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**Social-Psychological Influences on Opinion Expression in Face-to-Face and Computer-Mediated Communication**

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### **Abstract**

This study used an experiment embedded within a Web-based survey to examine the influence of contextual (i.e., face-to-face vs. online chat room discussion) and social-psychological factors on individuals' willingness to express opinions. In this experiment, respondents were asked whether they would be willing to express an opinion if they were placed in a face-to-face discussion group in one condition and in an online chat room discussion group in the other condition. Results indicate that print news use, fear of isolation, communication apprehension, future opinion congruency, and communication setting significantly predict willingness to speak out. In addition, not only did fear of isolation have a negative main effect on opinion expression, but this effect was significantly attenuated by computer-mediated discussion. Findings suggest that computer-mediated communication may avoid some of the dysfunctional social-psychological influences found in face-to-face interactions and create a forum conducive for public deliberation.

**Keywords:** opinion expression; spiral of silence; computer-mediated communication; fear of isolation; communication apprehension; news media use; opinion congruency; public deliberation; same-sex marriage

## **Social-Psychological Influences on Opinion Expression in Face-to-Face and Computer-Mediated Communication**

The role of public deliberation has long been a key element of democracy. Most classical theorists and scholars share the fundamental notion that deliberation and reciprocal dialogues with different social actors expose citizens to diverse ideas and arguments and promote their understanding of multiple points of view (Dewey, 1954; Gutmann & Thompson, 1996; Katz, 1997). The constant exposure to reasoning and disputation would engender an expanded public sphere (Habermas, 1989) and better informed opinions (Fishkin, 1995). However, the idea of genuine public deliberation is often impeded by dysfunctional social-psychological processes including, but not limited to, the potential coercion of the majority (e.g., de Tocqueville, 1835/1945) and the reluctance of minority members to speak out from fear of social isolation (Noelle-Neumann, 1974, 1993). Therefore, there is a need to identify ways to overcome these normative social influences in order to encourage productive social interaction among citizens.

In particular, public opinion scholars have been enthusiastic about the potential of computer-mediated communication as an effective forum for fostering deliberation, information gathering, and exchanges among citizens (Cappella, Price, & Nir, 2002; Delli Carpini, 2000; Hardy & Scheufele, 2005; Jennings & Zeitner, 2003). In fact, some researchers have proposed that individuals may now interact and deliberate through computer-mediated channels, bypassing traditional face-to-face meetings (Barber, Mattson, & Peterson, 1997; London, 1993).

Given the conditions of anonymity and reduced observable social cues relative to face-to-face interactions, computer-mediated communication has been shown to level the social playing field by encouraging more lively discussions and by generating more interesting arguments (Connolly, Jessup, & Valacich, 1990; Jessup, Connolly, & Tansik,

1990; Siegel, Dubrovsky, Kiesler, & McGuire, 1986). In light of these considerations, computer-mediated communication may have the potential to create an environment conducive for public deliberation by attenuating the effects of the undesirable social-psychological influences on opinion expression.

Our study examines the contextual and social-psychological influences on opinion expression. Using an experiment embedded within a Web-based survey design, we assess the extent to which communication setting (i.e., face-to-face versus online chat room discussion) affects individuals' willingness to express opinions. Alongside the experimentally induced contextual influence, we also draw on extant literature such as spiral of silence research to identify important social-psychological factors including fear of isolation, communication apprehension, and perceived current and future opinion congruency, and examine their influence on opinion expression. In addition, we also assess the extent to which the communication setting moderates the effects of these social-psychological factors on opinion expression. Similar to the procedures commonly employed in spiral of silence research, we created hypothetical experimental scenarios in which individuals were asked to indicate their willingness to speak out.

### **Contextual Influence on Opinion Expression: Face-to-Face Versus Computer-Mediated Communication**

Important structural differences between face-to-face (FTF) and computer-mediated communication (CMC) contexts could potentially elicit differential rates of opinion expression among discussion participants. Whereas FTF interactions rely heavily on spoken language and observable social cues such as nonverbal gestures and signs of status, interactions in CMC contexts (e.g., online chat rooms) often depend on such features as written text messages and anonymity. Studies have also found FTF interaction to have the highest social presence or media richness among voice mail, text, and electronic mail (e.g.,

Rice, 1993).

By implication, some of the social dynamics such as the salience of group personal characteristics would be less evident in CMC than in FTF interactions. According to social role theory (Eagly & Karau, 1991), group members use observable status characteristics (e.g., age and gender) as a basis for establishing initial leadership and influence hierarchies. Furthermore, Tajfel's (1978) social identification theory posits that individuals tend to categorize themselves into members of in-groups or out-groups, in which they associate with perceived in-group traits, while perceiving out-groups as possessing stereotypically extreme traits or views.

