When One Speaks Out and When One Does Not: Online Discussion Forums for Opinion Expression

by

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Abstract

Individuals' opinion expression about public affairs has entered a new phase with the growth of new venues for social interaction among fellow citizens such as online discussion forums. However, not much empirical evidence exists to understand an individual's voicing views in online discussion. Focusing on this attention-deserved form of political activity online, the current dissertation aimed to yield insights into some fundamental questions: who, with what characteristics, more intends and tends to talk on an online discussion forum, and what forum conditions (and combinations of them) facilitate an individual's opinion expression intention and behavior. To investigate these questions, two experimental research methods – scenario-based thought and website-based true experiments – were implemented. Thought experiments relied on a hypothetical scenario technique, the most widely used method in spiral of silence research, but employed the multifaceted, detailed scenarios. True experiments, on the other hand, used the stimulus online forums designed for this study to actually place the

participants in the online discussion situation. The findings from these two different approaches indicated that a person's race, issue involvement, issue knowledge, and the revelation of identity were factors that generally influenced opinion expression online. Racial minorities, compared to Whites, were consistently more willing and likely to voice their views on the online forum. Those who were involved in and knowledgeable about the issue under discussion were more likely to post messages to the forum. Disclosing one's real name and other personal information was a big hindrance to actual opinion expression on the discussion forum. However, comparing the findings from scenarios to those obtained from real, analogous situations also revealed that the use of scenarios could not accurately identify some existing phenomena. Thought and true experiments returned incongruent predictions regarding the roles of age, fear of isolation, and the votes climate as well as the contribution degree of issue knowledge (to posting intention). In particular, trait fear of isolation, which has been pointed out as the primary culprit behind silencing minority opinion holders, played a completely opposite role. Against the background of these findings, the theoretical and methodological implications of the study were discussed.

Chapter 1

Introduction

"The constant free flow of communication among us - enabling the free interchange of ideas - forms the very bloodstream of our nation. It keeps the mind and body of our democracy eternally vital, eternally young." - Franklin D. Roosevelt

An individual's expressing opinion in public discussion, though it may seem trivial per se, is a crucial process (Price, 2009; Yang, 1997) that is intertwined with other moments of participatory democracy. Conceptually, on the individual speaker's side, speaking in public is a basic way of sharing his or her own thought and view (Delli Carpini, Cook, & Jacobs, 2004; Gutmann & Thompson, 1996; Price; 2009; Wright & Street, 2007). This opinion expression, for those co-present in the interaction, serves as an antecedent for learning others' positions (Delli Carpini et al., 2004; Mendelberg, 2002; Walton, 2007) and enhancing understanding of multiple perspectives on the issue in hand (Chambers, 2003; Ho & McLeod, 2008; Katz, 1997). Last but not least, if looked at on a broader level, some outcomes such as consensus or mutually acceptable decisions can be produced through the exchanges of talk (Delli Carpini et al., 2004; Gutmann &

Thompson, 1996; Habermas, 1989; Wright & Street, 2007).[1] Several normative concepts related to the democratic ideal, including the metaphor of a marketplace of ideas (Napoli, 1999) and the realization of the ideal speech situation (Harbermas, 1981), also rely, to a certain extent, on this communicative action (Habermas, 1981) of individual citizens. For some scholars, individuals' talking in public with other fellow citizens is a justifiable foundation or essential element of democracy (Conover, Searing, & Crewe, 2002; Clarke, 1996; Delli Carpini et al., 2004; Fishkin, 1995; Habermas, 1981; Hill & Hughes, 1998; Ho & McLeod, 2008; Page, 1996; Sartori, 1987), or the ideal for democracy in itself (Mendelberg, 2002; Papacharissi, 2002; Wright & Street, 2007).

Despite its prominent position within democracy, however, ordinary people's speaking in public deliberation has not been the de facto center of interest in empirical studies. Even investigations on civic or political participation "seldom include talk as a measure of engagement, focusing instead on activities such as voting, attending rallies, working for a political party, lobbying, joining and actively participating in voluntary organizations, protesting, and the like" (Delli Carpini et al., 2004, p. 318-319). This gap may be attributable, at least in part, to the practical reality of an individual's public expression of personal opinion. Basically, speaking with other citizens in public settings has existed more in theory than in practice (Conover et al., 2002; Eliasoph, 1998). While discussing the public matter with friends, family, or acquaintances has been fairly common (e.g., Brady, 1999; Delli Carpini et al., 2004; Keeter, Zukin, Andolina, & Jenkins, 2002), opportunities for voicing opinions in citizen-to-citizen public discussion,

[1] As power – regardless of whether it is communicative power or resulting political power – is exercised not by an individual but by a group acting together (Arendt, 1970; Flynn, 2004; Habermas, 1996), reaching a certain collective decision is often considered an especially meaningful moment.

which democratic theory deems more desirable and important (Conover et al., 2002), were scarce in the traditional media environment (Conover et al., 2002; Yun & Park, 2011). What is more, one's opinion expression in public deliberation is often vulnerable to undesirable social-psychological influences (Ho & McLeod, 2008) as exemplified by pressure from the majority (e.g., Asch, 1955; Noelle-Neumann, 1974; Tocqueville, 1856/1955). The significance that expression behavior itself carries has therefore been somewhat tarnished.

In fact, private individuals' discussing public affairs with other citizens in public places has not always been a rare phenomenon. Dating back to the 18th century, with the growth of a market economy (Johnson, 2006) and daily newspapers (Scannell, 2007), ordinary people had become conscious of others and begun to be concerned about general or generalizable interests and important matters. Coffee houses, salons, dinner parties, reading circles, and interestingly, magazines and newspapers themselves were some discursive spaces that arose to meet unprecedented demands for social gatherings. In these then new public arenas, ordinary persons gathered together, shared their own taste and self-understanding with others, and, by extension, communicated the needs of society with the state (Habermas, 1989). These domains of discourse and communication soon exercised influence as a space that embodied what could almost be called public opinion. Participants' direct expression of needs and interests (Kellner, 2000) there resultantly came to have a political function.

Yet, individuals' engaging in public talk and the resulting communicatively generated power of citizens over political practice (Flynn, 2004; Habermas, 1989) seemed to have waned through the late 19th and 20th century. During that period,

ordinary social members increasingly degenerated into mere passive culture consumers who were more apolitical social intercourse oriented (Calhoun, 1992; Price, 2009). Public opinion naturally lost its critical edge and furthermore assumed the character of a commodity that a few powerful (e.g., political, economic, or media) elites controlled. There may be many other reasons of the times, but this appeared to be mainly a result of the transformation or disappearance of the public sphere (Eliasoph, 1998; Habermas, 1989), which was a stronghold for "the communicative network of a public made up of rationally debating private citizens" (Habermas, 1989, p. 247). Indeed, although private individuals somehow continued to have a mode to express their opinions about common interests in the public realm, a channel for ongoing public discussion and communication at this time was quite limited in its form and impact. Even the press, once home to political discussing publics (Scannell, 2007), was no longer a public sphere in the true sense of the word (Habermas, 1989; Price, 2009). Ordinary people could still be involved in public debate through the press (e.g., a letter to the editor, reader's opinion in newspapers) and broadcast (e.g., a televised interview) media, but in most cases, they just took a role as "spectators of media presentations and discourse which mold public opinion" (Kellner, 2000, p. 265).

In this context of physical and procedural constraints, the emergence and infiltration of newer venues the Internet affords – online discussion spaces – in private people's lives warrants renewed interest in the behavior of speaking in public (Delli Carpini, 2000; Ho & McLeod, 2008; Neuman, Bimber, & Hindman, 2011; Ó Baoill, 2000; Papacharissi, 2004; Poor, 2006; Poster, 1999; Price, 2009; Wright & Street, 2007). Online communication environments are often characterized with terms that go well with

democratic civic discourse, such as interactivity, networks, interoperability, autonomy, and openness (e.g., Bargh, McKenna, & Fitzsimons, 2002; Haythornthwaite, 2005; Jensen, 2003; McKenna & Bargh, 1998; Meyrowitz, 1997; Neuman et al., 2011; Rafaeli, 1998; Walther, 1996; Wellman, 2001). Accordingly, communication among ordinary citizens happening in these new spaces raises relevant expectations.

Seemingly unlimited space and expanded connectivity online open a way for citizens to reach others (even the mass of people) and to participate in discursive interaction and direct discussion with them on issues that can have the public character (McKenna & Bargh, 2000; Stromer-Galley, 2003; Wojcieszak, Baek, & Delli Carpini, 2009). Speaking out about public affairs through the online platform generally requires less energy, cost, and time than its counterpart venues (Delli Carpini et al., 2004; Price, 2009; Wright & Street, 2007). This online talk does not rely on face-to-face communication, but it has the beauty of direct, person-to-person interactions (Neuman et al., 2011; Wellman, 2001), while overcoming "natural limits on the size of the [classical face-to-face discussing] public" (Peters, 1993, p. 564). In addition, unlike in other existing or once-functioning public spheres, there is no need for private individuals to have specific qualifications (e.g., men with economic power) or to go through intense competition to express opinions in this digital realm. For instance, if getting a letter to the editor published in newspapers was a matter of chance, posting opinion pieces on the web becomes more a matter of personal choice. Online spaces seem to enable ordinary people's speaking out to enter the era of willingness – whether they decide or want to engage in public communication. Some common discussion conditions online such as the absence of physical co-presence and contact, reliance on written text messages, and

lack of non-verbal cues (e.g., Ho & McLeod, 2008; Price, 2009; Wright & Street, 2007; Yun & Park, 2011) also add to the expectation that they might provide a more level playing field where the effects of dysfunctional social-psychological influences (Ho & McLeod, 2008) might be basically somewhat attenuated.

These attributes catapult discursive venues online to becoming a strong candidate that may lead the revival or revolution of ordinary people's talking in public with other citizens. In particular, Internet discussion forums,[2] which are highly popular and prevalent meeting places online (Yun & Park, 2011), seem to be in a good position in this regard (e.g., Hauben & Hauben, 1997; Rheingold, 1993). They are specifically designed to facilitate individuals' expression of opinions about public issues in the presence of other citizens. As "a kind of virtual agora" (Wright & Street, 2007, p. 850) or digital public sphere, where people can gather to discuss their preferences, online forums have been posited "as a tool by which . . . deliberative democracy can be made practical" (Wright & Street, 2007, p. 850).

To put this into perspective, the degree to which online forums aid the genuine expression of personal opinions and thus overall civic deliberation still remains open to question. The most basic reason is that the differences in the characteristics or features of online discourse situations and their potential impact on speaking out have been largely ignored in expectations. However, there do exist various conversational contexts that the shape of online forums create,[3] and these – "both independently and in interaction with

[2] In this dissertation, online discussion forums are used as a generic term for sites specialized in asynchronous civic discussion. Some examples include: Debate.org, ProCon.org, Slashdot, and Topix.

[3] For instance, in certain online discussion forums, even though it may not be like observable cues in face-to-face interactions, some personally identifiable information about the speaker can be

each other" (Delli Carpini et al., 2004, p. 336) – may have conditional effects on the way people communicate their views. Indeed, it is likely that "the democratic possibilities opened up (or closed off) by websites are not a product of the technology . . . but of the ways in which it is constructed, by the way it is designed" (Wright & Street, 2007, p. 850). Treating online discussion forums as one big homogeneous venue could just obscure understanding of their potential for citizens' opinion expression and exchanges.

The reality is that there is even "little systematic research on how fearful people online are of expressing unpopular opinions" (Neuman et al., 2011, p. 30) and who is more or less likely to speak out, let alone studies that take contextual effects and their interactions into account. While online arenas, "combined with asynchronous discussion board technology" (Wright & Street, 2007, p. 852), seem to break new ground for private individuals to articulate their views in public, unfortunately, past empirical studies tend to focus more on other (in a way, less active) forms of political or social activities online such as information-searching (e.g., Garrett, 2009; Johnson, Bichard, & Zhang, 2009; Knobloch-Westerwick & Meng, 2011), news consumption (e.g., Ahlers, 2006; Mitchelstein & Boczkowski, 2010; Jang & Oh, in press; Tewksbury, 2003), political learning (e.g., Kavanaugh et al., 2007; Price, 2009; Valentino, Hutchings, Banks, & Davis, 2008), and exposure to disagreement (e.g., Jang, 2014; Price, 2009; Wojcieszak & Mutz, 2009). Identifying the structural conditions (or combinations of them) of an online forum as well as individual characteristics that make a difference in people's speaking out during public discussion, in this context, is expected to address these gaps in the literature – *whether*, *who*, and *where* aspects – at the same time. The findings from this

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available (e.g., FUDforum, Huffingtonpost conversations section); posting anonymously there might not be possible.

investigation will shed light on which online structural conditions – and then which online discussion forum realization – have the potential to constitute a favorable environment for opinion expression and will also have practical implications for the players involved – ordinary citizens, Web designers, or politicians.

Chapter 2

Individuals' Speaking Out in Public Deliberation

When it comes to opinion expression, how well individuals can give their candid views in the discourse process is often a main concern. This seems to be more so if they are situated in public discussion. The promising deliberative experience and its products in theory need suitable conditions to materialize in practice (Walton, 2007), and one of the basic premises running through those desired outcomes is that participants' honest opinions, even minority views, would be exchanged in interactions (Conover et al., 2002; Habermas, 2008; Neuman et al., 2011). Expressed opinions in deliberation usually form the basis on which citizens build their understanding of others' positions on given issues (Noelle-Neumann, 1993; Scheufele & Moy, 2000). A free and frank exchange of views among participants, in this sense, is a prerequisite for one's real and undistorted understanding of the situation. Speaking out candid opinions is also closely tied to the diversity of viewpoints encountered in public discourse (Mutz, 2006). In addition, there can be a great difference between reaching some form of agreement after the give-and-take of various opinions and in the silence of those with minority views. Although the direction of final collective decisions might be the same, citizen satisfaction with the

result and the power of collective decisions or action can differ substantially (Delli Carpini et al., 2004; Lind & Tyler, 1998; Tyler & Blader, 2000).

Indeed, in order for public deliberation to have an intended democratic significance, there should be "no sources of coercion built into the process and procedures of discourse" (Bohman & Rehg, 2011, para. 37) and citizens should be able to voice their honest opinions. Freedom of expression – whether individuals can "express their [true] attitudes, desires, and needs," and "challenge the assertions of others without fear of retribution" (Neuman et al., 2011, p. 26) – thus has often been regarded as a barometer of the ideal speech situation (Habermas, 1990) in microcosm and political maturation of society (e.g., Sharansky & Dermer, 2006) at large. Keeping silence and merely following mass opinion, from a broad perspective, are implied to be to the detriment of democracy (Mutz, 1998).

A Social-Psychological Reason Why Silence Occurs in Reality: The Spiral of Silence

The problem is this presupposition about free communication relies on strong idealization, while things are not always ideal in the communicative practice of daily life (Delli Carpini et al., 2004; Habermas, 2008; Ho & McLeod, 2008; Mutz, 2006; Papacharissi, 2002; Price, 2009; Walton, 2007). In fact, many times, "yes/no stances are manipulated or conditioned by other kinds of influences" (Habermas, 2008, p. 51), and these "dysfunctional social-psychological influences . . . [undermine] . . . the idea of genuine public deliberation" (Ho & McLeod, 2008, p. 190).

Among others, perceptions of public opinion have been considered influential on the individual's speaking-out intentions and behaviors (Mutz, 1998; Noelle-Neumann, 1974, 1993). Despite criticisms of its unnatural laboratory contexts (e.g., Mutz, 1998; Salmon & Kline, 1985), Asch's (1955) experiment, which hinted at the presence of individual tendency to conform to the majority, was the real start of research on collective influence. Since then, numerous studies have also suggested that "fears of potential social discomfort can inhibit or pressures toward conformity can stifle expressions of dissenting points of view, even when people do privately disagree" (Price, Cappella, & Nir, 2002, p. 97). Here, conformity – more specifically, "the desire to be personally rewarded for conforming behavior and to avoid social punishment by conforming to others' expectations" (Mutz, 1998, p. 198) – functions as normative societal influence.[4]

Noelle-Neumann's (1974) model of the spiral of silence, which views fear of isolation as the dominant factor eliciting this kind of normative conformity (Scheufele & Moy, 2000), is recognized as coming closest to being an "actual theory" (Glynn, Ostman, & McDonald, 1995, p. 266) in this topic area. Based on statements about public opinion formation by classical writers like Allport (1937), Noelle-Neumann focused on the role of collective opinion as conventions, customs, and norms in social interaction, and pointed out it is intimately associated with individual opinion expression.

According to Noelle-Neumann (1974), fear of isolation, existing inside of the individual, is "an integral part of all processes of public opinion" (p. 43). As noted in her article, many scholars have shared this notion of fear of isolation for a long time. For

[4] Another way of explaining conformity focuses on informational social influence. This assumes cases in which "an individual accepts the fact that a majority favor a given opinion as valuable information, as evidence for a certain view of reality" (Price & Allen, 1990, p. 378).

example, Tocqueville (1856/1955) states that "[people], dreading isolation more than the stigma of heresy, professed to share the sentiments of the majority" (p. 155) even when they did not agree with them. The presence of fear of isolation has been evidenced in part through experimental studies on conformity.

To determine whether their opinions are in danger of being isolated in speech situations, individuals use a quasi-statistical organ (Noelle-Neumann, 1974). Later, this concept of a quasi-statistical organ was expanded to broadly refer to an ability to perceive the climate (i.e., an increase or decrease) of public opinion on an issue (Noelle-Neumann, 1993). Through this kind of sixth sense, ordinary citizens carefully and continuously monitor the present frequency distribution and the future trend of opinion in their social environment. Such observation includes "attending to media coverage of an issue, direct observation of one's environment, or interpersonal discussion of issues" (Scheufele & Moy, 2000, p. 9). The opinion climate of the immediate interaction environment appears to be particularly influential (e.g., Neuwirth, Frederick, & Mayo, 2007; Yun & Park, 2011).

If individuals discover their view to be dominant or on the rise, they are more likely to express their opinions freely. On the contrary, if individuals perceive their view is in the minority or on the decline, they tend to remain silent, concealing their true opinions. To individuals, not becoming social isolates is more important than their own opinions (Noelle-Neumann, 1974). This intrinsic psychological procedure in each individual affects others' speaking up or falling silent and thus "starts off a spiraling process which increasingly establishes one opinion as the prevailing one" (Noelle-Neumann, 1974, p. 44). While its theoretical framework received some criticism (see

Price & Allen, 1990; Scheufele & Moy, 2000), this socio-psychological mechanism has been widely researched as a core component of public opinion formation.

In this respect, many studies have tried to assess opinion expression by measuring congruency between one's personal positions and perceived majority opinion (e.g., Glynn, Hayes, & Shanahan, 1997; Salmon & Neuwirth, 1990; Scheufele, Shanahan, & Lee, 2001). Unlike the view of public opinion as rationality, which regards individuals as rational participants in generating social change (Scheufele & Moy, 2000), the spiral of silence posits that public opinion, as social control, can threaten individuals who deviate from the majority (e.g., Noelle-Neumann, 1974, 1995). Noelle-Neumann (1974) described public opinion as "the dominating opinion, which compels compliance of attitude and behavior in that it threatens the dissenting individual with isolation" (p. 44). By paraphrasing, public opinion is the opinion that can be expressed without social sanctions or isolation, or the opinion that should be expressed in order to avoid social isolation (Scheufele & Moy, 2000) in speech situations. It is equated with the pressure to follow. Although there are people who continue to voice opinions in defiance of this pressure, whom Noelle-Neumann called the hard core (Noelle-Neumann, 1974, 1991, 1993) or the avant-garde (Noelle-Neumann, 1991, 1993), these vocal minorities are small in number,[5] and several studies have demonstrated in commonalities that an individual's perception of the distribution of collective opinion is a main factor that motivates

[5] According to Noelle-Neumann, the hard core minorities are not "comprising persons with especially stable attitudes" (Noelle-Neumann, 1991, p. 274) or people "who are especially convinced of an opinion" (Noelle-Neumann, 1993, p. 218); rather, they are those "who have been overpowered and relegated to a completely defensive position in public" (Noelle-Neumann, 1991, p. 274). On the other hand, the avant-garde minorities are the artists, reformers, or scholars who have "conviction that they are ahead of their time" (Noelle-Neumann, 1993, p. 218) and thus endure being isolated.

decisions to voice honest opinions (Glynn et al., 1997; Glynn & McLeod, 1985; Mutz, 1989; Noelle-Neumann, 1974; Salmon & Oshagan, 1990; Willnat, 1996).

This dysfunctional social-psychological process (Ho & McLeod, 2008) that the spiral of silence suggests seems particularly relevant to what individuals might experience when expressing their views in public deliberation. The spiral of silence explains "macrosocial . . . public opinion [formation], . . . interpersonal interaction, and group dynamics" (Hayes, 2007, p. 787); individuals in public deliberation are involved in all of these moments. Participating in public deliberation is literally "talking in public with other citizens" (Delli Carpini et al., 2004, p. 319); the spiral of silence can be construed as a theory of individual opinion expression in a public situation as well. While some studies have tested the spiral of silence in a more private circumstance, such as conversations with friends (e.g., Salmon & Rucinski, 1988), the original focus of the theory (e.g., Noelle-Neumann, 1974) and thus the main concern of most investigations is willingness to speak out in public settings (e.g., Gonzenbach & Stevenson, 1994; Lasorsa, 1991; Mutz, 1989; Neuwirth, 2000; Noelle-Neumann, 1993; Salmon & Neuwirth, 1990; Shamir, 1997; Yang, 1997).[6] Taken together, a case can be made that the spiral of silence is a process that will very likely take place in public deliberation among citizens. The public discussion situation where opinion expression is free from this kind of social pressure seems to have been illusory for a long time.

[6] Public situations used in spiral of silence research include interacting with unknown fellow passengers on a train, bus, or airplane (e.g., Lasorsa, 1991; Noelle-Neumann, 1974, 1993; Salmon & Neuwirth, 1990), attending a public meeting (e.g., Gonzenbach & Stevenson, 1994) or social gathering (e.g., Mutz, 1989; Neuwirth, 2000), and being interviewed on television (e.g., Shamir, 1997; Yang, 1997), to name a few.

Online Discussion Forums as a Place for Opinion Expression

Considering its significance within deliberation, individuals' opinion expression behavior in this discursive context is certainly worth attention. However, some scholars point out that opportunities for public talk are so rare in the traditional media environment (Conover et al., 2002; Delli Carpini et al., 2004; Yun & Park, 2011) as to make such discussion about willingness to speak out less meaningful. Indeed, in offline communication settings, expressing one's views in public before strangers (i.e., other fellow citizens one does not know) seems to happen in somewhat unusual or infrequent circumstances such as public meetings (e.g., Gonzenbach & Stevenson, 1994) and interviews with the news media (e.g., Shamir, 1997; Yang, 1997). The public situation Noelle-Neumann (1974) supposed, "a conversation among passengers on a long train journey" (p. 46), is also not very common. For Habermas (1989), this was primarily a matter of the transformation of the public sphere where a sort of public discourse once took place. Individuals might have willingness to express their true opinions in public, but might not be able to do so (Yun & Park, 2011) since there was no platform – place, means, or chance – for it.

In such a context, online discussion spaces give rise to a set of expectations that these venues, as a new home to citizen deliberation (Papacharissi, 2004; Price, 2009), could not only overcome the supposed limits of traditional settings (Delli Carpini et al., 2004; Iyengar, Luskin, & Fishkin, 2003; Price, 2009) but also provide the preferred playing field for public expression of personal opinion (Delli Carpini, 2000; Neuman et

al., 2011; Rains, 2005; Stromer-Galley, 2003; Yun & Park, 2011).[7] Online discussion spaces where individuals can express opinions appear in many different forms (though not always clearly distinguishable), including online discussion forums, blogs, chat rooms, and social networking sites (SNSs). Of these, online discussion forums are seen as a major channel (Sun et al., 2011) that makes ongoing talk and conversations among citizens about public issues "a real possibility" (Wright & Street, 2007, p. 852).

Online forums are a generic term for sites specialized in asynchronous civic discussion. While public deliberation about public affairs is possible on other types of venues as well, that is often not the primary practice or goal (e.g., boyd & Ellison, 2008) and thus much of the discussion occurring there tends to be spontaneous. Compared to those sites, online discussion forums enable more long-term, but at the same time more timely deliberation on issues of concern (Delli Carpini et al., 2004). With the help of numerous forum hosting services (Yun & Park, 2011) that allow individuals to easily install and run an online forum for free or at an affordable price, online discussion forums, ranging from one with a few members to one with over 20 million (The Biggest Boards, 2014), have mushroomed and been highly popular on the Internet (Dellarocas, 2006; Yun & Park, 2011).

The "asynchronous discussion board technology" (Wright & Street, 2007, p. 852), coupled with "the technical characteristics of the Internet" (p. 852), has established good discussion conditions for ordinary citizens to exchange their views in public on common concerns. This becomes more evident when the potential of online forums for opinion

[7] In fact, for instance, consonance has weakened substantially as both online discussion venues, where individuals can express their opinions, as well as the alternative media news sources, emerge. Through various channels such as blogs, online debate sites, and Internet news media, social issues, which might not have received attention in the past, have now begun to draw attention from the public.

expression is assessed in light of important ideal discourse presuppositions such as inclusiveness, equal opportunities, and the absence of coercion (Conover et al., 2002; Habermas, 1990; Habermas, 2008).

Theoretically, the Internet "grants *any* citizen the technical means to communicate their views *directly* to other citizens" (Neuman et al., 2011, p. 26) in the virtual space. Although the digital divide objection comes up frequently in criticism of the online sphere (e.g., Goldberg, 2011; Neuman et al., 2011; Price, 2009),[8] indeed, its openness for citizen discursive participation can compare to that of no other (former) platform. If the focus is more narrowed down to individual access to certain discussions taking place in deliberative arenas – in other words, "the publicity of the context of discussion" (Conover et al., 2002, p. 29) – online forums stand out from even other discussion places online. For instance, the 18th-century public sphere Habermas idealizes was actually more like a preserve of white, bourgeois, property-owning males. What could not be heard in this realm at that time were the voices and concerns of the working class, plebeians (e.g., Negt & Kluge, 1972/1996), and women (e.g., Fraser, 1992). Expressing opinions in the traditional mass communication process was also only possible for those "with resources or professional access to the media" (Yun & Park, 2011, p. 203). Discussions happening on SNSs are oftentimes not meant to be public but exclusively open to those in the users' network (e.g., "Friends only") (boyd & Ellison, 2008; Haythornthwaite, 2005). Yet, no such levels of specific qualifications or special efforts are required to discuss public issues on online forums. Online discussion forums are public in their nature. People can participate in ongoing talk on forums by simply posting new messages or commenting on

[8] According to recent statistics, a lack of access no longer becomes a main impediment to Internet use though (Zickuhr, 2013).

others' posts. In general, the posting activity is unrestricted or available with few restrictions (e.g., basic registration is required). This indicates, compared with admission-restricted public deliberation held in bourgeois coffee shops, mass media, or many SNSs, discussions on online forums move closer to the form of a "social [gathering] . . . into which each and all could enter" (Scannell, 2007, p. 234). Indeed, online forums create an environment where "silence on the part of users can be directly interpreted as unwillingness to speak out without the concerns about their inability to speak out" (Yun & Park, 2011, p. 204).

