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IN MY HUMBLE OPINION: TESTING THE SPRIAL OF SILENCE IN COMPUTER-MEDIATED AND FACE-TO-FACE CONTEXTS

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ABSTRACT OF THESIS

IN MY HUMBLE OPINION: TESTING THE SPIRAL OF SILENCE IN COMPUTER-MEDIATED AND FACE- TO-FACE CONTEXTS

The purpose of this investigation is to further an understanding of the spiral of silence theory as it functions within both face-to-face (FtF) and computer-mediated contexts. Computer-mediated communication (CMC) is often touted for being an empowering medium as it affords its users anonymity. This finding could have an impact on whether the spiral of silence occurs within CMC. Previous studies have relied upon hypothetical scenarios and have established weak support for the theory. Despite this study's utilization of a within-subjects experimental design, however, no significant differences in minority opinion holders' fear of isolation were found. Similarly, no significant relationship was found between minority opinion holders' attention paid to news and fear of isolation. In regards to both majority and minority opinion holders, no significant differences in perceptions of opinions expressed in either condition were found. Reasons for such unexpected findings, as well as strengths, limitations, and directions for future research are discussed.

KEYWORDS: Spiral of Silence Theory, Fear of Isolation, Media Surveillance,
Computer-Mediated Communication, Face-to-Face
Communication

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July 29, 2009

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TO-FACE CONTEXTS

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THESIS

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The Graduate School
University of Kentucky

2009

IN MY HUMBLE OPINION:
TESTING THE SPRIAL OF SILENCE IN COMPUTER-MEDIATED AND FACE-
TO-FACE CONTEXTS

THESIS

A thesis submitted in partial fulfillment of the
requirements for the degree of Master of Arts in the
College of Communication and Information Studies
at the University of Kentucky

By

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Lexington, Kentucky

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Lexington, Kentucky

2009

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To my mother and father

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Chapter One: Introduction

The perceived climate of public opinion is a force so powerful that it can coerce minority opinion holders to silence themselves out of a fear of social isolation (Noelle-Neumann, 1984). However, this concept has largely been empirically tested within the scope of face-to-face (FtF) communication. The fear of social isolation may be diminished when conversations take place through computer-mediated discourse due to the unique contextual features afforded by such communications. Several studies have found that such open and frank discussions are likely to occur in such online contexts as bulletin boards, chat rooms, and USENET groups (O'Sullivan, 1995; Shiraishi, Endo, & Yoshida, 2002; Witmer, 1997).

The impact that the Internet and other interactive technologies have had on the field of communication has promoted studies that have dealt with computer-mediated communication (CMC) and its impact on political participation (Johnson, Braima, & Sothirajah, 1999; Min, 2007; O'Sullivan, 1995), personal development (Bers & Chau, 2006; Gordin, Gomez, Pea, & Fishman, 1996), and social support systems (Ridings & Gefen, 2004). While there have been a

number of studies that have dealt with the issue of opinion expression within CMC (e.g., Al-Saggaf, 2006; Bickel, 2003), few have actually examined such behavior through a perspective that incorporated Noelle-Neumann's spiral of silence theory (e.g., Ho & McLeod, 2008; Li, 2007; McDevitt, Kiouisis, & Wahl-Jorgensen, 2003; Wanta & Dimitrova, 2000). This line of research can help determine whether the features that such interactive technologies provide its users can liberate minority opinion holders from silencing themselves. Such open and free discussions can further help facilitate democratic discourse in a world where FtF communication may not allow for such open dissent.

The primary purpose of this investigation is to examine the relevance of the spiral of silence as it functions within both computer-mediated and FtF contexts. It is hoped that a better understanding can be obtained in regards to whether the unique features of CMC discourse can have an impact on both fear of isolation and the perceptions of opinions delivered through CMC. Likewise, testing the spiral of silence theory subsequently involves examining the relationship between an individual's attention paid to public affairs and the individual's fear of isolation.

The importance of this line of research mimics the purported importance of past spiral of silence studies: an individual's ability to speak freely is what ultimately facilitates a free democracy. Since the Internet has offered a new way for people to communicate, research should highlight and reflect the importance of such discourse. The online world has often been touted as a liberating force that will allow anyone and everyone to express their own opinions, whether of

majority or minority status; therefore, it is important for society to fully grasp whether or not such ambitious claims are an accurate portrayal of this context.

This investigation examines the historical development of Noelle-Neumann's spiral of silence theory while also providing a review of studies that have examined the phenomenon as it occurs in both FtF and CMC contexts. A set of three hypotheses is advanced. Results of the experiment, as well as a thorough discussion, are also included.

Chapter Two: Literature Review

This chapter provides an historical overview of the development of Noelle-Neumann's spiral of silence theory; studies concerning both FtF and CMC contexts are also reviewed. A set of three primary hypotheses is advanced.

Noelle-Neumann's Spiral of Silence Theory

The beginnings of the spiral of silence theory have roots that extend back to the 1965 and 1972 elections in Germany. During this time, Noelle-Neumann noticed some puzzling behaviors surrounding the 1965 and 1972 elections. For example, during the election of 1972, Noelle-Neumann found an interesting paradox: while survey data showed that both the Social Democratic candidate and the Christian Democratic candidate were essentially receiving an equal amount of support, there was a great difference between those surveyed in regards to their expectations of which candidate would win the election. While it would have seemed that those surveyed would respond that their political party had a better chance of winning, the Social Democrat Party's expectation of winning grew from week to week, despite an equal amount of support for both the Christian Democratic candidate and the Social Democratic candidate. In the end, there was a band-wagon effect that ultimately led a number of individuals to jump onto the perceived winner's side despite the apparent equal support for both parties prior to the election (Noelle-Neumann, 1993).

The hypothesis of silence, a key component to the spiral of silence theory, was later developed when Noelle-Neumann encountered a student who was wearing a Christian Democrat pin. Though the student denied being a supporter

of that specific party, she claimed that she had “put the button on to see what it’s like” (Noelle-Neumann, 1993, p. 4). Later that day, she once again encountered her student, though this time she had removed her pin. The student explained, “It was too awful, I took it off” (Noelle-Neumann, 1993, p. 4). Though both Social Democrats and Christian Democrats had a seemingly equal amount of supporters at the time, the Social Democrats were described as being much more likely to express their political affiliations and therefore had a much more significant presence within the public sphere (Noelle-Neumann, 1993).

Noelle-Neumann was not the first to conceptualize the notion of silence and its impact on opinion expression. In Thomas Hobbes’ (1651) book, *The Elements of Law*, he noted that silence has a generally shared interpretation of agreement. From an historical perspective, Alexis de Tocqueville also examined silence within the decline of the French church. He argued that the people who fought to retain the beliefs ushered forth by the church suddenly became fearful for being isolated by remaining on religion’s side (Tocqueville, [1856] 1955). Though several historical figures had held hypotheses concerning silence, one of the first studies that laid the groundwork for the spiral of silence theory came with the Allensbach studies in 1971 (Noelle-Neumann, 1993).

The Allensbach studies surveyed members of the public about their perceptions on public opinion. Respondents were asked a series of questions concerning their own opinions on public matters along with several follow-up questions that asked their thoughts on the public’s opinion. A typical follow-up question would begin with, “Now, regardless for the moment of you own opinion,

what do you think: are most of the people for or against..." (Noelle-Neumann, 1993, p. 9). Though there was an expectation that there would be a few responses such as "I have no idea what the public thinks," the actual response rate to the surveys measured between 80-90% (Noelle-Neumann, 1993).

A year later, in 1972, the Allensbach studies went on to include a hypothetical situation that was designed to measure one's willingness to speak out or keep silent in a politically-charged discussion. Those surveyed were presented with two dichotomous opinions on raising children and were asked with which person they were more closely aligned. The crucial question then followed: "Suppose you are faced with a five-hour train ride, and there is a woman sitting in your compartment who thinks..." (Noelle-Neumann, 1993, p. 18). At this point participants were presented with a set of questions that exhibited the previous opinions. The question then concluded with, "Would you like to talk with this woman so as to get to know her point of view better, or wouldn't you think that worth your while?" (Noelle-Neumann, 1993, p. 18). This "train test" was repeated with various opinions on a wide range of subject matters with each question following a similar format.

The fear of isolation as a motive to silence one's opinions was a concept that has appeared throughout history. John Locke outlined three sets of laws that were said to influence an individual's behavior: the divine law, civil law, and the law of fashion, the latter of which being relevant to the spiral of silence theory. His examination of public opinion, reputation, and fashion all had a tremendous impact on the lines of thinking present within modern public opinion research

(Noelle-Neumann, 1993). As Noelle-Neumann noted about Locke's work, "The description stands complete: men, through fear of isolation, are forced into conformity by the court of public opinion" (Noelle-Neumann, 1993, p. 71). Solomon Asch provided one of the earliest scientific examinations of conformity with his popular line tests in the 1950s.

The empirically-based identification of fear of isolation as a motive to induce silence has its roots in Asch's line tests, which were conducted more than 50 times within the United States. In these tests, he had subjects judge which of the three drawn lines were congruent with the fourth line. In each test, one of the three lines was exactly the same length as the fourth line, while the other lines were noticeably shorter or longer. Though examining the lines themselves makes one wonder about the validity of such a study, the main concern of this test was to examine how an individual conforms to a perceived group opinion. Within each round of these tests, there was only one naïve subject being examined, while the other members (some seven to nine research assistants) took the role of a confederate. All subjects, both naïve and otherwise, were to respond with their judgments in an ordered fashion as to which line they felt best matched the fourth line. This procedure was then repeated a total of 12 rounds (Asch, 1951).

Though the first two rounds of the test resulted in correct judgments from all of the participants, the confederates thereafter artificially controlled the rounds. In these following rounds, Asch had research assistants claim that a noticeably shorter line was in fact longer than the others. The one naïve subject was then asked for his/her own opinion. Asch found that only two out of ten naïve

subjects stuck with their own opinion. He further found that two subjects were also inclined to incorrectly agree with the group a marginal number of times. On the other hand, an overwhelming six subjects conformed to the group's opinion regardless of the accuracy or truth of said opinion (Asch, 1951).

Stanley Milgram (1961) repeated Asch's original experiments by extending the examination of the study to include members of both individualistic and collectivist cultures. In his experiment, he found that 80% of the members of the collectivist culture went along with the majority opinion, regardless of their correctness. On the other hand, 60% of the members from the individualistic culture frequently joined in the majority perception.

While these findings are significant in regards to the influence of public opinion, the studies were not designed to specifically promote Noelle-Neumann's theory (it had yet to be developed at the time); these experiments measured conformity and influence rather than the silencing of minority opinion holders. In order to design an experiment to further support the spiral of silence theory, the line test study would have had to include discussion rather than brief, ordered judgments.