We can extend this notion to traditional FTF discussions when nonverbal cues such as eye contact and hand gestures of participants are readily available. For instance, a participant in an FTF group may utter the expression, "I am against gay marriage," and reinforce his or her view with facial expressions, gestures, and tone of voice. The stance becomes immediately apparent such that it is easy for others to categorize this person as a member belonging to the in-group or the out-group. Conversely, in an online chat room setting, a participant may type in the exact same sentence, but due to the absence of nonverbal cues, the intensity and hence the extremity of that expression may become ambiguous to the others in the discussion. The identical viewpoint may be perceived by others as more moderate in the CMC context than in the FTF context. In essence, CMC may deemphasize status characteristics and physical aspects of groups.

In fact, Brashers, Adkins, and Meyers (1994) found that anonymity within CMC interaction reduces observable status differences found in FTF groups and promotes the potential for a "more level playing field" for participants. This is in line with the "equalization effect" phenomenon (Siegel et al., 1986), in which individuals who may be reluctant to speak out in FTF discussions because of status differences might feel more

comfortable making contributions in CMC groups (Straus, 1996). Furthermore, Zigurs, Poole, and DeSanctis (1988) reported that member influence was distributed more evenly in CMC groups compared to FTF groups. At the individual level, Straus (1996) suggested that participation across members of CMC groups is less unequal than among FTF group members. Moreover, Rains (2007) found that individuals participating in an anonymous computer-mediated team meeting will find their group members less credible and less influential than those participating in an identified computer-mediated meeting.

Overall, studies have found that media that support anonymity promote the possibility of more egalitarian participation (Siegel et al., 1986), allow greater idea generation (Gallupe, Bastianutti, & Cooper, 1991), and potentially increase overall participation levels (Kiesler, Siegel, & McGuire, 1984). Evidently, the differences between computer-mediated discussions and FTF conversations in terms of group dynamics and interaction characteristics further support our argument that the two communication contexts would generate differential rates of opinion expression. We therefore posit the following:

*Hypothesis 1:* Individuals who are asked to speak out in the FTF setting will be less likely to express their opinions than those who are asked to speak out in the CMC setting.

### **Social-Psychological Influence on Opinion Expression**

One of the most relevant social psychological theories to our study is Noelle-Neumann's (1974) spiral of silence. This theory postulates that individuals, driven largely by the fear of isolation, scrutinize their environment to evaluate the climate of opinion. Noelle-Neumann argued that media portrayals of the normative "climate of opinion" have an effect on individuals' perception of public opinion, in which individuals who perceive their opinions to be popular or gaining public support will be more likely to express their views than those who believe their opinions are not shared by the majority or are losing ground.

Over time, this induces a spiraling process in which the perceived minority may become less likely to speak out (though in fact this minority could potentially be in the majority), and this process further establishes the perceived majority group as the dominant one. Even though meta-analytic evaluations of research on the hypothetical silencing effect of the mediated climate of opinion suggest that such effects seem to be moderate (Glynn, Hayes, & Shanahan, 1997), the theory has gained substantial empirical interest and remains influential.

Empirical studies of spiral of silence processes have revealed several social-psychological factors that could potentially influence opinion expression. Drawing on insights from the second part of the theory on the “silence hypothesis,” we identify and examine the extent to which factors associated with the theory, including fear of isolation, perceived opinion congruency, and communication apprehension, influence opinion expression and the extent to which such potential effects are moderated by computer-mediated environment.

Notably, previous studies have found that greater fear of isolation is associated with a lower level of opinion expression (Glynn & Park, 1997; Kim, Han, Shanahan, & Berdayes, 2004; Neuwirth, 2000; Willnat, Lee, & Detenber, 2002). According to spiral of silence theory, the relationship between one’s own opinions and the perceptions of the opinions of others predicts opinion expression. Studies have demonstrated that perceptions of the current opinion climate predict willingness to express an opinion (e.g., Moy, Domke, & Stamm, 2001; Willnat, 1996). Many studies have also demonstrated that perceptions of the future opinion trend influence willingness to speak out (e.g., Salmon & Neuwirth, 1990; Scheufele, Shanahan, & Lee, 2001). Other studies have found that communication apprehension, defined as “an individual’s level of fear or anxiety associated with either real or anticipated (oral) communication with another person or persons” (McCroskey, 1977, p. 78), was negatively associated with expressing opinions in public (Neuwirth, Frederick, & Mayo, 2004; Willnat



et al., 2002). We therefore posit the following:

*Hypothesis 2:* Fear of isolation will be negatively associated with willingness to speak out.