There, private individuals are seemingly afforded distinctive new possibilities for expressing their opinions in public (e.g., Kim & Kim, 2007; McKenna & Bargh, 1998; Neuman et al., 2011; Price, 2009; Purcell, Rainie, Mitchell, Rosenstiel, & Olmstead, 2010; Robinson, Neustadtl, & Kestnbaum, 2002). Admittedly, on many personal blogs or SNSs, individuals are "primarily communicating with people who are already a part of their extended social network" (boyd & Ellison, 2008, p. 211). Through online forums, on the other hand, people are capable of exchanging views not only with those around them, but also with geographically dispersed strangers (Kraut et al., 2002; Price, 2009). Opportunities for discussing the public issues with complete strangers have greatly expanded. In addition, Internet forums allow individuals to involve themselves in interactions with a great number of diverse people – "the large-scale discussion" (Wright & Street, 2007, p. 851) – and to discover others' thoughts about certain public affairs at their convenience (Hauben & Hauben, 1997). As one might say, "that is no small matter" (Papacharissi, 2002, p. 23).

What also constitutes an optimistic prospect for digital discussion forums is anticipation that ordinary citizens would voice their views in ways not possible in their traditional, face-to-face social environment (e.g., Bargh et al., 2002; McKenna & Bargh, 1998; Mutz, 1998; Price, 2009; Rafaeli, 1998; Walther, 1996). The online forum setting has triggered changes in basic assumptions that characterized offline or face-to-face communication; "the lack of physical presence" (Price, 2009, p. 17), "a reliance on text-based exchanges lacking non-verbal, facial and vocal cues" (p. 37), and "limited [actual] contact among participants" (Ho & McLeod, 2008, p. 194) are, in particular, considered the key features of the common online forum situation, which might produce a change in one's speaking out behavior.[9] The true self (e.g., Bargh et al., 2002) or even concealable stigmatized identities (e.g., McKenna & Bargh, 1998), which are not fully revealed in social life, are shown to be somewhat expressed in online interactions. However, contrary to sufficient speculation on *freer* communication, limited research evidence is available (c.f., Yun & Park, 2011) on the question of whether individuals feel free to speak out unpopular opinions as well (Neuman et al., 2011) on online discussion forums.

Structural Conditions of the Contexts Can Matter

Naturally, there has been much argument about the status of online discussion forums as a new public sphere, democratic meeting place, or the like (e.g., Davis, 1999;

[9] These same characteristics are expected to work differently in online communication with kith and kin (Bargh et al., 2002; Salmon & Oshagan, 1990) since they are physically present in everyone's life.

Hauben & Hauben, 1997; Hill & Hughes, 1998; Rheingold, 1993).[10] However, in this preoccupation-like discussion (Goldberg, 2011), individuals' (free) opinion expression, which is a key element in sustaining the idea of public deliberation (Conover et al., 2002; Delli Carpini et al., 2004; Ho & McLeod, 2008), has not received much comment. More surprising is that online forums tend to be treated like one big homogenous entity in these stories – in fact, many studies in this area oversimplified online settings and just relied on the comprehensive term, Internet, to describe them. Whether online forums en bloc can constitute an ideal environment has been a popular debate topic (e.g., Hauben & Hauben, 1997; Hill & Hughes, 1998; Rheingold, 1993; Wilhelm, 2000), while the variety of their structural conditions has been left out of consideration. Yet, as seen in examples of real-life Internet forums, each online forum displays a combination of different structural arrangements, and individual's behavior there and thus the success of deliberation seems to be "dependent on design and choice . . . [and not] a predetermined product of the technology [itself]" (Wright & Street, 2007, p. 849).

The built environment (Lessig, 2006) is especially important in online forum contexts where speaking out is not a matter of ability but a matter of willingness. Given that there is a platform for public expression of opinion, what mainly impedes one's expressive conduct online would be the social-psychological influences. For instance, as the spiral of silence suggests, majority opinions in the online forum might function as the norms of that space, which determine what individuals should not (or can) say there. However, structural conditions – or architecture, in Lessig's (2006) words – can make changes in the effects of these normative social influences; structural conditions can

[10] Some of them have expressed concerns about online discussions, which include group polarization (Sunstein, 2004), cognitive homogeneity (Wellman, 2001), and the fragmentation of the public (Harbermas, 2006).

undermine the impact of the norms or make them more salient (Lessig, 2006). These structural arrangements, with other incidental clues on the online forum, can be perceived as social signifiers (Norman, 2008), which "offer guidance . . . [on] the nature of the world and of social activities" (p. 19). "[To] realize different behavior" (Lessig, 2006, p. 129), structural conditions can be changed.

In fact, this lack of consideration of different conditions is a recurring problem in most extant research on offline opinion expression as well. Many studies concerned with traditional speech situations, using one or two specific hypothetical scenarios in a survey (e.g., Neuwirth & Frederick, 2004; Salmon & Neuwirth, 1990; Shanahan, Scheufele, Yang, & Hizi, 2004), have failed to tell much about the possible changes in speaking out in diverse offline settings. Some researchers attributed contradictory or inconsistent findings across research in this area to these operational differences (e.g., Scheufele & Moy, 2000).

In the real-world situations, especially when considering fear of isolation or social pressure, it is conceivable that at least two factors – whether or not they speak in front of a large group (e.g., Asch, 1951; Salmon & Oshagan, 1990) and whether or not a speaker's identity is kept anonymous (e.g., Neuman et al., 2011; Papacharissi, 2002) – could yield a difference in one's speaking-out intentions and behaviors. The online environment is expected to add yet another facet atop the aforementioned – the perceived votes climate – to the speech context, which might also complicate opinion expression (e.g., Koroleva, Stimac, Krasnova, & Kunze, 2011; Spiliotopoulos, 2010). In this situation, perhaps, the right question to ask is what kind of online forums can do better in embodying the ideal environment where ordinary citizens can speak their minds.

Structural conditions can be "ways to overcome . . . normative social influences in order to encourage productive social interaction among citizens" (Ho & McLeod, 2008, p. 191).

The Size of the Audience: Small vs. Large Gatherings

"*If it is a very large group, the collective psyche will be more like the psyche of an animal, which is the reason why the ethical attitude of large organizations is always doubtful. The psychology of a large crowd inevitably sinks to the level of mob psychology.*" - C.G. Jung, *The Archetypes and the Collective Unconscious*

One of the situational features that many conformity studies have been concerned with for a long time with is group size, but findings about its effects are inconsistent and inconclusive (Bond, 2005; Gerard, Wilhelmy, & Conolley, 1968; Insko, Smith, Alicke, Wade, & Taylor, 1985). Asch's (1951) research, which is the earliest (Gerard et al., 1968) and most frequently cited (Bond, 2005) one on this topic, and some studies after that (e.g., Rosenberg, 1961, Stang, 1976) suggest a curvilinear-type relationship between group size and conformity. For example, Asch (1951) found that the majority effect "appeared in full force with a majority of three," and larger majorities of four or more "did not produce effects greater than a majority of three" (p. 233). Other studies, in contrast, argue that a group-size influence on conformity can be better described by a power function or monotonically increasing function (e.g., Gerard et al., 1968; Insko et al., 1985; Latané & Wolf, 1981; Stang, 1976); in other words, the larger the group, the greater the tendency to conform. This is shown to be particularly true when the individuals make a public response (see Bond, 2005 for the relevant meta-analysis). More recent theories on the

relationship between group size and conformity generally go along with this latter line of empirical evidence (see Figure 1, Bond, 2005), although they also propose the "principle of marginally decreasing impact" (Latané & Wolf, 1981, p. 442) where the additional influence of each additional majority member gets smaller.[11]

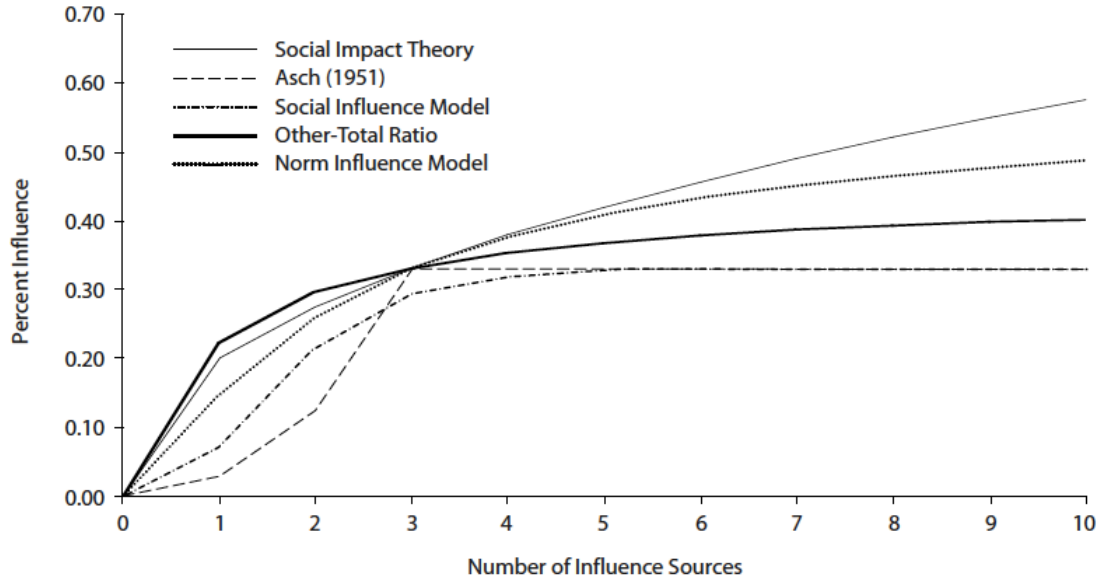

Figure 2.1 Theoretical relationships between group size and conformity (Bond, 2005)

When looking at online communication, the attempt to examine the effect of different majority sizes on speaking out requires first taking the special nature of online gatherings into consideration. The number of people whom an individual is confronted with in online venues can be much bigger than that in general face-to-face meetings. In fact, few of the previous studies that were conducted in the traditional speech situation employ a group size greater than 10, which means, "the majority sizes investigated cover

[11] Suspicion that the rest of the majority in the group just followed the first few people's opinion in face-to-face interactions (Bond, 2005; Gerard et al., 1968; Insko et al., 1985) is often cited as a reason behind this negatively accelerating pattern.

such a limited range" (Bond, 2005, p. 341). This size of the largest discrepant majority being less than 10, in a way, may appear to well reflect the realities of the general face-to-face interaction situation. The issue though is that, in the online world, 10 seems to be no longer an appropriate number to describe a large group. Discussion group size online can be as small as two or as large as hundreds and thousands (sometimes, beyond measure).

In online communication, too, it is expected that pressure to conform will increase as group size becomes larger. However, the amount of power that a majority group online yields on opinion expression is likely to vary in a wider range. A small number of people online, relative to that in face-to-face venues, can be perceived as less dangerous, influential, or intimidating (Ho & McLeod, 2008; Price, 2006; Stromer-Galley, 2003) in that online deliberation, in most cases, does not involve firsthand human interactions and non-verbal signals (Wojcieszak et al., 2009) but written text messages. Normative pressure induced by a few people in weakened social presence contexts online (Lee & Nass, 2002) appears to take on lesser significance when compared to its offline counterpart.

The large group (and the larger group possible) online, on the other hand, puts threats or pressure from majority members on a different level than those one might experience in offline contexts. Especially, when situated on a discussion Web site where a large number of people, too numerous to count, visit, a private individual who voices a different, disfavored view there may face greater risks of being a potential target of flaming, public shaming, doxing,[12] or online witch-hunts. These kinds of objection and

[12] Doxing refers to the practice of searching for and publishing "private or identifying information about a particular individual on the Internet, typically with malicious intent" (Dox., n.d.).

criticism from masses of people are hard to come across in face-to-face interactions, while even a seemingly trivial thing can provoke them in online situations. Yet, hostile threats aside, basically, the online circumstances that seem to guarantee "independence among the others" (Gerard et al., 1968, p. 82) in a group, unlike the face-to-face group setting, can make the majority opinion look less suspicious and thus more powerful. The dominant view shared by many people online at times gives the impression that it represents the sentiments of the general public. Overall, the total pressure to conform to the majority is likely to be great in a large online gathering.

From a tactical perspective, individuals may also simply have little motivation to contribute to conversations among a large number of people in a sincere and truthful manner because they expect that there are many others who will express opinions instead (Butler, 2001; Olson, 1965).

Hypothesis 1.1. (H1.1): Individuals are more willing to speak out their opinions on a small-sized online forum than on a large-sized online forum.

Hypothesis 1.2. (H1.2): Individuals are more likely to actually speak out their opinions on a small-sized online forum than on a large-sized online forum.

The Revelation of Identity: Anonymous vs. Identified

"*With false names, on the right nets, they could be anybody. Old men, middle-aged women, anybody, as long as they were careful about the way they wrote. All that anyone would see were the words, their ideas.*" - Orson Scott Card, *Ender's Game*

Anonymity is clearly a key aspect that many researchers regard as having the potential to make people feel more at ease when revealing their true opinions (e.g., Bargh et al., 2002; McKenna & Bargh, 1998; Mutz, 1998; Neuman et al., 2011; Papacharissi, 2002; Price, 2006). It is often asserted, "when people are anonymous and cannot be personally identified with their judgments, the tendency to conform to others' views is considerably attenuated" (Mutz, 1998, p. 205). One of the mechanisms suggested is that individuals are less likely to fear being isolated or criticized for voicing an unpopular view if their true identities are kept anonymous in speech situations (Yun & Park, 2011). Reduced concern about being judged or accountable for their own views frees individuals from the eyes of others and thus from normative social influence (Lee & Nass, 2002). Admittedly, due to physical presence and visual cues available, face-to-face communication does not seem to be able to guarantee full anonymity in the strictest sense. Even when each individual's identity is not linked to his or her expressed opinion (e.g., secret opinion polls in meetings), offline interaction inevitably involves the disclosure of some observable information.

Since, at least on the surface, it appears to afford complete anonymity or pseudonymity, online communication is considered to have advantages in free expression (Lee & Nass, 2002; Neuman et al., 2011; Price, 2009; Rains, 2005; Stromer-Galley, 2003) over traditional face-to-face interactions. The relative anonymous character of online communication is thought to free individuals from social expectations and constraints and therefore decrease the threats of social sanctions for their behavior (Neuman et al., 2011; Price, 2009; Rains, 2005; Stromer-Galley, 2003).

In online discussion situations, as long as their real identities behind the screen are not disclosed, individuals "cannot be [actually and physically] hurt, ridiculed, or embarrassed" (Yun & Park, 2011, p. 205) for their own doing. This should provide "a potential shield for those with minority views who might otherwise be hesitant to speak" (Neuman et al., 2011, p. 29). Some findings that the anonymous online condition stimulated less conforming choices (Lee & Nass, 2002), more comments (Jessup, Connolly, & Galegher, 1990; Jessup & Tansik, 1991), and critical or probing remarks (Jessup et al., 1990; Valacich, Dennis, & Nunamaker, 1992) may be explained in that regard as well. Unfortunately, in some cases, the resulting liberating effect even goes so far as to incite a hasty act (Papacharissi, 2002) or "the propensity of animosity and acrimony" (Neuman et al., 2011, p. 29).

One must be aware though that complete digital anonymity is not a definite common trait of online venues, even if it is generally treated so in discussions about the virtual discussion forum. There are certainly identified (or identifiable) online interactions where some personal information about the participant (e.g., real name, occupation, picture, email address, location) is available and open to others at the time of posting a message. While this online situation, too, features "physical isolation and [real-time] visual anonymity" (Lee & Nass, 2002, p. 353) in general, the fact that others can know who the person really is and see what he or she wrote might make an opinion deviate susceptible to the fear of potential isolation and sanction (Yun & Park, 2011). Personal identity revelation on a certain discussion Web site, even when it looks like a one-time thing, can also have long-lasting ripple effects; it is not unthinkable that posts or comments with personal information are easily screen captured and floating around

online, for example. In this sense, being identified with the expressed view online might be a factor that makes one hesitate to speak out against the tide of opinion. Whether the absence of physical co-presence and relatively reduced observable cues online themselves are enough to encourage upfront speaking out, or whether complete anonymity should be maintained for it still needs further systematic comparative research.

Hypothesis 2.1. (H2.1): Individuals are more willing to speak out their opinions on an anonymous online forum than on an identifiable online forum.

Hypothesis 2.2. (H2.2): Individuals are more likely to actually speak out their opinions on an anonymous online forum than on an identifiable online forum.

The User-voting System and the Dual Opinion Climate: Favorable vs. Unfavorable

"*There's only one thing worse than a man who doesn't have strong likes and dislikes, and that's a man who has strong likes and dislikes without the courage to voice them.*" - Tony Randall

". . . *an illusory sense of being LIKED.*" - Mokokoma Mokhonoana

The user-voting system – that uses the features such as the 'thumbs up/down' or 'like/dislike' button, star rating, or scoring – has become prevalent on online forums (e.g., Das Sarma, Das Sarma, Gollapudi, & Panigrahy, 2010; Duggan & Smith, 2013; Lee & Jang, 2010; Rolia et al., 2013). Its popularity is actually an Internet-wide trend as illustrated in the fact that over 50,000 sites have implemented Facebook's 'Like' plugin (Sutter, 2010).

On one hand, a voting system is a means to evaluate the merit or quality, such as helpfulness, insightfulness, and informativeness, of the posts (Cao, Duan, & Gan, 2011; Chua, 2009; Duggan & Smith, 2013; Poor, 2006; Spiliotopoulos, 2010). On the other hand, it offers another way of expressing one's opinion about others' posts and thus the issues under discussion; for instance, giving a 'thumbs up/like' or positive vote can mean that one agrees with the argument in the post, and vice versa (Drenner, Sen, & Terveen, 2008; Koroleva et al., 2011; Spiliotopoulos, 2010). In a sense, this feature allows readers to gain quick comprehension of, supposedly, the most beneficial (Cao et al., 2011) or the most winning content (Koroleva et al., 2011) in that venue, even when "they are unable to process each piece of information systematically" (Koroleva et al., 2011, p. 3). For speakers, rating is the easier and simpler course of action that requires much less effort than posting. In that it naturally implies that their own posts might easily get judged and receive unfavorable votes by others in the future (e.g., Lee & Jang, 2010), the presence of the user-voting system is expected to discourage people with unpopular or unlikable views from leaving comments on the online forum. However, at the same time, the 'thumbs up/like' button itself can be a good tool for minority opinion holders or slacktivists, who otherwise might not participate in discussion at all, to express their minds in a visually unobtrusive and effortless way.

Favorable (or unfavorable) votes can connote multiple other meanings (e.g., the post is funny (boring), informative (redundant), or has good (bad) arguments) in different online contexts (Cao et al., 2011; Chua, 2009; Duggan & Smith, 2013; Koroleva et al., 2011; Poor, 2006). On online discussion forums, votes are often interpreted as indicating agreement (or disagreement) due to the meaning their common formats (i.e., 'thumbs

up/down' or 'like/dislike') and the main activity on discussion forums (i.e., expressing opinion through the post) together produce: *I like/thumbs up your opinion*. Indeed, if a certain opinion post scores high 'thumbs up/like' points, individuals are likely to think there are many people who agree with the content of the post (opinion in this case) within that online forum. Thus, along with the assessment of prevailing posts on the site, 'thumbs up/like' count or points tend to function as a peripheral cue (Koroleva et al., 2011) that tell which opinion is popular and which one is not in the particular communication situation.

This perceived climate of opinion – "the aggregate distribution of opinions on a given issue" (Scheufele & Moy, 2000, p. 7) – is assumed to be closely related to opinion expression in public (Glynn et al., 1997; Noelle-Neumann, 1974, 1993; Salmon & Neuwirth, 1990). Strictly speaking, however, it is not true to say there is a single, monolithic opinion climate; in fact, there exist opinion *climates*, and they are not always consistent with one another (Salmon & Neuwirth, 1990; Yun & Park, 2011). In the case of offline communication, there can be largely two opinion climates: a perceived national climate (on a society level) (e.g., Noelle-Neumann, 1974) and a climate within the interaction group (on a context level) (e.g., Asch, 1951). In online forums, there can be three: an offline climate, an online climate, and a climate within the specific discussion forum (Yun & Park, 2011). While the original idea of the spiral of silence focused on the impact of the national opinion climate (Noelle-Neumann, 1974, 1993), several subsequent investigations supposed instead a situation where the opinion climate of the immediate interaction environment is not aligned with personal opinion (e.g., Hayes, 2007; Ho & McLeod, 2008; Neuwirth et al., 2007) and have found that the situational

climate – not the general (distant) opinion climate – is particularly influential in shaping willingness to speak out (Neuwirth et al., 2007; Yun & Park, 2011).

In face-to-face settings, individuals can assess the opinion climate in their immediate discussion environment based on the expressed opinions during conversation. While listening to others, people perceive the popular and unpopular issue positions among the discussants. In this process, the speaker's "facial expressions, gestures, and tone of voice" (Ho & McLeod, 2008, p. 192) may provide additional information about his or her stance (e.g., confidence, attitude strength). These mainly nonverbal cues very rarely conflict with the opinion one outwardly expresses, and, in most cases, they go well with (and hence reinforce) the articulated view. They can be subtle or might even be actually misleading when an individual secretly keeps disagreement to oneself, but it is difficult to tell which is genuine and which is "to maintain social harmony and the positive face of one's interaction partners" (Hayes, 2007, p. 786). In face-to-face discussions, cues other than verbal messages seem to play an additive, not that independent, role in forming the perception of the opinion trend.

In online discussion forums, since they each contain information on other people's preferences, both existing posts and votes (or points) received can contribute to the perceptions of the climate of opinion within the particular forum (Koroleva et al., 2011). Basically, individuals read others' posts and determine whether they are with the majority or the minority in the online forum (Yun & Park, 2011). If 'thumbs up/like' votes are in the same direction as this perceived forum messages climate (e.g., the post on the minority side received unfavorable votes, and vice versa), the perception of the

immediate climate of opinion will be intensified (see Sundar, Knobloch-Westerwick, & Hastall, 2007 and Xu, 2013 for a cue-cumulation effect).

An interesting and unique-to-online moment arises when those two cues tell different stories. If 'thumbs up/like' points are not congruent with the perceived posts climate (e.g., the post in the minority scored high points), individuals might first doubt how well the current forum messages reflect the discussion forum's genuine public opinion. This can signal the presence of another layer of the immediate climate of opinion: opinions of those who observe the online forum, might have participated in rating, but simply did not leave posts (e.g., lurkers or latent users). For minority opinion holders, in particular, this would be a promising sign that many people might actually be of the same opinion – in other words, their views might not be a real minority opinion (though it still may not be true). This dual climate of opinion perception in the online forum can encourage or embolden those having a seemingly unpopular opinion to speak out in that setting.

Hypothesis 3.1. (H3.1): Individuals are more willing to speak out their opinions on an online forum when a post congruent with their opinions received favorable votes than when it received unfavorable votes.

Hypothesis 3.2. (H3.2): Individuals are more likely to actually speak out their opinions on an online forum when a post congruent with their opinions received favorable votes than when it received unfavorable votes.

Indeed, "technology [here, online discussion forums] can facilitate deliberation but cannot guarantee that it will happen in any one particular way" (Wright & Street,

2007, p. 855). In other words, online forums, in themselves, do not determine the way private individuals communicate in the discourse process. Rather, it seems to be the various structural characteristics (or conditions within them) that shape – promote or block – individuals' opinion expression behavior. A long-standing, popular question on how well an online discussion provides the ideal platform for discursive participation should now be adjusted into one on *which* design feature (Wright & Street, 2007) or discourse architecture (Lessig, 2006; Sack, 2005) of the technology has the most potential in this light.

Among others, conditional factors such as the size of the discussion group, the revelation of identity, and the perceived votes climate are examined in this study. In reality, real-life discussion Web site implementation comes in various forms, each of which is the different mixture of these structural conditions. These elements do not appear in isolation but in combination on the discussion forums. Thus, "their individual effects are less likely to be ecologically informative than their combinatory effects" (Sundar et al., 2007, p. 370). Identifying the interaction relationship among structural conditions, in this sense, is expected to have some practical and realistic significance (e.g., design suggestions for online forums) that the focus on an individual feature cannot sufficiently provide.

Research Question 1 (RQ1): Which combination of structural conditions maximizes participants' willingness and likelihood to speak out on an online discussion forum?

Other Considerations: Individual Differences

The evidence thus far suggests that individual factors can also influence opinion expression (e.g., Hayes, 2007; Moy, Domke, & Stamm, 2001; Yang, 1997). After Noelle-Neumann's initial research (1974) found that those who were younger, male, more educated, and in the middle and upper classes were more willing to speak out, many subsequent studies took demographic characteristics into consideration (e.g., Moy et al., 2001; Scheufele, 1999; Scheufele et al., 2001). Findings, although inconsistent about the pattern, broadly demonstrated the presence of associations between demographics and individuals' speaking-out in offline conversation settings.

Among other individual-level factors that were proposed to affect opinion expression were issue involvement (e.g., Lasorsa, 1991; Oshagan, 1996; Salmon & Neuwirth, 1990), issue knowledge (e.g., Salmon & Neuwirth, 1990; Shamir, 1997; Willnat, 1996), and fear of isolation (e.g., Moy et al., 2001; Scheufele et al., 2001). Interestingly, fear of isolation, a central underlying motive of silence, was not measured in Noelle-Neumann's (1974) original work and many other studies since it was regarded as a constant "intrinsic psychological state, not subject to changes in the outside environment" (Yang, 1997, p. 35). Yet, several researchers (e.g., Glynn & McLeod, 1985; Scheufele & Moy, 2000; Scheufele et al., 2001) have questioned whether this presumed fear of isolation is really a major factor that makes individuals remain silent and have called for "the direct inclusion of a reliable index of fear of isolation when investigating predictors of opinion expression behavior" (Yang, 1997, p. 40). In general, prior research has shown that issue involvement and knowledge were positively related to willingness to speak out offline, while the opposite was true for fear of isolation.

