Monitoring and Expressing Opinions on Social Networking Sites –
Empirical Investigations based on the Spiral of Silence Theory

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Study 1

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Studies 2 & 3

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Study 5

Neubaum, G., (2015, July). *How different audiences in social media affect people's outspokenness on controversial issues*. Poster presented at the international summer school "Living with Media" at the University of Cologne, Germany.

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Abstract

Social networking technologies such as Facebook are increasingly used for the exchange of information and opinions on politically and civically relevant issues. Drawing on the spiral of silence theory, this dissertation investigated the psychological mechanisms leading to the formation of opinion climates on social networking platforms. Specifically, this work focused on (a) whether and how users monitor other people's opinions through these technologies and (b) under which circumstances they are willing to contribute to these opinion climates by voicing their personal viewpoint on these platforms.

These two processes were addressed by five empirical studies. Study 1 examined the effects of different opinion cues (available on Facebook) on people's inferences about public opinion. Results of a two-session experiment showed that individuals' fear of isolation sharpened their attention toward user-generated comments, which, in turn, affected recipients' public opinion perceptions. The latter influenced subjects' opinions and their willingness to participate in social media discussions. Study 2 explored the situational manifestations of people's fear of isolation and environmental variables as influence factors of people's outspokenness. Results from qualitative interviews revealed a variety of sanctions people expect from others when voicing a minority opinion and a series of factors such as the size or the relationship to the audience which could exert an impact on one's willingness to express their opinion. Study 3 further investigated the expectations of sanctions and their explanatory value regarding people's communication behavior in different situations. Findings from an experiment demonstrated that the expectation of being personally attacked can explain why people are more inclined to express a minority opinion in offline rather than in online communication settings. Study 4 tested whether the publicness of social networking platforms in terms of the size and relational diversity of the audience affect people's outspokenness. Results from a cross-cultural experiment showed that in Germany, a higher level of publicness of a controversial discussion on Facebook reduced people's likelihood to express their viewpoint. This pattern, however, was not found in Singapore. Study 5 analyzed whether the relationship to the audience determines people's likelihood to express their opinion on Facebook. Findings from an experiment revealed no effects of relational closeness to the audience on outspokenness. Instead, people's certainty about the prevailing opinion climate among the audience increased their willingness to voice their opinion on Facebook.

This collection of studies extends the previous state of knowledge by testing the validity of the spiral of silence theory but also pointing to potential boundaries thereof in the context of increasingly popular communication environments.

Zusammenfassung

Soziale Netzwerktechnologien wie Facebook werden immer mehr zum Informations- und Meinungsaustausch hinsichtlich politisch und gesellschaftlich relevanter Themen genutzt. Vor diesem Hintergrund untersucht die vorliegende Dissertation auf Basis der Theorie der Schweigespirale die psychologischen Mechanismen, die zur Bildung von Meinungsklimata auf sozialen Netzwerkplattformen führen. Dabei betrachtet diese Arbeit, (a) ob und wie Nutzer/innen anhand dieser Technologien die Meinungen anderer Menschen wahrnehmen und (b) unter welchen Umständen sie bereit sind, zu diesem Meinungsklima beizutragen und ihre Meinung auf diesen Plattformen zu äußern.

