13
Kidsheal	Children's sickness, nutrition, and other health issues	Mixed	1	1	2
Mets	New York Mets baseball team	Mixed	10	7	17
Mindspir	Life, death, and what, if anything, lies beyond.	Mixed	2	2	4
Movie	Movies	Mixed	2	7	9
Nba	NBA basketball	Mixed	1	2	3
Teach	The teaching profession	Mixed	3	18	21
Vegas	Las Vegas	Mixed	7	4	11
(13 communities classified as mixed)		Subtotals	65	76	141
Airtran	Investing in AAIR (AirTran Holdings, Inc.)	Mostly Men	5	1	6
Auswine	Australian wines	Mostly Men	8	0	8
Espn	Fantasy baseball strategy	Mostly Men	2	0	2
Fish	Steelhead and salmon fishing	Mostly Men	24	2	26
Guitar	Musicians who play or like the guitar	Mostly Men	26	2	28
Guns	Gun control efforts	Mostly Men	14	1	15
Pickup	Pickup truck enthusiasts	Mostly Men	53	2	55
Scinat	The universe and how it works	Mostly Men	4	0	4
Shadow	Fans of the Honda Shadow motorcycle.	Mostly Men	84	2	86
Sopranos	The television show "Sopranos"	Mostly Men	6	1	7
Space	Space and the universe	Mostly Men	7	1	8
Sprtcar	Coupe, convertible and sports car enthusiasts	Mostly Men	10	0	10
Tacoma	Toyota Tacoma pickup truck enthusiast	Mostly Men	46	4	50
Technet	Technology, computers and the online world	Mostly Men	3	0	3
(14 communities classified as mostly men)		Subtotals	292	16	308
Breast	Debate on formula or breast feeding babies	Mostly Women	0	21	21
Cat	Cat health issues	Mostly Women	2	16	18
Cathelp	Anything to do with cats	Mostly Women	2	12	14
Cycle	Women who get pregnant at the same time	Mostly Women	0	12	12
Doghse	Anything to do with dogs	Mostly Women	0	11	11
Expect	Expecting a baby that is not your first child	Mostly Women	0	18	18
Hightec	High tech methods of getting pregnant	Mostly Women	0	12	12
Homesch	Discussions and support of home educators of children	Mostly Women	0	6	6
Hsbb	High school girls basketball in New Jersey	Mostly Women	0	2	2
Nurse	The nursing profession	Mostly Women	0	7	7
Spank	Debate on whether or not children should be spanked	Mostly Women	0	2	2
(12 communities classified as mostly women)		Subtotals:	4	119	123
Total			361	211	572

Table 5. Rotated Principal Components Factor Analysis and Descriptive Statistics

	Coming to give social support	Coming to get social support	Responsive Participation by others	Capability of others	Quality of responses by others	Item Communnality
SSOTHRPB	0.81	0.39	0.02	0.10	0.02	0.82
SSOTHRCN	0.85	0.30	0.07	0.06	0.11	0.82
SSOTHRAV	0.87	0.31	0.09	0.02	0.06	0.87
SSOTHRSG	0.86	0.32	0.11	0.06	0.08	0.86
SSLISPRB	0.35	0.88	0.11	0.09	0.08	0.92
SSCONCRN	0.37	0.87	0.12	0.09	0.09	0.92
SSGETADV	0.41	0.79	0.05	0.14	0.16	0.84
SSGETSUG	0.43	0.80	0.10	0.11	0.14	0.86
REVERY	0.08	0.10	0.90	0.15	0.18	0.87
REALOT	0.09	0.05	0.91	0.10	0.09	0.85
REQUICK	0.05	0.12	0.84	0.12	0.27	0.81
ABKNOWLG	0.03	0.14	0.17	0.88	0.18	0.86
ABCONFID	0.07	0.10	0.11	0.87	0.27	0.86
ABQUALFD	0.08	0.04	0.10	0.87	0.21	0.81
QUNOTINF	0.06	0.04	0.10	0.25	0.80	0.72
QURELEV	0.07	0.17	0.37	0.24	0.73	0.77
QUHELPFL	0.14	0.21	0.30	0.36	0.71	0.79
Eigenvalue	7.29	3.42	1.76	9.42	8.38	
Variance explained	42.90%	20.12%	10.32%	5.54%	4.93%	
Cronbach's α	.94	.96	.90	.90	.82	

Table 6a. Mean (and standard deviation) by Gender

Construct	Men	Women	t-value
Coming to give social support	3.87 (1.74)	4.95 (1.68)	7.22 ***
Coming to get social support	3.36 (1.89)	4.36 (2.03)	5.98 ***
Responsive Participation by others	5.31 (1.22)	5.35 (1.30)	0.38
Capability of others	5.40 (1.15)	5.66 (1.01)	2.71 **
Quality of responses by others (Community Quality)	5.49 (1.12)	5.69 (1.07)	2.04 *
Self-Reported Participation			
Hours per week at the virtual community	3.96 (1.88)	3.75 (1.87)	1.29
Average number of new threads posts you make a month	5.66 (3.15)	5.29 (3.08)	1.36
Average number of responses you post to others' messages	6.55 (3.19)	6.60 (3.28)	0.16