Despite their probable impacts on opinion expression, however, relatively little is known about how these individual characteristic factors that were suggested and tested in the context of face-to-face communication work in the online discussion situations. Considering the common online forum conditions such as "physical isolation and [real-time] visual anonymity" (Lee & Nass, 2002, p. 353), there is a possibility that the way demographics (e.g., gender, age, race, income, and education) and other individual predispositions are associated with opinion expression appears different in the online forums. For instance, some researchers expected that trait fear of isolation would be less negatively influential online; however, relevant studies have produced incongruent and inconclusive results (e.g., Ho & McLeod, 2008; Yun & Park, 2011).

Research Question 2 (RQ2): How do individual characteristics, such as demographics, issue involvement, issue knowledge, and trait fear of isolation, influence participants' willingness and likelihood to speak out on an online discussion forum?

Two Methodological Approaches for Assessing Opinion Expression Online

Even though many researchers have acknowledged the survey as the appropriate method for measuring individuals' speaking out behavior (Scheufele & Moy, 2000), the survey design has also revealed some limits of its capacity to account for how individuals will behave and voice their opinions in detailed or realistic situations. Most extant studies, as results of the incorporation of a short hypothetical question in the survey (e.g., Neuwirth & Frederick, 2004; Noelle-Neumann, 1974; Salmon & Neuwirth, 1990; Shanahan et al., 2004), have not only failed to fully capture various features of real-world contexts, but also induced concerns about whether respondents took sketchy (in most

cases, one or two sentences) descriptions in a survey question into account as intended. Some researchers attributed contradictory or inconsistent findings across research in this area to these kinds of measurement issues (e.g., Glynn et al., 1997; Scheufele & Moy, 2000).

Underlying interest in individuals' opinion expression in multifaceted situations as well as doubts about the use of short hypothetical questions embedded in surveys warrant an experimental study as an alternative (e.g., Glynn et al., 1997; Hayes, 2007; Ho & McLeod, 2008; Yun & Park, 2011). Experimental manipulations with randomization will also have the advantage of distinguishing important causal variables and thus determining causal models, which can never be achieved in correlational studies (Wilson, Aronson, & Carlsmith, 2010).[13] Admittedly, to date, only a few studies tested free opinion expression with an experimental technique (e.g., Ho & McLeod, 2008; Lee & Nass, 2002; Oshagan, 1996; Scheufele et al., 2001; Yun & Park, 2011), and even many of them ended up using a short hypothetical scenario as an experimental condition (e.g., Oshagan, 1996), reckoned without various features of the speech context (e.g., Ho & McLeod, 2008), and did not measure the actual opinion participants would express in a given situation (e.g., Ho & McLeod, 2008; Scheufele et al., 2001; Yun & Park, 2011).

In this vein, the current study implemented two experimental research methods – scenario-based thought and website-based true experiments – to investigate who, and under which structural conditions, was more willing and likely to express a view online. Thought experiments relied on a hypothetical scenario technique, the most widely used

[13] Randomization, "the all-purpose procedure for achieving pretreatment equality of groups" (Campbell & Stanley, 1963, p. 6), will help to allay doubts about initial biases among experimental groups before the treatment, thus eliminating many rival explanations for the results.

method in spiral of silence research, but employed the multifaceted, detailed scenarios; each of these scenarios served as a distinctive experimental setting. True experiments, on the other hand, used the stimulus online forums designed for this study to actually place the participants in the online discussion situation; this is hard to accomplish with a hypothetical scenario technique (Hayes, 2007; Yun & Park, 2011). A lot of effort was put into making a comparable scenario and online forum for the same condition.

This use of two different approaches is expected to have methodological implications. First, any difference or congruency between the intention and actual behavior measured in each experiment can be discussed in its own right (cf., Ajzen, 1991). Second, evidence from these two experiments can be used to evaluate the hypothetical situation technique, which has been *the* method in most spiral of silence research. While "many researchers were not fully convinced that the hypothetical questions would generate genuine answers from the respondents" (Yun & Park, 2011, p. 204), this suspicion remains as suspicion mainly because there has been little evidence available on how "participants would have behaved had they actually been in a real situation analogous to one presented in the hypothetical scenario" (Hayes, 2007, p. 797). By comparing the findings from thought and true experiments, this study will be able to provide a basis for the appropriateness or inappropriateness of the prevailing method as a way to measure opinion expression.

Research Question 3 (RQ3): To what extent do scenario-based thought experiments and website-based true experiments produce consistent results?

Chapter 3

Methodology

Study 1: Scenario-based Thought Experiments

Design Overview

The first study examined speaking-out intention and behavior in different online settings using hypothetical scenarios. By combining three contextual factors, eight multifaceted scenarios about the online discussion forum (2 (*the size of the audience:* small vs. large) x 2 (*the revelation of identity*: anonymous vs. identified) x 2 (*the perceived votes climate*: favorable vs. unfavorable)) were created (see Appendix A for the full text). All eight scenarios were identical and varied only in their combination of size, anonymity, and the perceived votes climate. Participants completed the pre-test and then were randomly assigned to one of these eight scenario conditions. Participants' posting intentions, messages (if they were willing to post a message in a given situation), and final behavioral choice were measured. Lastly, all participants took the same posttest.

Participants

The online survey company *Qualtrics* collected the data in the spring of 2015 (March 5 - March 11, 2015). *Qualtrics*, as a panel aggregator, partnered with online panel providers and drew a sample from the panel base that was proportioned to the general population. Four hundred five participants initially completed the entire experiment in exchange for cash value incentives, but 20 of them were dropped from the analysis due to response quality issues.[14] Consequently, the data from 385 participants were analyzed.

The age of the participants in the final sample was between 19 and 87 years, with a mean age of 52.30 (*SD* = 13.45). The majority was female (57.7%) and White non-Hispanic (83.6%). The median annual household income was *$50,000-$59,999*, and the median education level was "*Some college, Associate's degree, or Trade school*" (see Table 4.13 for details).

Common Experimental Settings

Issue. An issue used to study the spiral of silence should be a "controversial one with clearly identifiable moral aspect attached to it" (Scheufele & Moy, 2000, p. 15). Noelle-Neumann (1993) assumes that the spiral of silence only works for controversial issues with moral or value-laden components. The issue under discussion in the main experiment – legally recognizing same-sex marriage – was chosen from the pool of topics that have been thought to meet this criterion in previous studies (e.g., Ho & McLeod,

[14] These 20 participants who were excluded showed undesired within-study behaviors such as straight-line responding, speeding, and topic-irrelevant responding.

2008; Liu & Fahmy, 2011). According to the Gallup poll in 2014, American adults were still divided in their opinions on the issue of legally recognizing same-sex marriage (55% favor vs. 42% disfavor), and the same held true for the participants in this study (53.8% favor vs. 46.2% disfavor).

Hostile opinion environment. Since the main concern of this study is whether honest and diverse views can be expressed in civic discourse online, all of the scenarios purposely depicted a "potentially hostile opinion environment" (Scheufele et al., p. 309) where a participant's own opinion about legally recognizing same-sex marriage was in the minority. In a description about the 'same-sex marriage' topic section of an online discussion forum, *WeTalkAll.org*, participants were told that 11 out of the 12 existing posts on the first page presented a different opinion from theirs about whether same-sex marriage should be legally recognized.

Experimental Stimulus

The size of the audience. The size of the discussion group was operationalized with the number of people who were visiting the forum and the total number of comments the issue had. Participants in the small gathering condition were given a description about *WeTalkAll.org* where 80 people were browsing and 39 comments had been left by forum users on the issue of legally recognizing same-sex marriage. On the contrary, participants in the large gathering condition were shown a description about *WeTalkAll.org* where 2,130 people were in attendance and 679 comments had been written on the same issue. In order to make the participants perceive the forum with 80 users as small-sized and the forum with 2,130 users as large-sized, all participants, before

reading a predetermined description about the online forum, were told that five different forums with varying numbers of members, from 80 to 2,130, were prepared for this study and that they would be randomly assigned to one of these five online forums. There were actually only two settings – 80 users or 2,130 users – in terms of forum size.

The revelation of identity. The anonymity condition scenario portrayed *WeTalkAll.org* as an online forum where participants would be able to leave comments under any pseudonym (i.e., screen name) as other existing posts had been written under pseudonyms. Participants in this condition were noted that they would not have to reveal any personal information on this online forum. The identification condition scenario, however, described *WeTalkAll.org* as a site where participants could post new messages only under their real names as other forum users had done so. These participants were also told that they could see other users' information such as gender, location, occupation, and email address, and that their personal information would be open to others as well on this discussion forum.

The votes climate. In the favorable votes climate condition, a description about the 'same-sex marriage' topic section of *WeTalkAll.org* indicated that the post on the first page that participants agreed with had received 132 thumbs up, even though it was on the minority side on the forum. The unfavorable votes climate scenario, on the other hand, described a forum situation of *WeTalkAll.org* where this same post had been given no thumbs up. Participants in both conditions were told that thumbs up next to the other 11 forum messages on the first page, which they disagreed with, ranged between 23 and 157.

Individual Characteristics Measures[15]

Issue involvement. Personal involvement in the issue of same-sex marriage was measured by three items: (a) "How much influence do you think the issue of legally recognizing same-sex marriage has on your life?", (b) "To what extent do you believe legally recognizing same-sex marriage is a meaningful social issue?", and (c) "How important do you think the issue of legally recognizing same-sex marriage is?". Responses were recorded on a 6-point scale ranging from 1 (*not at all*) to 6 (*very much*). These three items were averaged to form a composite score of issue involvement (M = 3.37, SD = 1.39, α = .66).

Level of issue knowledge. Two items, measured on a 1 (*not at all*) to 6 (*very much*) 6-point scale, assessed general perceived knowledge about the issue of same-sex marriage:[16] (a) "How much do you know about arguments for and against legally recognizing same-sex marriage?", and (b) "How much do you know about the key concerns/matters of legally recognizing same-sex marriage?". An index for level of issue knowledge was constructed by averaging the scores (M = 4.05, SD = 1.37, r = .85).

Trait fear of isolation. The measures of trait fear of isolation were taken from a previous study (Scheufele et al., 2001). Seven statements were presented to participants

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[15] Collinearity diagnostics for all individual characteristics variables (i.e., gender, age, race, education, income, issue involvement, issue knowledge, and fear of isolation) revealed that there was no evidence of multicollinearity among these variables (see Table B.1 in Appendix B for the test results). Tolerance levels for individual characteristics variables ranged from .738 to .941, when a tolerance of less than .20 is generally considered a cause for concern (Menard, 1995). Similarly, the Variance Inflation Factors (VIFs) for these variables ranged from 1.063 to 1.354, while a VIF of greater than 5 is often taken as an indication of multicollinearity.

[16] Instead of factual knowledge, this study measured self-perceived knowledge. Because the spiral of silence is about perception (e.g., if individuals *perceive* their view is in the minority), perceived issue knowledge seems to work well with the theory. This has been used as a variable in several previous studies on the spiral of silence (e.g., Neuwirth, 2000; Salmon & Neuwirth, 2000; Priest, 2006).

to evaluate their trait fear of isolation: (a) "I worry about being isolated if people disagree with me", (b) "I don't worry about other people avoiding me" (reverse-coded), (c) "I avoid telling other people what I think when there's a risk they'll avoid me if they knew my opinion", (d) "I enjoy avoiding arguments", (e) "Arguing over controversial issues improves my intelligence" (reverse-coded), (f) "I enjoy a good argument over a controversial issue" (reverse-coded), and (g) "I try to avoid getting into arguments". Respondents were asked to report their agreement or disagreement with each statement using a 6-point scale ranging from 1 (*definitely disagree*) to 6 (*definitely agree*). The scores from these seven items were averaged to create a combined index for trait fear of isolation where higher numbers indicate more fear of isolation ($M = 3.08$, $SD = 0.81$, $\alpha = .66$).

Opinion Expression on an Online Forum

Intention. After participants read a short description about how *WeTalkAll.org* was working, they were asked whether they would click a "*Post a New Message*" button to express their own opinion in such a forum situation. Among the 385 participants, 176 (45.7%) reported that they would click this button, showing an intention to articulate their view on the discussion forum (Table 3.1).

Actual behavior. If participants indicated an opinion expression intention, they were then requested to type the message they would write in the comment box on that online forum. Once typing was finished, these participants were told that they were given a chance to actually post what they had composed in the 'same-sex marriage' topic section on *WeTalkAll.org*. Participants could choose either "*Post to Forum*" or "*Cancel*."

Based on these responses, two types of actual behaviors were assessed: the behavior of expressing opinions (i.e., posting) and the behavior of expressing *honest* views (i.e., a subset of the former; posting *honestly*). The behavior of expressing views on the forum was measured by whether or not participants selected "*Post to Forum*" to finally post their messages on *WeTalkAll.org*. The measure of the behavior of expressing honest opinions, in addition to this, incorporated a criterion of broad congruence between participants' personal opinion about the issue of legally recognizing same-sex marriage and the opinion expressed in the message (Table 3.1).

Table 3.1 Descriptive Statistics of Opinion Expression on an Online Forum (Thought Experiments)

	Intention	Actual behavior	
		Posting	Posting honestly
Yes	176 (45.7%)	136 (35.3%)	125 (32.5%)
No	209 (54.3%)	249 (64.7%)	260 (67.5%)
Total		385 (100%)	

Note. Entries are *n* (%: column percentages). $N = 385$.

Procedure

Potential participants were sent an email invitation by *Qualtrics* panel partners. To reduce self-selection bias, this invitation did not include any specific details about the study. If they accepted the invitation, an informed consent form, which included a brief

explanation of the study, was presented. Participants were told that this study would assess public opinion on several social issues.

All consented participants first received the pre-test that contained questions about their positions on five social issues, including same-sex marriage, as well as involvement in and knowledge of these issues. Questions about four additional longtime debating or emerging topics – abortion (e.g., Salmon & Neuwirth, 1990), college drinking (e.g., Neuwirth & Frederick, 2004), legal marijuana, and immigration reform – served as fillers to prevent excessive sensitization. Trait fear of isolation and basic demographics (i.e., gender, age, race, education, and income) were measured as well at this stage.

When completing the pre-test, participants advanced to the instruction page for the main part of this study. The instruction page informed the participants that they would be randomly assigned to one of the five online forums, among which the smallest had 80 and the largest had 2,130 users, and that they would first read a short description about the nature of this random online forum. The part regarding the five forums with varying numbers of users was included to lead the participants to perceive the size of the discussion group as intended (i.e., small vs. large). In fact, on the next page, the study software randomly presented the participants with one of the eight scenarios about *WeTalkAll.org*.

After participants finished reading the assigned scenario, they proceeded to the next page where they were asked about their intention to post a message, messages they would write, and their final decision on actually posting the messages on the 'same-sex marriage' topic section of *WeTalkAll.org* (the last two questions were shown only when

the participants indicated an intention to post). All participants were then forwarded to the posttest for manipulation check purposes, fully debriefed, and thanked.

Study 2: Website-based True Experiments

Design Overview

The second study examined individuals' opinion expression – both behavioral intention and actual behavior – using stimulus online forums designed for this experiment. To embody the combination of three focal features, eight variants of the experimental online discussion forum, *WeTalkAll.org* (2 (*the size of the audience:* small vs. large) x 2 (*the revelation of identity*: anonymous vs. identified) x 2 (*the perceived votes climate*: favorable vs. unfavorable)), were constructed. Each of these eight stimulus forums was available in two versions – pro-same-sex marriage and con-same-sex marriage – so that participants would be exposed to the forum messages incongruent to their opinions. All participants first filled out the pre-test and then were randomly forwarded to one of the eight stimulus forums with a pro-same-sex marriage majority or a con-same-sex marriage majority depending on their issue position measured in the pretest. Participants' activities on the assigned forum, including button clicking and message posting (e.g., username or name used, posts content), were tracked and recorded. Finally, the participants completed the posttest. The pre-test and posttest were identical to those of Study 1.

Participants

Online data collection was carried out by the survey company *Qualtrics* in the spring of 2015 (March 5 - March 11, 2015). *Qualtrics* panel partners randomly selected a sample of participants for this study, and each sample from the panel base was proportioned to the general adults population before the experiment was deployed. Of the 478 participants who originally completed the entire study in exchange for cash value incentives, 31 were dropped for problematic responding.[17] The data from a total of 447 participants were thus used in the analysis. The participants in the final sample ranged in age from 20 to 83 (M = 52.58, SD = 13.41). The majority was female (59.5%) and White non-Hispanic (86.4%). Participants' median annual household income fell in the *$50,000-$59,999* range, and their median education level was "*Some college, Associate's degree, or Trade school*" (see Table 4.13 for details).

Common Experimental Settings

Issue. As Study 1, this study employed the issue of legally recognizing same-sex marriage as a topic of discussion on the online forum. Participants in Study 2, too, were aligned on both sides of this issue (52.1% favor vs. 47.9% disfavor).

The stimulus online discussion forum. The fictional online forum, *WeTalkAll.org*, and its 'same-sex marriage' topic section were created for the experiment. This forum emulated real and common discussion Web sites encountered online, but at

[17] The same criteria as in Study 1 were used to determine problematic within-study behaviors. Response quality issues related to these 31 participants included speeding, straight-lining, and invalid responding.

the same time, special efforts were made in order for it not to remind participants of any specific real-life forum (e.g., Yun & Park, 2011).

To eliminate any source of validity threats, the top menu bar to different sections and other experiment-irrelevant forum features (e.g., page number navigation) were blurred or deactivated. The 'same-sex marriage' topic section on *WeTalkAll.org* consisted of two pages: the main page and the 'Post a New Message' page.

Main page. The main page displayed the fictitious discussion about legally recognizing same-sex marriage (see Figure 3.1). There were twelve posts on the first page that ostensibly had been written by other forum users. To add realism to the stimulus discussion, these forum messages were extracted and edited from actual comments on the same-sex marriage topic sections of real online forums, including ProCon.org and Debate.org. The top menu bar, page number navigation, "*Post a New Message*" button, and a "*Skip*" button (for experiment purpose) also appeared on this main page.

'Post a New Message' page. Clicking a "*Post a New Message*" button on the main page opened a 'Post a New Message' page (see Figure 3.2). This page had fields for name (or username) and comments as well as radio buttons for indicating the issue position. Below the comment box were "*Post to Forum*" and "*Cancel*" buttons. The same top menu bar as the one shown on the main page was retained.

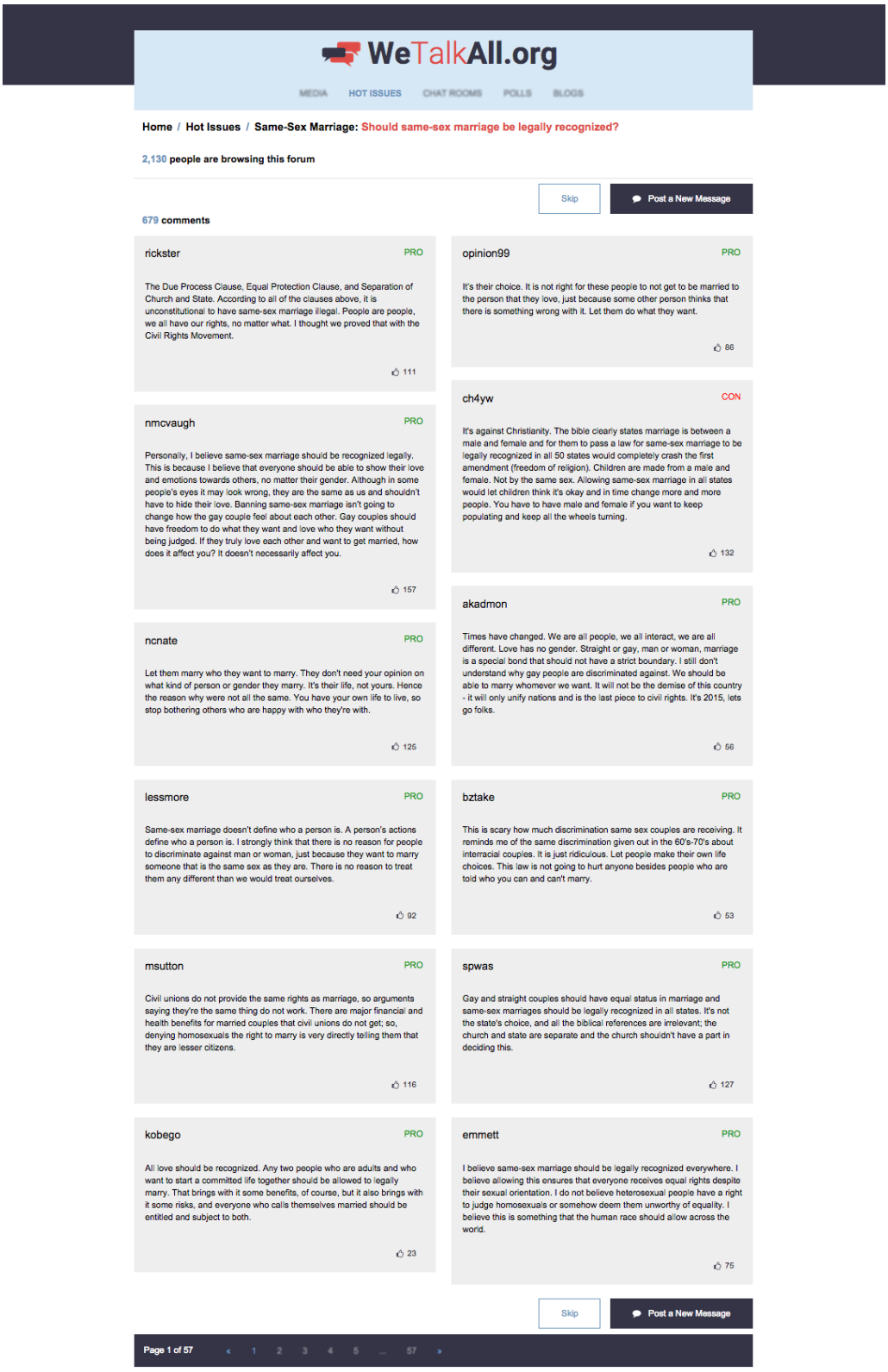


Figure 3.1 Main Page of the Online Discussion Forum, *WeTalkAll.org* ('Large + Anonymous + Favorable' Condition)

Hostile opinion environment. To create a hostile opinion environment where a participant's view was incongruent with the majority position of the forum messages, two sets of 12 stimulus posts were prepared. Eleven of the 12 messages in each set unanimously either supported or opposed legally recognizing same-sex marriage, and only one post took a different stance from others. The set consisting of posts that were mostly opposite to a participant's issue position was displayed on the main page of *WeTalkAll.org*.

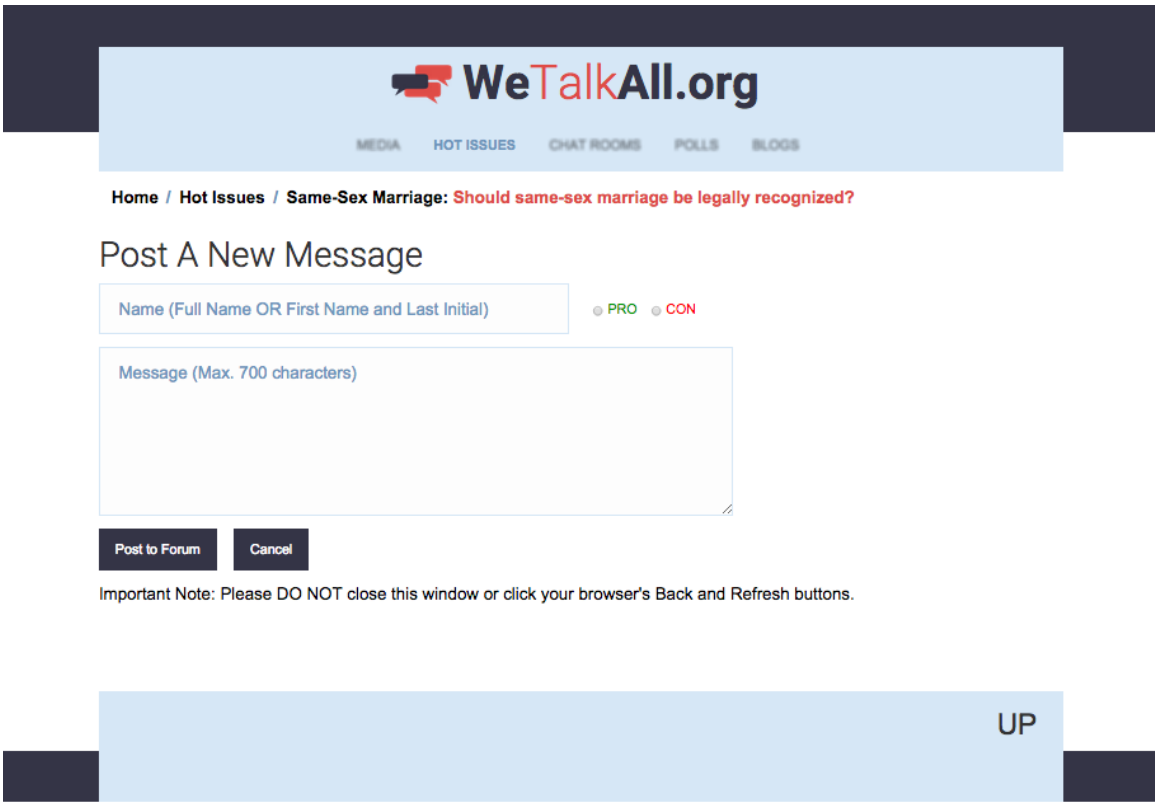


Figure 3.2 'Post a New Message' Page of the Online Discussion Forum, *WeTalkAll.org* (Identified Condition)

A post in one set was carefully matched with its counterpart in the other set so that every pair of posts, which would be positioned at the same location on the main page, was comparable in terms of length while clearly presenting opposite views on the issue. Thirty American adults recruited from *Amazon MTurk* (age: M = 31.13, SD = 8.87; 53.3% male; 70% White; income: *Mdn = $40,000 - $49,999*; education: *Mdn* = "*Some college, Associate's degree, or Trade school*") participated in evaluating the issue position of each comment. They were asked to indicate the degree to which a post favored or disfavored legally recognizing same-sex marriage on a 5-point scale ranging from -2 (*strongly disfavor*) to 2 (*strongly favor*). The results of this rating test showed that paired posts reflected conflicting views about the issue and that the stance of each comment in itself was also perceived as intended (Table 3.2).