Diese zwei Prozesse wurden mit Hilfe von fünf empirischen Studien analysiert. Studie 1 untersuchte die Wirkungen von verschiedenen Meinungs-Hinweisreizen (auf Facebook) auf die individuelle Wahrnehmung der öffentlichen Meinung. Ein zweiwelliges Experiment zeigte, dass die dispositionelle Isolationsfurcht die Aufmerksamkeit auf nutzergenerierte Kommentare erhöhte, welche wiederum die Wahrnehmungen des öffentlichen Meinungsklimas beeinflussten. Diese wirkten sich auf die persönliche Meinung der Rezipient/inn/en sowie deren Bereitschaft, sich an dieser thematischen Diskussion auf Facebook zu beteiligen, aus. Studie 2 fokussierte die situativen Erscheinungsformen der Isolationsfurcht und Umgebungsvariablen als Einflussfaktoren der Redebereitschaft. Anhand der Ergebnisse einer qualitativen Interview-Studie ließen sich diverse Sanktionen identifizieren, die Menschen von ihrer Umgebung erwarten, wenn sie eine Minderheitsmeinung kundtun würden, sowie eine Reihe von Faktoren, etwa die Größe oder die Beziehung zum Publikum, die Einfluss auf die Bereitschaft zur Meinungsäußerung nehmen könnten. Studie 3 analysierte weiterhin die Erklärungskraft der erwarteten Sanktionen auf das Kommunikationsverhalten in unterschiedlichen Situationen. Ein Experiment zeigte, dass die Erwartung, von anderen persönlich attackiert zu werden, einen Grund darstellt, warum Menschen eher dazu bereit sind, eine Minderheitsmeinung in der Offline- als in der Online-Kommunikation zu äußern. Studie 4 testete, ob die Öffentlichkeit auf sozialen Netzwerkseiten im Sinne der Größe und Diversität des Publikums die Redebereitschaft von den Nutzer/inne/n beeinflusst. Die Ergebnisse eines kulturvergleichenden Experiments legten offen, dass der höhere Öffentlichkeitsgrad einer kontroversen Diskussion auf Facebook – in Deutschland – die Wahrscheinlichkeit senkt, dass Menschen bei dieser Diskussion ihren Standpunkt zum Thema äußern. Dieses Muster konnte in Singapur nicht festgestellt werden. Studie 5 untersuchte, ob die Beziehung zum Publikum die Redebereitschaft zu einem kontroversen Thema beeinflussen kann. Ein Experiment fand jedoch keinen Effekt der

Beziehungsnähe zum Publikum auf die Bereitwilligkeit von Nutzer/innen, ihre Meinung zum Thema auf Facebook kundzutun. Stattdessen erwies sich die verspürte Sicherheit über das wahrgenommene Meinungsklima unter dem entsprechenden Publikum als entscheidend: Je höher diese war, desto eher waren Menschen bereit, ihre Meinung auf Facebook kundzutun.

Diese Studienreihe erweitert den aktuellen Forschungsstand, indem sie die Gültigkeit der Theorie der Schweigespirale, aber auch deren Grenzen in zunehmend beliebten Kommunikationsumgebungen aufzeigt.

I INTRODUCTION

Social media technologies have become ideal venues for users to engage in discussions about public issues: On social networking services such as Facebook or Twitter, people can easily express their opinions on politically and civically relevant topics to a large group of other people as well as assess the opinion distributions on these topics (Bode, Vraga, Borah, & Shah, 2014; Gil de Zúñiga, Molyneux, & Zheng, 2014; Vaccari et al., 2015; Walther & Jang, 2012). These platforms offer a series of features allowing people to pass along, recommend, or comment on politically relevant information and raise the awareness of a networked audience more easily than ever before (Messing & Westwood, 2014). According to Pew research, 86% of Facebook users and 77% of Twitter users get in touch with online news and political content that is often forwarded or posted by their networked friends through these technologies (Gottfried, 2014; Rainie & Smith, 2012). This development, on the one hand, may foster public deliberation and political learning as every user has the same chances to publicly voice their opinion on social issues and learn how other people argue about and judge a subject. On the other hand, there is a risk that (nonrepresentative) opinion expressions in large-scale online discussions convey distorted pictures of public opinion to users who might adapt their attitudes and behaviors to this alleged opinion climate. These opportunities and risks raise the question of whether and how people perceive opinion climates and under which circumstances they participate in these discussions using these technologies. In this regard, it seems plausible to ask how long-standing theoretical propositions focusing on the dynamics of public opinion do justice to these new ways of gauging and expressing opinions in mass-interpersonal contexts as provided by social media.