*Hypothesis 3a:* Current opinion congruency will be positively associated with willingness to speak out.

*Hypothesis 3b:* Future opinion congruency will be positively associated with willingness to speak out.

*Hypothesis 4:* Communication apprehension will be negatively associated with willingness to speak out.

In the physical presence of others in an FTF context, individuals may fear that their views are perceived by others as deviant and so they are more reluctant to voice their actual opinions. In computer-mediated forums, however, reduced social presence, limited contact among participants, and anonymity may insulate individuals from negative social sanctions (Short, Williams, & Christie, 1976). Given the anonymity offered in the CMC context, participants may have greater latitude to express extreme opinions. That is, they may feel less restricted to voice opposing viewpoints because of the reduced threat that the majority of others can impose negative sanctions. Considering differences in the features and quality of discussion between FTF and CMC environment as suggested by previous literature, we argue that the effect of fear of isolation should be dependent on the communication setting. In statistical terms, of course, this means that the communication setting interacts with fear of isolation to influence willingness to speak out. We therefore posit the following:

*Hypothesis 5a:* The CMC scenario will moderate the effect of fear of isolation on willingness to speak out such that the strength of the relationship will be reduced relative to the FTF scenario.

Likewise, we expect the communication setting to interact with perceived opinion

congruency to influence opinion expression. In an FTF setting where contact among participants is high, it is reasonable to expect that individuals who perceive the majority opinion to be in conflict with their own or moving in the opposite direction of their current views (i.e., low congruence) may be less likely to speak out in public. Conversely, participants in the CMC setting may feel more at ease expressing their opinions irrespective of what they believe most other people are thinking, since their true identities are kept anonymous. As such, we hypothesize the following:

*Hypothesis 5b:* The CMC scenario will moderate the effect of current opinion congruency on willingness to speak out such that the strength of the relationship will be reduced relative to the FTF scenario.

*Hypothesis 5c:* The CMC scenario will moderate the effect of future opinion congruency on willingness to speak out such that the strength of the relationship will be reduced relative to the FTF scenario.

The impact of communication apprehension may also be moderated by computer-mediated discussion. As mentioned earlier, communication apprehension is a personality trait that individuals experience to varying degrees in different FTF communication situations (Daly, 1978; McCroskey & Beatty, 1998). This feeling of apprehension may trigger psychological discomfort, inducing individuals who cannot handle such discomfort well to pull out from an FTF conversation or to avoid an FTF communication setting (McCroskey & Beatty, 1998). By inference, in an FTF setting, participants with high communication apprehension may be less likely to speak out than those with low apprehension. Conversely, such differences may be relatively smaller in the CMC setting since participants could bypass speaking in public and instead convey their views in the physical absence of others.

Therefore, the following is hypothesized:

*Hypothesis 5d:* The CMC scenario will moderate the effect of communication

apprehension on willingness to speak out such that the strength of the relationship will be reduced relative to the FTF scenario.

A substantial number of studies found that demographic variables such as age and gender are associated with willingness to speak out on controversial issues (Lasorsa, 1991; Salmon & Neuwirth, 1990; Scheufele et al., 2001). Specifically, women and older persons are generally less likely to state their opinions. In addition, previous studies have examined the relationship between news media use and public outspokenness (Gonzenbach, King, & Jablonski, 1999; Neuwirth, 2000; Willnat, 1996; Willnat et al., 2002). Given that mass media set the agenda of public discussion by conveying information on the opinion climate on specific issues to the audience and providing arguments for one or both sides of an issue (Noelle-Neumann, 1993), it is not surprising that most studies found news media use to be positively related to individuals' willingness to speak out (e.g., Moy et al., 2001; Neuwirth, 2000). Gender and news media use will be examined as control variables in this study.

### **Method**

Data for this study came from a Web-based survey of 352 undergraduate students enrolled in mass communication courses at a large Midwestern university. Respondents were offered extra credit for their participation, which took an average of 15 minutes. Specifically, this study used a between-subjects experiment embedded within an online questionnaire. All respondents first answered the same set of questions on demographics, levels of media use, individual predispositions, and attitudes toward the topic of same-sex marriage before they were randomly assigned to the experimental conditions. For our purpose, the topic on same-sex marriage was chosen as the context for our study because this highly visible issue is polarized and morally loaded, and several previous studies on the spiral of silence have employed variations of this issue as the context to examine public outspokenness (e.g., Hayes, Shanahan, & Glynn, 2001; Willnat et al., 2002).