Table 3.2 Comparisons Between the Two Sets of Stimulus Posts

Pair	Set 1			Set 2			
		Length[a]	Issue position[b] Mean		Length[a]	Issue position[b] Mean	t issue position
1	Pros 1	297	1.40	Cons 1	303	-1.73	17.76***
2	Pros 2	211	1.50	Cons 2	219	-1.33	12.30***
3	Pros 3	611	1.80	Cons 3	603	-1.83	32.36***
4	Cons 4	523	-1.77	Pros 4	511	1.83	34.39***
5	Pros 5	278	1.53	Cons 5	279	-1.30	17.14***
6	Pros 6	443	1.77	Cons 6	450	-1.90	38.08***
7	Pros 7	334	1.53	Cons 7	334	-1.30	14.83***
8	Pros 8	321	1.53	Cons 8	317	-1.87	30.33***

9	Pros 9	312	1.33	Cons 9	314	-1.73	19.06***
10	Pros 10	294	1.70	Cons 10	287	-1.60	26.49***
11	Pros 11	311	1.63	Cons 11	304	-1.50	17.97***
12	Pros 12	363	1.93	Cons 12	365	-1.73	23.20***

Note. [a] Length was measured in the number of characters with spaces. [b] Entries are means of the scores that ranged from -2 (*strongly disfavor*) to 2 (*strongly favor*).
*p <.05. **p <.01. ***p <.001.

Experimental Stimulus

The size of the audience. Information about the number of users and posts on the forum was used to create the size of the discussion group manipulation. The small-sized forum participants were shown on *WeTalkAll.org* that 80 people were browsing the 'same-sex marriage' topic section and 39 comments had been written on this topic by other forum users. The large-sized forum participants, on the other hand, viewed the same topic section of *WeTalkAll.org* with 2,130 visiting users and 679 total comments. To enhance realism, page number navigation at the bottom of the main page displayed the appropriate total number of pages such as four for the small condition and 57 for the large condition. However, participants in both conditions could only look at the first page while they were on *WeTalkAll.org*.

As in Study 1, before being directed to a pre-assigned stimulus forum, all participants were told that they would be randomly assigned to one of the five forums with different numbers of users, which ranged from 80 to 2,130. In fact, participants were exposed to the forum with either 80 users or 2,130 users. This step was included to induce the participants to perceive 80 members as a small group and 2,130 members as a large group.

The revelation of identity. The revelation of identity (anonymous vs. identified) was manipulated by two situational cues on the online forum: the availability of other users' information and disclosure of the participant's personal information. In the anonymity condition, all the posts on the main page of *WeTalkAll.org* were written under pseudonyms. If participants in this condition clicked a "*Post a New Message*" button, a 'Post a New Message' page opened and those who wanted to leave a comment could create any username on that page. On the contrary, in the identification condition, comments on the first page of *WeTalkAll.org* appeared with (seemingly) real names and personal information of (ostensible) writers. Disclosed personal information included gender, location, occupation, and email address. Below the "*Post a New Message*" button was a warning that user information would be visible to other users, which was not actually true.[18] If participants in the identification condition clicked "*Post a New Message*," they were forwarded to the 'Post a New Message' page where they were asked to fill in their real name (i.e., full name or first name and last initial) to add a post.[19]

The fictitious usernames (for the anonymity condition), real names, and personal information such as location, occupation, and email address of comment writers (for the identification condition only) were carefully devised. Since gender representation on the site can affect one's behavior (Harp & Tremayne, 2006; Yun & Park, 2011), gender-

[18] Although personal information (except name) was not gathered on the stimulus online forum, there was a high possibility that participants would think this warning was real, first because they answered questions about demographics in the pretest, and second because they had provided *Qualtrics* panel partners with their personal information during registration or upon sign-in.

[19] This name entering option (i.e., first and last names or first name and last initial) was given mimicking the name display system currently used by some websites with a real-names policy (e.g., Huffington Post, LinkedIn). Among the 20 participants who actually left a comment in the identification condition, 13 provided first name and last initial, while 5 used full names. The remaining two typed the email address or pseudonym instead of their real names, but their data were analyzed as well since they were noted that their user information including name would be displayed on the forum when they chose to post a message.

neutral pseudonyms were used in the anonymity condition, while the names of ostensible post writers were balanced in terms of gender frequency in the identification condition. Six male names and six female names were made using a random name generator.[20] Similarly, for locations, twelve cities (along with the states) were selected through a random U.S. city generator.[21] Email addresses were created by combining pseudonyms made on the username generator site[22] and the email address domain names. Lastly, occupations were chosen based on a list of the most common jobs in America.[23]

The votes climate. Next to each post on the 'same-sex marriage' topic section of *WeTalkAll.org* was an icon with the number of thumbs up the comment had been given. In the favorable votes climate condition, a post in the minority was shown to have received 132 thumbs up. Yet, in the unfavorable votes climate condition, this post that expressed a different opinion from others was displayed with no thumbs up. Thumbs up for the rest 11 forum messages on the main page varied from 23 to 157 in both conditions.[24]

[20] http://random-name-generator.info/
[21] http://www.randomlists.com/random-us-cities
[22] http://www.spinxo.com/
[23] http://www.ranker.com/list/most-common-jobs-in-america/american-jobs
[24] Nine numbers between 23 and 157 were randomly selected using a random number generator (https://www.random.org) as the number of thumbs up next to each of these posts (c.f., the number of thumbs up for the two of 11 posts was 23 and 157, respectively).

Individual Characteristics Measures[25]

Issue involvement. Three items assessed participants' involvement in the issue of legally recognizing same-sex marriage on a 6-point scale (1 = *not at all* to 6 = *very much*): (a) "How much influence do you think the issue of legally recognizing same-sex marriage has on your life?", (b) "To what extent do you believe legally recognizing same-sex marriage is a meaningful social issue?", and (c) "How important do you think the issue of legally recognizing same-sex marriage is?". Responses to these items were averaged to yield a composite measure of issue involvement (M = 3.31, SD = 1.39, α = .68).

Level of issue knowledge. An index for level of issue knowledge was created by averaging the scores of the two 6-point scale (1 = *not at all* to 6 = *very much*) items (M = 4.04, SD = 1.44, r = .78): (a) "How much do you know about arguments for and against legally recognizing same-sex marriage?", and (b) "How much do you know about the key concerns/matters of legally recognizing same-sex marriage?".

Trait fear of isolation. Trait fear of isolation was measured using seven items taken from prior research (Scheufele et al., 2001): (a) "I worry about being isolated if people disagree with me", (b) "I don't worry about other people avoiding me" (reverse-coded), (c) "I avoid telling other people what I think when there's a risk they'll avoid me if they knew my opinion", (d) "I enjoy avoiding arguments", (e) "Arguing over controversial issues improves my intelligence" (reverse-coded), (f) "I enjoy a good

[25] As in Study 1, collinearity diagnostics for individual characteristics variables (i.e., gender, age, race, education, income, issue involvement, issue knowledge, and fear of isolation) revealed no apparent multicollinearity problem (see Table B.2 in Appendix B for the diagnostics results). Tolerance levels for these variables ranged between .780 and .961, while a tolerance of less than .20 indicates potential multicollinearity. The VIFs ranged between 1.041 and 1.282; in general, a VIF of greater than 5 is considered evidence of multicollinearity.

argument over a controversial issue" (reverse-coded), and (g) "I try to avoid getting into arguments". Participants reported how much they agreed or disagreed with each of these statements on a 6-point scale (1 = *definitely disagree* to 6 = *definitely agree*). The seven item scores were averaged to form a trait fear of isolation index where higher values represent greater fear of isolation (M = 3.04, SD = 0.86, α = .68).

Opinion Expression on an Online Forum

Intention. Participants' intentions to express their view were assessed by their button clicking activities on the main page of *WeTalkAll.org*. On the main page, if participants would like to post a message, they could click the "*Post a New Message*" button. If they clicked the "*Skip*" button, this indicated that they had no inclination to leave a message. Fifty-nine out of 447 participants (13.2%) clicked "*Post a New Message*" showing an intention to voice their opinion about legally recognizing same-sex marriage on the discussion forum (Table 3.3).

Actual behavior. If participants clicked a "*Post a New Message*" button on the main page, they were then directed to the 'Post a New Message' page where they could type their comments. On this page, below the message box, participants saw an option of two buttons to click, "*Post to Forum*" or "*Cancel*." Two kinds of actual behaviors were examined from participants' activities on this 'Post a New Message' page: the behavior of expressing opinions (i.e., posting) and the behavior of expressing *true* views (i.e., a subset of the former; posting *honestly*). The behavior of expressing opinions was determined by whether participants finally pressed "*Post to Forum*" in order to add their messages on *WeTalkAll.org*. Measuring the behavior of expressing honest views took

one more point – message content – into consideration; if the comment participants wrote broadly reflected their personal opinion assessed in the pretest and if they clicked "*Post to Forum*" to post it, this behavior counted as honest posting (Table 3.3).

Table 3.3 Descriptive Statistics of Opinion Expression on an Online Forum (True Experiments)

	Intention	Actual behavior	
		Posting	Posting honestly
Yes	59 (13.2%)	56 (12.5%)	53 (11.9%)
No	388 (86.8%)	391 (87.5%)	394 (88.1%)
Total		447 (100%)	

Note. Entries are *n* (%: column percentages). $N = 447$.

Procedure

Qualtrics panel partners sent out an email invitation to those in the sample. To decrease self-selection bias, potential participants were not given any details about research at this stage. Once they accepted the study invitation, a consent form with general information about the study was provided. Participants were told that the purpose of this study was to assess public opinion on several social issues.

All participants who agreed to participate in the study were first asked questions about their personal opinions, involvement, and knowledge regarding five issues (i.e., same-sex marriage, abortion, college drinking, legal marijuana, and immigration reform) as well as trait fear of isolation and demographics in the pre-test. Questions about issues

other than same-sex marriage were included as fillers to reduce the emphasis on the focal topic.

After finishing the pre-test, participants were led to the instruction page for the main experiment. The instruction page indicated that the participants would visit one of the five online forums with different numbers of users from 80 to 2,130. The explanation about the five forums was presented to make the participants perceive the size of the gathering as intended (i.e., small vs. large). Actually, participants were randomly directed to one of the eight variants of the online forum, *WeTalkAll.org*, with either a pro-same-sex marriage majority or a con-same-sex marriage majority depending on their existing issue position. Participants were told to browse the 'same-sex marriage' topic section of this online forum as they would normally do on any other forum and to spend as much time as they wanted. All button clicking activities and the messages typed (if any) on *WeTalkAll.org* were automatically recorded. Once participants had clicked "*Skip*" on the main page or "*Post to Forum*" or "*Cancel*" on the 'Post a New Message' page of *WeTalkAll.org*, the posttest containing manipulation check items appeared. Participants were then fully debriefed and thanked.

Data Analysis Strategies

Hypotheses and research questions (except for RQ3) were examined using the same statistical techniques in both Study 1 (scenario-based thought experiments) and Study 2 (website-based true experiments). As the outcome variables, opinion expression intention and behavior, were dichotomous (i.e., whether or not a participant showed a posting intention and whether he or she finally posted a message to the forum), binary

logistic regression analyses were performed. Logistic regression is a powerful (p. 11) and well-suited (p. 4) analytical tool for "testing hypotheses about relationships between a categorical outcome variable and one or more categorical or continuous predictor variables" (Peng, Lee, & Ingersoll, 2002, p. 4).[26] Three sets of logistic regression analyses – one predicting the intention and the other two predicting actual behaviors (i.e., posting and posting honestly) – were initially run with individual characteristics (RQ2) and structural conditions (H1, H2, and H3) as predictors and then with individual characteristics and combined forum conditions (seven dummy variables representing eight combined conditions) (RQ1) as predictors. Because RQ1 inquired about which combination of structural conditions maximized opinion expression on an online discussion forum, the combination with the highest odds ratio estimate was selected as a reference group for a better comparison.

To assess the degree to which scenario-based thought experiments and website-based true experiments returned congruent predictions regarding the contribution of individual predictors to opinion expression on the online forum (RQ3), an interaction term between the method (i.e., thought experiments or true experiments) and each predictor was added to the logistic regression model. A significant interaction represented that the effect of the corresponding predictor variable on opinion expression was different across the two methods. The nature of such significant interactions was explored through the calculation of predicted probabilities (see Footnote 31 for details) and was then plotted for a visual representation of the findings.

[26] Ordinary least squares (OLS) regression or linear discriminant analysis techniques were "found to be less than ideal for handling dichotomous outcomes due to their strict statistical assumptions" (Peng et al., 2002, p. 3).

Chapter 4

Results

Study 1: Evidence from Scenario-based Thought Experiments

Manipulation Check

Three items in the posttest ascertained whether the manipulations of the audience size, identity revelation, and votes climate in scenarios worked as intended. Overall, these manipulations appeared successful. Participants who read a description about the online forum with 80 users perceived it as smaller-sized ($M = 2.37$, $SD = 0.62$) than those who saw a description about the forum with 2,130 users ($M = 2.94$, $SD = 0.68$, $F(1, 374) = 72.38$, $p < .001$). The identity of users was thought to be less identified on the online forum portrayed in the anonymity scenario ($M = 1.83$, $SD = 0.58$) than on the forum described in the identification scenario ($M = 3.12$, $SD = 0.80$, $F(1, 379) = 328.59$, $p < .001$). Lastly, participants given a favorable votes climate scenario associated the post in the minority on the online forum with more thumbs up ($M = 2.69$, $SD = 0.68$) than those given an unfavorable votes climate scenario ($M = 1.62$, $SD = 0.82$, $F(1, 377) = 189.49$, $p < .001$).

Predicting Intention to Express Opinions on Online Forums

A binary logistic regression analysis was performed to predict opinion expression intention from individual characteristics of the users (RQ2) and structural conditions of the online forums (H1.1, H2.1, and H3.1). A person's issue position was included as a control variable because support for or opposition to legal recognition of same-sex marriage may not only be associated with individual factors, such as age or race, but also with the public expression of opinion.[27] The full model demonstrated a significant improvement over the null model ($\chi^2(12) = 50.93$, $p < .001$) and correctly classified 66.8% of the cases. The Hosmer and Lemeshow goodness-of-fit test indicated that the model was fit to the data well ($\chi^2(8) = 8.68$, $p = .370$) (Table 4.1).

Table 4.1 Overall Evaluation of the Model and Classification[a] for Intentions (Thought Experiments)

	χ^2	*df*
Overall model statistics	50.93***	12
Hosmer & Lemeshow goodness-of-fit	8.68	8

[27] According to the Pew Research Center survey (2015), there were substantial differences in opinions about same-sex marriage legalization by race and generation. First, African Americans were less likely than Whites and Hispanics to favor legal recognition of same-sex marriage. Second, younger generations were more supportive of same-sex marriage than were older generations. Multiple national polls (e.g., the 2014 National Opinion Research Center survey, the 2014 Gallup poll, the 2015 NBC News/Wall Street Journal poll), too, revealed this generation gap on the issue. A preliminary analysis of participants in thought experiments showed that age was indeed significantly related to attitudes toward the issue ($\chi^2(1) = 5.89$, $p < .05$). Moreover, as the tide of public opinion appeared to be turning in favor of legalized same-sex marriage, individuals may curtail their willingness and likelihood to express opinion if they oppose legalizing same-sex marriage.

Observed	Predicted		% Correct
	Yes	No	
Yes	106	70	60.2
No	58	151	72.2
Overall % correct			66.8

Note. [a] The cut value is .50. $N = 385$.
$^{***}p < .001$.

The statistical significance test results for each individual predictor are summarized in Table 4.2. Race and fear of isolation among the individual characteristics made a unique and statistically significant contribution to the prediction of opinion expression intention. Specifically, when holding all other variables constant, the odds of having an intention to post on the online forum were 1.85 times higher for non-Whites than for Whites ($\chi^2(1) = 4.04$, $p < .05$). As the original spiral of silence assumed, trait fear of isolation significantly suppressed the willingness to express views on the online discussion forum ($\chi^2(1) = 22.42$, $p < .001$); every one-unit increase in fear of isolation brought about a 52% decrease (odds ratio = .481) in the odds of having opinion expression intention (RQ2).

The votes climate was the only significant structural condition predictor in the context of all other variables ($\chi^2(1) = 7.10$, $p < .01$). Contrary to what H3.1 suggested, the odds of individuals showing an intention to leave a message were 1.81 times (inverted odds ratio: 1/0.553) greater if they read an unfavorable votes climate scenario than its favorable counterpart. The Wald χ^2 for the coefficient associated with the size of the

gathering and the revelation of identity was not statistically significant, rejecting H1.1 and H2.1.

Table 4.2 Logistic Regression Analysis of Intentions (Thought Experiments)

	Intentions		
	B	S.E.	Odds ratio (95% CI)
Constant	1.367	.987	3.922
Control variable			
Issue position (1=Favor)	.090	.254	1.095 (.666-1.800)
Individual characteristics			
Gender (1=Female)	.167	.239	1.182 (.740-1.888)
Age	-.004	.009	.996 (.980-1.013)
Race (1=Non-White)	.613*	.305	1.845 (1.015-3.354)
Education	-.049	.118	.953 (.756-1.201)
Income	-.006	.047	.994 (.906-1.091)
Issue involvement	. 150	.102	1.162 (.951-1.420)
Issue knowledge	.134	.095	1.143 (.948-1.378)
Fear of isolation	-.732***	.155	.481 (.355-.651)
Structural conditions			
Size (1=Large)	.072	.222	1.075 (.695-1.662)
Identity revelation (1=Identified)	-.115	.221	.892 (.578-1.376)
Votes climate (1=Favorable)	-.592**	.222	.553 (.358-.855)

Note. Numbers in parentheses represent 95% confidence intervals.
†p <.1. *p <.05. **p <.01. ***p <.001.

Predicting Actual Behaviors on Online Forums

Two logistic regression analyses, one predicting the actual behavior of expressing opinions (i.e., behavior of posting) and the other predicting the actual behavior of expressing *true* opinions (i.e., a subset of the former; behavior of posting *honestly*), were conducted. A test of the full model was statistically significant for both behaviors of expressing opinions ($\chi^2(12) = 52.48$, $p < .001$) and expressing honest views ($\chi^2(12) = 68.65$, $p < .001$), correctly classifying 70.1% and 73.8% of participants, respectively. The Hosmer and Lemeshow test also showed good model fits (*posting*: $\chi^2(8) = 7.41$, $p = .493$; *posting honestly*: $\chi^2(8) = 5.11$, $p = .746$) (Table 4.3).

Table 4.3 Overall Evaluation of the Model and Classification[a] for Actual Behaviors (Thought Experiments)

	Posting			Posting honestly		
	χ^2		*df*	χ^2		*df*
Overall model statistics	52.48***		12	68.65***		12
Hosmer & Lemeshow	7.41		8	5.11		8
	Predicted			Predicted		
Observed	Yes	No	% Correct	Yes	No	% Correct
Yes	57	79	41.9	55	70	44.0
No	36	213	85.5	31	229	88.1
Overall % correct			70.1			73.8

Note. [a] The cut value is .50. $N = 385$.
*** $p < .001$.

When looking at each individual characteristics variable, race and trait fear of isolation had statistically significant impacts on actual behaviors as well. Besides these predictors, for posting behaviors, personal involvement in and general knowledge about the issue of same-sex marriage emerged as significant (Table 4.4). The odds of non-Whites actually expressing opinions on the forum (or actually expressing true opinions on the forum) were about 2.35 (or 2.57) times higher than the odds for Whites, controlling for all other variables (*posting*: $\chi^2(1) = 7.58$, $p < .01$; *posting honestly*: $\chi^2(1) = 8.64$, $p < .01$). Those who were involved in (*posting*: $\chi^2(1) = 4.94$, $p < .05$; *posting honestly*: $\chi^2(1) = 5.80$, $p < .05$) and knowledgeable about (*posting*: $\chi^2(1) = 3.52$, $p < .1$; *posting honestly*: $\chi^2(1) = 6.83$, $p < .01$) the same-sex marriage issue were more likely to post messages to the forum. A one-unit increase in issue involvement was associated with a 27% (or 31%) increase in the odds of expressing opinions (or expressing true opinions). Similarly, a one-point increase in issue knowledge resulted in a 21% (or 32%) increase in the odds of posting (or posting honestly). Trait fear of isolation was a major hindrance to actual posting behaviors (*posting*: $\chi^2(1) = 14.06$, $p < .001$; *posting honestly*: $\chi^2(1) = 15.61$, $p < .001$); the odds of actual behaviors were nearly cut in half (i.e., *posting*: a 45% decrease; *posting honestly*: a 48% decrease) for every one-unit increase in fear of isolation scores (RQ2).

Among the structural conditions variables, the revelation of identity was a significant predictor for behaviors of expressing opinions ($\chi^2(1) = 3.01$, $p < .1$) and expressing honest views ($\chi^2(1) = 5.94$, $p < .05$), even when other variables were considered (Table 4.4). Compared to participants who were given a scenario about an identifiable online forum, those given a scenario about an anonymous one had about 1.8

(*posting* - inverted odds ratio: 1/0.554) to 1.9 times (*posting honestly* - inverted odds ratio: 1/0.521) greater odds of posting messages; thus, H2.2 was supported. The size of the audience and the votes climate made no significant difference in the odds of actual behaviors (H1.2 and H3.2).

Table 4.4 Logistic Regression Analysis of Actual Behaviors (Thought Experiments)

	Actual behavior			
	Posting		Posting honestly	
	B (S.E.)	OR (95% CI)	B (S.E.)	OR (95% CI)
Constant	-.027 (1.024)	.974	-.865 (1.070)	.421
Control variable				
Issue position (1=Favor)	.194 (.265)	1.214 (.722-2.041)	.368 (.277)	1.444 (.838-2.488)
Individual characteristics				
Gender (1=Female)	-.259 (.249)	.772 (.474-1.256)	-.304 (.260)	.738 (.443-1.228)
Age	-.003 (.009)	.997 (.980-1.014)	-.001 (.009)	.999 (.981-1.017)
Race (1=Non-White)	.854** (.310)	2.348 (1.279-4.312)	.944** (.321)	2.571 (1.370-4.824)
Education	-.005 (.125)	.995 (.779-1.270)	.013 (.131)	1.013 (.784-1.308)
Income	-.050 (.050)	.951 (.863-1.048)	-.069 (.052)	.933 (.843-1.033)
Issue involvement	.237* (.106)	1.267 (1.028-1.561)	.267* (.111)	1.306 (1.051-1.623)
Issue knowledge	.189† (.101)	1.209 (.991-1.473)	.280** (.107)	1.324 (1.073-1.634)
Fear of isolation	-.591*** (.158)	.554 (.407-.754)	-.651*** (.165)	.521 (.377-.720)
Structural conditions				
Size (1=Large)	.047 (.233)	1.048 (.665-1.653)	.179 (.243)	1.196 (.743-1.924)
Identity revelation (1=Identified)	-.405† (.233)	.667 (.422-1.054)	-.600* (.246)	.549 (.339-.889)

Votes climate (1=Favorable)	-.342 (.233)	.710 (.450-1.120)	-.263 (.243)	.769 (.477-1.238)

$^{\dagger}p$ <.1. $^{*}p$ <.05. $^{**}p$ <.01. $^{***}p$ <.001.

Optimal Combination of Structural Conditions

To assess the combined effects of structural conditions on opinion expression, interaction terms (all two-way and three-way) among the size of the discussion group, the revelation of identity, and the perceived votes climate were preliminarily evaluated; none of these interaction effects was statistically significant for posting intentions (Table 4.5). However, for posting behaviors, a significant three-way interaction among structural arrangements was found (*posting*: $\chi^2(1) = 5.93$, p <.05; *posting honestly*: $\chi^2(1) = 5.33$, p <.05) (Table 4.6).

Table 4.5 Combined Effects of Structural Conditions on Intentions (Thought Experiments)

	Intentions		
	B	S.E.	Odds ratio (95% CI)
Constant	1.356	1.017	3.881
Control variable			
Issue position (1=Favor)	.089	.255	1.093 (.663-1.801)
Individual characteristics			
Gender (1=Female)	.160	.241	1.173 (.732-1.881)
Age	-.005	.009	.995 (.978-1.012)
Race (1=Non-White)	.606*	.308	1.833 (1.003-3.349)
Education	-.059	.119	.943 (.747-1.190)

Income	-.004	.048	.996 (.907-1.094)
Issue involvement	. 144	.103	1.154 (.944-1.412)
Issue knowledge	.136	.097	1.145 (.947-1.385)
Fear of isolation	-.751***	.156	.472 (.348-.641)
Structural conditions			
Size (1=Large)	.623	.428	1.865 (.806-4.314)
Identity revelation (1=Identified)	.164	.438	1.179 (.500-2.779)
Votes climate (1=Favorable)	-.457	.458	.633 (.258-1.552)
Interactions			
Size × Identity revelation	-.928	.613	.396 (.119-1.315)
Size × Votes climate	-.640	.629	.527 (.154-1.809)
Identity revelation × Votes climate	-.021	.639	.979 (.280-3.425)
Size × Identity revelation × Votes climate	.851	.894	2.342 (.407-13.497)

Note. Numbers in parentheses represent 95% confidence intervals.
†p <.1. *p <.05. **p <.01. ***p <.001.