For more than four decades, the spiral of silence theory (Noelle-Neumann, 1974, 1993) has guided scholarship interested in the reciprocal effects of the individual's opinion expression behavior and the formation of public opinion. Following this theory, human beings permanently observe their social environment in order to determine opinion trends among people surrounding them. Based on the prevailing opinion climate, people decide whether to contribute to a discussion or not: Individuals voice their opinion when they know that their opinion is socially acceptable and withhold their view when they assume that their opinion might be deviant from the majority. In the long run, this silencing mechanism is thought to increase the visibility of the alleged majority faction, while the supposed minority faction loses ground in the public spot. The social psychological explanation for this mechanism was provided by human beings' fear of isolation, meaning that people's behavior is driven by the wish to not be rejected by their social surrounding. In the context of a controversial

discussion, a person would rather keep silent than contradict the prevailing majority who could punish him/her for being deviant.

While these assumptions have been explored, criticized, and extended by an extensive body of research focusing on face-to-face communication (see Glynn, Hayes, & Shanahan, 1997; Glynn & Huge, 2014; Hayes, Glynn, & Shanahan, 2005a; Matthes, Morrison, & Schemer, 2010; Salmon & Kline, 1985; Scheufele & Moy, 2000), the examination of these predictions in online realms is still in its infancy. Testing the validity of the spiral of silence theory in these new communication environments becomes even more relevant when considering that social networking technologies such as Facebook combine both sources that Noelle-Neumann (1993) posited to affect the individual's inferences about public opinion: mass media (e.g., online news content integrated on the Facebook news feed) and interpersonal communication (e.g., comments on this article posted by other users or even by Facebook friends; cf. Schulz & Rössler, 2012). The juxtaposition of these communication sources, therefore, may offer an appropriate forum for users to easily make inferences about how the "general public" evaluates a public issue. Despite the great theoretical potential of these technologies to convey pictures of public opinion to users, systematic analyses on how people make use of different opinion cues presented side by side on social networking platforms are yet to be conducted.

The opinion climates people encounter on these platforms can only exist under the condition that other users disclose their personal opinion therein. While expressing one's opinion on a controversial issue on Facebook or Twitter is only a few clicks away, there may be several factors that prevent users from directly becoming outspoken in these technology-based social spheres. Although the spiral of silence theory (Noelle-Neumann, 1993) would predict that people would only voice their viewpoint if they knew that their opinion is in agreement with the majority, initial examinations testing the existence of a silencing mechanism in social media communication offered inconclusive findings: Some empirical studies revealed a significant relationship between perceived public support for one's opinion and outspokenness on social media (Hampton et al., 2014; Lee & Kim, 2014; Miyata, Yamamoto, & Ogawa, 2015), whereas others did not find any (Gearhart & Zhang, 2014; Kwon, Moon, & Stefanone, 2015). This discrepant state of knowledge prompts one to analyze the particular circumstances under which people may (or not) be sensitive to the opinion climate when expressing their opinion through social media. Given that online networking platforms function as social spheres with an unprecedented quality, for instance, in terms of the size or the composition of the audience (including close friends, acquaintances, co-

workers but also strangers at the same time), it seems conceivable that these environmental factors intervene in the silencing process, requiring new explanations for people's communication behavior (cf. Metzger, 2009). Following this line, it seems a pressing need for research to not only assess the validity but also theorize potential boundaries of the spiral of silence theory in these new communication channels.