*** p<.001 ** p<.01 *p<.05

Table 6b. Mean (and standard deviation) by Community Type

	A	B	C	D	E	F	G	H
Construct	Men in Mostly Men (MiM)	Women in Mostly Women (WiW)	t-value MiM vs. WiW	Men in Mixed (MiX)	t-value MiM vs. MiX	Women in Mixed (WiX)	t-value WiW vs. WiX	t-value MiX vs. WiX.
Coming to give social support	3.98 (1.71)	5.58 (1.15)	9.38***	3.30 (1.77)	2.86**	4.09 (1.89)	6.85***	2.54**
Coming to get social support	3.52 (1.87)	5.26 (1.46)	9.01***	2.51 (1.70)	3.92***	3.20 (2.06)	8.14***	2.13*
Responsive Participation by others	5.38 (1.17)	5.60 (1.08)	1.74	4.98 (1.43)	2.36*	5.00 (1.45)	3.32**	0.05
Capability of others	5.42 (1.13)	5.60 (0.99)	2.32*	5.29 (1.27)	0.82	5.62 (0.95)	0.48	1.79
Quality of responses by others (Community Quality)	5.58 (1.10)	5.92 (0.95)	2.95**	5.10 (1.19)	3.12**	5.37 (1.19)	3.57***	1.33
Self-Reported Participation								
Hours per week at the virtual community	4.07 (1.89)	3.47 (1.60)	3.05**	3.54 (1.85)	2.07*	4.17 (2.14)	2.61**	1.86
Average number of new threads posts you make a month	5.56 (3.08)	5.02 (2.92)	1.65	6.14 (3.46)	1.34	5.62 (3.38)	1.32	0.90
Average number of responses you post to others' messages	6.60 (3.15)	6.40 (3.18)	0.57	6.42 (3.37)	0.42	6.92 (3.44)	1.07	0.88

* Significant at the .05 level, ** Significant at the .01 level, *** Significant at the .001 level

Table 7. Regression Results
Dependent Variable: Quality of Responses of Others

Variable	1 Standardized Coefficients - Men	2 Standardized Coefficients - Women	3 Standardized Coefficients Men in Mostly Men Virtual Communities	4 Standardized Coefficients Women in Mostly Women Virtual Communities	5 Standardized Coefficients Men in Mixed Virtual Communities	6 Standardized Coefficients Women in Mixed Virtual Communities
Coming to get social support	.11**	.22 ***	.07	.25**	.21*	.16
Responsive Participation by others	.30 ***	.44 ***	.27***	.41***	.38**	.49***
Capability of others	.53 ***	.24***	.58***	.27***	.36**	.28**
Adjusted R ²	.53	.43	.54	.42	.55	.46

* Significant at the .05 level, ** Significant at the .01 level, *** Significant at the .001 level

Table 8. Baron and Kenny (1986) Mediation Test Results

Independent Variables	Dependent Variables Standardized Coefficients	
Step 1: Regressing the mediators on the independent variables	Capability of Others	Coming to Get Social Support
Gender	.113**	.243 ***
R ²	.013	.057
Step 2: Regressing the dependent variable on the independent variables	Quality of Responses by Others	
Gender	.085 *	
R ²	.006	
Step 3: Regressing the dependent variable on both the independent variables and mediators	Quality of Responses by Others	
Gender	-.029	
Coming to get social support	.233 ***	
Capability of others	.518 ***	
R ²	.379	

* Significant at the .05 level, ** Significant at the .01 level, *** Significant at the .001 level

Figure 1. Research Model

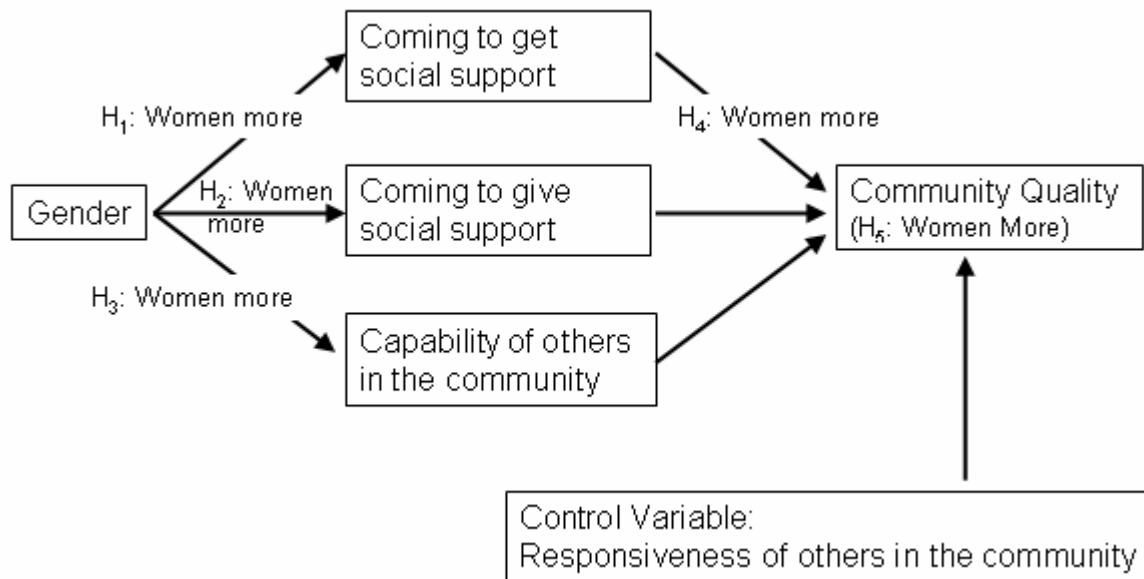


Figure 2. Assessments by Community Type