Table 4.6 Combined Effects of Structural Conditions on Actual Behaviors (Thought Experiments)

	Actual behavior			
	Posting		Posting honestly	
	B (S.E.)	OR (95% CI)	B (S.E.)	OR (95% CI)
Constant	-.084 (1.060)	.937	-.860 (1.103)	.423
Control variable				
Issue position (1=Favor)	.190 (.267)	1.210 (.717-2.041)	.366 (.279)	1.442 (.835-2.491)

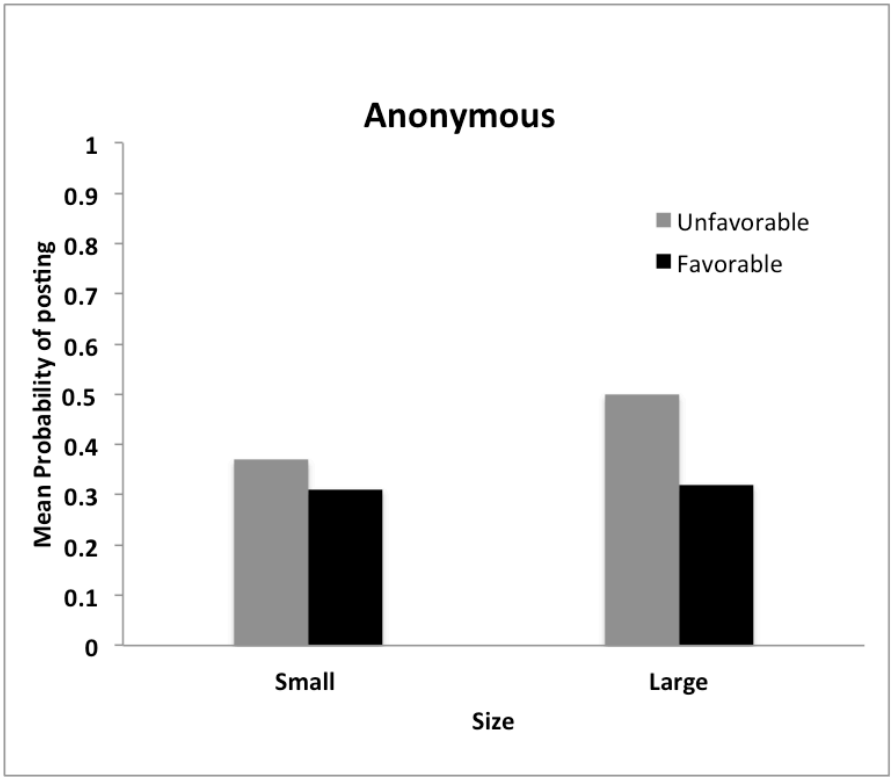
Individual characteristics				
Gender (1=Female)	-.268	.765	-.322	.725
	(.253)	(.467-1.255)	(.264)	(.432-1.216)
Age	-.004	.996	-.001	.999
	(.009)	(.979-1.014)	(.009)	(.981-1.017)
Race (1=Non-White)	.819**	2.269	.912**	2.490
	(.312)	(1.230-4.185)	(.323)	(1.323-4.686)
Education	-.023	.978	-.009	.991
	(.127)	(.763-1.253)	(.133)	(.764-1.286)
Income	-.047	.954	-.067	.936
	(.050)	(.865-1.053)	(.052)	(.845-1.036)
Issue involvement	.236*	1.266	.269*	1.308
	(.107)	(1.027-1.561)	(.111)	(1.052-1.626)
Issue knowledge	.202†	1.223	.295**	1.343
	(.103)	(.999-1.497)	(.109)	(1.084-1.664)
Fear of isolation	-.639***	.528	-.704***	.495
	(.161)	(.385-.723)	(.168)	(.356-.688)
Structural conditions				
Size (1=Large)	.622	1.863	.650	1.916
	(.436)	(.792-4.383)	(.450)	(.793-4.629)
Identity revelation (1=Identified)	.124	1.133	-.206	.814
	(.454)	(.465-2.759)	(.477)	(.320-.2.072)
Votes climate (1=Favorable)	.035	1.036	.098	1.103
	(.478)	(.406-2.644)	(.499)	(.415-2.932)
Interactions				
Size × Identity revelation	-1.363*	.256	-1.140†	.320
	(.641)	(.073-.899)	(.667)	(.086-1.183)
Size × Votes climate	-.976	.377	-.970	.379
	(.652)	(.105-1.352)	(.676)	(.101-1.426)
Identity revelation × Votes climate	-.875	.417	-.846	.429
	(.685)	(.109-1.597)	(.728)	(.103-1.787)
Size × Identity rev. × Votes clim.	2.326*	10.239	2.319*	10.161
	(.955)	(1.575-66.555)	(1.004)	(1.420-72.703)

†p <.1. *p <.05. **p <.01. ***p <.001.

The nature of this interaction effect on speaking-out behavior is plotted graphically in Figure 4.1. For participants who were given a scenario about an anonymous online forum, the votes climate really did not matter if only a small number of people were browsing the forum. However, if there were many other users on the

forum, participants were more likely to write a new message when the post congruent with their opinion received unfavorable votes.

When participants read a description about an identifiable online forum where personal information was disclosed, the right combination of group size and the votes climate became important. If the number of users in attendance was small, participants tended to post a comment when the votes climate was not favorable to them. On the contrary, in a large-sized discussion setting, participants were more likely to express their opinions when the post they agreed with had received many thumbs up.



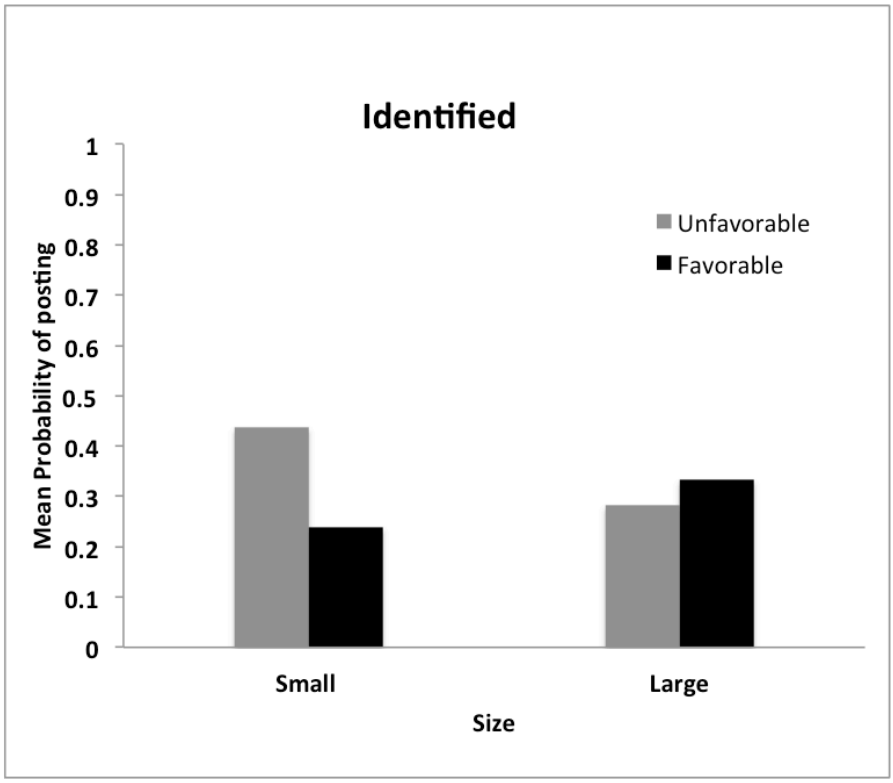


Figure 4.1 The Three-way Interaction Effect of Structural Conditions (Thought Experiments)

Note. The y-axis represents the mean predicted probabilities of posting.

As another way to examine which combination of structural conditions maximized willingness to express opinions on an online form, a logistic regression analysis that included individual characteristics and scenario conditions (seven dummy variables to represent eight conditions) as predictors was performed.[28] Figure 4.2

[28] This logistic regression model is essentially equivalent to the previous specification with all two-way and three-way interactions because structural conditions variables were binary (taking either value 0 or 1) and scenario conditions (seven dummy variables; categories based on combinations of three structural conditions) were just a different scheme for capturing interactions. The results of the omnibus tests were identical between this model with seven dummy scenario conditions variables and the model with two-way and three-way interactions ($\chi^2(16) = 54.40$, $p < .001$; correct classification: 64.4%).

illustrates odds ratios and 95% confidence intervals for each combination of structural conditions, having 'Large + Anonymous + Unfavorable' as a reference group.[29]

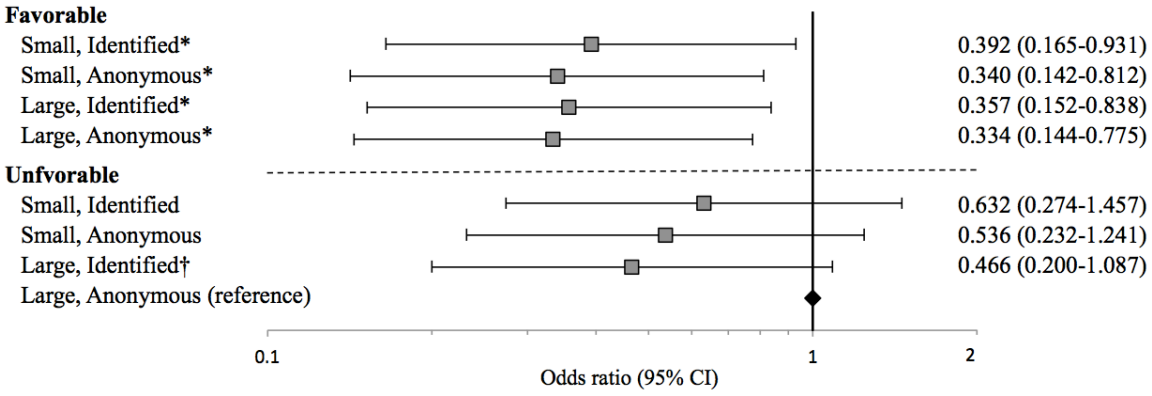


Figure 4.2 Odds Ratios for the Association Between Intentions and Scenario Conditions (Thought Experiments)

Note. The x-axis has a logarithmic scale. Error bars indicate 95% confidence intervals. Odds ratios were controlled for all individual characteristics variables and issue position. $^{\dagger}p < .1$. $^{*}p < .05$.

Although not every seven comparison was statistically significant, results suggested that the 'Large + Anonymous + Unfavorable' combination was likely to make a good environment for individuals to have opinion expression intention (RQ1). Participants exposed to a scenario that described this online forum situation were more willing to write a message on the forum than those exposed to five other scenarios – 'Large + Anonymous + Favorable' ($\chi^2(1) = 6.52, p < .05$), 'Small + Anonymous + Favorable'($\chi^2(1) = 5.90, p < .05$), 'Large + Identified + Favorable' ($\chi^2(1) = 5.59, p < .05$), 'Large + Identified + Unfavorable' ($\chi^2(1) = 3.12, p < .1$), and 'Small + Identified

[29] The combination of structural conditions, which demonstrated the highest odds ratio for opinion expression intention among the eight combinations, was used as a reference group for the better identification of the optimal forum condition. The same strategy was applied to the subsequent relevant analyses.

+ Favorable' ($\chi^2(1) = 4.50, p < .05$). The odds of showing an intention in the 'Large + Anonymous + Unfavorable' condition were 2.15 (inverted odds ratio: 1/0.466) to 2.99 (inverted odds ratio: 1/0.334) times higher than in these five conditions.

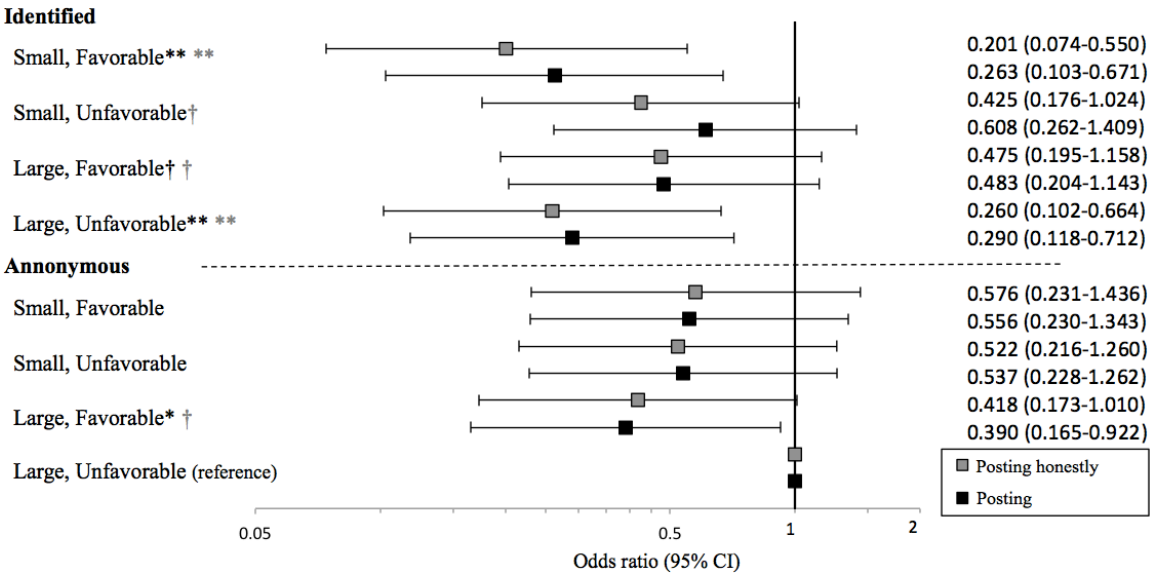


Figure 4.3 Odds Ratios for the Association Between Actual Behaviors and Scenario Conditions (Thought Experiments)

Note. The x-axis uses a logarithmic scale. Error bars represent 95% confidence intervals. Odds ratios were controlled for individual characteristics variables and issue position. $^{\dagger}p < .1$. $^{*}p < .05$. $^{**}p < .01$. (Symbols in black: significant for posting; symbols in grey: significant for posting honestly).

The 'Large + Anonymous + Unfavorable' combination appeared to work well for eliciting actual posting behaviors, too (RQ1). As shown in Figure 4.3, individuals in this scenario condition were more likely to finally post their message to the forum compared to those in the 'Large + Anonymous + Favorable' ($\chi^2(1) = 4.60, p < .05$), 'Large + Identified + Favorable' ($\chi^2(1) = 2.74, p < .1$), 'Large + Identified + Unfavorable' ($\chi^2(1) = 7.28, p < .01$), or 'Small + Identified + Favorable' ($\chi^2(1) = 7.81, p$

<.01) condition; they had about 2.07 (inverted odds ratio: 1/0.483) to 3.80 times (inverted odds ratio: 1/0.263) greater odds of actual opinion expression.

This trend remained largely the same even when specifically focusing on behaviors of expressing honest views. Participants who were given a chance to post a message on the 'Large + Anonymous + Unfavorable' condition forum chose to express their true opinions more than those in most other comparable conditions, including 'Small + Identified + Unfavorable' ($\chi^2(1) = 3.64$, $p < .1$) on top of the above four conditions. The odds of posting honestly were 2.11 (inverted odds ratio: 1/0.475) to 4.98 times (inverted odds ratio: 1/0.201) higher if participants read a description about the forum with 'Large + Anonymous + Unfavorable' features.

Study 2: Evidence from Website-based True Experiments

Manipulation Check

Whether the embodiment of the gathering size, identity revelation, votes climate, and existing messages' position on stimulus forums generated intended perceptions among participants was assessed by four manipulation check items in the posttest. Overall, the manipulations were successful. Participants who visited the forum with 80 users described the size of the discussion group as smaller ($M = 2.30$, $SD = 0.66$) than did those directed to the forum with 2,130 users ($M = 2.79$, $SD = 0.69$, $F(1, 434) = 58.31$, $p < .001$). Forum users were perceived as less identified on the online forum in the anonymity condition ($M = 2.14$, $SD = 0.56$) than on the forum in the identification condition ($M = 2.95$, $SD = 0.67$, $F(1, 438) = 192.43$, $p < .001$). The number of thumbs up

that the post in the minority had received was recalled to be greater in the favorable votes climate condition (M = 2.29, SD = 0.72) than in the unfavorable votes climate condition (M = 2.03, SD = 0.72, $F(1, 434) = 14.49$, $p < .001$). Lastly, participants exposed to the forum with a pro-same-sex marriage majority perceived its opinion environment as more supporting the issue (M = 2.77, SD = 0.99) than those exposed to the forum with a con-same-sex marriage majority (M = 2.00, SD = 0.96, $F(1, 440) = 68.99$, $p < .001$).

Predicting Intention to Express Opinions on Online Forums

A logistic regression analysis was conducted with opinion expression intention as a dependent variable and individual characteristics (RQ2) and structural conditions (H1.1, H2.1, and H3.1) as predictors. Whether a participant supported or opposed legalizing same-sex marriage (i.e., issue position) was taken into account as a control variable to ensure that any differences in posting intentions could be confidently attributed to the variables of interest.[30] An omnibus test indicated that the full model was significantly better than the null model ($\chi^2(12) = 40.46$, $p < .001$) and the fit of the model was good (the Hosmer and Lemeshow goodness-of-fit test: $\chi^2(8) = 8.55$, $p = .381$). The overall correct prediction rate was 87.5% (Table 4.7).

[30] In line with the results of the Pew Research Center national survey (2015) (see Footnote 24 for details), a preliminary analysis of participants in true experiments indicated that one's attitude toward legal recognition of same-sex marriage was highly dependent on age ($\chi^2(1) = 10.86$, $p < .01$) and race ($\chi^2(1) = 3.11$, $p < .1$).

Table 4.7 Overall Evaluation of the Model and Classification[a] for Intentions (True Experiments)

	χ^2	*df*
Overall model statistics	40.46***	12
Hosmer & Lemeshow goodness-of-fit	8.55	8

	Predicted		
Observed	Yes	No	% Correct
Yes	5	54	8.5
No	2	386	99.5
Overall % correct			87.5

Note. [a] The cut value is .50. $N = 447$.
***$p < .001$.

Table 4.8 presents the binary logistic regression coefficients and the estimated change in odds of having a posting intention for each individual predictor. When holding the other variables constant, age, race, issue knowledge, and trait fear of isolation among the individual characteristics and the revelation of identity among the structural conditions made a significant unique contribution to the model.

Table 4.8 Logistic Regression Analysis of Intentions (True Experiments)

	Intentions		
	B	S.E.	Odds ratio (95% CI)
Constant	-5.826***	1.373	.003
Control variable			

Issue position (1=Favor)	-.393	.322	.675 (.359-1.269)
Individual characteristics			
Gender (1=Female)	-.122	.313	.885 (.480-1.633)
Age	.020†	.012	1.020 (.997-1.044)
Race (1=Non-White)	.913*	.392	2.491 (1.154-5.375)
Education	-.037	.143	.964 (.728-1.276)
Income	-.094	.061	.911 (.808-1.026)
Issue involvement	.179	.121	1.196 (.943-1.517)
Issue knowledge	.403**	.126	1.496 (1.169-1.914)
Fear of isolation	.435*	.180	1.546 (1.085-2.201)
Structural conditions			
Size (1=Large)	.420	.301	1.522 (.844-2.744)
Identity revelation (1=Identified)	-.548†	.305	.578 (.318-1.052)
Votes climate (1=Favorable)	.395	.298	1.485 (.828-2.663)

Note. Numbers in parentheses represent 95% confidence intervals.
$^{\dagger}p$ <.1. $^{*}p$ <.05. $^{**}p$ <.01. $^{***}p$ <.001.

Specifically, consistent with the results from Study 1, non-Whites had 2.49 times greater odds of showing an intention to post than Whites ($\chi^2(1) = 5.41$, p <.05). Age, issue knowledge, and fear of isolation, however, worked differently; when individuals were actually on the discussion forum, those who were older ($\chi^2(1) = 2.79$, p <.1), knowledgeable about the issue of legally recognizing same-sex marriage ($\chi^2(1) = 10.27$, p <.01), and afraid of being isolated ($\chi^2(1) = 5.83$, p <.05) were more willing to express opinions. With every one-year increase in age and one-point increase in issue knowledge

and fear of isolation scales, the odds of having opinion expression intention increased by about 2%, 50%, and 55%, respectively (RQ2). Anonymity was a forum feature that promoted one's willingness to leave a message ($\chi^2(1) = 3.22$, $p < .1$). As hypothesized (H2.1), the odds of individuals showing an intention to post were 1.73 times (inverted odds ratio: 1/0.578) higher if they were on an anonymous online forum than on an identifiable forum. The Wald χ^2 for the coefficient associated with the other two structural conditions variables was not statistically significant, rejecting H1.1 and H3.1.

Predicting Actual Behaviors on Online Forums

Two sets of logistic regression analyses were performed, one for the behavior of expressing views in general (i.e., behavior of posting) and one for the behavior of expressing *true* opinions (i.e., a subset of the former; behavior of posting *honestly*). The full models predicted the odds of actual behaviors significantly better than a null model (*posting*: $\chi^2(12) = 39.14$, $p < .001$; *posting honestly*: $\chi^2(12) = 36.40$, $p < .001$), correctly classifying 88.1% and 89.0% of the cases. The Hosmer and Lemeshow test also indicated that each model was a good fit to the data (*posting*: $\chi^2(8) = 12.60$, $p = .127$; *posting honestly*: $\chi^2(8) = 6.69$, $p = .571$) (Table 4.9).

Table 4.9 Overall Evaluation of the Model and Classification[a] for Actual Behaviors (True Experiments)

	Posting		Posting honestly	
	χ^2	*df*	χ^2	*df*
Overall model statistics	39.14***	12	36.40***	12

Hosmer & Lemeshow	12.60		8	6.69		8
	Predicted			Predicted		
Observed	Yes	No	% Correct	Yes	No	% Correct
Yes	4	52	7.1	4	49	7.5
No	1	390	99.7	0	394	100
Overall % correct			88.1			89.0

Note. [a] The cut value is .50. $N = 385$.
$^{***}p < .001$.

When examining the unique contribution of each predictor (Table 4.10), age (*posting*: $\chi^2(1) = 3.38$, $p < .1$; *posting honestly*: $\chi^2(1) = 3.42$, $p < .1$), race (*posting*: $\chi^2(1) = 6.32$, $p < .05$; *posting honestly*: $\chi^2(1) = 5.29$, $p < .05$), issue knowledge (*posting*: $\chi^2(1) = 6.82$, $p < .01$; *posting honestly*: $\chi^2(1) = 4.65$, $p < .05$), trait fear of isolation (*posting*: $\chi^2(1) = 4.48$, $p < .05$; *posting honestly*: $\chi^2(1) = 2.96$, $p < .01$), and the revelation of identity (*posting*: $\chi^2(1) = 4.15$, $p < .05$; *posting honestly*: $\chi^2(1) = 4.16$, $p < .05$) continued to have significant partial effects on behaviors in the same direction as for posting intentions. Compared to those for Whites, the odds of expressing opinions (or expressing honest views) on the online forum were 2.69 (or 2.52) times greater for non-Whites. Each one-year increase in age and one-unit increase in issue knowledge were associated with a 2.2% (or 2.3%) and 39.4% (or 32.3%) increase in the odds of posting (or posting honestly), respectively. Trait fear of isolation, too, produced consistent effects across the two layers of opinion expression behaviors. People with high fear of isolation were more likely than those with low fear of isolation to post a message on the forum (RQ2). Also, individuals on the online forum where their identity was kept anonymous had about 1.9 times

(*posting* - inverted odds ratio: 1/0.527; *posting honestly* -inverted odds ratio: 1/0.519) higher odds of finally posting messages than those on the forum where personal information was disclosed; therefore, H2.2 was supported. The size of the audience and the votes climate, however, made no significant impact on posting behaviors (H1.2 and H3.2).

Unlike for intentions, personal involvement in the issue of legally recognizing same-sex marriage was a significant booster for behaviors (*posting*: $\chi^2(1) = 4.37$, $p < .05$; *posting honestly*: $\chi^2(1) = 6.51$, $p < .05$); the odds of actual posting behaviors increased by 1.30 (*posting*) to 1.39 times (*posting honestly*) for every one-point increase on the issue involvement scale (RQ2).

Table 4.10 Logistic Regression Analysis of Actual Behaviors (True Experiments)

	Actual behavior			
	Posting		Posting honestly	
	B (S.E.)	OR (95% CI)	B (S.E.)	OR (95% CI)
Constant	-5.786*** (1.403)	.003	-5.791*** (1.433)	.003
Control variable				
Issue position (1=Favor)	-.409 (.327)	.664 (.350-1.260)	-.422 (.331)	.656 (.342-1.255)
Individual characteristics				
Gender (1=Female)	-.211 (.318)	.810 (.434-1.511)	-.217 (.324)	.805 (.427-1.518)
Age	.022† (.012)	1.022 (.999-1.047)	.023† (.012)	1.023 (.999-1.048)
Race (1=Non-White)	.989* (.393)	2.688 (1.244-5.808)	.924* (.402)	2.520 (1.147-5.539)
Education	-.015 (.146)	.985 (.740-1.311)	.003 (.149)	1.003 (.750-1.343)
Income	-.086 (.062)	.918 (.813-1.036)	-.069 (.063)	.933 (.825-1.056)

Issue involvement	.263*	1.300	.332*	1.393
	(.126)	(1.016-1.663)	(.130)	(1.080-1.797)
Issue knowledge	.332**	1.394	.280*	1.323
	(.127)	(1.086-1.789)	(.130)	(1.026-1.707)
Fear of isolation	.392*	1.479	.325†	1.384
	(.185)	(1.029-2.126)	(.189)	(.956-2.005)
Structural conditions				
Size (1=Large)	.277	1.319	.319	1.376
	(.306)	(.725-2.402)	(.312)	(.746-2.537)
Identity revelation (1=Identified)	-.641*	.527	-.656*	.519
	(.314)	(.284-.976)	(.321)	(.276-.974)
Votes climate (1=Favorable)	.356	1.428	.318	1.374
	(.305)	(.786-2.594)	(.311)	(.747-2.527)

†p <.1. *p <.05. **p <.01. ***p <.001.

Optimal Combination of Structural Conditions

As a first step to test the joint effects of three structural conditions variables on opinion expression, all two-way and three-way interaction terms were added to the model. However, none of these interaction terms turned out to be significant (Tables 4.11 and 4.12).

Table 4.11 Combined Effects of Structural Conditions on Intentions (True Experiments)

	Intentions		
	B	S.E.	Odds ratio (95% CI)
Constant	-5.795	1.418	.003
Control variable			
Issue position (1=Favor)	-.391	.324	.676 (.358-1.277)
Individual characteristics			
Gender (1=Female)	-.137	.314	.872 (.471-1.613)

Age	.020†	.012	1.020 (.997-1.044)
Race (1=Non-White)	.923*	.395	2.516 (1.160-5.456)
Education	-.055	.144	.946 (.714-1.255)
Income	-.079	.062	.924 (.819-1.043)
Issue involvement	.183	.123	1.200 (.943-1.527)
Issue knowledge	.426**	.129	1.531 (1.189-1.970)
Fear of isolation	.440*	.183	1.553 (1.084-2.224)
Structural conditions			
Size (1=Large)	.423	.565	1.526 (.505-4.616)
Identity revelation (1=Identified)	-1.380†	.835	.252 (.049-1.293)
Votes climate (1=Favorable)	.195	.558	1.216 (.407-3.632)
Interactions			
Size × Identity revelation	.555	1.021	1.741 (.235-12.883)
Size × Votes climate	-.243	.772	.784 (.173-3.564)
Identity revelation × Votes climate	1.001	1.024	2.721 (.366-20.250)
Size × Identity revelation × Votes climate	-.197	1.303	.821 (.064-10.561)

Note. Numbers in parentheses represent 95% confidence intervals.
†p <.1. *p <.05. **p <.01. ***p <.001.