Further, it is clear that Asch (1951) relied heavily upon the concept of consensus as an instrument for achieving conformity, whereas Noelle-Neumann (1977) theorized that the majority opinion, or the perceived support for one side over another (as in the case of the 1972 election), was the catalyst for silence. Based on the spiral of silence theory, the presentation of the majority opinion, which is not necessarily consensus but rather the side of an issue with the most

perceived support, is responsible for increasing the fear of isolation experienced by those who are in the minority. While the spiral of silence theory is somewhat grounded in Asch's line tests, there is a distinct difference in how Noelle-Neumann chose to theorize how individuals were influenced by others.

Noelle-Neumann (1977) started testing social isolation in 1976 with a study that involved the subject of smoking within the presence of non-smokers. This study presented subjects with a hypothetical situation in which they were given the statement: "In the presence of nonsmokers one should refrain from smoking. To smoke would be inconsiderate; for those who do not smoke, it is very unpleasant to have to breathe smoke-filled air" (Noelle-Neumann, 1993, p. 43). Though her findings suggested that most people were split on their decision on whether or not such a statement was acceptable, they also showed that there was an almost equal amount of people who would speak out on the matter as there were people who would remain silent (Noelle-Neumann, 1977). However, her smoking test went on to later include a "threat test" in which a strong opponent's opinion was presented to the subjects. The threat test included such strongly worded dialogue as: "It seems to me that smokers are terribly inconsiderate. They force others to inhale their health-endangering smoke" (Noelle-Neumann, 1993, p. 45). In this instance, only 23% of smokers were found to be inclined to participate in the discussion (Noelle-Neumann, 1993).

Noelle-Neumann's spiral of silence theory has had a tremendous impact on the social sciences and the study of communication, which has resulted in numerous recent studies that have examined her theory (e.g., Huiping, 2005;

Neuwirth, Frederick, & Mayo, 2007; Priest, 2006). However, such popularity in social science research is not without critical assessment. Several critics of Neumann's methods cite that she relied too heavily upon hypothetical situations to bolster her theory (McDevitt, et al., 2003; Scheufele, Shanahan, & Lee, 2001). An aggregate examination of studies examining the spiral of silence theory that used hypothetical situations has shown that although findings are consistent, researchers may not be employing the best methods by which to empirically measure the phenomenon (Glynn, Hayes, & Shanahan, 1997).

A recent meta-analysis survey examined 17 published and unpublished studies concerning the spiral of silence theory (Glynn, et al., 1997). These studies represented six different countries and relied upon responses from an aggregate total of 9,500 participants. Researchers of the meta-analysis suggest that the correlation between perceptions of opinion support and willingness to speak out was positive, despite the average correlation being relatively small ($r = .054$). They further reported that the literature they studied provided no clear support for the argument that willingness to express opinions is affected by perceived support for those opinions.

Glynn et al. (1997) determined that the use of hypothetical situations did not provide a sound method for testing the spiral of silence theory:

After numerous survey-based studies, we conclude that future research on the spiral of silence should concentrate on observations of actual willingness to speak out as opposed to hypothetical willingness. It may be that the questions used in survey instruments do not capture spiral of silence phenomena very well. The hypothetical nature of the situation presented in survey questions may not engender the kinds of psychological states that putatively produce spiral of silence effects. Experimental studies are perhaps better suited to answer some of these questions (p. 461).

While previous survey-based research has been the primary method of examining the spiral of silence theory, such work has not provided a robust set of results due to the reliance on hypothetical situations and the lack of experimental design necessary to claim causality. The use of an experimental design allows for testing of the spiral of silence theory within a controlled setting; this method also allows for the testing of fear of isolation experienced on the part of subjects as a result of participating in a live discussion.

Other scholars have contended that past spiral of silence studies have yielded both contradictory and inconsistent results (Scheufele & Moy, 2000). Such problematic findings, as pointed out by Scheufele and Moy (2000), have been as a result of misunderstandings resulting in irregular concepts regarding the theory (specifically the concept of public opinion) and inaccurate measurement of variables.

Such misunderstandings of the spiral of silence theory revolve primarily around the definition of public opinion. Noelle-Neumann (1995) provided two separate definitions of the term: (1) public opinion as rationality and (2) public

opinion as social control. Forms of the latter definition include the display of an opinion as it is intended to “influence perceptions of opinion distribution rather than to convey a political message” (Scheufele & Moy, 2000, p. 6). Such displays are more apt for spiral of silence-based study due to their roots within social control. However, Noelle-Neumann herself has pointed out that there are a plethora of definitions for public opinion. She noted that Harwood Childs, a Princeton professor during the 1960s, took on the arduous task of defining the term and came up with a set of 50 exclusive definitions for public opinion (Noelle-Neumann, 1993).

Likewise, Scheufele and Moy (2000) argue that public expression (i.e., public expression of an opinion) has been operationalized by asking respondents about their willingness to express an opinion in a hypothetical situation. Such measures have lacked attention to public exposure, the anonymous nature and the size of “the public,” and the issue under discussion (i.e., whether such an issue has a moral aspect). Noelle-Neumann (1995) notes that public expression must occur in a public (i.e., not private) setting with a public that is both constant and small in size and anonymous. Inconsistencies related to the issue under discussion have also plagued research in this field. Scholars have noted that in order to assess the theory, incorporation of a moral issue (i.e., not an issue of fact) should be employed. For instance, asking respondents if they would likely express an opinion about whether smoking in public places is a socially acceptable behavior would meet the criteria while asking respondents if they

would likely express an opinion about how many packs of cigarettes the average person smokes a day would be asking respondents about an issue of fact.

While the spiral of silence has been tested within FtF communication, new interactive technologies allow for the theory to be tested in entirely new contexts. Such technologies are often lauded for providing a liberating environment where the voiceless are empowered; however, the body of research testing this claim is rather limited. What follows is a review of CMC-related literature.

Computer-Mediated Communication (CMC)

The promise of liberation through CMC has received a considerable amount of attention following the terrorist attack on September 11, 2001 and the subsequent war in Iraq in 2003. Bickel (2003) examined the use of RAWA.org, an Internet website based in Pakistan and operated by Afghan women who found the extreme dichotomy between Islamic fundamentalism and U.S. policy to be overly confining. Bickel's argument focused on the interactive elements of the website and claimed that the site operated to construct new cultural identities and help promote new forms of discourse. Ess and Sudweeks (2003) commented on Bickel's work by saying, "Most hopefully, the website serves as an example of how the Web may yet serve as a vehicle for grounding and projecting alternative views and voices in the context of the war on terrorism – over against the otherwise overwhelming forces of U.S. military and conglomerate media dominance" (2003, para. 7).

A similar study examined how the Internet spurred war protests within America (Nah, Veenstra, & Shah, 2006). Use of the Internet in this instance was

praised for its ability to offer a strategic communication platform that allowed users to broadcast information and discuss current issues with individuals holding both similar and dissenting opinions. The findings of this specific study detailed a positive link between use of web-based news and FtF and/or online political discussion. This line of research, though primarily concerned with political engagement as a result of CMC, is important within the realm of the spiral of silence theory because, as the author noted, “These results stress the importance of online political discussion as a complement to FtF political discussion for political activism, especially when individuals oppose the actions of government and find themselves in the opinion minority” (Nah, et al., 2006, p. 240).

While the majority of spiral of silence studies have primarily focused on FtF communication, there have been a few studies that have examined this theory as it occurs through CMC (e.g., Ernste, Fan, Sheets, & Elmasry, 2007; Fan, 2005; Ho & McLeod, 2008; McDevitt, et al., 2003; Wanta & Dimitrova, 2000). Of particular interest is the ability that interactive technologies such as the Internet have in providing their users with a perception of anonymity (Christopherson, 2007). However, Ernste, Fan, Sheets, and Elmasry (2007) assumed that despite a sense of anonymity, participants in CMC discourse could share a group identity that may cause users to feel social pressures.

The social identification of deindividuated effects (SIDE) model argues that despite the anonymous nature of some forms of CMC, individuals in a group may have experience a higher sense of group identity despite having a

diminished identity as an individual (Ernste, et al., 2007). For example, users of the popular World of Warcraft gaming software may be anonymous, but they may experience a group identity (e.g., users can play alongside other players and join “guilds,” which are essentially groups of other players), which may alter their behavior within the interactive world as a result of having a less salient individual identity. Based on the SIDE model, depending on the salience of the group, the user may still experience some pressure to conform to group norms regardless of the anonymity offered by such media. While anonymity is one of the several key factors in determining behavior via CMC, it is one of many theorized variables.

McClendon (1974) found that the perception of equal status increases the perception of similarities between individuals. Within typical FtF interactions, the differences between individuals in terms of dress, body language, and use of space can all influence how a person perceives the status of another individual. Through initial online interactions, users are not aware of such commonly utilized cues and therefore status is a difficult concept to grasp in the computer-mediated context. However, studies have shown that even in such online interactions where an individual’s status is known or made apparent, the online environment tends to placate the status differences between individuals (Amichai-Hamburger & McKenna, 2006). For example, organizations with an established hierarchy may experience turbulent communication when such communication takes place electronically. As noted by Amichai-Hamburger and McKenna (2006), “...existing internal status does not carry as much weight and does not affect the behavior of

the group members to such an extent. Underlings are more likely to speak up, to speak 'out of turn,' and to speak their mind" (p. 829).

Along with anonymity and a status-leveling effect, CMC is also noted for its omission of nonverbal cues and lower social presence. As Walther and Parks (2002) noted, "The lack of nonverbal cues and lower social presence [makes] it more difficult for leadership to emerge and for groups to reach agreement in socioemotional terms" (2002, p. 531). This confusion is supplemented by what many researchers noted was a lack of social context cues offered in online communication (Kiesler, Siegel, & McGuire, 1984). CMC was believed to lack the contextual cues that were considered necessary in FtF environments to clearly define purpose, setting, roles, and affect. Researchers argued that the lack of these cues would cause online users to "become absorbed in the task and the self, and become disinhibited [*sic*] and hostile" (Walther & Parks, 2002, p. 532). The research at that time supported such claims; CMC users were often subject to greater hostility while also remaining primarily task-oriented (Walther & Parks, 2002).

Hostile behaviors exhibited through CMC have been the subject of a number of studies (Kennedy, 2000). Such studies have examined cases involving flaming, trolling, and spamming behaviors. These behaviors reflect a variety of situations ranging from a mere moment of anger or conflict between individuals to persistent disagreements within online communities (Burnett & Buerkle, 2004). While research at the time typically supported this link between

hostile behaviors and CMC use, recent research has demonstrated that online behavior is much more complicated than once thought.

Early research into CMC found that online communication typically resulted in fewer cues being presented and processed; these findings came together to form the commonly known “cues filtered out” model (Culnan, et al., 1987). Research under this model assumed that since CMC lacks many of the commonly found cues in FtF communication, such computer-based communication is ultimately impersonal. However, this model came under heavy scrutiny due to its methods that relied upon a short time period for CMC activities and the use of zero-history groups. As Walther (2002) noted, there is “the possibility that it simply takes longer to achieve the same level of content exchange in CMC as in oral FtF communication” (p. 532).