Gender (70% female) and news media use were included as control variables in the statistical analysis. Gender was dummy coded, with females coded as 1 and males coded as 0. In addition, our measure of news media use was broken down into print news use and television news use. For print news use, respondents were asked to indicate the amount of attention they paid to the issue of same-sex marriage from print news stories and national news magazines, and their frequency of exposure to daily newspapers, alternative weekly newspapers, and national news magazines. The scores for these 5 items were averaged ( $M = 4.60$ ,  $SD = 2.10$ ,  $\alpha = .74$ ). Similarly, television news use was operationalized by measuring on a 10-point scale respondents' attention to broadcast news stories, and their exposure to network evening news programs and other cable news programs on a 10-point scale, in which the three items were averaged to create a composite score ( $M = 5.00$ ,  $SD = 2.00$ ,  $\alpha = .62$ ).

Our operationalization of the fear of isolation was a 6-item composite measure assessing positive and negative emotions related to conversational situation that was adapted from a previous study by Scheufele et al. (2001). Respondents rated their level of agreement on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) with the following statements: (a) "I worry about being isolated if people disagree with me," (b) "I avoid telling other people what I think when there's a risk they'll avoid me if they knew my opinion," (c) "I do not enjoy getting into arguments," (d) "Arguing over controversial issues improves my intelligence," (e) "I enjoy a good argument over a controversial issue," and (f) "I try to avoid getting into arguments." Items (d) and (e) were reverse-coded for analysis. All 6 items were averaged to create a scale, with bigger scores indicating higher level of fear of isolation ( $M = 3.14$ ,  $SD = 1.11$ ,  $\alpha = .76$ ).

To measure current opinion congruency, respondents were first asked to indicate their own position on the same-sex marriage issue (1 = *favor*, 6 = *oppose*), in which 77.6% of the respondents were in favor of the issue. This was recoded into a continuum scale, ranging

from a score of  $-1$  (*oppose*) to  $+1$  (*favor*). Next, respondents were asked to gauge the percentage of students and local community members who were supportive of the issue. Responses ranging from 0% to 49% were recoded to a score of  $-1$ , whereas responses ranging from 50% to 100% were assigned a score of  $+1$ . We then created a measure for current opinion congruency by multiplying the score for own opinion with the score for current public opinion, yielding a continuous score in which  $-1$  indicates *low congruency* and  $+1$  indicates *high congruency* ( $M = .09$ ,  $SD = .25$ ).

We measure future opinion congruency by asking respondents to use a 3-point scale to gauge whether the trend in public opinion among the students and local community members was toward greater or lesser support for the legalization of same-sex marriage (1 = *increase*, 2 = *remain the same*, 3 = *decrease*). These scores were recoded and averaged to create a new scale for future trend in public opinion ( $-1 = decrease$ , 0 = *remain the same*, 1 = *increase*). Similar to the computation of current opinion congruency, future opinion congruency was constructed by multiplying the score for respondents' own opinion with the score for future public opinion trend, creating a continuous score from  $-1$  (*low congruency*) to  $+1$  (*high congruency*;  $M = .31$ ,  $SD = .49$ ).

Communication apprehension was a composite of 4 items adapted from a subset of the original PRCA-24 scale that pertains to anxiety in group settings (McCroskey, 1977). On a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*), respondents indicated their level of agreement with each of the following four statements: (a) "I like to get involved in group discussion," (b) "I'm afraid to speak up in conversations," (c) "I enjoy talking at a small group meeting," and (d) "My body feels relaxed when I speak during a small group meeting." Items (a), (c), and (d) were reverse-coded ( $M = 3.01$ ,  $SD = 1.24$ ,  $\alpha = .81$ ).

Respondents were then randomly assigned to one of the following two hypothetical experimental conditions: (a) the FTF scenario ( $n = 160$ ) and (b) the CMC scenario ( $n = 192$ ).

The means of the independent variables in each of the experimental conditions are reported in Table 1. As shown in Table 1, there were no substantial differences between the means and standard deviations of all the independent variables. The gender proportions in both conditions were also equivalent. Since the independent variables were asked before the manipulation, this shows that the random assignment indeed resulted in equal groups.

[Insert Table 1 about here.]