Table 4.12 Combined Effects of Structural Conditions on Actual Behaviors (True Experiments)

	Actual behavior			
	Posting		Posting honestly	
	B (S.E.)	OR (95% CI)	B (S.E.)	OR (95% CI)

Constant	-5.684***	.003	-5.710***	.003
	(1.438)		(1.467)	
Control variable				
Issue position (1=Favor)	-.396	.673	-.400	.670
	(.328)	(.354-1.280)	(.333)	(.349-1.287)
Individual characteristics				
Gender (1=Female)	-.219	.804	-.225	.799
	(.320)	(.430-1.503)	(.325)	(.422-1.510)
Age	.022†	1.023	.023†	1.023
	(.012)	(.999-1.047)	(.012)	(.999-1.048)
Race (1=Non-White)	1.005*	2.732	.944*	2.571
	(.395)	(1.258-5.929)	(.404)	(1.165-5.671)
Education	-.026	.975	-.006	.994
	(.147)	(.731-1.300)	(.150)	(.741-1.333)
Income	-.077	.926	-.063	.939
	(.063)	(.819-1.047)	(.063)	(.829-1.064)
Issue involvement	.260*	1.297	.323*	1.381
	(.126)	(1.012-1.661)	(.130)	(1.069-1.783)
Issue knowledge	.342**	1.407	.287*	1.332
	(.129)	(1.092-1.813)	(.132)	(1.029-1.725)
Fear of isolation	.387*	1.473	.322†	1.380
	(.187)	(1.021-2.124)	(.191)	(.950-2.005)
Structural conditions				
Size (1=Large)	.189	1.208	.290	1.336
	(.576)	(.391-3.734)	(.589)	(.421-4.242)
Identity revelation (1=Identified)	-1.428†	.240	-1.323	.266
	(.835)	(.047-1.233)	(.846)	(.051-1.398)
Votes climate (1=Favorable)	.174	1.190	.153	1.166
	(.557)	(.399-3.546)	(.583)	(.372-3.657)
Interactions				
Size × Identity revelation	.784	2.189	.676	1.966
	(1.028)	(.292-16.410)	(1.035)	(.258-14.958)
Size × Votes climate	-.029	.972	.014	1.014
	(.781)	(.210-4.487)	(.798)	(.212-4.846)
Identity revelation × Votes climate	1.005	2.733	1.010	2.744
	(1.024)	(.367-20.336)	(1.038)	(.359-21.007)
Size × Identity rev. × Votes clim.	-.760	.468	-.988	.372
	(1.325)	(.035-6.280)	(1.349)	(.026-5.234)

†p <.1. *p <.05. **p <.01. ***p <.001.

In such a context where none of the interaction effects was statistically significant, to examine the optimal combination of structural conditions for eliciting opinion expression intentions, a logistic regression analysis was run with individual

characteristics and stimulus forum conditions (seven dummy variables representing eight forums) as predictors. Figure 4.4 shows the odds ratio and corresponding 95% confidence intervals for each combination relative to the reference condition, 'Large + Anonymous + Unfavorable'. All odds ratio estimates were adjusted for individual characteristics (i.e., gender, age, race, education, income, issue involvement, issue knowledge, and fear of isolation) and issue position.

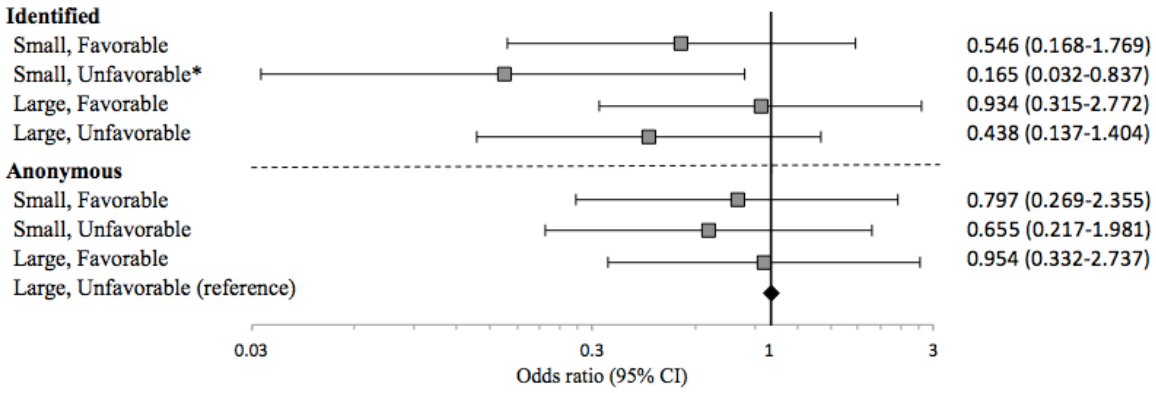


Figure 4.4 Odds Ratios for the Association Between Intentions and Stimulus Forum Conditions (True Experiments)

Note. The x-axis has a logarithmic scale. Error bars indicate 95% confidence intervals. Odds ratios were controlled for all individual characteristics variables and issue position.
$^{*}p < .05$.

Results implied that, unlike in Study 1, there seemed to be no apparent better-working combination for posting intentions. The odds of having an intention to leave a message on the 'Large + Anonymous + Unfavorable' online forum were 6.06 times (inverted odds ratio: 1/0.165) greater than those on the 'Small + Identified + Unfavorable' forum ($\chi^2(1) = 4.73$, $p < .05$). Yet, other comparisons were not statistically significant (RQ1).

This was much the same for posting behaviors. The odds ratio with 95% confidence intervals for each forum condition compared to the reference group, 'Large + Anonymous + Favorable', suggested that no particular combination was consistently or clearly superior in promoting actual opinion expression (Figure 4.5). The only significant comparison was between the 'Large + Anonymous + Favorable' and 'Small + Identified + Unfavorable' conditions (*posting*: $\chi^2(1) = 4.69$, $p < .05$; *posting honestly*: $\chi^2(1) = 4.79$, $p < .05$); individuals on the online forum with 'Large + Anonymous + Favorable' features had 5.81 (*posting* - inverted odds ratio: 1/0.172) to 5.92 (*posting honestly* - inverted odds ratio: 1/0.169) times higher odds of posting their message than those on the 'Small + Identified + Unfavorable' combination forum (RQ1).

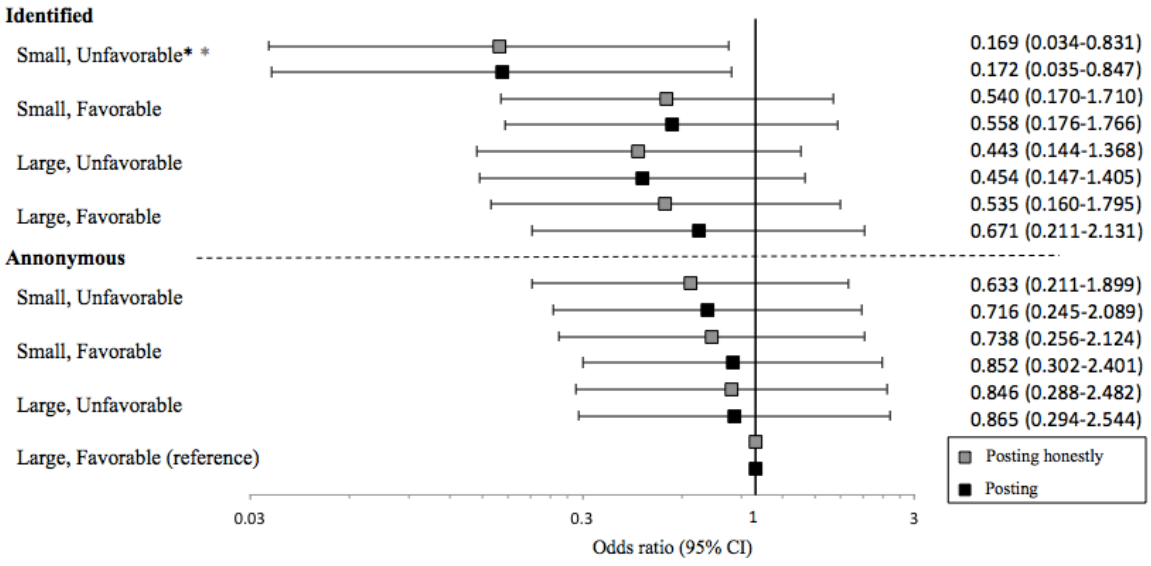


Figure 4.5 Odds Ratios for the Association Between Actual Behaviors and Stimulus Forum Conditions (True Experiments)

Note. The x-axis uses a logarithmic scale. Error bars represent 95% confidence intervals. Odds ratios were controlled for individual characteristics variables and issue position. *$p < .05$. (Symbols in black: significant for posting; symbols in grey: significant for posting honestly).

Comparing Evidence from Two Methodological Approaches

Lastly, the extent to which scenario-based thought experiments and website-based true experiments generated consistent results was assessed with a focus on the patterns of the association between individual predictors and opinion expression on the online forum (RQ3).

Preliminary Analysis

Participants in both experiments were recruited from the same population over the same period of time. A preliminary analysis confirmed that the thought experiments and true experiments participants did not differ systematically in gender ($\chi^2(1) = .290$, $p = .621$), age ($F(1, 830) = .089$, $p = .766$), race ($\chi^2(1) = 1.204$, $p = .284$), education ($F(1, 828) = .213$, $p = .644$), income ($F(1, 830) = .009$, $p = .924$), issue involvement ($F(1, 830) = .317$, $p = .574$), issue knowledge ($F(1, 830) = .002$, $p = .964$), fear of isolation ($F(1, 830) = .452$, $p = .502$), and issue position ($\chi^2(1) = .224$, $p = .676$) (Table 4.13).

Table 4.13 Comparisons Between Thought Experiments and True Experiments Participants on Demographics and Other Individual Characteristics

	Thought experiments	True experiments	
	M (*SD*)	*M* (*SD*)	Statistic
Gender	57.7% female	59.5% female	$\chi^2(1) = .290$
Age	52.30 (13.45)	52.58 (13.41)	$F(1, 830) = .089$

18-29	6.8%	7.2%	
30-39	13.5%	12.0%	
40-49	18.9%	15.9%	
50-59	27.6%	31.1%	
60-69	24.9%	26.9%	
70 +	8.3%	6.9%	
Race	83.6% Whites	86.4% Whites	$\chi^2(1) = 1.204$
White non-Hispanic	83.6%	86.4%	
Black non-Hispanic	4.9%	6.0%	
Hispanic	5.5%	2.9%	
Asian	3.4%	2.0%	
Native American	0.8%	1.6%	
Other	1.8%	1.1%	
Education	3.43 (1.06)	3.43 (1.11)	$F(1, 828) = .213$
Less than high school (1)	0.8%	0.9%	
High school/ GED (2)	17.7%	17.2%	
Some college (3)	38.4%	40.9%	
Bachelor's degree (4)	27.5%	26.2%	
Master's degree (5)	11.7%	10.3%	
Professional degree/PhD (6)	3.9%	4.0%	
Other (9)	-	0.4%	
Income	4.08 (2.66)	4.10 (2.61)	$F(1, 830) = .009$
Under $30,000 (1)	26.2%	24.8%	

$30,000 - $39,999 (2)	11.7%	11.2%	
$40,000 - $49,999 (3)	10.1%	11.0%	
$50,000 - $59,999 (4)	11.2%	11.9%	
$60,000 - $69,999 (5)	7.3%	9.4%	
$70,000 - $79,999 (6)	8.1%	6.5%	
$80,000 - $89,999 (7)	4.7%	5.6%	
$90,000 or more (8)	20.8%	19.7%	
Issue involvement	3.37 (1.39)	3.31 (1.39)	$F(1, 830) = .317$
Issue knowledge	4.05 (1.37)	4.04 (1.44)	$F(1, 830) = .002$
Fear of isolation	3.08 (0.81)	3.04 (0.86)	$F(1, 830) = .452$
Issue position	53.8% favor	52.1% favor	$\chi^2(1) = .224$

Note. Entries in main rows are means with standard deviations in parentheses except for gender, race, and issue position. Entries in sub-rows are relative frequencies expressed as percentages. $N = 832$.

Comparing the Two Methods for Predicting Intention

Before comparing the two methods in estimating the effects of individual characteristics and structural conditions on posting intentions, the relationship between the method used and willingness to express opinions was first examined (Table 4.14). As seen in Table 4.14, the method used appeared to influence the reported intention to express opinions on the forum ($\chi^2(1) = 107.90$, $p < .001$). The participants in thought experiments who read scenarios about the online forums were about 3.5 times (i.e., 45.7% vs. 13.2%) more willing to write a message in a given situation than those in true experiments who were actually situated on the forums.

Table 4.14 Methods and Opinion Expression Intentions

		Intention			χ^2
		No	Yes	Total	
Method	Thought experiments	54.3% (209)	45.7% (176)	100% (385)	107.900***
	True experiments	86.8% (388)	13.2% (59)	100% (447)	

Note. Entries are row percentages with observed frequencies in parentheses. $N = 832$.
***$p < .001$.

A test of the interaction between the method and each predictor also revealed that thought and true experiments returned incongruent predictions regarding the contribution of age ($\chi^2(1) = 2.83$, $p < .1$), issue knowledge ($\chi^2(1) = 3.32$, $p < .1$), fear of isolation ($\chi^2(1) = 24.74$, $p < .001$), and the votes climate ($\chi^2(1) = 7.61$, $p < .01$) to opinion expression intentions (see interaction results in Table 4.15).

Table 4.15 Comparisons Between the Methods for Predicting Intentions

	Intentions		
	B	S.E.	Odds ratio (95% CI)
Method (1=True experiments)	-2.313***	.452	.099 (.041-.240)
Issue position (1=Favor)	-.086	.200	.918 (.620-1.359)
Gender (1=Female)	.192	.238	1.211 (.760-1.931)
Age	-.004	.008	.996 (.979-1.013)

Race (1=Non-White)	.620*	.305	1.858 (1.022-3.379)
Education	-.049	.118	.952 (.755-1.200)
Income	-.003	.047	.997 (.909-1.094)
Issue involvement	.182†	.098	1.199 (.989-1.454)
Issue knowledge	.127	.095	1.135 (.942-1.368)
Fear of isolation	-.737***	.155	.479 (.354-.648)
Size (1=Large)	.077	.222	1.080 (.699-1.670)
Identity revelation (1=Identified)	-.113	.221	.893 (.579-1.378)
Votes climate (1=Favorable)	-.601**	.222	.548 (.355-.848)
Method × Gender	-.301	.394	.740 (.342-1.603)
Method × Age	.024†	.015	1.025 (.996-1.054)
Method × Race	.238	.503	1.269 (.474-3.399)
Method × Education	-.055	.203	.947 (.636-1.410)
Method × Income	-.082	.078	.922 (.790-1.075)
Method × Issue involvement	-.041	.147	.960 (.719-1.281)
Method × Issue knowledge	.287†	.158	1.333 (.978-1.815)
Method × Fear of isolation	1.189***	.239	3.283 (2.055-5.245)
Method × Size	.404	.377	1.495 (.715-3.128)
Method × Identity revelation	-.416	.377	.660 (.315-1.383)
Method × Votes climate	1.030**	.373	2.800 (1.347-5.820)
Constant	.038	.386	1.039

Note. All continuous variables were centered before the interaction terms were created. Numbers in parentheses represent 95% confidence intervals.
†$p < .1$. *$p < .05$. **$p < .01$. ***$p < .001$.

Specifically, in true experiments, participants who were older showed greater probability of having an intention to post. In thought experiments, on the other hand, although those older were slightly less willing to express opinions, age was not a significant predictor (Figure 4.6).

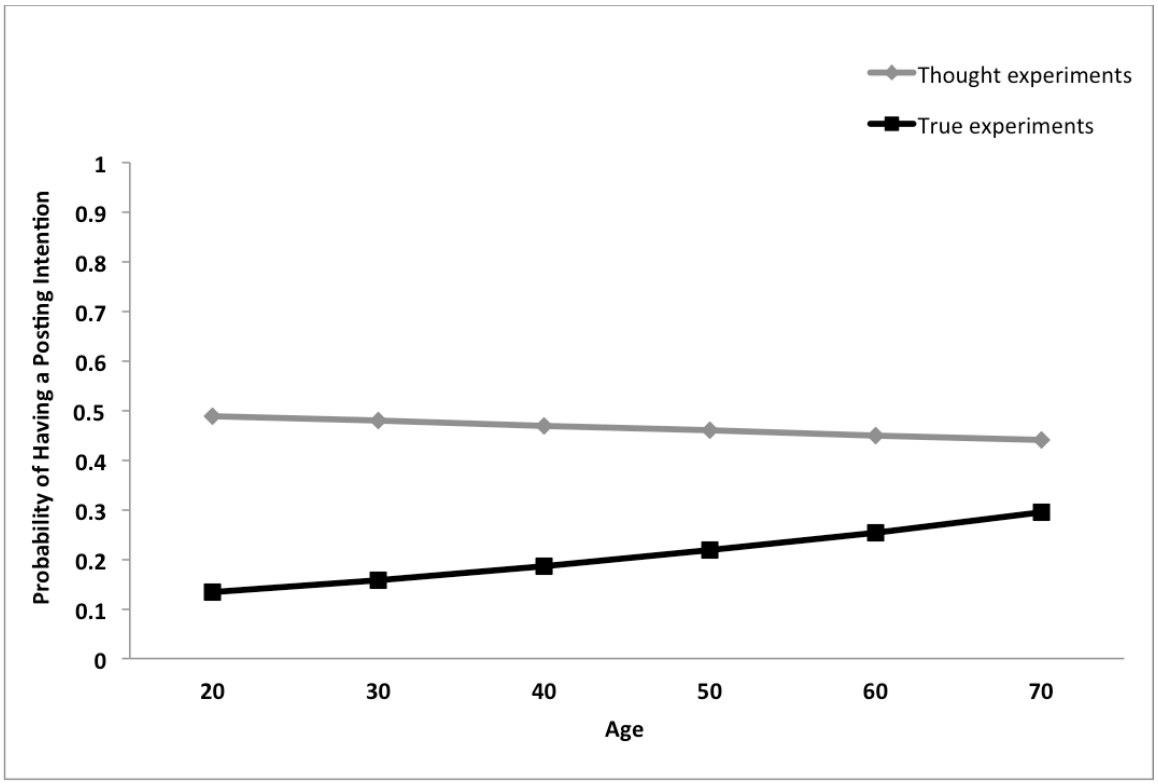


Figure 4.6 The Relationship Among Methods, Age, and Opinion Expression Intention[31]

More knowledge about the issue of legally recognizing same-sex marriage increased the probability of having a posting intention in both thought and true experiments. In particular, individuals who perceived themselves as more knowledgeable about the issue were significantly more willing to leave a message about it when they

[31] Predicted probabilities of having an intention to post or actually posting a message (y-axis) in Figures 4.6, 4.7, 4.8, 4.9, 4.10, 4.11, and 4.12 were calculated using the following equation:

$$p(\text{intention or behavior}) = \frac{e^{\beta_0+\beta_1*method+\beta_2*predictor+\beta_3*method*predictor}}{1+e^{\beta_0+\beta_1*method+\beta_2*predictor+\beta_3*method*predictor}}$$

were actually on the online forum. However, such effects of issue knowledge were relatively much weaker if individuals were given a scenario about the forum (Figure 4.7).

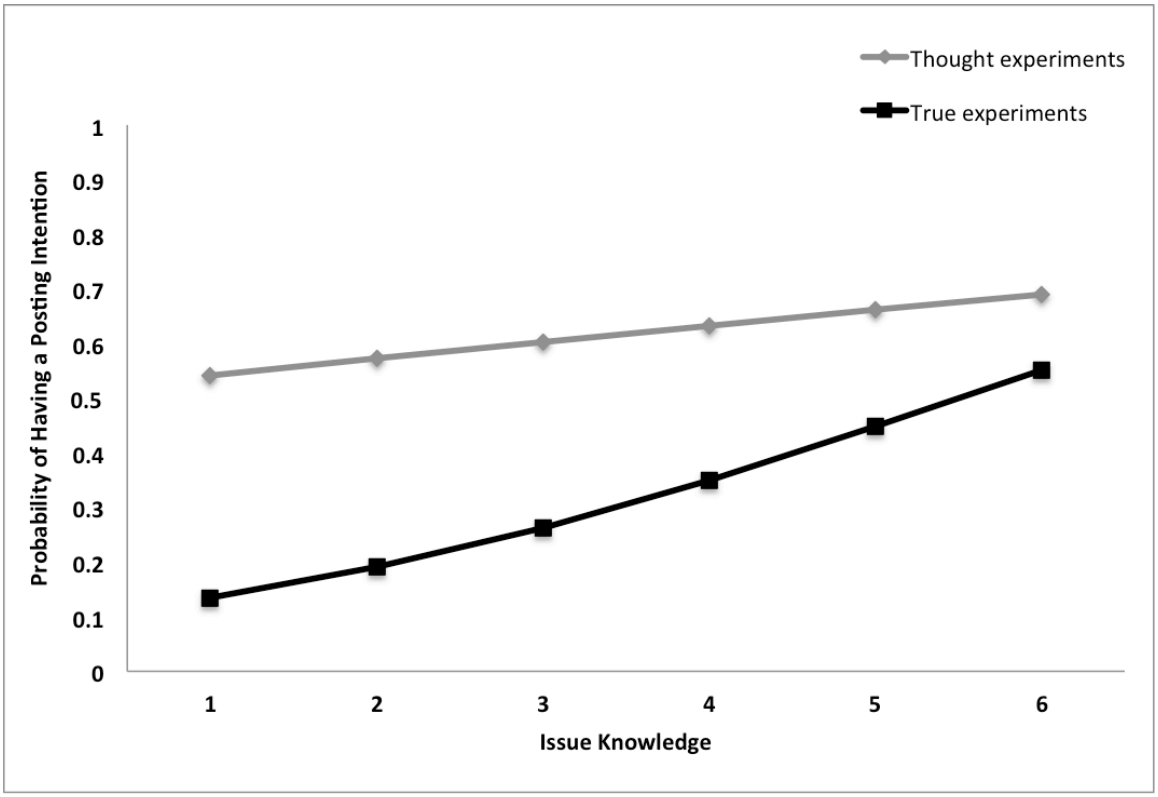


Figure 4.7 The Relationship Among Methods, Issue Knowledge, and Opinion Expression Intention

The role of trait fear of isolation was completely different across the two methods. Participants with high trait fear of isolation showed lesser intention to express opinions than those with low fear in scenario-based thought experiments, whereas the opposite trend was found in website-based true experiments; fear of isolation acted rather as a catalyst for having an intention to post when individuals were actually exposed to the online discussion forum (Figure 4.8).

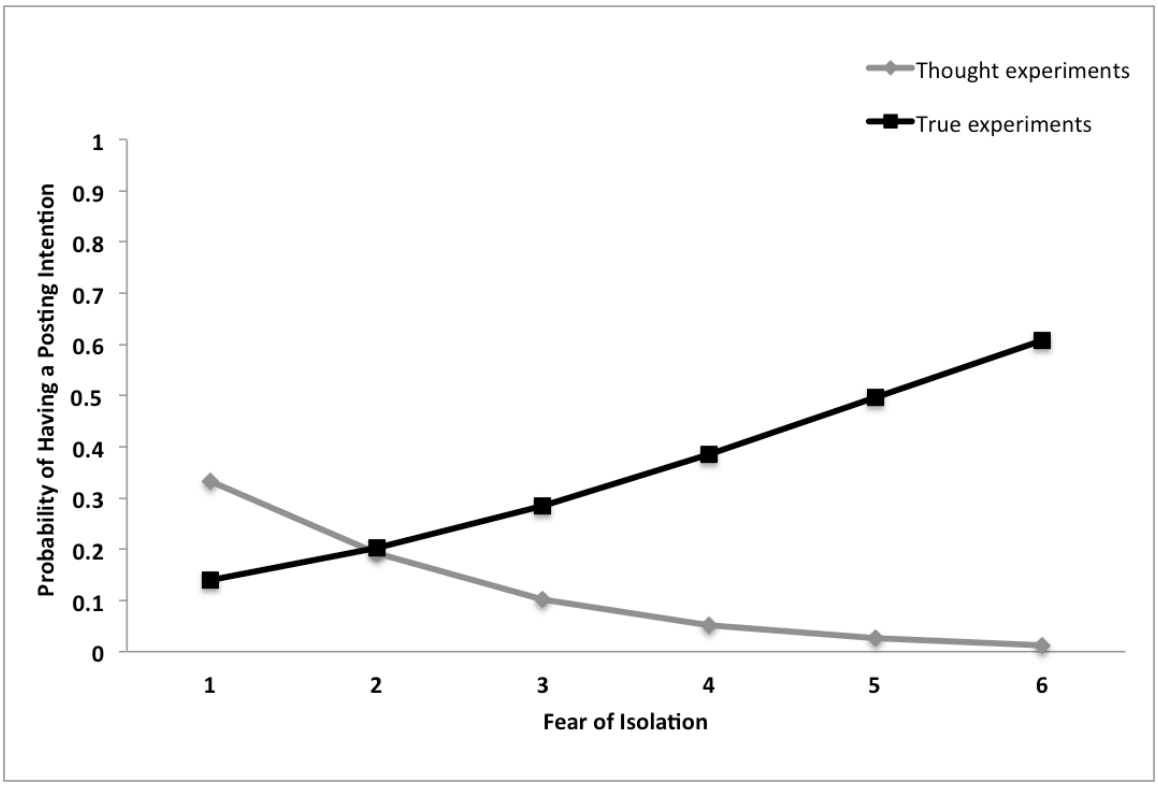


Figure 4.8 The Relationship Among Methods, Fear of Isolation, and Opinion Expression Intention

Among the structural conditions, the votes climate was the feature about which the findings from the two methods were not in agreement. Participants in thought experiments indicated significantly lower posting intention if they read a favorable votes climate scenario than its unfavorable counterpart. By contrast, those in true experiments had a higher intention to write a comment when they were on the online forum that displayed a favorable votes climate; this effect of the votes climate in true experiments was not statistically significant though (Figure 4.9).