Although the cues filtered out model does have some explanatory power in short-term CMC activities, contemporary research has provided several more models that have attempted to grasp the complex nature of CMC discourse. Under the “cues filtered in” model, communicators are assumed to have the same goal to eliminate interpersonal uncertainty as in other settings. As Walther and Parks (2002) noted, “When denied the nonverbal cues available in FtF interaction, communicators substitute the expression of impression-bearing and relational messages into the cues available through the CMC” (p. 535). Despite the differences in CMC models, it is clear that CMC is uniquely different than communication delivered through FtF contexts, which is not to say that one modality is inherently “better” than the other.

Though the few studies that have examined the spiral of silence as it occurs in CMC have yielded significant results, the methods employed by these researchers are not without their limitations. What follows is a review of literature concerning the spiral of silence as it occurs in CMC.

The Spiral of Silence in CMC

Investigations that have examined the spiral of silence as it occurs in CMC have used a wide variety of methods and have reported inconsistent results. For instance, Li (2007) found a positive, albeit weak, relationship between an individual's exposure to diverse opinions on the Internet and an individual's likelihood to express deviant opinions in public (i.e., FtF situations) ($r = .14, p < .01$). Surprisingly, the results did not support the notion that individuals were more likely to express deviant views on the Internet than in public settings. In fact, the results showed that subjects were more likely to express deviant opinions in public ($M = 13.61$) rather than on the Internet ($M = 9.18, t = 19.75, p < .001$). Again, it is important to note that survey methods were used in this study, which could explain why the results were counterintuitive. Similarly, McDevitt et al. (2003) had previously failed to find support for the spiral of silence hypothesis, despite the use of an experimental design.

McDevitt et al. (2003) used a complex experimental design in which participants with perceived minority opinions were matched with participants who held the opinion of the perceived majority; confederates were also used in these groups. Along with studying the ability of an individual to express an opinion, they

also examined perceptions of opinion expression. As noted by the research team,

Decreased social cues, including an absence of nonverbal communication, should limit the capacity for opinion surveillance when discussants are physically isolated from each other. In an online discussion group, one possible result is that extreme opinions become muted and thus appear more moderate than they really are (p. 457).

Although their methods were rigorous, they were unable to find a statistically significant main effect that would support the spiral of silence hypothesis. As they noted, “members of the minority appeared to have been less willing than those in the majority to articulate their privately-held opinions, as perceived by others in their groups; however, this main effect failed to reach statistical significance $F(1, 24) = 1.35$ ” (p. 463).

The lack of support for the spiral of silence hypothesis could have been due to the relatively small sample size ($n = 48$). Similarly problematic, their protocol instructed subjects to discuss an issue (abortion) that has no clearly perceived majority opinion (i.e., it is likely that most people would say that the public is fairly split on the issue). They were able, however, to show that opinions expressed in an FtF context were perceived as being more extreme than opinions expressed in CMC.

Ho and McLeod (2008) conducted a similar study in which participants were placed into either a “FtF condition” or a “computer-mediated condition” (i.e., a chat room). While McDevitt et al.’s (2003) study drew from a small sample, Ho and McLeod gathered data from a much larger sample ($n = 352$). They found that FtF participants were less likely to express their opinions ($M = 65.18$, $SD =$

27.80) than those subjects placed in the CMC condition ($M = 72.63$, $SD = 24.82$, $t = -2.78$, $p < .001$). Subjects who ranked high in fear of isolation were subsequently less likely to express their opinions. They also found significant interactions between fear of isolation and the condition on willingness to express an opinion.

While these findings are significant, it is important to note that Ho and McLeod (2008) did not observe actual opinion expression; instead, they utilized a quasi-experimental design that used hypothetical situations. Although their study drew from hypothetical situations, it did so in a much less artificial manner than previous studies. The research team utilized an element of deception, leading subjects to believe that they actually would be discussing a moral issue with other subjects. In reality, such discussions did not take place. Data were collected both before and after such an announcement was made. The benefit of such a design is the higher degree of external validity, although such a benefit is achieved only by forfeiture of observing actual opinion expression (albeit circumstances under which observation of such behavior may be artificial).

This current investigation relies on some design components from McDevitt et al. (2003), but differs in several ways. First, instead of measuring participants' perceptions of other participants' opinions, this investigation will measure fear of isolation, which is central to the spiral of silence theory. Second, this investigation will also take into account participants' news usage, another tenet of the spiral of silence theory. Finally, the selection of a more appropriate discussion topic (i.e., one with a clearly perceived majority) will be selected.

Likewise, some of the instruments for this study come directly from Ho and McLeod (2008). However, unlike the design utilized in their study, this investigation will make use of the experimental method with the hopes that measurement of fear of isolation will be possible by having subjects participate in a live discussion. As in both of these studies, the current investigation will use zero-history groups (i.e., groups of subjects with no known prior history), which is consistent with Noelle-Neumann's suggestion for the use of a small and anonymous public.

Hypotheses

The initial hypothesis is provided by a direct application of Noelle-Neumann's spiral of silence theory and is based on previous literature regarding spiral of silence theory as it applies to CMC (e.g., Ho & McLeod, 2008; McDevitt, et al., 2003):

H1: Minority opinion holders experience a stronger fear of isolation in an FtF context than in a computer-mediated context.

Similarly, it is expected that individuals who are exposed to media that present the majority opinion will be less likely to express their opinion in either context. Based on the spiral of silence theory, individuals who survey the media as a means of assessing public opinion are likely to experience a greater fear of isolation when they find dissonance between perceived public opinion as a result of media surveillance and their own opinion.

Therefore, it is expected that there is a positive relationship between an individual's news usage and fear of isolation. Not only should attention to general

news and issue-specific news be positively related to a minority opinion holder's general fear of isolation, they should also be related to the fear of isolation experienced by the individual in both FtF and CMC discussions. Thus the following hypotheses are advanced:

- H2a:* There is a positive relationship between a minority opinion holder's attention to general news/public affairs and the individual's general fear of isolation.
- H2b:* There is a positive relationship between a minority opinion holder's attention to general news/public affairs and the individual's fear of isolation experienced during FtF discussion.
- H2c:* There is a positive relationship between a minority opinion holder's attention to general news/public affairs and the individual's fear of isolation experienced during CMC discussion.
- H2d:* There is a positive relationship between a minority opinion holder's attention to issue-specific news/public affairs and the individual's general fear of isolation.
- H2e:* There is a positive relationship between a minority opinion holder's attention to issue-specific news/public affairs and the individual's fear of isolation experienced during FtF discussion.
- H2f:* There is a positive relationship between a minority opinion holder's attention to issue-specific news/public affairs and the individual's fear of isolation experienced during CMC discussion.

Based on McDevitt et al.'s (2003) findings, moderation effects are expected to be present in the CMC condition with regard to individuals' perceptions of opinion expression. Therefore, the following hypotheses are advanced.

H3a: Majority opinion holders will perceive opinions delivered through CMC as more moderate than opinions delivered in an FtF context.

H3b: Minority opinion holders will perceive opinions delivered through CMC as more moderate than opinions delivered in an FtF context.

Chapter Three: Methods

To evaluate the hypotheses posed by this investigation, a within-subjects quasi-experimental design was employed. This chapter provides a description of the general methods that were used. It includes information pertaining to: (a) sample procedure and sample characteristics, (b) research design and procedures, and (c) measures.

Sampling Procedure and Sample Characteristics

Sampling Procedure. For the purposes of this study, a convenient sample of college undergraduates was employed. Participants for the study were collected from a population of University of Kentucky students enrolled in lower-division and upper-division communication courses. The majority of the sample was expected to mirror the demographic breakdown the University of Kentucky as a whole since students enrolled in lower-division communication courses are not necessarily enrolled as communication majors and thus such courses provide a greater representation of college undergraduates. Subjects from upper-division courses were expected to offset the disproportionate amount of underclassmen enrolled in lower-division courses. No special classes were targeted specifically or were excluded from the study.

Subjects were students currently enrolled in an introductory communication class (either COM 181: Basic Public Speaking, or COM 252: Interpersonal Communication) or an upper division course (such as COM 365: Introduction to Communication Research Methods, COM 453: Mass Communication and Social Issues, or COM 571: Health Communication). When

possible, the principle investigator visited courses and read from a script that informed students of a research study opportunity; otherwise an e-mail containing the same information was distributed to course instructors and passed along to their students. Students were directed to a webpage that allowed them to sign up to participate in the study. Data were collected in the Media Center for the Future, which is housed in the basement of the Grehan Building on the University of Kentucky's campus. Subjects were offered extra credit for their participation in the research study or for their completion of a writing assignment.

The majority of the sample frame was made up of lower division courses. Subjects were primarily solicited from 24 sections of COM 181 or COM 252. Each section had anywhere from nine to 25 students currently enrolled in the course. In an effort to recruit more participants and to offset the disproportionate amount of freshmen and sophomore students enrolled in COM 181 and COM 252, subjects were also solicited from select upper-division communication courses. The resulting sample frame with inclusion of these courses was approximately $n = 575$.

Based on a priori power analyses (computed using G*Power 3 software) that took into account the statistical analysis employed for H1 and H2 (i.e., matched pairs t test) and with the assumption of a moderate effect size ($d = 0.5$), it was determined that the sample size necessary for this study should not be less than $n = 27$ to achieve statistical significance at $p < .05$. The actual sample size with relation to minority opinion holders was $n = 24$, which was close to the sample size suggested from the a priori power analysis (See "Measures: Opinion

Holder Status” for how minority opinion holders were determined). McDevitt et al. (2003) were able to find significant findings with regard to CMC opinion moderation (H3) based on a sample of $n = 48$. Thus a sample of similar size or larger was expected to be able to obtain similar significant findings.

Sample Characteristics. In terms of the demographics of the sample, age, gender, ethnicity, class rank, and political affiliation were measured. The sample was predominately younger, with 69.8% reporting to be in the range of 18-20 years of age and only 30.2% reported being either 21 years of age or older. Similar to the makeup of undergraduates in 2009 (see Table 3.1), 53.4% of participants were female while 46.6% were male; the sample was made up mainly of Caucasian participants (87.9%), while African-Americans made up only 8.9%, Hispanics made up 0.9%, and other ethnic groups were reported by 2.6% of subjects.

Since the majority of the sample frame was made up of sections of lower division communication courses, it is not surprising that the majority of respondents were Freshmen (40.5%) or Sophomores (27.6%). Juniors (18.1%) and Seniors (13.8%) were largely unrepresented in this sample. In terms of political affiliation, the majority of participants were Republican (46.6%), though Democrats also made up a large proportion of the sample (40.5%), while Independents (10.3%) and those subjects who reported “other” (2.6%) accounted for a mere fraction of the sample.