In light of these research demands, the present dissertation aims to advance the theoretical and empirical state of knowledge on the psychological processes operating when people monitor opinion climates and express their opinions on social networking sites (SNS). To this end, this work first reviews literature on the Internet and specifically social media as venues for public deliberation in the sense of enabling citizens to exchange information, ideas, and arguments about public affairs (Chapter 1) and subsequently outlines a social psychological view on the formation of public opinion (Chapter 2) with a special focus on the spiral of silence theory. Based on a synthesis of these different lines of inquiry (Chapter 3), a research model is proposed that is intended to systematically constitute the mechanisms behind people monitoring and expressing opinions on SNS (Chapter 4). To investigate the predictions of this thesis's guiding model, five empirical studies are presented. The first study experimentally addresses the process of monitoring opinion climates on the social networking service Facebook and focuses on the effect of different opinion cues on this platform on perceptions of public opinion and how those, in turn, affect people's opinions and communication behavior (Chapter 5). The second and third study shift the attention to the process of expressing opinions and investigate qualitatively (Study 2) and experimentally (Study 3) environmental factors as well as manifestations of the fear of isolation exerting an impact on people's outspokenness (Chapter 6). Study 4 builds upon knowledge gathered by the previous studies and focuses on the influence of the publicness on SNS and its influence on the silencing mechanisms based on a cross-cultural experiment (Chapter 7). The fifth study elaborates on the relationship to the audience on SNS and tests experimentally its influence on people's likelihood of opinion expression on the platform Facebook (Chapter 8). These studies' empirical results are summarized in light of the research model's predictions (Chapter 9), leading to theoretical implications in the context of SNS and regarding the spiral of silence theory (Chapter 10). Subsequently, general limitations of the present dissertation are outlined (Chapter 11), giving impetus for future research (Chapter 12). After pointing to practical implications of the current evidence (Chapter 13), a final conclusion is drawn (Chapter 14).

II THEORETICAL FRAMEWORK

1 The Informational and Discursive Use of the Internet

This chapter first introduces the state of the art concerning how the Internet and, contemporarily, social media serve as channels for the distribution of politically and socially relevant information as well as for discussions on public issues among citizens. The current state of research is outlined in the context of the omnipresent discussion about the deliberative potential of online communication. These descriptions should help to interpret the uses and effects of contemporary Internet technologies in the light of potential societal consequences. Along these lines, pertinent research demands are derived leading to the present research interest.

1.1 Early Years of the Internet as a Forum for Public Deliberation

The idea that online communication may play a critical part in public opinion formation, in the sense of enabling public deliberation among citizens, is not new. As the Internet became more and more available in the 1990s, both the mass media and the scientific community started to evaluate this "new" communication technology as a potential public agora enabling lively political discussions and enhancing democratic processes (see Browning, 1996; Corrado & Firestone, 1996; Rheingold, 1993; Rogers, Collins-Jarvis, & Schmitz, 1994; Schneider, 1996). Optimistic and skeptical views have been voiced in this regard, resulting in a debate that is still on-going to date (Lee, Choi, Kim, & Kim, 2014; Papacharissi, 2008; Rowe, 2015; You, Lee, Kang, & Go, 2015). In the following, both lines of reasoning are reviewed in order to provide an understanding of how the informational and discursive use of the Internet was estimated in the pre-social media era.

Scholars holding an optimistic viewpoint ("utopian vision;" cf. Papacharissi, 2008) have elaborated on how the use of computer networks generally allows information dissemination overcoming geographical and time boundaries. The simplified and quicker flow of, for instance, governmental or journalistic information has been thought to enable Internet users to become better informed citizens, which is a prerequisite for a healthy democratic system (Bimber, 1998; Hacker & van Dijk, 2000). Besides regarding the Internet as a provider of civically relevant information, it has been proposed that Internet-based technologies facilitate political discussions among citizens as well as between citizens and the government