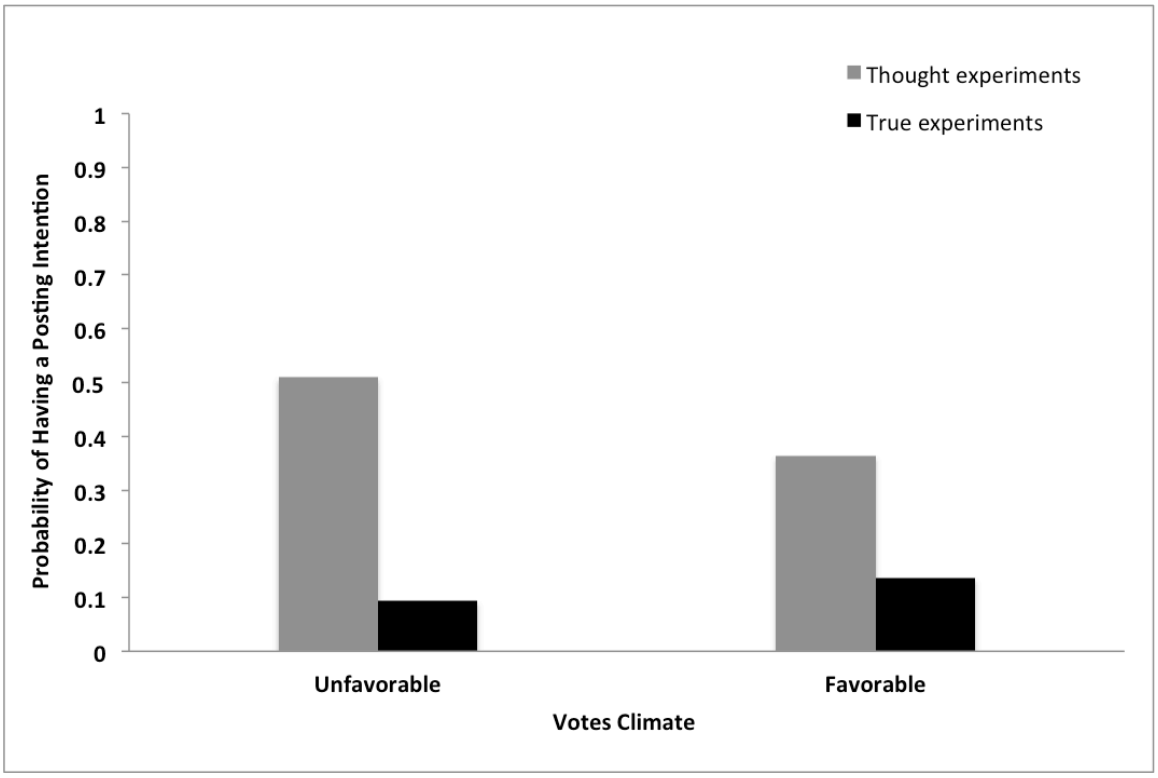


Figure 4.9 The Relationship Among Methods, Votes Climate, and Opinion Expression Intention

Comparing the Two Methods for Predicting Actual Behaviors

As in the case of intentions, the method used significantly affected individuals' posting behaviors (*posting*: $\chi^2(1) = 60.56$, $p < .001$; *posting honestly*: $\chi^2(1) = 52.25$, $p < .001$). As Table 4.16 presents, the proportion of participants who finally posted their message on the forum was 35.3% in scenario-based thought experiments, while the proportion of those who posted was only 12.5% in website-based true experiments. When narrowing the focus to the behavior of posting honestly, similarly, the participants in thought experiments, compared to those in true experiments (11.9%), were more likely to express their true views on the forum (32.5%).

Table 4.16 Methods and Actual Opinion Expression Behaviors

Method	Posting		χ^2	Posting honestly		χ^2
	No	Yes		No	Yes	
Thought	64.7% (249)	35.3% (136)	60.556***	67.5% (260)	32.5% (125)	52.249***
True	87.5% (391)	12.5% (56)		88.1% (394)	11.9% (53)	

Note. Entries are row percentages with observed frequencies in parentheses. $N = 832$.
***$p < .001$.

Comparing the two methods in their assessment of the relationship between each predictor and posting behaviors, again, showed that thought and true experiments produced inconsistent results in some aspects (see interaction results in Table 4.17). The difference was found in the effects of age (*posting*: $\chi^2(1) = 3.10$, $p < .1$; *posting honestly*: $\chi^2(1) = 2.76$, $p < .1$), fear of isolation (*posting*: $\chi^2(1) = 16.70$, $p < .001$; *posting honestly*: $\chi^2(1) = 15.32$, $p < .001$), and the votes climate (*posting* only: $\chi^2(1) = 3.79$, $p < .1$).

Table 4.17 Comparisons Between the Methods for Predicting Actual Behaviors

	Actual behavior			
	Posting		Posting honestly	
	B (S.E.)	OR (95% CI)	B (S.E.)	OR (95% CI)
Method (1=True experiments)	-1.918*** (.456)	.147 (.060-.359)	-1.762*** (.470)	.172 (.068-.431)
Issue position (1=Favor)	-.035 (.206)	.966 (.644-1.448)	.057 (.213)	1.059 (.697-1.608)

Gender (1=Female)	-.229	.796	-.265	.767
	(.247)	(.490-1.292)	(.258)	(.463-1.272)
Age	-.003	.997	-.002	.998
	(.009)	(.980-1.014)	(.009)	(.981-1.016)
Race (1=Non-White)	.859**	2.361	.947**	2.577
	(.310)	(1.285-4.336)	(.321)	(1.374-4.832)
Education	-.006	.994	.012	1.012
	(.125)	(.779-1.269)	(.130)	(.784-1.307)
Income	-.047	.954	-.064	.938
	(.050)	(.866-1.052)	(.052)	(.847-1.038)
Issue involvement	.276**	1.318	.319**	1.376
	(.103)	(1.078-1.612)	(.107)	(1.116-1.696)
Issue knowledge	.180†	1.197	.266*	1.305
	(.101)	(.983-1.458)	(.107)	(1.059-1.607)
Fear of isolation	-.596***	.551	-.655***	.520
	(.158)	(.405-.751)	(.165)	(.376-.718)
Size (1=Large)	.054	1.056	.188	1.207
	(.232)	(.670-1.665)	(.242)	(.751-1.941)
Identity revelation (1=Identified)	-.401†	.670	-.592*	.553
	(.233)	(.424-1.058)	(.245)	(.342-.895)
Votes climate (1=Favorable)	-.352	.703	-.274	.760
	(.232)	(.446-1.109)	(.243)	(.472-1.223)
Method × Gender	.025	1.025	.046	1.047
	(.404)	(.464-2.263)	(.415)	(.464-2.362)
Method × Age	.026†	1.027	.025†	1.026
	(.015)	(.997-1.057)	(.015)	(.995-1.057)
Method × Race	.083	1.086	-.063	.939
	(.506)	(.403-2.928)	(.520)	(.339-2.602)
Method × Education	-.086	.918	-.101	.904
	(.209)	(.609-1.382)	(.213)	(.595-1.373)
Method × Income	-.028	.973	.009	1.009
	(.081)	(.830-1.139)	(.083)	(.859-1.187)
Method × Issue involvement	-.057	.944	-.039	.962
	(.154)	(.698-1.278)	(.162)	(.700-1.320)
Method × Issue knowledge	.164	1.178	.027	1.027
	(.162)	(.857-1.619)	(.168)	(.739-1.428)
Method × Fear of isolation	.999***	2.715	.987***	2.683
	(.244)	(1.682-4.384)	(.252)	(1.637-4.398)
Method × Size	.281	1.324	.191	1.210
	(.386)	(.621-2.823)	(.398)	(.555-2.639)
Method × Identity revelation	-.213	.808	-.031	.970
	(.391)	(.375-1.741)	(.404)	(.439-2.142)
Method × Votes climate	.748†	2.112	.642	1.900
	(.384)	(.995-4.486)	(.395)	(.875-4.123)
Constant	-.319	.727	-.666	.514
	(.398)		(.415)	

Note. All continuous variables were centered before the interaction terms were created.
†p <.1. *p <.05. **p <.01. ***p <.001.

The likelihood of actually posting a message on the forum (regardless of whether the message reflected true opinions or not) increased with a participant's age in true experiments. Yet, in thought experiments, there was a slight, but non-significant, decrease in posting behavior as age increased (Figure 4.10).

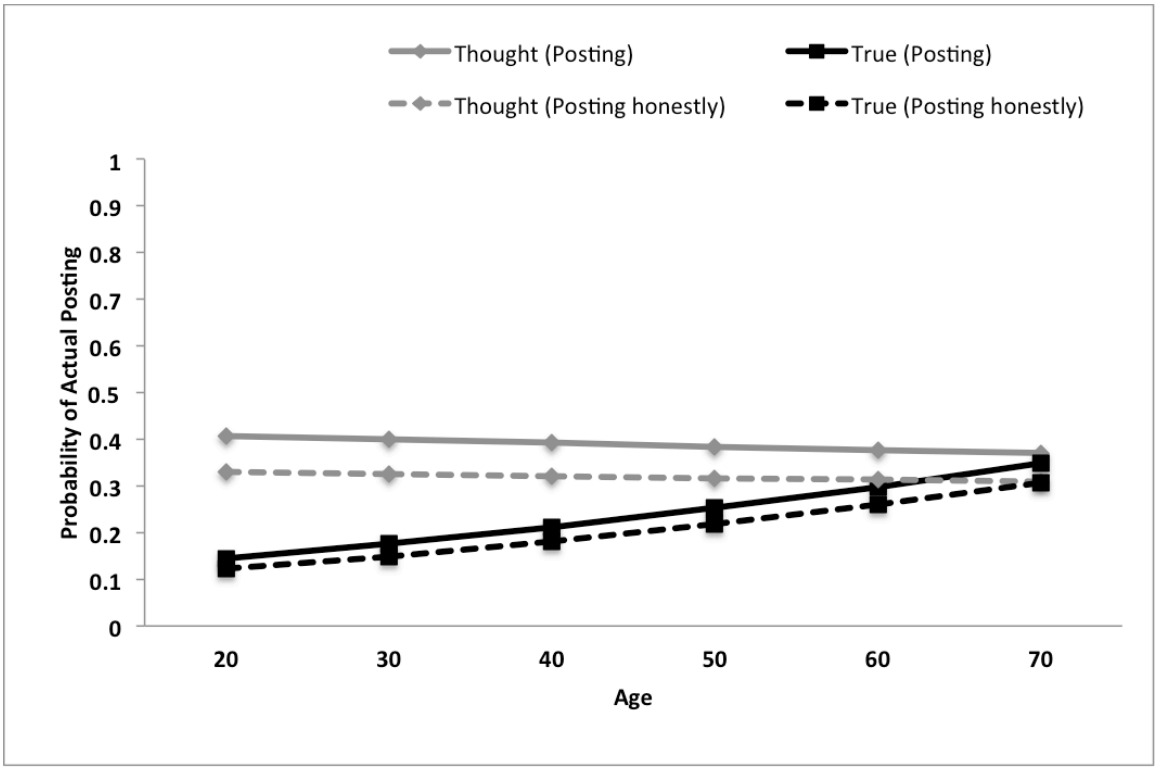


Figure 4.10 The Relationship Among Methods, Age, and Actual Behaviors

Consistent with the results for intentions, trait fear of isolation was found to be a deterrent to posting behaviors in thought experiments but a facilitator in true experiments. Participants afraid of being isolated were less likely to finally post a message to the forum when given a chance after reading a description about the online forum. On the contrary, those who were on the online forum tended to actually leave a comment if they had more fear of isolation (Figure 4.11).

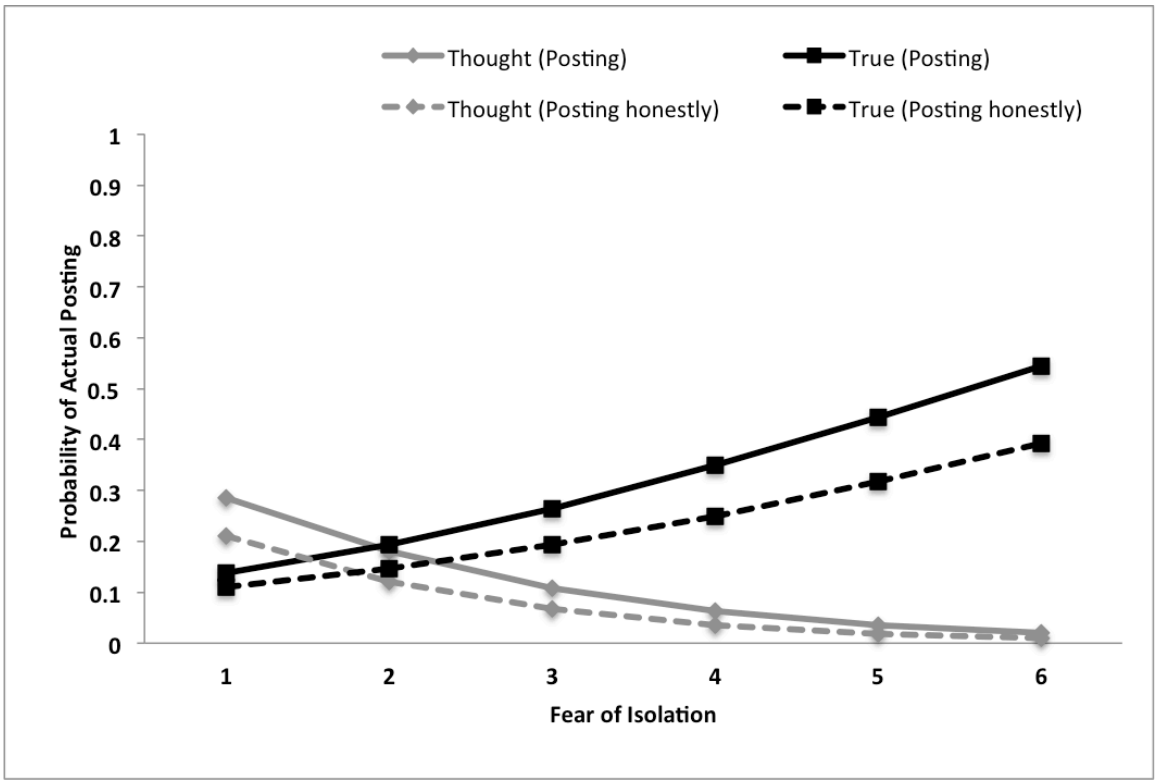


Figure 4.11 The Relationship Among Methods, Fear of Isolation, and Actual Behaviors

The way the votes climate influenced the behavior of expressing opinions appeared different according to the methods used. More individuals finally left a comment when they read a scenario about the forum where the post they agreed with had received unfavorable votes. However, when people visited the online forum, they were more likely to post a message to the forum if the comment congruent with their opinions received favorable votes than when it received unfavorable votes (Figure 4.12).

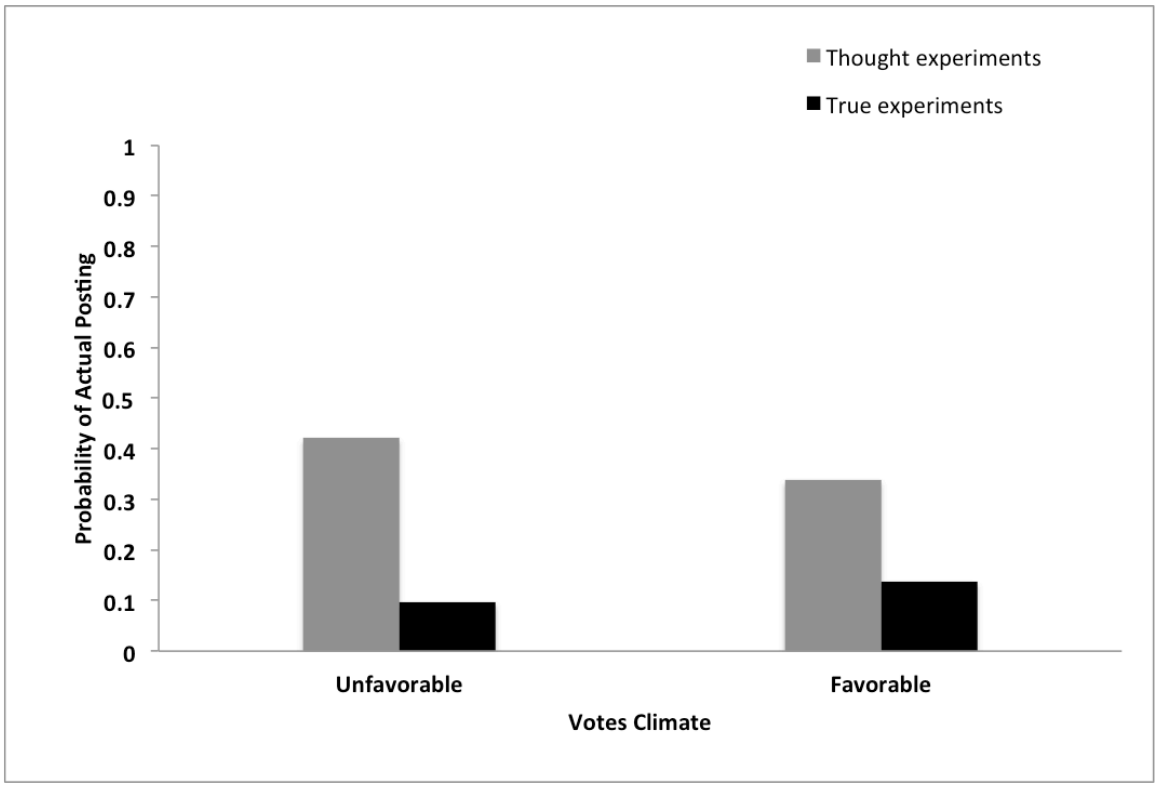


Figure 4.12 The Relationship Among Methods, Votes Climate, and Actual Behavior of Expressing Opinions

Chapter 5

Conclusion

Individuals' opinion expression about public affairs has entered a new phase with the emergence and growth of new venues for social interaction among fellow citizens such as online discussion forums. Many expect that these spaces online provide a golden opportunity for citizen-to-citizen public discussion, where a freer and more frank public expression of personal opinion would be possible (Delli Carpini, 2000; Ho & McLeod, 2008; Neuman et al., 2011; Rains, 2005; Stromer-Galley, 2003; Yun & Park, 2011). Despite its topical and democratic significance (Conover et al., 2002; Clarke, 1996; Delli Carpini et al., 2004; Fishkin, 1995; Hill & Hughes, 1998; Page, 1996; Sartori, 1987), however, not much empirical evidence exists to understand an individual's voicing views in online discussion. While focusing on this attention-deserved form of political activity online, the current dissertation aimed to yield insights into some fundamental questions: who, with what characteristics, more intends and tends to talk on an online discussion forum, and what forum conditions facilitate an individual's opinion expression intention and behavior.

Summary and Interpretation of Empirical Findings

The findings from the first experiment (Study 1: Scenario-based thought experiments), which used the multifaceted, detailed scenarios, indicated that a person's race and trait fear of isolation were individual characteristics that influenced initial posting intention. Fear of isolation was relevant online, contrary to general expectations that common online discussion features such as the lack of physical co-presence and nonverbal cues would free people from its impacts (e.g., Ho & McLeod, 2008; Yun & Park, 2011). Individuals with more fear showed less intention to write a new message when they read a description about the online forum where their own view was in the minority. Racial minorities, compared to Whites, had more willingness to join the discussion on the forum.

The role of the votes climate was different from that of the perceived opinion climate in the spiral of silence. The original proposition in the spiral of silence suggests that individuals are more inclined to speak out if their personal positions are congruent with the majority opinion (e.g., Glynn et al., 1997; Moy et al., 2001; Noelle-Neumann, 1974; Salmon & Neuwirth, 1990; Scheufele et al., 2001, Willnat, 1996). The opinion climate, in this sense, appears to function as a kind of social norm. Yet, the votes climate, which constitutes the dual climate of opinion perception with the forum messages climate, did not work in that way; thought experiments revealed that people were rather less willing to state their views in a situation where the votes climate was favorable to them. One plausible explanation may be that when the post they agreed with, even though it was on the minority side on the forum, had received favorable votes, individuals could expect others (e.g., lurkers or latent posters) to come forward to express opinions instead

(see Butler, 2001 and Finholt & Sproull, 1990 for a free-riding tendency). They thus might have had little motivation to speak up themselves. In the opposite case, on the contrary, people might have felt that they needed to put themselves forward to lend weight to the lone poster who advocated the view consistent with theirs.

Predicting posting behaviors in thought experiments presented largely similar patterns, but there were differences in two regards. First, besides race and fear of isolation, how much people were involved in and knew about the issue began to matter for the posting decision. As they were in face-to-face or offline conversation situations (e.g., Lasorsa, 1991; Oshagan, 1996; Salmon & Neuwirth, 1990), people who were more involved in the issue under discussion were more likely to express their opinions in an online forum. When given a chance to actually post a comment to the forum, individuals also seemed to consider if they had enough knowledge about the issue to argue against the majority position on the online forum; the more knowledgeable a person was, the greater the likelihood of finally expressing an opinion. Second, the votes climate was no longer influential, while whether a user's identity was kept anonymous on the forum became important when posting a message came to the real thing. Disclosing one's real name and other personal information was a big hindrance to actual opinion expression on the discussion forum. All of these effects were greater on the behavior of expressing *true* opinions (i.e., posting honestly). The size of the discussion group made no significant difference in any stage of opinion expression.

The second experiment (Study 2: Website-based true experiments) examined the same questions with simulated online forums designed for this study instead of hypothetical scenarios. In line with the results from the first study (Study 1), non-Whites

were consistently more willing and likely to voice their views on the online forum. Also, when individuals were actually situated on the online forum, the extent to which anonymity would be maintained was a crucial concern from the beginning (i.e., forming an intention to post) to the end (i.e., finally leaving a message) of opinion expression. These findings, together with the observations using scenarios, empirically supported the idea that anonymity would provide a potential shield for those voicing a minority opinion (Ho & McLeod, 2008; McDevitt, Kiousis, & Wahl-Jorgensen, 2003; Neuman et al., 2011). At the same time, they made one point clear: although online interactions, in general, afford the relative anonymity through the absence of physical co-presence and reduced observable cues, these characteristics seemed not to create a sufficient condition for encouraging or emboldening those with a seemingly unpopular view to speak out. In other words, it was not computer-mediated communication itself but complete anonymity guaranteed during online discussion that promoted one's opinion expression. The size of the online discussion group continued to have no significant impact on opinion expression. The results that both a direct reference to group size in the scenarios and its realization on the online forums did not induce meaningful changes in speaking-out intention and behavior imply two possibilities: first, although an additional step was introduced to lead the participants to perceive the size of the online discussion group as intended (i.e., 80 members as a small group and 2,130 members as a large group), '80 people' online could still be accepted as large. Second, the human brain might have a limited processing power for group size beyond a certain point (Chong, Humble, Kendall, Li, & Yao, 2007; Watkins, 2004). Considering that conformity was found to level off or flatten out once the group size reached a threshold (e.g., four in Asch, 1951) in face-to-

face interactions (Latané & Wolf, 1981), individuals might also not be able to distinguish the difference between pressure from 2,130 people and that from a much smaller number of users online.

Placing the participants in the simulated online forum produced some noteworthy results as well, which were distinctive from those of thought experiments. In a more true-to-life online discussion situation, those who were older appeared to be more vocal. This was in contrast to the phenomenon observed in previous studies on face-to-face interactions, where younger adults were more willing to speak out (Noelle-Neumann, 1974; Salmon & Rucinski, 1988). In addition, whereas issue-related variables were not influential in eliciting initial posting intentions in thought experiments, issue knowledge was a decisive factor from the start in true experiments. Trait fear of isolation played a completely opposite role. Unlike what the original idea of the spiral of silence assumes (see Noelle-Neumann, 1974) and what the first study using scenarios (Study 1) found, people with high fear of isolation had greater intention to write a comment and actually did so when they were exposed to a simulated discussion on the online forum. In a way, the online discussion forum seemed to serve as a site for venting one's opinion expression desires that had been stifled by an inherent fear of isolation in offline settings.

Methodological Implications

Such differences between the findings from the two approaches became even clearer if looking at the comparison results. The interaction between the method and each predictor showed that thought and true experiments assessed the roles of age, fear of isolation, and the votes climate as well as the contribution degree of issue knowledge (to

posting intention) differently. Furthermore, leaving this issue of association patterns aside, the percentage of participants who expressed intention to leave a message or who decided to actually post their opinions was far higher in thought experiments than in true experiments. This implies that the use of scenarios tended to inflate or overestimate individuals' willingness and likelihood to speak out in a given situation. The relatively large number of people who changed their minds about posting (i.e., manifested intention but did not translate it into action) in thought experiments can be understood in a similar vein. According to the hot-cold empathy gap explanation, being asked a hypothetical question about whether they would do something in a supposed situation does not "put people in touch with the feelings they have when the prospect of [doing it] is real" (Loewenstein, 2005, p. 51). Thus, in thought experiments, it is likely that participants did not "get in touch with their fear of [criticism] unless the event was imminent . . . [but they finally chickened out] when the moment of truth arrived" (Loewenstein, 2005, p. 51) (i.e., the cold-to-hot empathy gap). On the other hand, when the participants were actually exposed to the online discussion forums in true experiments, they were likely to be in affectively hot states due to emotions such as fear and discomfort at the time of their initial decision-making. Individuals' willingness to express opinions as well as the difference between anticipated and actual posting naturally decrease in such a situation (cf., Van Boven, Loewenstein, Welch, & Dunning, 2004).

It is also interesting to note that the results of true experiments identified no obvious better combination of structural conditions, while those of thought experiments hinted at the possible presence of it (i.e., the 'Large + Anonymous + Unfavorable' combination). This might be because the manipulations or discussion features illustrated

in scenarios were more salient than their visual embodiment on the online forum. For instance, participants who read the scenario might have been easily able to gauge the vote climate in the assigned forum since there was a direct description of the number of thumbs up the comments had received. Even though a comparable stimulus forum portrayed the same situation, however, the participants who actually were on the forum had to spend some time or look around in order to have a grasp of what was going on there. These natural or somewhat inevitable differences between experiencing a real situation and a hypothetical situation described in the scenario might not only affect the perception of each structural condition but also change the resulting combinatory effects.