Table 3.1. *University of Kentucky Enrollment Demographics for 2008-2009 Undergraduates* ("2008-2009 Enrollment and persistence," 2009)

Gender	Number Enrolled	Percentage
Female	9573	50.5%
Male	9369	49.5%
Total	18492	100%
Ethnicity	Number Enrolled	Percentage
Nonresident Aliens	212	1.1%
Black, Non-Hispanic	1231	6.5%
American Indian or Alaska Native	39	0.2%
Asian or Pacific Islander	419	2.2%
Hispanic	243	1.3%
White, Non-Hispanic	16330	86.2%
Race/ethnicity unknown	468	2.5%
Total	18942	100%

Research Design and Procedures

Treatment Assignment. This study used a within-subjects experimental design to examine the spiral of silence theory as it operates in different contexts (FtF or CMC); thus, the treatment was the modality (FtF or CMC) in which discussion took place. The use of a within-subjects design allows for greater power (and thus a smaller sample) and a reduction in error variance. Therefore, any individual factors that may influence responses from participants in the FtF setting would subsequently account for their responses in the CMC setting.

After securing informed consent (see “Appendix C: Informed Consent”), participants were asked to respond to a number of items, including questions regarding demographics, media use, general fear of social isolation, personal opinion of a proposed campus-wide smoking ban, and items related to current and future opinion congruency with regard to the campus-wide smoking ban. Participants were then randomly assigned to one of two conditions (FtF or CMC). Participants in the FtF condition were directed to a ring of chairs in an empty room, while those in the CMC condition were lead into a room that contained several laptop computers. Those in the CMC condition were seated at computers in such a way that allowed for some amount of semi-private discussion (i.e., they did not sit at adjacent machines), albeit they were all in the same room.

A trained confederate, or person who worked with the principal investigator, was also assigned to each condition. Ideally, each group in every session would have contained the same amount of participants, but such an ideal could not be met due to non-response on the part of some participants (i.e., a number of individuals signed up for the study but did not participate). The result was that each condition contained no fewer than three participants and one confederate and no more than five participants and one confederate.

Participants in each condition were asked to discuss their opinions of the proposed campus-wide smoking ban, which will effectively ban smoking in all indoor and outdoor spaces on the university’s campus starting in the fall of 2009. A city-wide ban on smoking in indoor public places (such as bars, restaurants,

and storefronts) has gained much public approval; a press release issued in 2005 by the Kentucky Tobacco Policy Research Program found that 64% of Lexington residents favored the policy ("UK survey: Support for smoke-free law increases," 2005). The medical campus at the university has also recently banned smoking in both indoor and outdoor spaces within their boundaries.

The primary focus of this study was to examine the behavior of minority opinion holders, which in this case was determined to be those individuals who disagreed or strongly disagreed with the ban (20.7% of subjects or $n = 24$). Participants were also asked whether they agreed that students favored the ban; only 31.9% disagreed or strongly disagreed with the statement. Thus the clear majority was supportive of the campus-wide smoking ban.

This study, unlike the one conducted by McDevitt et al. (2003), did not control for the makeup of the groups with regard to opinion holders. That is to say, groups were not made up of a specific quota of specific opinion holders. However, it was assumed that each group in each session would contain at least one participant who either disagreed or strongly disagreed with the campus-wide smoking ban. This was based in part on the percentage of undergraduates who had smoked a cigarette in the past 30 days (nearly 20% in 2007 according to Dr. Elen Hahn of the Kentucky Tobacco Research Program) and the percentage of Lexington residents who disagreed with the city's ban, which still permits smoking in outdoor public spaces.

Treatment Phase 1. After participants were assigned to conditions, they were given the following set of directions:

Next fall, the University of Kentucky will be instituting a smoke-free policy that encompasses the campus. Smoking will be prohibited from all buildings and outdoor spaces within the campus. Currently, the medical campus has already implemented such a policy. For the next 5-7 minutes we ask that you discuss whether or not you agree with this policy and why. After the discussion, you will be asked to respond to some questions concerning the conversation you had.

Participants in the CMC condition were directed to discuss the issue over an Internet Relay Chat (IRC) in which participants were signed in under an anonymous user name (e.g., "student108"). Participants in the FtF condition were instructed to discuss the issue by simply talking with one another.

After seven minutes of discussion, participants were asked to end their conversation and respond to a set of questions that related to their discussion. Participants responded to measures concerning the fear of isolation as experienced during the actual discussion and one item concerning opinion perception. Participants were then instructed to trade places; the group that had discussed the issue via CMC took their place in the seats arranged for the FtF condition and those in the FtF condition were lead into the room with the computers and seated in the same manner as those who were originally in the CMC condition.

Treatment Phase 2. Again, both groups were read the same set of previously mentioned instructions. After seven minutes of discussion, participants were asked to end their conversation and respond to a set of questions that related to their discussion. Participants responded to measures concerning the

fear of isolation as experienced during the discussion and one item concerning opinion perception. These items were worded exactly as the items in the first phase. Participants were then debriefed and given information regarding the nature of the study with regard to the role confederates played within the study.

Confederates. Volunteer graduate students from the communication department were trained as confederates for this study. Their purpose was simply to express the majority opinion; that is to say, they were instructed to say that they agreed with the campus-wide smoking ban. Confederates were instructed to express this opinion regardless of what was brought up in the discussion. Afterwards, confederates were instructed to complete a separate set of questions regarding the discussions they had in both conditions (See “Appendix B: Confederate Observation Items”).

Measures

General Fear of Isolation. Participants were asked to respond to a series of statements using a five-point Likert scale. Six items adapted from Ho and McLeod (2008) and Scheufele et al. (2001) were used to assess a subject’s general fear of social isolation. These items included: (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 in 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 subsequently reverse-

coded for analysis (see Table 3.2 for means and standard deviations for general fear of isolation).

When all six items were averaged to create a scale, a suitable reliability ($\alpha \geq .7$) could not be obtained ($\alpha = .69$). Pearson product-moment correlation coefficients demonstrate that some items were not significantly related to one another and some items were not strongly related to one another (see Table 3.3 for correlation coefficients for general fear of isolation). Thus, one item (“Arguing over controversial issues improves my intelligence,” GFI4) was removed in order to achieve a higher scale reliability score. Higher scores on the resulting scale indicate a higher level of fear of isolation ($M = 2.53$, $SD = .63$, $\alpha = .70$). Scale reliability was consistent with reliabilities reported by both Ho & McLeod (2008) ($\alpha = .76$) and Scheufele et al. (2001) ($\alpha = .72$).

Table 3.2. *Means and Standard Deviations for General Fear of Isolation*

Item	<i>n</i>	Mean	Std. Deviation
1. I worry about being isolated if people disagree with me (GFI1)	116	2.2845	.93069
2. I avoid telling other people what I think when there's a risk they'll avoid me if they knew my opinion (GFI2)	116	2.3879	.96704
3. I do not enjoy getting in arguments (GFI3)	116	2.6638	.98638
4. Arguing over controversial issues improves my intelligence (GFI4)	116	2.2069	.74036
5. I enjoy a good argument over a controversial issue (GFI5)	116	2.5000	.89928
6. I try to avoid getting into arguments (GFI6)	116	2.7931	.87989

Table 3.3. *Correlation Coefficients of General Fear of Isolation Items*

	GFI1	GFI2	GFI3	GFI4	GFI5	GFI6
GFI1	--					
GFI2	.640**	--				
GFI3	.228*	.320**	--			
GFI4	-.137	-.040	.251**	--		
GFI5	-.016	.075	.456**	.509**	--	
GFI6	.147	.320**	.490**	.200*	.527**	--

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

News Usage. Two items were used to assess participants' news usage. Participants responded to a five-point Likert scale with regard to the following items: (a) "I pay a lot of attention to public affairs/news in general" and (b) "I pay a lot of attention to public affairs/news with regard to the campus-wide smoking ban." These two items were averaged together in an attempt to create a composite score, but a significant correlation between the two items could not be obtained ($r(115) = .175, p > .05$) nor could a decent reliability ($\alpha = .30$). Thus, these items were treated separately in the analysis. With regard to item (a), a higher score indicated a higher level of attention paid to affairs/news in general ($M = 3.33, SD = .87$). A higher score on item (b) indicated a higher level of attention paid to affairs/news related to the campus-wide smoking ban ($M = 2.72, SD = .94$).

Opinion Holder Status. An opinion holder's status (minority or majority) was operationalized by asking whether participants favored the campus-wide smoking ban. Those with higher scores on this item favored the ban ($M = 3.39$, $SD = 1.37$). Those who disagreed or strongly disagree ($n = 24$) were considered to be minority opinion holders.

Fear of Isolation During Discussion. In order to assess fear of isolation as it occurred within an actual discussion, participants were asked to respond to three items after having discussed the campus-wide smoking ban using a five-point Likert scale. Ho and McLeod (2008) and Scheufele et al. (2001) employed a similar measure related to the fear of isolation, except with one minor difference: the live discussion portion did not take place in either study; the questions were related to a discussion that did not take place although subjects were lead to believe that a discussion would actually occur. The measures used in their studies were adapted for this study in order to account for an actual discussion having occurred.

These items were created by changing the wording from a hypothetical, generic statement to one aimed at the experiences the participant had during the actual discussion. For example, Ho and McLeod had participants respond to the following item: "I worry about being isolated if people disagree with me." This item was adapted for the study and reworded to the following: "When discussing the campus-wide smoking ban, I worried about being isolated if people disagreed with me."

Three items that appeared on Scheufele et al.'s (2001) original scale ("I do not enjoy getting in arguments," "Arguing over controversial issues improves my intelligence," and "I enjoy a good argument over a controversial issue") were removed because they primarily dealt with an individual's affect toward arguments and therefore could not be properly adapted to measure fear of isolation as experienced during the discussion. Thus, the three items that were used included: (a) "When discussing the campus-wide smoking ban, I worried about being isolated if people disagreed with me," (b) "When discussing the campus-wide smoking ban, I did not avoid telling other people what I thought," and (c) "When discussing the campus-wide smoking ban, I avoided telling other people what I thought because there was a risk they would avoid me if they knew my opinion." See Table 3.4 and Table 3.5 for means and standard deviations for fear of isolation during FtF and CMC discussion.