In both experimental conditions, respondents were told that there would be a second stage of the study in which other participants who disagree with the participant's point of view would discuss the issue of legalizing same-sex marriage in greater detail. To make the scenarios less contrived in this study, respondents were told the specific time, day, and venue where either the face-to-face or virtual chat room discussions would be held. They were also given detailed information on who they would be meeting for the discussion and asked to indicate on a percentage scale how likely they would be to state their own opinion in either the FTF or CMC context ( $M = 69.23$ ,  $SD = 26.45$ ; see appendix for the exact question wording). In essence, respondents in both experimental conditions were asked about their willingness to express unpopular opinions in either the FTF or CMC context. A dummy variable (CMC condition coded as 1 and FTF condition coded as 0) was used to indicate whether the respondent was told that the discussion would be computer mediated or face-to-face.

At the end of data collection, when all respondents had completed the questionnaire, a separate debriefing e-mail was simultaneously sent to each respondent, in which they were told that no discussions would actually take place. Our between-subjects study design is equivalent to the split-ballot survey design that was used in some of the previous research on spiral of silence (e.g., Hayes et al., 2001; Scheufele et al., 2001). Not only does this technique overcome the generalizability problem of experiments, the between-subjects design also

avoids question-order effects that might arise if we asked each respondent the two sets of questions together.

### Results

As described earlier, this study randomly assigned respondents to one of two experimental conditions: willingness to express one's own opinion in an FTF setting or a CMC setting. Notably, it was expected that respondents in the FTF setting would be less likely to express their own opinion than those in the CMC setting. A *t* test contrasting the two conditions revealed that respondents in the FTF condition expressed significantly lower levels of inclination to express their own opinion ( $M = 65.18$ ,  $SD = 27.80$ ) than did respondents in the CMC condition ( $M = 72.63$ ,  $SD = 24.82$ ,  $t = -2.78$ ,  $p < .001$ ). Therefore, Hypothesis 1 was supported.

We ran a hierarchical regression model using ordinary least square estimations (OLS) to test the hypothesized relationships, with independent variables entered in blocks according to their assumed causal order. Control variables including gender and news media use were entered first, followed by the main effects of predispositions, opinion congruency, and communication setting (i.e., FTF vs. CMC condition). Finally, the interaction terms were entered in the last block.

To avoid multicollinearity problems between the interaction term and its components, the main effect variable was centered by converting the raw scores into standardized *z*-scores (Cohen, Cohen, West, & Aiken, 2003). In our analysis, the four interaction terms were formed by multiplying the dichotomous experimental condition variable with each of the standardized predisposition and opinion congruency variables. We included the four multiplicative terms in the final block for the regression model predicting willingness to speak out: (a) the interaction between condition and fear of isolation, (b) the interaction between condition and current opinion congruency, (c) the interaction between condition and

future opinion congruency, and (d) the interaction between condition and communication apprehension.

Both before-entry standardized betas and final standardized betas are reported for the main effects. Only before-entry standardized betas are reported for the interaction effects. Before-entry betas control for all previously appearing variables in the model but do not simultaneously control for the variables within the same block or variables entered in the subsequent block. This method for testing and reporting interactions has been widely used in extant studies examining moderating influences pertaining to media effects (e.g., Eveland & Scheufele, 2000; Nisbet, Nisbet, Scheufele, & Shanahan, 2004; Scheufele, 2002). Overall, the total  $R^2$  in our model was 38.90%. Table 2 summarizes the results of the hierarchical regression analysis.

[Insert Table 2 about here.]

As indicated in Table 2, the gender of the respondents had no significant impact on their willingness to speak out on the issue of same-sex marriage. In terms of news media use, results show that print news use was positively related to public outspokenness ( $\beta = .17, p < .001$ ). On the other hand, television news use was not significantly related to opinion expression. The control variables block accounted for 8.2% of the variance in the model.

As predicted, the results suggest that as the level of fear of isolation increased, willingness to express opinion decreased ( $\beta = -.17, p < .001$ ), supporting Hypothesis 2. Next, current opinion congruency was found to be unrelated to the dependent variable. Hence, Hypothesis 3a was not supported. However, perceptions of congruency between own opinion and future opinion climate were found to be significantly related to willingness to express one's own opinion ( $\beta = .10, p < .05$ ), supporting Hypothesis 3b. Overall, the opinion congruency block accounted for an increase of 2.4% of the variance in respondents' willingness to express an opinion. Furthermore, the analysis shows that as the level of



communication apprehension ( $\beta = -.40, p < .001$ ) increased, respondents were less likely to express their own opinion, lending support to Hypothesis 4. On the whole, the predisposition block (including fear of isolation and communication apprehension) accounted for 23.8% of the variance in the model.