In fact, it is undeniable that the hypothetical scenario technique, the most widely used method in the opinion expression research area, has several methodological advantages. Hypothetical scenarios allow researchers to situate their participants in a wide variety of interaction settings, from conversations with fellow passengers (e.g., Lasorsa, 1991; Noelle-Neumann, 1974, 1993; Salmon & Neuwirth, 1990) to televised interview (e.g., Shamir, 1997; Yang, 1997), many of which are hard to create for research purposes in the real world. Also, in most cases, people can easily imagine themselves in these hypothetical contexts because the scenarios depict plausible situations in their daily lives (Yun & Park, 2011). Yet, despite these merits, comparing the findings from scenarios to those obtained from real, analogous situations (i.e., simulated online forums) indicated that the use of scenarios could not accurately identify some existing phenomena and associations. There is a need for caution in interpreting what people said they would do after reading a description of the situation as a valid indicator of what they would do when actually faced with that situation.

The Spiral of Silence Revisited

This dissertation did not directly address whether the spiral of silence phenomenon occurred during online discussion in that perceived opinion congruency, one of the most central to the theory (Glynn et al., 1997; Glynn & McLeod, 1985; Noelle-Neumann, 1974; Salmon & Neuwirth, 1990; Scheufele et al., 2001), was not treated and included as a variable. However, the findings from two experiments have the potential to provide some insights into how the spiral of silence theory that emerged in the pre-Internet era works in the new media environment online, when considering the following aspects: first, all participants were placed in an incongruent or hostile majority opinion situation which was thought to maximize the chances of silence. Second, several factors that previous studies on the spiral of silence identified as significant in face-to-face settings were tested under various online forum conditions to determine which of them contributed to decisions to express an opinion against the unfavorable opinion climate.

Among the results of this research, the most remarkable in connection with the spiral of silence is perhaps the function of trait fear of isolation on online discussion forums. In the spiral of silence, fear of isolation has been pointed out as the primary culprit behind silencing minority opinion holders (Moy et al., 2001; Noelle-Neumann, 1974; Scheufele et al., 2001). This fear of isolation argument has been the area of debate (Hayes, 2007; Lee & Kim, 2014; Moy et al., 2001; Scheufele & Moy, 2000; Yun & Park, 2011) and seems likely to become more so in the new online discussion circumstances. Many researchers predicted that the characteristics of online communication would weaken the influence of fear of isolation and thus individuals might speak out their views online regardless of the perceived distribution of public opinion (e.g., Ho & McLeod,

2008; Neuman et al., 2011; Yun & Park, 2011). Yet, trait fear of isolation appeared to not simply become less influential in online discussions. According to thought experiments based on scenarios, fear of isolation was still a powerful deterrent to speaking out on an online forum. Moreover, in true experiments using realistic-looking online forums (Study 2), trait fear of isolation even acted as a motivator for frank opinion expression online.

This discrepancy between two experimental estimates of the role of fear of isolation could be accounted for in two ways. First, an expectancy of visiting a discussion forum in thought experiments might not have successfully activated the true aspect of self, while an experience of being in an online forum in true experiments might have done so. In typical face-to-face interactions, those with high fear of isolation are likely to be the ones who feel uncomfortable in fully or freely revealing their honest ideas when facing opinion gaps with others. It is evident, however, that people have a strong need to be truly themselves (Bargh et al., 2002; Rogers, 1951). Considering that inner opinion constitutes a significant part of the real or true self (Bargh et al., 2002; Swann, 1990), individuals repressed under traditional communication situations might have been more motivated than others to take advantage of new interaction fields online to release their pent-up thoughts. The problem could be that knowing that one is going to participate in online discussion does not convey the qualities of the Internet discussion experience. Rather, if one is not being immersed in a real online discussion experience, he or she is more likely to be well within the sphere of influence of his or her offline social interaction norms. Congruent with previous research that indicated the "importance of the actual Internet interaction experience" (Bargh et al., 2002, p. 40), not

anticipation, for the activation of the true self, the act of expressing one's true opinion seemed to be triggered only when one with fear of social isolation was actually on the online discussion forum (Study 2).

Second, different dimensions of fear of isolation could be at play in thought and true experiments. This study used a pre-validated seven-item measure taken from a previous study (Scheufele et al., 2001) to assess fear of isolation. A post-hoc factor analysis of these items, which was performed in an effort to understand the underlying mechanism, revealed the existence of two sub-constructs: one grouping the three items associated with fear of being avoided and the other grouping the four items related to fear of arguing (see Tables C.1 and C.2 in Appendix C for the factor analysis results). Additional binary logistic regression analyses then included these two factors (i.e., fear of being avoided and fear of arguing) instead of a combined trait fear of isolation index (see Tables C.3 and C.4 in Appendix C).

The results were contrasting; in thought experiments, fear of arguing significantly suppressed one's willingness and likelihood to express opinions on the online forum (*posting intention*: $\chi^2(1) = 21.99$, $p < .001$; *posting behavior*: $\chi^2(1) = 13.94$, $p < .001$), while fear of being avoided made no significant impact (Table C.3). Interestingly, in true experiments, fear of being avoided was a significant booster for opinion expression on the discussion forum (*posting intention*: $\chi^2(1) = 8.29$, $p < .01$; *posting behavior*: $\chi^2(1) = 6.98$, $p < .01$), but fear of arguing did not make a significant contribution (Table C.4). Participants in thought experiments read a description of how almost everyone who had posted on the forum they would soon visit seemed to disagree with their opinion. Due to this direct depiction of the situation, participants might have felt that deciding to post a

message to such a forum would mean jumping into arguments. Participants in thought experiments, however, were not yet on the online discussion forum; being avoided by other forum users after posting might thus have seemed distant. In the case of true experiments, participants were exposed to what other (ostensible) users had written on the discussion forum. Unlike those in thought experiments, these participants actually experienced the situation. In relation to the first explanation, this actual Internet forum experience might facilitate expression of inner thoughts, particularly among individuals who might not do so well in traditional face-to-face interactions, such as those with high fear of being avoided. Yet, reluctance to become involved in arguments is a relatively stable personality trait that is not subject to significant changes during online discussions.

When the findings from a more realistic setting are used as a criterion, the original spiral of silence proposition that relied solely on the fear of isolation explanation seems to need to consider appropriate amelioration or modification in order to account for silence and outspokenness in the online forum discussion. Alternative psychological mechanisms, which reflect the unique character and culture of online contexts, such as fear of being doxed or fear of Internet vigilantism may be more adequate for explaining why dissenting individuals still choose to remain silent in this very different communication situation.

Limitations of the Study

By using both multifaceted, detailed scenarios and real online forums and by measuring both initial intentions and final behaviors, this dissertation tried to capture the various aspects of opinion expression on the online discussion forum. How individuals

with different characteristics acted in the online discussion situation and what forum conditions put another complexion on their activities were widely tracked and discussed.

Here, however, it should be acknowledged that these patterns of the association were observed during participants' one-time visit to the forum (in true experiments) or while implying one-time participation in the discussion that was taking place on the forum (in thought experiments). In reality, online discussion forums are running based on more long-term deliberation among users on the issues of concern (Delli Carpini et al., 2004); people read discussion messages, take a wait-and-see attitude, express their ideas, show agreement with or refute existing comments, respond to others' reaction to their opinions, and so on, and these sometimes may or may not happen in the course of their multiple visits to the site. With a short-period observation, admittedly, it is difficult to detect these behavioral changes in discussion participation over time.

Another point to be addressed is that the findings of this study need to be understood in the context of online discussion forums. Although online forums hold a prominent position in providing an arena for sustained and timely public discussion among ordinary citizens (Delli Carpini et al., 2004; Hauben & Hauben, 1997; Sun et al., 2011; Wright & Street, 2007; Yun & Park, 2011), discussion about public affairs is also happening in other venues online such as blogs, chat rooms, news websites, and SNSs (Neuman et al., 2011). Considering that these discussion spaces are all different both functionally and structurally, caution is urged in generalizing results to other types of settings.

The interpretation of the findings related to the role of age and race should be done with care as well. The current study found that when individuals were situated in

the online forum, those who were older appeared to be more willing and likely to speak out. This result stands out since past studies reported that older adults tended to remain silent in offline interactions (e.g., Noelle-Neumann, 1974; Salmon & Rucinski, 1988). Still, the conclusion that older people feel freer to express opinions online or take advantage of the new discussion spaces cannot be drawn due to the limitation of the present data. Available evidence cannot entirely exclude the possibility that a young cohort who was more willing to speak out at the time of the previous studies (1970s and 1980s) has reached old age (i.e., a cohort effect). Regarding racial differences in opinion expression, both experiments consistently showed that racial minorities, compared to Whites, were more willing and likely to voice their views on the online forum. In this analysis, several racial groups were lumped together as 'non-Whites' and were considered in the aggregate because the sample size in the non-White racial groups was relatively small. However, this dichotomous comparison between Whites and non-Whites could mask any meaningful difference between racial groups.

Directions for Future Research

Against the background of these findings and limitations, several avenues for future research can be suggested. First, future work could more explicitly incorporate the distinctive qualities of online discussion contexts. On the explanatory side, evidence from this study implied that a person's fear of isolation trait, which has been central to the original spiral of silence argument, seemed to not adequately account for silence (or not speaking out) in the hostile online forum environment. Other mechanisms that better suit online discussion situations, such as fear of being doxed or fear of Internet

vigilantism, need to be proposed, and their possibility as underlying motives for silence should be tested with the development of relevant reliable measures. On the research design side, future research could consider the continuous nature of real-life online discussions and explore the role of individual characteristics and structural conditions in the long-term discussion dynamics. Longitudinal observation of individuals' engagement in public discussion on the online forum would further extend the understanding of the multi-phase deliberation process that might involve opinion expression, exchange, or change as well as silence.

Future studies could also pay more attention to the other structural conditions that may make a difference in individuals' opinion expression. This study opened up a new discussion about the impact of contextual features such as the size of the discussion group, the revelation of identity, and the perceived votes climate, but these factors represent only part of the diverse discussion forum conditions encountered online. Several widely-used or adaptable features – for instance, the presence of moderators (e.g., Slashdot), the option of sending private messages (e.g., Topix), the implementation of opinion polls (e.g., Debate.org), and the lack of an archive (e.g., 4chan) – could be examined for their contribution to people's talking in public. Much of the potential relationships between structural arrangements and speaking out on the online forum still remained unexplained and await further investigations.

Ordinary citizens' speaking-out intentions and behaviors in other types of online venues where individuals can voice their views would be a promising area for future research as well. While many of those online spaces are not designed for and specialized in civic discourse, inadvertent, lively, or serious discussion on public issues, indeed,

sometimes takes place there (boyd & Ellison, 2008; Brundidge, 2010; Kim, 2011; Neuman et al., 2011; Wojcieszak & Mutz, 2009). In particular, SNSs such as Facebook and Twitter are drawing attention as a platform for this kind of political discussion. Exploring individuals' genuine expression of personal opinions in these online settings would enable more in-depth and wider discussion about online discussion spaces as a public sphere.

Lastly, future research designs should take argument quality into account when analyzing what people wrote in online discussion situations. This is one of the few studies that assessed personal issue positions prior to the discussion and attempted to analyze the content of messages left (if any) to examine whether the comment broadly reflected a person's honest opinion. This investigation allowed for a closer look at individuals' speaking out in online discussions. However, admittedly, speaking out is not always desirable nor does it guarantee the quality of discussions; one can speak out his or her opinion online in an offensive or inflammatory way. Posts could also be nothing more than "mindless, juvenile commentary" (Neuman et al., 2011, p. 29). The quality of expressed opinions ranges widely. Some researchers argue that "the extent of rational speech in any particular political forum on the Internet [too] depends on . . . the structure of conversation, . . . some technically based system of collaborative moderation" (Neuman et al., 2011, p. 29), "design, and choice" (Wright & Street, 2007, p. 849). In this regard, examining the associations between structural arrangements and discursive quality would be a critical and necessary step forward from the current study.

Concluding Remarks

As one of the first studies that examined both internal or individual (i.e., personal characteristics) and external or situational (i.e., structural conditions) factors affecting individuals' speaking in public discussion online, this dissertation contributes to the better understanding of the democratic potential of online discussion forums. Some warn that online discussion spaces increase group polarization (Sunstein, 2004), cognitive homogeneity (Wellman, 2001), and the fragmentation and isolation of the public (Harbermas, 2006). The findings of this study, however, provided some supporting evidence for the hope that online discussion forums would create a favorable environment at least for public expression of personal opinion, which overcomes the physical and procedural constraints of traditional settings. The voices of people who tended not to speak out in face-to-face or offline interactions – such as those with high fear of isolation – could be heard in the online discussion forum. When they decided to participate in the discussion on the forum, most people expressed their true and honest views without making any adjustments even in the hostile opinion environment (whether speaking out would be positive for deliberation, of course, is yet another matter). The online discussions on the forum were likely to be filled with opinions from those who were involved in and knowledgeable about the issue. The large-scale public discussion is possible, but discussion group size did not bother people to speak out. A user-voting feature that most online forums implement these days had a possibility to facilitate the exchange of diverse viewpoints. Lastly, the result that full anonymity was preferred for opinion expression placed online forums in a more promising position than counterpart public forums offline.

Appendices

Appendix A

Thought Experiment Scenarios

You are now in the "same-sex marriage" topic section on an online discussion forum, *WeTalkAll.org*. At first glance, *WeTalkAll.org* looks like a typical online discussion forum. You see a "Post a New Message" button and posts others have already written. [**You recognize that 2,130 people are browsing this forum and that 679 comments have been left on this issue./ You recognize that 80 people are browsing this forum and that 39 comments have been left on this issue.**] You begin to look through the posts on the first page. [**They were written under pseudonyms./ They were written under users' real names. You also see user information such as gender, location, occupation, and email address.**] It is apparent as you are reading the 12 posts on the first page that almost everyone who posted disagrees with your opinion about allowing same-sex marriage to be legally recognized. That is, they seem to have a different opinion from you about whether same-sex marriage should be legally recognized. Of the 12 existing messages on the first page, only one is consistent with

your opinion. Next to each post is an icon with the number of 'thumbs up' each comment has been given by others on the forum. You notice that the comments you disagree with have received between 23 and 157 thumbs up. The post that you agree with has [**132 thumbs up./ received no thumbs up.**] [**It seems clear that you can leave a comment under a pseudonym and no personal information about you will be revealed on this online discussion forum./ It seems that you can leave a comment only under your name and other forum users can see your personal information as you can see theirs on this online discussion forum.**]

Appendix B

Collinearity Diagnostics

Table B.1 Collinearity Diagnostics for Individual Characteristics Variables (Thought Experiments)

	Collinearity statistics	
	Tolerance	VIF
Gender	.884	1.131
Age	.921	1.086
Race	.941	1.063
Education	.787	1.271
Income	.777	1.287
Issue involvement	.758	1.319
Issue knowledge	.738	1.354
Fear of isolation	.852	1.174

Table B.2 Collinearity Diagnostics for Individual Characteristics Variables (True Experiments)

	Collinearity statistics	
	Tolerance	VIF
Gender	.906	1.104
Age	.934	1.071
Race	.961	1.041

Education	.795	1.258
Income	.879	1.138
Issue involvement	.854	1.171
Issue knowledge	.780	1.282
Fear of isolation	.930	1.075

Appendix C

Different Dimensions of Fear of Isolation

Table C.1 Factor Loadings for Fear of Isolation (Thought Experiments)

Items	Factor loading	
	Factor 1	Factor 2
(a) I worry about being isolated if people disagree with me	-.028	**.785**
(b) I don't worry about other people avoiding me (reverse-coded)	-.006	**.487**
(c) I avoid telling other people what I think when there's a risk they'll avoid me if they knew my opinion	.089	**.782**
(d) I enjoy avoiding arguments	**.531**	.429
(e) Arguing over controversial issues improves my intelligence (reverse-coded)	**.816**	-.186
(f) I enjoy a good argument over a controversial issue (reverse-coded)	**.909**	-.088
(g) I try to avoid getting into arguments	**.772**	.260
Variance explained (%)	35.16	23.94

Note. Rotation method: Varimax with Kaiser normalization.

Table C.2 Factor Loadings for Fear of Isolation (True Experiments)

Items	Factor loading	
	Factor 1	Factor 2

(a) I worry about being isolated if people disagree with me	.015	**.878**
(b) I don't worry about other people avoiding me (reverse-coded)	-.048	**.452**
(c) I avoid telling other people what I think when there's a risk they'll avoid me if they knew my opinion	.197	**.815**
(d) I enjoy avoiding arguments	**.697**	.241
(e) Arguing over controversial issues improves my intelligence (reverse-coded)	**.814**	-.214
(f) I enjoy a good argument over a controversial issue (reverse-coded)	**.860**	-.070
(g) I try to avoid getting into arguments	**.798**	.188
Variance explained (%)	37.59	24.54

Note. Rotation method: Varimax with Kaiser normalization

Table C.3 Logistic Regression Analysis with Fear of Isolation Sub-constructs (Thought Experiments)

	Opinion expression			
	Intention		Behavior	
	B (S.E.)	OR (95% CI)	B (S.E.)	OR (95% CI)
Constant	1.286 (.990)	3.617	-.114 (1.028)	.893
Control variable				
Issue position (1=Favor)	.102 (.255)	1.108 (.672-1.826)	.202 (.266)	1.224 (.727-2.061)
Individual characteristics				

Gender (1=Female)	.184	1.202	-.249	.780
	(.240)	(.751-1.925)	(.250)	(.478-1.272)
Age	-.001	.999	-.001	.999
	(.009)	(.982-1.016)	(.009)	(.982-1.017)
Race (1=Non-White)	.620*	1.859	.867**	2.380
	(.305)	(1.022-3.381)	(.310)	(1.296-4.372)
Education	-.072	.931	-.024	.976
	(.120)	(.736-1.177)	(.126)	(.763-1.249)
Income	-.006	.994	-.050	.951
	(.048)	(.906-1.091)	(.050)	(.863-1.048)
Issue involvement	.147	1.159	.236*	1.266
	(.103)	(.948-1.417)	(.107)	(1.027-1.561)
Issue knowledge	.141	1.151	.195†	1.215
	(.096)	(.954-1.389)	(.101)	(.996-1.482)
Fear of being avoided	-.054	.948	-.040	.961
	(.040)	(.876-1.025)	(.042)	(.885-1.043)
Fear of arguing	-.129***	.879	-.105***	.900
	(.027)	(.833-.928)	(.028)	(.852-.951)
Structural conditions				
Size (1=Large)	.052	1.053	.029	1.030
	(.223)	(.680-1.632)	(.233)	(.652-1.627)
Identity revelation (1=Identified)	-.126	.881	-.417†	.659
	(.222)	(.570-1.362)	(.234)	(.416-1.043)
Votes climate (1=Favorable)	-.600**	.549	-.349	.706
	(.223)	(.354-.850)	(.233)	(.447-1.114)

†p <.1. *p <.05. **p <.01. ***p <.001.

Table C.4 Logistic Regression Analysis with Fear of Isolation Sub-constructs (True Experiments)

	Opinion expression			
	Intention		Behavior	
	B (S.E.)	OR (95% CI)	B (S.E.)	OR (95% CI)
Constant	-6.003*** (1.391)	.002	-5.948*** (1.421)	.003
Control variable				
Issue position (1=Favor)	-.422 (.325)	.656 (.346-1.240)	-.443 (.330)	.642 (.336-1.226)
Individual characteristics				
Gender (1=Female)	-.013 (.321)	.987 (.526-1.853)	-.102 (.327)	.903 (.476-1.715)

Age	.024*	1.024	.026*	1.027
	(.012)	(1.001-1.049)	(.012)	(1.002-1.051)
Race (1=Non-White)	.944*	2.570	1.020*	2.773
	(.396)	(1.182-5.586)	(.397)	(1.273-6.041)
Education	-.052	.950	-.033	.968
	(.145)	(.714-1.262)	(.149)	(.723-1.295)
Income	-.092	.912	-.083	.920
	(.061)	(.809-1.029)	(.062)	(.814-1.039)
Issue involvement	.174	1.191	.262*	1.299
	(.125)	(.932-1.520)	(.129)	(1.009-1.673)
Issue knowledge	.412**	1.510	.340**	1.404
	(.129)	(1.173-1.943)	(.130)	(1.088-1.812)
Fear of being avoided	.141**	1.152	.133**	1.143
	(.049)	(1.046-1.268)	(.050)	(1.035-1.261)
Fear of arguing	.024	1.024	.019	1.020
	(.033)	(.960-1.093)	(.034)	(.955-1.089)
Structural conditions				
Size (1=Large)	.406	1.500	.265	1.304
	(.302)	(.830-2.713)	(.307)	(.715-2.379)
Identity revelation (1=Identified)	-.570†	.566	-.659*	.518
	(.308)	(.309-1.034)	(.316)	(.278-.962)
Votes climate (1=Favorable)	.368	1.444	.327	1.387
	(.300)	(.830-2.600)	(.306)	(.761-2.529)

†$p < .1$. *$p < .05$. **$p < .01$. ***$p < .001$.

Appendix D

Additional Analyses: The Interaction of Individual Characteristics and Structural Conditions

Table D.1 Interaction of Individual Characteristics and Structural Conditions (Thought Experiments)

	Posting		
	B	S.E.	Odds ratio (95% CI)
Constant	-1.259*	.566	.284
Control variable			
Issue position (1=Favor)	.149	.284	1.161 (.666-2.024)
Individual characteristics			
Gender (1=Female)	.392	.521	1.481 (.533-4.110)
Age	.024	.019	1.024 (.987-1.063)
Race (1=Non-White)	2.144**	.726	8.531 (2.057-35.39)
Education	.073	.249	1.076 (.660-1.753)
Income	-.054	.106	.947 (.770-1.166)
Issue involvement	.290	.204	1.366 (.895-1.994)
Issue knowledge	.361†	.207	1.434 (.956-2.151)
Fear of isolation	-.330*	.351	.719 (.361-1.429)
Structural conditions			
Size (1=Large)	.145	.401	1.156 (.527-2.537)
Identity revelation (1=Identified)	.099	.404	1.104 (.500-2.435)

Votes climate (1=Favorable)	.195	.410	1.216 (.544-2.716)
Interactions			
Gender × Size	-.070	.526	.932 (.333-2.612)
× Identity revelation	-.627	.526	.534 (.190-1.499)
× Votes climate	-.664	.523	.515 (.185-1.436)
Age × Size	-.017	.020	.983 (.946-1.022)
× Identity revelation	.009	.020	1.009 (.970-1.049)
× Votes climate	-.045*	.020	.956 (.920-.994)
Race × Size	-.630	.679	.533 (.141-2.015)
× Identity revelation	-1.114	.702	.328 (.083-1.300)
× Votes climate	-.522	.692	.593 (.153-2.301)
Education × Size	.440	.269	1.553 (.916-2.631)
× Identity revelation	-.356	.268	.701 (.414-1.185)
× Votes climate	-.320	.269	.726 (.429-1.230)
Income × Size	-.197†	.107	.821 (.666-1.012)
× Identity revelation	.021	.108	1.021 (.826-1.263)
× Votes climate	.158	.107	1.171 (.950-1.444)
Issue involvement × Size	-.008	.205	.992 (.664-1.482)
× Identity revelation	-.107	.209	.899 (.597-1.353)
× Votes climate	.083	.206	1.087 (.726-1.627)
Issue knowledge × Size	-.009	.214	.991 (.651-1.509)
× Identity revelation	-.021	.219	.979 (.638-1.505)

× Votes climate	-.273	.220	.761 (.495-1.172)
Fear of isolation × Size	-.330	.339	.719 (.370-1.397)
× Identity revelation	-.399	.342	.671 (.343-1.313)
× Votes climate	.002	.342	1.002 (.512-1.960)

Note. All continuous variables were centered before the interaction terms were created. Numbers in parentheses represent 95% confidence intervals.
$^{\dagger}p < .1$. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

Table D.2 Interaction of Individual Characteristics and Structural Conditions (True Experiments)

	Posting		
	B	S.E.	Odds ratio (95% CI)
Constant	-5.795	1.418	.003
Control variable			
Issue position (1=Favor)	-.350	.378	.704 (.336-1.478)
Individual characteristics			
Gender (1=Female)	.144	.715	1.154 (.284-4.689)
Age	.033	.027	1.033 (.979-1.090)
Race (1=Non-White)	.872	.905	2.392 (.406-14.102)
Education	-.895*	.405	.409 (.185-.904)
Income	-.151	.147	.860 (.645-1.147)
Issue involvement	-.154	.260	.857 (.515-1.427)
Issue knowledge	.830**	.299	2.294 (1.277-4.119)

Fear of isolation	.303	.370	.738 (.358-1.524)
Structural conditions			
Size (1=Large)	1.149†	.625	3.155 (.927-10.740)
Identity revelation (1=Identified)	-.991	.629	.371 (.108-1.272)
Votes climate (1=Favorable)	.512	.566	1.668 (.550-5.061)
Interactions			
Gender × Size	-.772	.727	.462 (.111-1.920)
× Identity revelation	.398	.739	1.489 (.350-6.339)
× Votes climate	-.218	.706	.804 (.202-3.207)
Age × Size	-.045†	.027	.956 (.907-1.008)
× Identity revelation	-.012	.026	.988 (.938-1.040)
× Votes climate	.051†	.026	1.052 (1.000-1.107)
Race × Size	.384	.974	1.468 (.217-9.908)
× Identity revelation	.293	.950	1.340 (.208-8.624)
× Votes climate	-.421	.881	.657 (.117-3.693)
Education × Size	.314	.374	1.369 (.658-2.847)
× Identity revelation	.721†	.373	2.056 (.990-4.269)
× Votes climate	.517	.374	1.677 (.805-3.492)
Income × Size	.204	.143	1.226 (.925-1.624)
× Identity revelation	-.012	.150	.988 (.736-1.326)
× Votes climate	-.116	.140	.890 (.676-1.172)
Issue involvement × Size	.250	.270	1.284 (.757-2.180)
× Identity revelation	.052	.276	1.054 (.614-1.809)

× Votes climate	.400	.272	1.492 (.875-2.544)
Issue knowledge × Size	-.606*	.295	.545 (.306-.973)
× Identity revelation	-.084	.291	.920 (.520-1.628)
× Votes climate	-.297	.275	.743 (.433-1.273)
Fear of isolation × Size	-.176	.397	.839 (.386-1.824)
× Identity revelation	1.199**	.443	3.317 (1.392-7.906)
× Votes climate	.686†	.391	1.985 (.923-4.271)

Note. All continuous variables were centered before the interaction terms were created. Numbers in parentheses represent 95% confidence intervals.
†$p < .1$. *$p < .05$. **$p < .01$. ***$p < .001$.

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