Table 3.4. *Means and Standard Deviations for Fear of Isolation During FtF Discussion*

Item	<i>n</i>	Mean	Std. Deviation
1. When discussing the campus-wide smoking ban, I worried about being isolated if people disagreed with me (FFI1)	116	1.6121	.70737
2. When discussing the campus-wide smoking ban, I did not avoid telling other people what I thought (FFI2)	116	1.7931	.96475
3. When discussing the campus-wide smoking ban, I avoided telling other people what I thought because there was a risk they would avoid me if they knew my opinion (FFI3)	116	1.5776	.63453

Table 3.5. Means and Standard Deviations for Fear of Isolation During CMC Discussion

Item	<i>n</i>	Mean	Std. Deviation
1. When discussing the campus-wide smoking ban, I worried about being isolated if people disagreed with me (CFI1)	116	1.6207	.81992
2. When discussing the campus-wide smoking ban, I did not avoid telling other people what I thought (CFI2)	116	1.9224	1.18065
3. When discussing the campus-wide smoking ban, I avoided telling other people what I thought because there was a risk they would avoid me if they knew my opinion (CFI3)	116	1.5948	.75732

The resulting scale had a weak reliability score with regard to both the FtF condition ($\alpha = .62$) and the CMC condition ($\alpha = .63$). Again, Pearson product-moment correlation coefficients demonstrate that relationships between some items were weak (see Table 3.6 and Table 3.7 for correlation coefficients for fear of isolation during FtF and CMC discussion). One item (“When discussing the campus-wide smoking ban, I avoid telling other people what I thought because there was a risk they would avoid me if they knew my opinion,” CFI3) was dropped to increase scale reliability. The resulting scale was used to assess both fear of isolation as it occurred within FtF discussion ($M = 1.59$, $SD = .60$, $\alpha = .762$) and CMC discussion ($M = 1.61$, $SD = .71$, $\alpha = .763$). Higher composite scores indicated higher fear of isolation as experienced during the discussion.

Table 3.6. *Correlation Coefficients of Fear of Isolation During FtF Discussion Items*

	FFI1	FFI2	FFI3
FFI1	--		
FFI2	.302**	--	
FFI3	.620**	.254**	--

** . Correlation is significant at the 0.01 level (2-tailed).

Table 3.7. *Correlation Coefficients of Fear of Isolation During CMC Discussion Items*

	CFI1	CFI2	CFI3
CFI1	--		
CFI2	.311**	--	
CFI3	.619**	.315**	--

** . Correlation is significant at the 0.01 level (2-tailed).

Opinion Perception. Finally, subjects responded to one item from McDevitt et al. (2003) that asked them to respond the following statement using a five-point Likert scale: “Some member(s) in my group expressed extreme opinions about the campus-wide smoking ban.” Higher scores indicated perceptions of extreme opinions expressed in either the FtF discussion ($M = 3.54$, $SD = 1.13$) or CMC discussion ($M = 3.65$, $SD = 1.19$).

Distractor Items. One item asked about their perception of the importance of the campus-wide smoking ban policy. Two items were also employed from Ho & McLeod (2008) and Scheufele et al. (2001) that dealt with opinion congruence. These items were not used in the final analysis and served as questions to

distract participants from the study's primary purposes. See "Appendix A: Measures" for a comprehensive list of items used.

Confederate Observations. Confederates were also asked to respond to a series of open-ended questions that dealt with the nature of the discussion. These questions included: (a) "Did group member(s) respond to your opinion? If so, how did they respond (agree/disagree)?," (b) "Did it seem as though everyone in the group had the same opinion?," (c) "Were there individuals in the group who did not participate or who had limited participation? If possible, describe the individual's opinion," and (d) "Were there individuals in the group who dominated the conversation? If so, describe the individual's opinion and how he/she dominated the conversation." The purpose of these items was to examine the group's discussion dynamics outside of what was quantitatively measured. Such supplementary data could provide greater insight to the dynamics of group discussion, specifically when minority opinion holders are presented with opposition from a much more sizeable majority.

Chapter Four: Results

Hypotheses 1 and 3, assessing whether differences in fear of isolation and opinion perception, are analyzed with paired *t* tests. Hypothesis 2, assessing whether a relationship exists between news usage and a general fear of isolation, is analyzed with a Pearson's product-moment correlation coefficient.

This study used a within-subjects experimental design in which subjects ($n = 116$) were randomly assigned to groups of no more than six and no fewer than four (group size also includes the one confederate that was placed in each group). In total, there were 11 groups that had four members, 17 groups that had five members, and three groups that had six members. Each group participated in both an FtF and computer-mediated discussion regarding the campus-wide smoking ban.

While subjects participated in groups, the unit of analysis was the individual. For this particular study, the main focus was on minority opinion holders, although majority opinion holders were also subject to analysis. A descriptive table is provided for all variables used for this study (see Table 4.1). Pearson product-moment correlation coefficients were also examined for all variables (see Table 4.2).

In order to assess the first two hypotheses, the data from those who were determined to be minority opinion holders (i.e., those who disagreed or strongly disagreed with the campus-wide smoking ban, $n = 24$) were analyzed.

Table 4.1. *Descriptive Table for All Variables*

	<i>n</i>	Min.	Max.	Mean	Std. Deviation
News Usage V1	116	2.00	5.00	3.3276	.87254
News Usage V2	116	1.00	5.00	2.7241	.93796
General Fear of Isolation	116	1.20	4.40	2.5259	.62999
Fear of Isolation During FtF Discussion	116	1.00	3.00	1.5948	.60402
Fear of Isolation During CMC Discussion	116	1.00	4.00	1.6078	.70958
FtF Opinion Perception	116	1.00	5.00	3.5431	1.12977
CMC Opinion Perception	116	1.00	5.00	3.6552	1.19494

Hypothesis 1

Hypothesis 1 predicted that participants who were minority opinion holders would feel a greater sense of fear of isolation during the FtF discussion than the CMC discussion. A paired *t* test that compared the conditions revealed no significant differences in mean scores of fear of isolation between the FtF condition ($M = 1.37$, $SD = .59$) and the CMC condition ($M = 1.43$, $SD = .76$) [$t(23) = .349$, $p > .05$]. Thus, Hypothesis 1 was not supported.

Hypothesis 2

Based on the spiral of silence theory, minority opinion holders experience a greater fear of isolation as a result of news usage (i.e., as the news promotes and maintains the majority opinion, minority opinion holders feel a greater fear of isolation). Therefore, Hypothesis 2a predicted that there would be a positive relationship between general news usage and a general fear of isolation with regard to minority opinion holders. A Pearson's product-moment correlation

coefficient was computed [$r(24) = -.412, p < .05$], but results did not confirm the predicted relationship. Therefore, Hypothesis 2a was not supported.

Table 4.2. *Correlation Matrix for All Variables*

	News Usage V1	News Usage V2	General Fear of Isolation	Fear of Isolation During FtF Discussion	Fear of Isolation During CMC Discussion	FtF Opinion Perception	CMC Opinion Perception
News Usage V1	--						
News Usage V2	.175	--					
General Fear of Isolation	-.123	.018	--				
Fear of Isolation During FtF Discussion	-.018	.024	.480**	--			
Fear of Isolation During CMC Discussion	.020	-.053	.471**	.478**	--		
FtF Opinion Perception	.083	.126	.103	-.038	-.166	--	
CMC Opinion Perception	.143	.155	-.030	-.063	-.063	.597**	--

** . Correlation is significant at the 0.01 level (2-tailed).

In regards to Hypothesis 2b and 2c, no significant relationship existed between general attention to news and fear of isolation experienced during the FtF discussion [$r(24) = 0.12, p > .05$] or fear of isolation experienced during the

CMC discussion [$r(24) = -.148, p > .05$]. Thus, Hypotheses 2b and 2c were not supported.

Subsequent Pearson's product-moment correlation coefficient analysis of attention to news related to the campus-wide smoking ban and general fear of isolation also failed to establish a significant relationship [$r(24) = -.013, p > .05$]. Likewise, no significant relationship was established between attention to news related to the campus-wide smoking ban and fear of isolation experienced during the FtF discussion [$r(24) = .058, p > .05$] or fear of isolation experienced during the CMC discussion [$r(24) = -.095, p > .05$]. Therefore, Hypotheses 2d, 2e, and 2f were not supported.

Hypothesis 3

Finally, in order to assess Hypothesis 3, data from both majority opinion holders and minority opinion holders were used in the analysis. It was expected that participants would perceive opinions delivered through CMC as being more moderate than opinions expressed in the FtF setting (McDevitt et al., 2003). A set of paired t tests that compared opinion perception in both FtF and CMC settings across opinion holder status (i.e., majority or minority) failed to find any statistically significant differences. In regards to majority opinion holders ($H3a$), there were no significant differences [$t(91) = .92, p > .05$] in mean scores with regard to opinion perception in both the FtF ($M = 3.52, SD = 1.14$) and CMC ($M = 3.62, SD = 1.21$) settings. Therefore, Hypothesis 3a was not supported.

Likewise, there were no significant differences [$t(23) = .70, p > .05$] in minority opinion holder's perception of opinions expressed in both FtF ($M = 3.63,$

$SD = 1.10$) and CMC ($M = 3.79$, $SD = 1.14$) settings. Thus, Hypothesis 3b was not supported.

Additional Analysis: Confederate Observations

Similar to McDevitt et al.'s (2003) inclusion of a content analysis of chatroom transcripts, the inclusion of confederate observation items was hoped to provide a further understanding of minority opinion expression in the face of a dominant majority. As noted in the methods section, confederates responded to a series of open-ended items pertaining to the discussion portion of the experiment (see "Appendix B: Confederate Observation Items"). These responses provide a further understanding of the spiral of silence theory in that such data pertain to observations of an actual discussion.

As previously noted, this study did not control the makeup of participant groups; that is to say, participants were randomly assigned to groups without regard to their opinion status. Based on statistics pertaining to the approval rating of the city's smoke-free policy (64% of Lexington residents approved of the policy in 2005) and the prevalence of undergraduate smokers (19% reported having smoke a cigarette in the past 30 days in 2007), it was hoped that each group would contain at least one person who would fall in the minority (i.e., disagreed with the campus-wide smoking ban). However, it was found that only 18 out of the 31 groups (58%) contained at least one minority opinion holder. These groups served as the basis for the following supplemental analysis, which is based upon the observations made by confederates who participated in each discussion group.

In terms of minority opinion holders voicing opposition to the majority, it seems as though such communication happened infrequently among the groups who had at least one minority opinion holder. As noted by one confederate, one participant “seemed to disagree but didn’t say much” in the FtF condition, while in the CMC condition, the same person “did not respond until the very end [of the discussion].” Thus, not every minority opinion holder in this study felt confident enough to overcome the fear of social sanctions and express his/her opinion.

In another group, an entirely different discussion took place. As noted by a confederate, one person in the group voiced a minority opinion “more strongly [in the CMC condition] than [in the] face-to-face [condition].” The participant had argued that the ban would be similar to “STOMPING ON THEIR [sic] CONSTITUTIONAL RIGHTS (emphasis in the original).” Such a statement from the individual was noticeably absent in the FtF discussion. Such minute evidence seems to lend support for differences in fear of isolation across contexts as a diminished fear of isolation would lead to a minority opinion holder freely expressing his/her own opinion.