(Dahlgren, 2005; Tsagarousianou, 1999). One pilot project revealing the deliberative potential of interactive communication systems was the Public Electronic Network (PEN) in Santa Monica, CA (Rogers et al., 1994; Schmitz, Rogers, Phillips, & Paschal, 1995). PEN was an electronic system including e-mail and discussion groups which connected the municipal government with residents who logged on to the system via public terminals or private computers. Through this system, residents of Santa Monica were invited to discuss local political topics that were of current relevance. One particularity here was the public availability of PEN which – theoretically – created an equality of access to political discussions, allowing people from different social groups (including information-disadvantaged groups such as the homeless) to participate. The political discourse through this system resulted not only in the increased mutual understanding among citizens of different social groups but also in civic projects which were intended to resolve issues of unemployment and homelessness at that time. As shown by the example of PEN in local terms, Internet-based technologies are supposed to connect people with different (cultural) backgrounds who might enrich each other's political and societal views (Papacharissi, 2002). Moreover, discourse-enabling technologies were even proposed to create opportunities for politically inactive people to engage in civic activities, for instance, by inviting them electronically to participate in viral campaigns (Delli Carpini, 2000; Krueger, 2002). To sum up, increased connectivity among individuals with diverse opinions and backgrounds has been presented as one reason why the Internet could foster discursive deliberation (see Stromer-Galley, 2003).

Another line of thought referred to the lack of social context cues on the Internet (Dubrovsky, Kiesler, & Sethna, 1991; Price, 2009; Rains, 2007; Siegel, Dubrovsky, Kiesler, & McGuire, 1986; Sproull & Kiesler, 1986) and proposed that the absence of social context cues, such as the physical environment or nonverbal responses, equalizes the status of the discussants and thus lowers the social barriers of the discussion. According to the so-called equalization phenomenon (Dubrovsky et al., 1991), the mediated nature of online communication and the related physical and discursive anonymity (meaning that participants' identities and physical behaviors are mostly not visible to each other) mitigate social differences empowering, for instance, low-status discussants to contribute to a discourse without fear of social retribution (Rains, 2007; Scott, 1999). It was suggested that these characteristics make computer-mediated group communication less inhibited and potential group decisions more democratic (Rains, 2005; Siegel et al., 1986). Moreover, it was proposed that people feel comfortable discussing topics via the Internet as the text-based

communication gives them the opportunity to review and edit their messages before posting which could stimulate a more reflective exchange of opinions (Klein, 1999; Price, 2009; Stromer-Galley, 2003).

Given that online environments seem to facilitate interpersonal and group discussions and that political conversations among citizens have been described as a pivotal component of democracy (cf. Tocqueville, 1835/2007), scholars had high expectations of the Internet as an instrument that would revitalize democratic principles (Dahlberg, 2001a; Debatin, 2008; Klein, 1999; Papacharissi, 2008; Rheingold, 1993).

The enthusiasm regarding the potential "digital democracy" or "cyber-democracy," however, was somewhat tempered by skeptical viewpoints ("dystopian visions;" cf. Papacharissi, 2008). One critical approach was based on the idea of the *digital divide* (van Dijk, 2000; van Dijk & Hacker, 2003) pointing to inequalities in access to the Internet and the lack of knowledge and skills in Internet use, including the ability to reflect upon the quality of information and discourses therein. In this regard, it was suggested that the potential public deliberation on the Internet suffers from the fact that for some people this medium is not available (Norris, 2001; Wilhelm, 2000). This not only impedes democratic participation through Internet technologies but also provokes concerns about a growing gap between the information rich and poor within and between countries (Norris, 2000). At this point, it should be noted that some regimes deliberately restrict access to the Internet or at least to some specific online platforms; similarly some governments censor content available on the Internet (Akgül & Kırlıdoğ, 2015; Rød & Weidmann, 2015), so that reasons for the digital divide may lie not only in the technological infrastructure but also in the political context of a country.