Controlling for all other independent variables, respondents who were asked to speak out in the CMC condition were found to be significantly more likely to express their own opinion than those who were asked to speak out in the FTF condition ( $\beta = .18, p < .001$ ), thus reaffirming Hypothesis 1. This variable accounted for 3.1% of the variance in the model.

Beyond the main effects, there was also a significant interaction effect between fear of isolation and the experimental condition (FTF vs. CMC) on willingness to express one's opinion, lending support to Hypothesis 5a. In other words, the impact of fear of isolation on opinion expression was moderated by computer-mediated discussion. In the FTF condition, respondents with high fear of isolation were significantly less likely to speak out than those with low fear. Conversely, such differences were relatively smaller in the CMC condition. For illustrative purposes, Figure 1 shows the means of the six subgroups: (a) low fear of isolation/FTF, (b) low fear of isolation/CMC, (c) medium fear of isolation/FTF, (d) medium fear of isolation/CMC, (e) high fear of isolation/FTF, and (f) high fear of isolation/CMC.

[Insert Figure 1 about here.]

Contrary to our expectation, we did not find significant interactions between condition and current opinion congruency, condition and future opinion congruency, and condition and communication apprehension on our dependent variable, failing to support Hypotheses 5b, 5c, and 5d. The interaction effects accounted for an additional 1.3% of the variance in willingness to speak out.

## Discussion

Overall, our regression analysis provides strong support for our hypotheses regarding the influence of contextual and social-psychological factors on willingness to express one's own opinion on the controversial issue of legalizing same-sex marriage. Notably, respondents were more reluctant to express opinions in the FTF setting than in the online chat room setting. Likewise, social-psychological factors including print news use, fear of isolation, communication apprehension, and future opinion congruence, were all found to be significantly related to willingness to express one's own opinion. Finally, we found that not only did fear of isolation have a significant negative impact on opinion expression, but that this effect was moderated by computer-mediated discussion. Taken together, these findings suggest that unique features such as anonymity and reduced social cues in computer-mediated discussion may be able to abate some of the dysfunctional social-psychological influence on opinion expression and create an environment conducive for public deliberation.

Before moving on to detailed discussions of our findings, one methodological issue that needs to be addressed is the concern over the use of hypothetical scenarios in our experimental study. With a few exceptions, a disproportionate number of past studies on the spiral of silence have employed similar techniques, either by directly asking respondents to imagine a situation in which they have to speak with a group of strangers or by inducing respondents to believe that an actual discussion is going to take place (e.g., Baldassare & Katz, 1996; Hayes, Glynn, & Shanahan, 2005; Huang, 2005; Kim et al., 2004; Moy et al., 2001; Neuwirth & Frederick, 2004; Scheufele et al., 2001; Shanahan, Scheufele, Yang, & Hizi, 2004; Willnat, 1996; Willnat et al., 2002). In our study, we attempted to induce respondents to believe that a real discussion was indeed going to take place by taking specific populations and situational factors (e.g., concrete information about the time, day, and venue of the discussion) into account when responding to our dependent measure.

Nevertheless, our study reveals several interesting findings on the influence of the contextual and social-psychological factors on opinion expression. With regard to the control variables, print news use rather than television news use was found to be significantly related to opinion expression. Since previous studies have shown that frequent newspaper readers are more politically knowledgeable than frequent users of television news (e.g., Becker & Whitney, 1980; Guo & Moy, 1998; Patterson & McClure, 1976), and that levels of factual political knowledge influence opinion expression on controversial issues (e.g., Salmon & Neuwirth, 1990; Willnat, 1996), it is not surprising that print news use, but not television news use, significantly predicted opinion expression.

Congruent with previous research, this study found negative associations between opinion expression and the two tested types of individual predispositions. Specifically, we found that respondents who displayed higher levels of fear of isolation were less willing to express their opinions about legalization of same-sex marriage. Likewise, respondents who exhibited greater degrees of communication apprehension were less inclined to express their opinions on the controversial issue. This underscores the importance of measuring and differentiating between the two closely related concepts in future studies that attempt to examine opinion expression, especially those related to the spiral of silence theory.

In line with findings from previous studies, respondents who thought their opinions were congruent with the future opinion climate were more inclined to state their own opinion on legalizing same-sex marriage than those who believed that their opinions would be at odds with the majority of the student population and members of the community. Conversely, current opinion congruency did not predict outspokenness. This suggests that the direction in which the opinion trend is moving plays a relatively more important role in opinion expression than the immediate climate of opinion.