Another confederate noticed a difference in terms of the way in which such dissent took place; such discussions were often noted for their frankness. In the face-to-face condition, the minority opinion holders “responded to [the confederate’s] opinion by in a very kind way. When they disagreed, they did so respectfully.” Such kindness was not apparent in the CMC condition; as the confederate noted, “They did respond to my opinion, and they were much more eager to shoot me down. Many seemed openly hostile and rude even.” In

another discussion group, the confederate noted similar discussion behavior, noting that “[the participants] were much more willing to drop the fronts and say what they thought.” Again, this provides some evidence (albeit not overwhelming support) that differences do exist in terms of opinion expression across contexts, and therefore implicit differences in levels of fear of isolation subsequently exist as well.

It was expected that minority opinion holders in the CMC condition would be less likely to feel a sense of fear of isolation and therefore express their opinion. While a statistically significant difference in terms of fear of isolation between the two conditions could not be obtained, confederates did notice that a few minority opinion holders were more likely to express an opinion through CMC. As one confederate noted, some participants in the FtF condition “did not feel compelled to speak at all” while “[participants] were much more outspoken when they were online chatting than face-to-face.” The overall picture that such data reveals is one of conflicting results. While some confederates noticed differences in terms of opinion expression across contexts, others noted that such communication simply did not occur.

One confederate noted that one participant in the FtF condition “didn’t say much at all; he disagreed.” In the CMC condition, the same individual was reported to have “only said 1 or 2 things at the end [of the discussion].” In a different group, a confederate noticed the same occurrence: in the FtF condition, “one person looked uncomfortable like she disagreed with everyone but didn’t say much,” while in the CMC condition, the “[same person] said she didn’t care

and didn't say much after." On the other hand, some confederates noticed more willingness on the part of minority opinion holders to express opinions through CMC. One confederate noted, "Everyone was willing to participate in cyber space" despite having an earlier FtF discussion in which one individual in the same group "did not talk much."

While observations were varied with regard to minority opinion holder opinion expression, there did seem to be some evidence that supports a multiplier effect in CMC in regards to those minority opinion holders who were able to express an opinion in an FtF setting. That is to say, those minority opinion holders who were able to express an opinion in an FtF discussion were subsequently even more expressive in a CMC setting. As one confederate noted, the person who was strongly against the ban and voiced an opinion in the FtF condition also "talked (chatted) a lot" in the CMC condition. Likewise, another confederate in a different group noted that the person who was strongly against the ban in the FtF condition became even more expressive in the CMC condition. Within the chat room, the participant claimed that he/she "[didn't] smoke but the day that [the ban] is supposed to start [he/she] is going to walk across campus smoking." As noted by the confederate, this participant "strongly disagreed" in both the chat room and the FtF discussion, but the person had disagreed in the chatroom "more so than in person."

In terms of participation, observations made by confederates suggest that participants were more equally engaged in discussion in the CMC condition than in the FtF condition, though this may have been a function of the similarities of

user names provided in the CMC discussion (i.e., each participant was assigned a similar user name, such as “student108” or “student316” and therefore it may have seemed like everyone was participating equally). In one group, a confederate noted that discussion “was more equal than face-to-face” in terms of participation. In yet another group, the confederate noted, “Everyone was able to voice opinions when they remained anonymous.” Such qualitative data provides another angle of examining what occurred during the discussion portion of the experiment. They also illuminate inconsistencies between what was measured and what occurred, thereby highlighting the difficulty in testing and measuring the spiral of silence theory.

Chapter Five: Discussion and Conclusion

The following chapter interprets results; additionally, a critical review of measures and a thorough discussion of limitations (both within this investigation and within the theory) are included. Directions for future research are also discussed.

Testing the Spiral of Silence

Results of this study run contrary to what was found by Ho and McLeod (2008), who used a hypothetical scenario, and McDevitt et al. (2003), who used a similar experimental method to test the spiral of silence theory. It is possible that the hypothetical situations used in Ho and McLeod (2008) were not able to accurately measure actual fear of isolation as a result of discussion with others, though they were able to obtain statistically significant results that supported the spiral of silence theory. It could be possible that the notion of discursive liberation through CMC is a commonly held axiom amongst a plethora of individuals; such dissenting discourse may be facilitated by a number of contexts. Thus, there may be a gap in what we all have been led to think will happen in both FtF and computer-mediated settings and what really occurs; this makes such hypothetical scenarios ineffective in measuring not only whether minority opinion holders experience a lesser degree of fear of isolation in online settings, but also with regard to whether such individuals are subsequently able to express their opinions.

McDevitt et al. (2003) had tested the spiral of silence theory using a similar experimental method as the one employed in this study. While they were

able to find limited support for the spiral of silence theory, they did not take into account the individual's fear of isolation, which is a key component of the theory. This difference in measurement may be the reason behind the differences found in their study and the lack of statistically significant results obtained in the current investigation. At best, it seems that taking into account the few studies of the spiral of silence theory, we can only hypothesize that some minority opinion holders do feel a fear of isolation some of the time and therefore silence themselves when presented with someone expressing the majority opinion. Under which specific circumstances these individuals experience such phenomenon are still unknown.

One reason that may explain why minority opinion holders in this study did not experience fear of isolation during discussion (and thereby were able to express their opinions) is the possibility of so-called social loafing on the part of the majority opinion holders (as noted by McDevitt et al., 2003). It is possible that those in the majority expected other majority opinion holders to speak up on their side of the issue. Therefore, support for the majority opinion may have been confined solely to the confederate who was instructed to espouse such an opinion.

For instance, suppose a group of five members (four in the majority, one in the minority) discuss the campus-wide smoking ban. There may be less pressure on the part of majority opinion holders to express an opinion since their sheer number may make individuals in the majority to expect a fellow majority opinion holder to speak out on their behalf (much like the bystander effect).

Therefore, minority opinion holders may not have been subject to such dominance by majority opinion holders and therefore may not have experienced a high degree of fear of isolation. Likewise, those in the minority may feel compelled to voice their opinion because there is no one else they can rely on to express that opinion for them; therefore they may feel pressured to speak up simply because they know no one else can do so for them.

It is also likely that minority opinion holders were more passionate about the issue. For instance, smokers who were in the minority may feel more strongly about the ban because the ban directly threatens their behavior. On the other hand, those who were in favor of the ban may not have been as passionate either because they did not perceive the ban to affect their behavior or because the perceived benefits of the ban were not as important compared to the minorities' perceived threats. For instance, if a minority opinion holder felt like the ban was important, it is likely that the individual would be prone to speaking out against it in the face of those in the majority if those individuals were largely apathetic about such a policy.

However, based on participants' responses to how important the issue was, minority opinion holders ($n = 24$) reported similar mean scores ($M = 2.25$, $SD = 1.15$) as those in the majority ($n = 92$, $M = 3.07$, $SD = 1.08$). These figures suggest that minority opinion holders generally did not find the issue to be as important as those who were in the majority. It would seem that minority opinion holders, though perceiving the ban to be not as important as those in the majority, were still able to speak out against the ban.

News Usage and Fear of Isolation

According to the spiral of silence theory, individuals survey the news as a way of assessing public opinion. Those who fall within the minority opinion who are presented with the majority opinion through the news experience a higher degree of fear of isolation. This fear of social sanctions is what effectively silences the individual when the person is presented with someone who promotes the majority opinion. However, this investigation was unable to find results that confirmed these predictions.

There are several reasons why such a relationship was not found. It is entirely possible that minority opinion holders who pay more attention to the news are also more confident in their opinions and are therefore less likely to experience a fear of isolation.

Second, the lack of such a relationship could have been the result of varied news coverage; that is to say, items appearing in the news may have not simply promoted and maintained the majority opinion; there may have been the presence of the minority opinion in such news coverage. Such mixed coverage could have less of an effect on individuals' fear of isolation as result of news exposure. Likewise, it is also possible that news sources, contrary to what would be expected based on the theory, did not support the majority opinion (in this case, the majority opinion was that the campus-wide smoking ban was favorable). Such support for the minority opinion could have a negative influence on the minority opinion holder's fear of isolation, thereby lessening the fear of isolation as a result of exposure to news concerning the issue.

Third, it is possible that news concerning the campus-wide smoking ban just was not prevalent enough to influence a person's public opinion perception. The mean score for minority opinion holders' attention paid to news concerning the campus-wide smoking ban ($M = 2.72$) suggests that people in the sample simply did not pay that much attention to news concerning this issue. This could be the reason why a significant relationship between attention paid to news concerning the smoking ban and fear of isolation could not be found.

Aside from these three possible reasons for contradictory findings, there are some clear theoretical issues that may also be responsible. Two main shortcomings in the theory are readily apparent. First, the theory omits any attention paid to the influence that individuals have on each other in terms of public opinion assessment. The notion that the media are responsible for an individual's perception of public opinion harkens back to the so-called hypodermic-needle model of media effects. Such a model does not take into account the increase in information sources, particularly of online, interpersonal sources (e.g., blogs, message boards, and social networking sites) that could influence one's perception of public opinion. Scheufele (2001) argued a similar point, maintaining that "previous experience with congruent conversations, especially with strangers, increased the likelihood of perceiving the general opinion climate as congruent with one's own. In other words, reference groups or at least discussion groups do matter" (p. 321).

Second, the theory does not take into account the high degree of self-selectivity that may be present in today's public. The three-broadcast-channel era

ended ages ago; our media landscape is one that is largely fragmented, with online news sources becoming more and more prolific and more and more popular. The way in which individuals go about their news consumption has drastically changed. Online news users can actively participate in the formation of news and information through sites that facilitate participatory journalism. Likewise, individuals can subscribe to news feeds that promote only the opinions with which they are aligned. It is entirely possible that such behavior could account for such inconsistent findings regarding the relationship between news usage and fear of isolation.

Perception of Opinions Expressed through CMC

McDevitt et al. (2003) suggested that opinions delivered through CMC would be perceived as more moderate than opinions expressed in FtF situations. This seems to make logical sense when dealing with zero-history groups, as there is a general belief amongst researchers that there is a decrease in social cues in CMC discourse. Unlike McDevitt et al. (2003), statistically significant findings that demonstrate this phenomenon could not be obtained. However, in one instance, a confederate noted that participants were much more polite in the FtF condition than in the CMC condition (although this is certainly not the strongest piece of evidence). Such behaviors also seem consistent with the literature regarding CMC discourse (see “Chapter One, Computer-Mediated Communication”). The lack of social cues in CMC may not only moderate perceptions of opinions, it may also be accountable for the more hostile and rude behaviors exhibited in such settings.

If we were to hold the message constant, it is likely that it would be perceived as more moderate in the CMC condition than the FtF condition due to a decrease in social cues in CMC discourse. However, if we allow variation in the message, the CMC condition may allow the user to express an even more extreme opinion than the one he/she presented in the FtF condition (perhaps due to anonymity). These seemingly dichotomous phenomena may be why statistically significant results with regard to opinion moderation through CMC were not obtained.