Based on empirical evidence, scholars have also claimed that there are *inequalities in discursive participation* on the Internet (Hill & Hughes, 1998). Accordingly, politically or civically relevant discourses are dominated by a minority of users, while the vast majority consists of passive "lurkers" who merely read but do not contribute to the discussion. This has raised questions of how representative online discourses are and how ideologically homogeneous this active minority is (Davis, 1999). Following this line of thought, the *fragmentation* hypothesis was posited (Sunstein, 2001, 2007), stating that people can use the Internet very selectively and, therefore, "filter" information, opinions and discussion forums according to their pre-existing viewpoints (Bennett & Iyengar, 2008; Prior, 2007). This is believed to lead to a fragmented public sphere wherein people build communities with like-minded others, exchanging homogeneous, but avoiding opposing, ideas. According to Sunstein (2001), social fragmentation is a "breeding ground for polarization, and potentially

dangerous for both democracy and social peace" (p. 67). Therefore, the absence of challenging points of view, together with a homogeneous deliberation is thought to lead individuals to adopt more extreme views than they had before. This alarming depiction of Internet communication was accompanied by empirical works indicating that opinion extremism is associated with exposure to like-minded online discussion forums (see e.g. Wojcieszak, 2010). Besides criticism scrutinizing the causality between opinion extremism and online communication with homogeneous groups, the fragmentation view has met with soothing claims stating that on the Internet people often get *incidentally* confronted with dissimilar opinions (Wojcieszak & Mutz, 2009). From a normative point of view, it has been discussed that the formation of like-minded groups is not harmful for democracy per se, as the existence of these groups can foster the general establishment of opinion diversity in society leading to more considerate public debates (Dahlberg, 2007).

Given this debate on the democratic potential of computer-mediated communication (CMC), an extensive line of empirical research has examined the extent to which Internet communication can fulfil deliberative ideals (see Janssen & Kies, 2005; Min, 2007). Building on the Habermasian public sphere theory (see Chapter 2.1), Schneider (1996, 1997) outlined four normative dimensions which are necessary to attain an idealized democratic discourse: *equality* (i.e., equal distribution of messages among discussants), *diversity* (i.e., range of conversational issues discussed in relation to the main topic), *reciprocity* (i.e., extent to which discussants respond or relate to each other) and *quality* (i.e., tendency of discussants to stay "on-topic"). Based on a content analysis of a Usenet newsgroup about abortion, he evaluated how each of these dimensions is manifested in an online discussion. Results showed that while the newsgroup on abortion was rated high in diversity and reciprocity, it had deficits in equality and quality. In other words, the discourse comprised many conversational issues and many interactions among discussants; however, the majority of messages (80%) were posted by a minority of people (5%) who, furthermore, were less likely to contribute on-topic. In an experiment, Jankowski and van Selm (2000) provided similar results, demonstrating that a small handful of discussants in an online forum (about the local political agenda) generated the majority of the contributions. Further studies supported the pattern of unequal participation rates (Davis, 1999; Hill & Hughes, 1998; see Graham & Wright, 2014).

Another normative instrument to evaluate the deliberative potential of online discussions has been proposed with the measurement of *communicative rationality* in the sense of whether discussants offer a reasoned argumentation to support their claims (Cappella, Price, & Nir, 2002; Graham & Witschge, 2003; Steenbergen, Bächtiger, Spörndli, & Steiner,

2003; Stromer-Galley, 2007). Corresponding studies revealed that those who participate more often in online discussions are more prone to provide relevant reasons justifying their opinion (Cappella et al., 2002). Their well-reasoned contributions, however, were not always on the topic that was supposed to be discussed (Stromer-Galley, 2007).

