

Rapid Communication

Developing a Sense of Virtual Community Measure

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ABSTRACT

Sense of virtual community is an important feature of virtual communities. This study develops a sense of virtual community (SOVC) measure, building off the strengths of a widely used measure of sense of community (SOC) for face-to-face communities. Although there is overlap between the senses of community for face-to-face and virtual communities, there are significant differences. The new SOVC measure is compared to the SOC measure on 265 members of seven online groups, explaining at least 7% more of the variance from exchanging support and member identification. This study represents an important step in developing a valid measure of SOCV.

DEVELOPING A MEASURE OF SENSE OF VIRTUAL COMMUNITY

SENSE OF VIRTUAL COMMUNITY (SOVC) is recognized as a significant feature of virtual communities.¹⁻⁴ SOVC is defined as members' feelings of membership, identity, belonging, and attachment to a group that interacts primarily through electronic communication. SOVC assesses the "community-ness" of virtual communities; it distinguishes virtual communities from other types of virtual groups. However, there is not currently a good measure of it.

The purpose of this study is to present a measure of SOVC based on the current measure of face-to-face sense of community (SOC) and taking into account the unique features of sense of *virtual* community. SOC consists of feelings of membership, feelings of influence, integration and fulfillment of needs, and shared emotional connection.⁵ However, research demonstrates that members of virtual communities may have less pronounced feelings of in-

fluence than do members of face-to-face communities.¹ Additionally, they feel that they know the personalities of others and experience and observe more personal relationships than do members of face-to-face communities. Thus, there are differences between SOVC and SOC.

These differences are significant. Most researchers currently adapt the most current measure of SOC, the sense of community index (SCI),⁶ to virtual groups.^{2,4} This practice creates a problem because the SCI may not have sufficient content validity as a measure of SOVC. That is, there may be items in the SCI that do not have relevance in virtual communities, and the SCI may be missing parts of the SOVC construct domain. Thus, the SCI would be a less sensitive measure of SOVC. An improved measure of SOVC would take into account the unique components of sense of community in virtual communities and therefore represent an improvement in measuring SOVC.

This study examined potential antecedents of SOVC, exchanging support^{1,7-11} and identifica-

tion^{1,12-19} to determine if the newer SOVC measure is an improvement over the SCI.

METHODS

Participants

Participants were 265 members of seven online groups: three listservs and four Usenet newsgroups. The topics of the groups ranged from pet lovers to human resource professionals. Five of the groups had mainly social topics and two had mainly professional topics. To be considered for this study, the groups had to be active with messages posted daily. The mean age of the participants was 47 ($SD = 11.7$). Of the participants, 62% were female.

Measures

Sense of virtual community. Twenty-two items were used to assess sense of community (see appendix). Twelve items from the SCI were adapted by changing the words *block* to *group* and *neighbors* to *members*.⁶ Ten additional items were created to assess the unique components of SOVC and to improve the clarity of the SOC construct, a problem noted by other researchers.²⁰⁻²² These items were pilot tested for clarity and appropriateness by members of another online group. Minor changes in wording addressed the pilot group's feedback. Responses to the SOVC ranged from 1, strongly disagree, to 4, strongly agree.

Exchanging support. To assess exchanging support, three measures were created: one to assess observation of others exchanging support (two items), one to assess the participants exchanging support themselves through e-mail (four items), and one to assess participants exchanging support by posting

to the group (four items). Responses for all items ranged from 1, never, to 4, quite a lot, with internal reliabilities of 0.85, 0.88, and 0.85 respectively.

Identification. Two items were used to assess identification. Responses ranged from 1, strongly disagree, to 4, strongly agree. The reliability coefficient of this scale was 0.80.

RESULTS

First, the SOVC items were factor-analyzed using maximum likelihood factoring and a promax rotation. Three factors were extracted to determine adequate fit. All the items loaded adequately, and the three-factor structure seemed appropriate. Communalities were also examined, and two items from the SCI (Q2 and Q11) were eliminated because of very low communalities. The remaining items met all the criteria for inclusion in the factor analysis. The correlations between the three extracted factors were all above 0.64, indicating the factors could be combined for one overall measure of SOVC.