A Possible Trend

While statistically significant results were not able to be obtained that could confirm the spiral of silence theory, the general trend of the data analyzed in this investigation demonstrate higher mean scores in the CMC condition with regard to both fear of isolation experienced during discussion (FtF: $M = 1.59$, CMC: $M = 1.61$) and perceptions of extreme opinions (FtF: $M = 3.54$, CMC: $M = 3.65$). It is important to note that though mean scores were higher in the CMC condition in both of these instances, such scores were not statistically significant when compared to mean scores from the FtF discussion.

Such lack of significance does not automatically rule out the possibility that discussions taking place in a computer-mediated setting could result in a higher degree of fear of isolation experienced and a perception of more extreme opinions being expressed. The higher degree of fear of isolation experienced in the CMC discussion could be as a result of a fear of being monitored; that is to say, the FtF setting allows for fleeting moments of discourse while computer-

mediated discussions could be captured, reproduced, and stored quite easily. Just as the lack of cues could make messages within CMC seem less extreme, there is also the possibility that the anonymity offered by the context allowed individuals to become more rude and hostile than they were in the FtF discussion.

Measure Refinement

News Usage. While several studies have examined news usage with complex items that include attention to different media (e.g., television, print, Internet), this current study simply asked if respondents paid attention to news in general and news as it related to the campus-wide smoking ban. Based on the inconsistent results demonstrated within the current investigation's findings, it is appropriate that more careful attention be paid toward this important part of the spiral of silence theory.

Aside from merely asking respondents their media diet, researchers could also perform a supplementary content analysis of media coverage of the issue used within the study. For instance, a content analysis of news coverage involving the campus-wide smoking ban may have provided a more concrete understanding of the public opinion climate. Through a content analysis, it could be determined to what degree the news supported the majority opinion.

Another possible remedy would be to simply ask respondents not only what type of media they gathered news from (e.g., television, print, Internet), but also what sort of stance such items took on the issue under discussion. For example, respondents could be asked to respond with whether they agree to the

following items: “I paid a lot of attention to broadcast television news items that supported *the issue*” and “I paid a lot of attention to broadcast television news items that did not support *the issue*.” Such broader analysis could better capture the underlying dimensions of the spiral of silence theory with regard to the role the news plays in an individual’s assessment of public opinion.

General Fear of Isolation. This study employed a measure of fear of isolation that had been used in previous studies, such as Scheufele (2001) and Ho and McLeod (2008). While Scheufele (2001) reported a scale reliability of $\alpha = .72$ and Ho and McLeod (2008) reported a similar reliability score ($\alpha = .76$), the current study was able to obtain a reliability of $\alpha = .70$ after removing one item from the six-item scale. While the scale reliability could be improved upon, the greater concern is whether items appearing on the scale measure what they are intended to measure. It is possible that some of the items included on the scale lack face-validity when it comes to measuring fear of isolation. For instance, one item asks respondents whether they agree with the following statement: “Arguing improves my intelligence.” This particular item seems to measure a respondent’s affect toward arguing rather than fear of isolation. It is clear that more accurate and reliable measures should be created if we are to gain any insight or demonstrate evidence that supports the spiral of silence theory.

Fear of Isolation During Discussion. The fear of isolation during discussion scale was created using items from the fear of isolation scale created by Scheufele (2001). Items that could be easily adapted to relate to fear of isolation as experienced during an actual discussion were repurposed for this scale.

However, as previously noted, the original scale may have some validity issues when it comes to measuring fear of isolation. These aforementioned issues may have also been responsible for the lack of significant differences between conditions in the current investigation. Therefore, it is necessary for a revised scale to be developed that takes into account fear of isolation as experienced during an actual discussion. Such a set of measures could provide greater insight to the fear of social sanctions experienced by minority opinion holders when put into a situation where they are asked to discuss their opinion about a particular issue with individuals of the majority.

Strengths

Though there are several issues with the instruments that have been used to measure components of the spiral of silence theory, this investigation had several strengths with regard to both the sample obtained and the experimental design. The sample used in this study was largely representative of the university population in terms of both gender and ethnicity.

The use of a within-subjects design in this investigation allowed for a higher degree of power (and therefore required a smaller sample size) and also controlled for individual factors as subjects received both treatments. The design also allowed for a higher degree of control in several instances. For example, the amount of time subjects discussed the issue was held constant, as was the location in which data were collected. Group size, though not held constant, was kept within a narrow range as to ensure similar conditions across all experiment sessions.

The design used in this investigation also followed the suggestions made by other scholars in this line of research. That is to say, a moral issue with a clearly defined majority opinion was selected as the discussion topic. Aside from that, the group makeup was both small (i.e., no larger than six members per group) and anonymous (i.e., zero-history), which also corresponds to scholars' suggestions for studying the spiral of silence.

Limitations

Like any research study, this investigation is not without its limitations. However, this exploratory study's value lies within the questions it raises rather than the questions it answers (or attempted to answer). While expected findings were not actualized, a clearer path in terms of future research is much more visible having conducted such an investigation.

Sample Limitations. This study utilized a convenient sample of college undergraduates who were primarily drawn from basic public speaking courses. It could be that the college undergraduate population is more likely to discuss opposing sides of an issue simply because they are encouraged to do so in their coursework. Likewise, it is possible that the effect size is smaller than expected, therefore requiring a larger sample size in terms of minority opinion holders.

It is also possible that the sample selected for this study felt obligated to participate in the discussion, as not only were they prompted to discuss the issue, but they were also given extra credit in their communication course. This may have caused participants to feel obligated to discuss the issue whereas in a different situation, they may not have been apt to do so.

Design Limitations. There were also some limitations with regard to the design employed. The two main limitations here lie within the lack of control. First, group size was controlled for fairly loosely; that is to say, participants were placed into groups no larger than six members and no fewer than three members. In an ideal study, group size would be controlled so that the number of interactions possible would subsequently be controlled. Likewise, the participants' opinion status (majority of minority) was not controlled for as done so by McDevitt et al. (2003). Since analysis of *H1* and *H2* required only looking at the data of minority opinion holders, this did not limit the results obtained in those instances. However, *H3* analyzed data from both majority and minority opinion holders. Such non-significant results may have been the function of the group makeup and lack of diversity among group members in terms of opinion status. For example, a group made up of three minority opinion holders and one confederate may have behaved differently than a group of one minority opinion holder, two majority opinion holders, and one confederate.

Aside from the lack of control in some areas of the study, there were other design limitations. The use of zero-history groups, though consistent with Noelle-Neumann's spiral of silence theory, may have had an influence on the participants' fear of isolation as future contact may not have been expected and therefore social sanctions may not have a prevalent concern. It is likely that this may have also been the reason why some group members were more hostile in their CMC discourse than in the FtF situation. Without the assumption of future

contact, participants may not have felt the need to abide by FtF social norms and therefore were more rude and hostile in the CMC condition.

The within-subjects design used in this study may also have had an unwanted influence on the group discussion as participants discussed the campus-wide smoking ban in both FtF and CMC conditions. There is the possibility of an ordering-effect with regard to the treatment participants first received. However, independent samples *t* tests show no statistical significance of order effects with regard to the data used to assess the first two hypotheses (where ordering-effects may have influenced the results).

Those who were assigned to the CMC condition first reported mean scores on the fear of isolation during discussion measure for both the CMC condition ($M = 1.42, SD = .25$) and FtF condition ($M = 1.33, SD = .15$) that were not significantly different ($p > .05$) than scores reported by those who were assigned to the FtF condition first (fear of isolation during discussion for CMC condition: $M = 1.42, SD = .19$; fear of isolation during discussion for FtF condition: $M = 1.46, SD = .19$). Likewise, those who were assigned to the CMC condition first reported mean scores on the opinion perception item for both the CMC condition ($M = 3.58, SD = 1.16$) and the FtF condition ($M = 3.75, SD = .87$) that were not significantly different ($p > .05$) than scores reported by those who were assigned to the FtF condition first (CMC opinion perception: $M = 4.00, SD = 1.12$; FtF opinion perception: $M = 3.5, SD = 1.31$).

As with most experimental designs, there is also a limit with regard to the external validity of the study. It is highly unlikely that five strangers would be

placed together in a group and asked to discuss their opinions on a moral issue. What was not expected was a limitation with regard to the CMC technology used in this study (i.e., the chatroom). In one session, some participants openly mocked the use of the chatroom, saying that it reminded them of middle school, therefore implying that such communication methods may have been irrelevant in relation to this population.

Future Research

Future research should seek to overcome the limitations present within this investigation. Based on this investigation's limitations, future studies could incorporate a sample from a much broader population than college undergraduates. Along with a broader population in mind, such a sample could be limited solely to those who are clearly in the minority as such individuals are clearly the focus of the spiral of silence theory. This could also provide the control over opinion holder status, which was noticeably absent in this investigation.

Aside from sampling procedures, future research could utilize a design in which minority opinion holders discuss an issue with one confederate who espouses the majority opinion. While such a design may not be possible due to resource limitations, it would eliminate the possibility for social loafing. The current investigation, as well as McDevitt et al. (2003), noted that participants may not have been as vocal due to the size of the group. When there are several people in a group, individuals may feel less pressure to speak out simply because they expect someone else to do it for them. Thus, using an

experimental design in which participants interact in a dyad may provide more control over extraneous variables related to group size.

There is also a need to understand what differences (if any) exist with regard to the history of the groups. Thus comparing zero-history groups to groups with some amount of history (and/or expectation for future contact) may be relevant in terms of designing such experiments. It may be that the fear of isolation experienced during a discussion may differ across such groups. This may therefore influence how discussions take place in both FtF and CMC contexts.

There is also a need to understand how time affects such discussion groups. Walther and Parks (2002) noted that CMC simply takes more time to deliver the same content as what can be delivered in FtF settings. Groups may be more hostile and task-oriented in the short-term, but they may alter their behaviors over time. Such shifts in behavior may be relevant to understanding how the spiral of silence functions in CMC discourse.

Lastly, it is crucial to make use of a CMC technology that is relevant to the population being examined and to ensure that the experiment provides for a realistic setting. For instance, this investigation used a chatroom, which is a fairly common form of CMC. However, it was clear that some individuals had not used chatrooms in years or had never used chatrooms. Thus, their experience may not have been the most realistic since they are unlikely to actually use such forms of CMC in everyday life. Therefore, future research should take into account the relevant CMC methods used by the population. In regards to college

undergraduates, that may mean incorporating social networking sites (e.g., Facebook, MySpace) or blog sites (e.g., Blogger, Wordpress, Twitter) into the study. Likewise, participants should also be physically isolated from one another in order to achieve a more realistic experience in terms of CMC discourse. Since CMC allows for anonymity, such a setting should be utilized when examining such discourse.

Conclusion

Examination of the spiral of silence theory has broader implications for public discussion and debate, as well as the facilitation of a deliberative democracy. While CMC has been thought of as the “liberator” for the minority opinion, it may not be that different than discussions that take place in FtF settings. Findings from this investigation provide no support for the notion that individuals experience a greater fear of isolation in the FtF context than in CMC. There was also no support for the theoretical claim that minority opinion holders who are exposed to more news content experience a greater general fear of isolation. Lastly, no significant differences were found in relation to perceptions of extremity across contexts.