Returning to the most fundamental question of this study, respondents were found to

be significantly less willing to express their own opinion in the FTF discussion setting than those in the online chat room discussion scenario, after controlling for demographic, news media use, individual predisposition, and opinion congruency variables. This implies that the communication setting experimental manipulation does make a difference as to whether individuals are willing to express their personally held views.

Our study examined the interaction between fear of isolation and the communication setting. The results demonstrated that computer-mediated discussion moderates the impact of fear of isolation on influencing willingness to speak out. In other words, in the FTF condition, respondents with high fear of isolation were significantly less willing to speak out than those with low fear of isolation. On the other hand, such differences were almost negligible in the CMC condition.

One plausible explanation for the interaction effect may be that the online chat room discussion setting offers physical isolation in which opportunities for the conveyance of nonverbal cues such as eye contact and hand gestures are absent. The reduced social cues and anonymity in the CMC condition may thus reduce status consciousness and inequality, and moderate the effect of fear of isolation to encourage individuals who hold the minority opinions to speak out. Moreover, this finding also concurs with previous research documenting higher social equalization, greater idea generation, and higher overall participation levels (e.g., Brashers et al., 1994; Gallupe et al., 1991; Kiesler et al., 1984; Siegel et al., 1986) in computer-mediated discussions when compared with FTF interactions. However, the assertion that anonymity and reduced social cues in the CMC condition abate fear of isolation is a claim that has not been tested in this study. Future research comparing opinion expression in CMC and FTF conditions may examine the mediating relationships between these variables.

Future research could build on these findings by allowing participants to engage in

actual FTF and CMC discussions and either measuring the naturally occurring opinion climate or assessing opinions prior to the discussion to create groups in which one participant is in the minority. Researchers could then measure actual participation during the discussion session and willingness to express opinions immediately following the discussion. An analysis of the content would allow researchers to examine other factors such as argument quality and other underlying mechanisms on opinion expressions (e.g., Price, Nir, & Cappella, 2006) that would not have been possible using hypothetical scenarios. This could also allow researchers to test the interactive relationships and identify the social-psychological factors that best predict willingness to express opinions in an actual CMC discussion.

Next, future research could explore other synchronous forms of mediated communication such as conference calls, or asynchronous CMC such as e-mails and Web logs, to see how the social-psychological factors related to the spiral of silence would play out across these various mediated settings. Furthermore, future studies could also explore how these independent variables in the spiral of silence relate to specific verbal expression strategies, such as providing neutral comments and arguing, in addition to the general “willingness to speak out” that was used most often in previous studies. In particular, it would be interesting for future research to examine how individuals use these different approaches when communicating in FTF and CMC discussions.

In sum, our study contributes to the growing body of literature in CMC research by being one of the first studies to examine how computer mediation moderated the effect of social-psychological factors specified by the spiral of silence theory on opinion expression. Extant CMC studies either focused on examining the effects of the unique characteristics of particular media such as computers and video conferencing on opinion expression, or focused on examining the effects of CMC on other criterion variables such as online uninhibited

behavior, impression formation, social identity processes, idea generation, and group decision-making (Connolly et al., 1990; Lea, Spears, & de Groot, 2001; Meyers, Brashers, & Hanner, 2000; Tanis & Postmes, 2003). By filling in the existing research gap, our study will augment our understanding of the impact of computer mediation on opinion expression.

Besides this, our study has important implications for public deliberation and democracy. While institutionalized deliberative public forums such as the town hall meeting may suffer from negative social-psychological influences as exemplified by factors associated with the spiral of silence research, our findings suggest that computer-mediated forums may lead to more communicative and lively discussions as they plausibly allow participants to be anonymous and alleviate the hesitancy of those members holding the minority viewpoints to speak out. This is most promising in relation to existing online deliberation initiatives such as the Electronic Dialogue Project conducted during the 2000 presidential campaign (Price & Cappella, 2002), in which representative groups of citizens were assembled to participate in a series of online discussions on controversial political issues. Such online discussions have been found to foster political engagement and general community participation. As suggested by the results of our study, the civic consequences of computer-mediated forums would be considerable since CMC has the potential to encourage productive deliberation by overcoming some of the inherent limitations of traditional FTF forms of communication.