Next, to ensure that the items developed for this study all factor onto their respective scales, another factor analysis was conducted with the SOVC items and the exchanging support and identification items. Two items from the original SCI, Q6 and Q8, inappropriately loaded onto the exchanging behavior by posting factor. These items were therefore dropped from the analysis. (The results from these two factor analyses are available from the author.) All other items loaded onto their appropriate scales. The internal reliability coefficient for the SOVC scale was 0.93.

Table 1 contains the comparison of the regression of the antecedents on SOVC and SOC. All the variables are strongly related to both SOC and SOVC. However, the antecedents explain 53% of the vari-

TABLE 1. REGRESSIONS COMPARING SOVC TO SOC

	SOVC			SOC		
	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β
Observe support	0.21	0.05	0.25*	0.15	0.04	0.21*
E-mail support	0.19	0.03	0.32*	0.14	0.03	0.27*
Post support	0.20	0.04	0.29*	0.19	0.04	0.32*
Identification	0.24	0.05	0.25*	0.22	0.05	0.26*
<i>R</i> -squared	0.53			0.46		

Note: * $p = <0.001$.

ance of SOVC and only 46% of the variance of SOC. Thus, SOVC is a more sensitive measure than SOC, accounting for 7% more of the variance, suggesting, therefore, improved content validity.

DISCUSSION

The purpose of this study was to demonstrate that a new measure of sense of community in virtual communities has increased content validity and sensitivity over the traditional measure of face-to-face SOC (i.e., the SCI) in virtual groups. Although there is overlap between the SOC and SOVC constructs, there is also evidence of significant differences.¹ In this study, 22 items were assessed for inclusion in the new SOVC measure. Four items from the SCI were eliminated because of poor factor loadings, poor reliability (i.e., communality), and inappropriate loading onto other study variables. The resulting 18 items in the SOVC measure are evenly divided between the SCI and newly developed measures. Some of the newly developed measures address specific differences of the SOVC construct as compared to the SOC construct, and others address some of the shortcomings of the SOC.²⁰⁻²²

The SOVC measure is a more sensitive measure explaining at least 7% more of the variance than the traditional SOC. Although simply adding variables to a measure will increase the amount of variance explained, these new items fit well conceptually and empirically into the new measure of SOVC. Also, because the new SOVC measure added over 7% of variance explained to an already substantial 46% of the variance, the new items are not likely to be trivial components of SOVC. Greater sensitivity is important, particularly in understanding the mechanisms that create SOVC. Using a more sensitive and content-valid measure, researchers will be able to develop models of the antecedents, mediators, and moderators of SOVC.

The validation of a measure is a lengthy process requiring multiple studies over a period of time, which allows for an integrated evaluation of the empirical evidence and theoretical rationale of the adequacy and appropriateness of the measure.²³ This study is not purported to be the last word on developing an appropriate measure of SOVC. However, a dialogue must be started among virtual community researchers about the appropriateness of simply transposing the SCI from face-to-face to virtual communities. This study is a significant first step in that process.

APPENDIX A

- Q1. I think this group is a good place for me to be a member.
- Q2. Members of this group do not share the same values.*
- Q3. Other members and I want the same thing from this group.
- Q4. I can recognize the names most members in this group.
- Q5. I feel at home in this group.
- Q6. Very few other group members know me.*
- Q7. I care about what other group members think of my actions.
- Q8. I have no influence over what this group is like.*
- Q9. If there is a problem in this group, there are members here who can solve it.
- Q10. It is very important to me to be a member of this group.
- Q11. Members of this group generally don't get along with each other.*
- Q12. I expect to stay in this group for a long time.
- Q13. I anticipate how some members will react to certain questions or issues in this group.
- Q14. I get a lot out of being in this group.
- Q15. I've had questions that have been answered by this group.
- Q16. I've gotten support from this group.
- Q17. Some members of this group have friendships with each other.
- Q18. I have friends in this group.
- Q19. Some members of this group can be counted on to help others.
- Q20. I feel obligated to help others in this group.
- Q21. I really like this group.
- Q22. This group means a lot to me.

* Deleted from the final SOVC measure

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