Based on these findings, which run contrary to the spiral of silence theory and previous research, a much-needed reexamination of the claims made by the theory should take place. It is possible that the limitations of this study are reason enough for the lack of significant results; however, it is also likely that the notion that the media promote and maintain the majority opinion, thereby causing a fear

of isolation in minority opinion holders and subsequently “silencing” them in public discourse may not actually function in the way researchers have believed.

Whether such technological innovations that facilitate CMC are truly the liberating forces that many suspect, it is unclear whether the ones doing the talking are not apt to similarly dissent in FtF settings. The unique features offered by CMC discourse (i.e., anonymity, lack of social cues) may not have as much of an influence on a minority opinion holder’s fear of isolation compared to the characteristics of the individual. It is possible that a fear of isolation is much more of a function of the individual’s characteristics than the context in which discourse takes place. Such a suggestion offers a bleak view of CMC; however, further research is necessary in understanding the true nature of the context and whether such unique features can allow individuals to overcome the spiral of silence.

Appendix A

Measures

Demographics

1. What is your age?
2. Gender:
Male (); Female ()
3. Ethnicity:
Caucasian (); African American (); Hispanic (); Asian (); Native American (); Other ()
4. Class rank:
Freshman (); Sophomore (); Junior (); Senior (); Other ()
5. Political Affiliation
Democrat (); Republican (); Independent/Other ()
6. Do you smoke?
Yes (); No ()

General Fear of Isolation (adapted from Ho & McLeod, 2008; McDevitt, et al., 2003; Scheufele, et al., 2001)

Strongly agree (); agree (); neutral (); disagree (); strongly disagree ()

Respond to the following items in terms of how much you agree with the following statements:

1. "I worry about being isolated if people disagree with me"
2. "I avoid telling other people what I think when there's a risk they'll avoid me if they knew my opinion"
3. "I do not enjoy getting in arguments"
4. "Arguing over controversial issues improves my intelligence"
5. "I enjoy a good argument over a controversial issue"
6. "I try to avoid getting into arguments"

News Usage

Strongly agree (); agree (); neutral (); disagree (); strongly disagree ()

Respond to the following items in terms of how much you agree with the following statements:

1. I pay a lot of attention to public affairs/news in general.
2. I pay a lot of attention to public affairs/news with regard to the campus-wide smoking ban.

Opinion Holder Status

Strongly agree (); agree (); neutral (); disagree (); strongly disagree ()

Respond to the following items in terms of how much you agree with the following statement:

1. I favor the campus-wide smoking ban.

Fear of Isolation During Discussion (for both FtF and CMC conditions) (adapted from Ho & McLeod, 2008; Scheufele, et al., 2001)

Strongly agree (); agree (); neutral (); disagree (); strongly disagree ()

Respond to the following items in terms of how much you agree with the following statements:

1. "When discussing the campus-wide smoking ban, I worried about being isolated if people disagreed with me."
2. "When discussing the campus-wide smoking ban, I did not avoid telling other people what I thought."
3. "When discussing the campus-wide smoking ban, I avoided telling other people what I thought because there was a risk they would avoid me if they knew my opinion."

Opinion Perception (for both FtF and CMC conditions) (McDevitt, et al., 2003)

Strongly agree (); agree (); neutral (); disagree (); strongly disagree ()

1. Some member(s) in my group expressed extreme opinions about the campus-wide smoking ban.

Distractor Items (adapted from Ho & McLeod, 2008; McDevitt, et al., 2003; Scheufele, et al., 2001)

Strongly agree (); agree (); neutral (); disagree (); strongly disagree ()

Respond to the following items in terms of how much you agree with the following statements:

1. The campus-wide smoking ban is important to me.
2. Students at the University of Kentucky favor the campus-wide smoking ban.
3. In the future, students at the University of Kentucky will favor the campus-wide smoking ban.

Appendix B

Confederate Observation Items

1. Did group member(s) respond to your opinion? If so, how did they respond (agree/disagree)?
2. Did it seem as though everyone in the group had the same opinion?
3. Were there individuals in the group who did not participate or who had limited participation? If possible, describe the individual's opinion.
4. Were there individuals in the group who dominated the conversation? If so, describe the individual's opinion and how he/she dominated the conversation.

Appendix C

Informed Consent

Consent to Participate in a Research Study

Testing the Spiral of Silence in Computer Mediated and Face-to-Face Contexts

WHY ARE YOU BEING INVITED TO TAKE PART IN THIS RESEARCH?

You are being invited to take part in a research study about opinion expression as it occurs within different contexts. If you volunteer to take part in this study, you will be one of about 400 people to do so at the University of Kentucky.

WHO IS DOING THE STUDY?

The person in charge of this study is Robert Zuercher, a student of the University of Kentucky's Department of Communication. He is being guided in this research by Dr. Derek R. Lane. There may be other people on the research team assisting at different times during the study.

WHAT IS THE PURPOSE OF THIS STUDY?

By doing this study, we hope to learn more about individuals' willingness to express opinions in both face-to-face settings and through online communication methods.

ARE THERE REASONS WHY YOU SHOULD NOT TAKE PART IN THIS STUDY?

Participation is strictly optional and welcome as long as you are at least 18 years of age.

WHERE IS THE STUDY GOING TO TAKE PLACE AND HOW LONG WILL IT LAST?

The research procedures will be conducted at the University of Kentucky. The total amount of time you will be asked to volunteer for this study is 60 minutes.

WHAT WILL YOU BE ASKED TO DO?

You will be randomly assigned to one of two groups of participants. Participants in each of the two groups will then be randomly grouped together into smaller groups. Participants will then be asked to complete a short questionnaire. Each small group will then be given a topic to discuss. Participants will discuss this issue in both face-to-face and chat room settings. After each discussion session, participants will be asked to complete a questionnaire about their experiences during the study. Each discussion session (face-to-face and chat room) will take no longer than 60 minutes combined. The total amount of time you will be asked to volunteer for this study is 60 minutes.

WHAT ARE THE POSSIBLE RISKS AND DISCOMFORTS?

To the best of our knowledge, the things you will be doing have no more risk of harm than you would experience in everyday life.

WILL YOU BENEFIT FROM TAKING PART IN THIS STUDY?

There is no guarantee that you will get any benefit from taking part in this study. Your willingness to take part, however, may, in the future, help society as a whole better understand this research topic.

DO YOU HAVE TO TAKE PART IN THE STUDY?

If you decide to take part in the study, it should be because you really want to volunteer. You will not lose any benefits or rights you would normally have if you choose not to volunteer. You can stop at any time during the study and still keep the benefits and rights you had before volunteering.

IF YOU DON'T WANT TO TAKE PART IN THE STUDY, ARE THERE OTHER CHOICES?

If you are participating in this study to receive course credit, there are other alternatives. If you don't qualify for this study or you prefer not to participate, you can complete a 2-page essay concerning smoke-free policies. If you choose to write the essay, please e-mail the essay directly to Robert Zuercher (Robert.Zuercher@uky.edu).

WHAT WILL IT COST YOU TO PARTICIPATE?

There are no costs associated with taking part in the study.

WILL YOU RECEIVE ANY REWARDS FOR TAKING PART IN THIS STUDY?

Participants may be eligible to receive participation credit or extra credit in a communication course based on the decision of the participant's course instructor. For more information, please contact your course instructor.

WHO WILL SEE THE INFORMATION THAT YOU GIVE?

We will make every effort to keep private all research records that identify you to the extent allowed by law.

Your information will be combined with information from other people taking part in the study. When we write about the study to share it with other researchers, we will write about the combined information we have gathered. You will not be personally identified in these written materials. We may publish the results of this study; however, we will keep your name and other identifying information private.

Also, we may be required to show information which identifies you to people who need to make sure we have done the research correctly; these would be people from such organizations as the University of Kentucky.

CAN YOUR TAKING PART IN THE STUDY END EARLY?

If you decide to take part in the study you still have the right to decide at any time that you no longer want to continue. You will not be treated differently if you decide to stop taking part in the study.

The individuals conducting the study may need to withdraw you from the study. This may occur if you are not able to follow the directions they give you, if they find that your being in the study is more risk than benefit to you, or if the agency funding the study decides to stop the study early for a variety of scientific reasons.

WHAT IF YOU HAVE QUESTIONS, SUGGESTIONS, CONCERNS, OR COMPLAINTS?

Before you decide whether to accept this invitation to take part in the study, please ask any questions that might come to mind now. Later, if you have questions, suggestions, concerns, or complaints about the study, you can contact the investigator, Robert Zuercher at (859) 257-1365. If you have any questions about your rights as a volunteer in this research, contact the staff in the Office of Research Integrity at the University of Kentucky at 859-257-9428 or toll free at 1-866-400-9428. We will give you a signed copy of this consent form to take with you.

Signature of person agreeing to take part in the study

Date

Printed name of person agreeing to take part in the study

Name of [authorized] person obtaining informed consent

Date

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VITA

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Birthplace: Eau Claire, Wisconsin

EDUCATION

B.S., *University of Kentucky*, Lexington, KY, May 2007

- Major: Telecommunications
- Minor: Business

PROFESSIONAL EXPERIENCE

Graduate Teaching Assistant, *University of Kentucky*, School of Journalism and Telecommunications, Lexington, KY

- August 2007 – Present

Graduate Research Assistant, *University of Kentucky*, School of Journalism and Telecommunications, Lexington, KY

- August 2007 – Present

Research Assistant, *University of Kentucky*, Rural Smoke-Free Communities Project, Lexington, KY

- May 2009 – August 2009

Production Director, *University of Kentucky*, 88.1 WRFL-FM, Lexington, KY

- July 2006 – August 2007, January 2009 – August 2009

Graduate Assistant, *University of Kentucky*, Institute for Rural Journalism and Community Issues, Lexington, KY

- August 2008 – May 2009

Audio Production Intern, *Shangri-La Productions*, Lexington, KY

- January 2007 – May 2007

PROFFESIONAL/ACADEMIC HONORS AND AWARDS

2009 Recipient of the *Kentucky Opportunity Fellowship Award*

- \$15,000 Non-Service Stipend
- University of Kentucky

2007, 2008 Recipient of the *Daniel R. Reedy Quality Achievement Fellowship Award*

- \$3,000 Award
- University of Kentucky

2007 Recipient of the *Otis T. Singletary Fellowship*

- \$12,000 Non-Service Stipend
- University of Kentucky

2007 Summa Cum Laude in Telecommunications conferred upon completion of the Bachelors of Science

- University of Kentucky

2003-2007 Dean's List attained every semester while attending the University of Kentucky.

2006 Recipient of the *Journalism and Telecommunications General Excellence Award*

Signed: Robert James Zuercher