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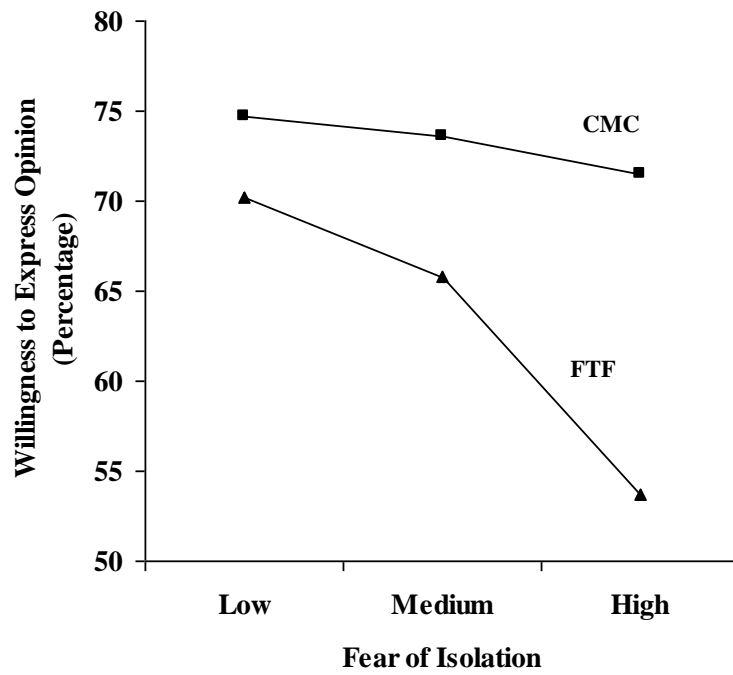
**Table(s) and Figure(s)***Table 1. Descriptive Statistics of Independent Variables in Each Experimental Condition.*

	FTF ( <i>n</i> = 192)		CMC ( <i>n</i> = 160)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Gender	Females (71.9%)	—	Females (69.1%)	—
Print news use	4.73	2.07	4.49	2.11
Television news use	5.02	1.96	4.98	2.04
Fear of isolation	2.98	1.10	3.26	1.10
Communication apprehension	3.00	1.23	3.03	1.26
Current opinion congruency	.09	.24	.09	.25
Future opinion congruency	.32	.50	.30	.49

Table 2. Predicting Willingness to Express Own Opinion ( $N = 350$ )

	Zero-Order Correlations	Before-Entry Beta	Final Beta
<i>Control variables</i>			
Gender (male=0, female=1)	.01	—	-.00
Print news use	.29***	—	.17***
Television news use	.13**	—	-.04
Incremental $R^2$ (%)		8.2***	
<i>Predisposition variables</i>			
Fear of isolation	-.39***	-.34***	-.17***
Communication apprehension	-.53***	-.49***	-.40***
Incremental $R^2$ (%)		23.8***	
<i>Opinion Congruency</i>			
Current opinion congruency	.19***	.13**	.09
Future opinion congruency	.20***	.13**	.10*
Incremental $R^2$ (%)		2.4**	
<i>Experimental Condition</i>			
Computer-mediated communication (1) versus face-to-face (0)	.14**	.18***	.18***
Incremental $R^2$ (%)		3.1***	
<i>Interactions</i>			
Fear of isolation $\times$ Condition	—	.10*	—
Communication apprehension $\times$ Condition	—	.07	—
Current opinion congruency $\times$ Condition	—	-.02	—
Future opinion congruency $\times$ Condition	—	.04	—
Incremental $R^2$ (%)		1.3	
Total $R^2$ (%)			38.9***

\*  $p \leq .05$ . \*\*  $p \leq .01$ . \*\*\*  $p \leq .001$ .



*Figure 1.* The Relationship between Fear of Isolation, Experimental Condition, and Willingness to Express Opinion.

**Appendix: Exact Question Wording***Condition 1: Willingness to Express Own Opinion in Face-to-Face Discussion Setting*

We will be conducting face-to-face discussion groups with other (University of Wisconsin) students and adults in (Dane County) who disagree with your point of view on the legalization of same-sex marriage. Several afternoon and evening discussion sessions will be held at (Vilas Hall) every day next week. In terms of percentage, how likely will you be to express your own opinion in a situation like this? (0%–100%)

*Condition 2: Willingness to Express Own Opinion in Online Chat Room Discussion Setting*

We will be conducting online chat room discussions with other (University of Wisconsin) students and adults in (Dane County) who disagree with your point of view on the legalization of same-sex marriage. You will be typing your responses onto a computer in a separate room from the other participants. Several afternoon and evening discussion sessions will be held at (Vilas Hall) every day next week. In terms of percentage, how likely will you be to express your own opinion in a situation like this? (0%–100%)