As a further deliberative ideal, the *civility* of online discussions, defined as "collective politeness" (Papacharissi, 2004, p. 267), was also subject to empirical research. Pioneer studies on discursive deliberation on the Internet had already observed that the uninhibited nature of online exchanges of opinions also included socially deviant and inflammatory behaviors among discussants and those were encountered significantly more often in CMC compared with face-to-face communication (Dubrovsky et al., 1991; Schmitz et al., 1995; Siegel et al., 1986; Sproull & Kiesler, 1986). This phenomenon often referred to as "flaming" is thought to impede an egalitarian deliberation as observing an offensive discourse might intimidate people to join the discussion (Dahlberg, 2001b). While Hill and Hughes (1998) found that 39% of discussions on Usenet and 32% of debates via AOL chat contained flaming behavior, Papacharissi (2004) revealed that 22% of messages in politically-oriented Usenet newsgroups were impolite (i.e., including impulsive and thoughtless remarks) and 14.2% were uncivil (i.e., messages including stereotypes and/or threats to democracy or the individual's rights). According to the author, the latter particularly limits the deliberative potential of online discourses, although she concludes that "[m]ost Usenet discussants managed to express their political viewpoints in a civil and polite manner in the discussion groups studied" (pp. 276–277).

Taken together, one of the principal questions that research has dealt with in order to evaluate the informational and discursive use of the Internet was: To what extent do Internet-based communication channels foster deliberative processes in societies? The debate outlined above does not give a clear answer to this question. There are many criteria that could be instrumental in estimating the deliberative potential of online communication (see Janssen & Kies, 2005) – depending on which criterion is given more importance, different empirical answers will be given. As already suggested by Papacharissi (2002), the fact that Internet-based communication offers new opportunities to inform and participate, does not mean that human beings use these channels the way normative ideals would supposed them to. While some of the opportunities and risks described in this chapter might appear old-fashioned and attributable to the technological context back then, some of them are still of high relevance (see e.g. Hilbert, 2015, for the omnipresence of the digital divide). The lines of research presented in this chapter may allow the conclusion that it is too simplistic to talk about the

deliberative nature of the "Internet" in general (Metzger, 2009; Walther, Gay, & Hancock, 2005). One important demand for current research, and so it is for this dissertation, is to identify conditions and circumstances under which democratic information and participation processes are stimulated or hindered on the Internet. Therefore, differentiated knowledge about specific Internet platforms, their users and corresponding usage patterns is necessary to advance this field of research. The challenge here is to make claims that do justice to the complexity of contemporary communication technologies and, at the same time, identify general communication patterns that make it possible to derive theoretical principles. The following chapter, therefore, introduces the generation of Internet technologies that are of interest in the present work which have been termed *social media*, *Web 2.0* or *participatory websites*. In this regard, common characteristics of these online communication systems and how people exchange information and opinions through these media are presented.

1.2 Characterizing Social Media as a Venue for Information and Discussion

The emergence of social media on the Internet represents a paradigm shift in online communication in which Internet users have gained new opportunities for consuming, exchanging, and creating information. Before the concept of social media was established, O'Reilly (2005; see also O'Reilly & Battelle, 2009) popularized Web 2.0 as an umbrella term for Internet technologies that combined diverse features that were previously offered by individual online platforms. Web 2.0, therefore, refers less to a new version of the World Wide Web but more to a convergence of different technical features that were already available (Walther & Jang, 2012). From a social science perspective, the most important evolutions accompanying the emergence of Web 2.0 technologies are the lower barriers for *networking* among users and the technical facilitation for providing *user-generated content* (OECD, 2007; Rainie & Wellmann, 2012). These two developments resulted in a stronger participatory culture which increased the social nature of Internet technologies and coined the popular term "social media." Examples of social media technologies are weblogs, microblogging services, social networking sites, video-sharing sites, and wikis. In the following, the characteristics of three of the most popular social media platforms (cf. Alexa, 2016) are briefly presented:

Social networking site: Facebook

Launched in 2004, Facebook today is the most popular online technology after the search engine Google (cf. Alexa, 2016). Worldwide 1.01 billion people are active on Facebook on a daily basis (Facebook, 2016). Meeting the definition criteria of social networking sites (cf. Ellison & boyd, 2013), Facebook is a web-based service providing a personal profile for every user which allows him/her to connect to and exchange content with other users. The three core elements of this platform are the users' personal profile, the user's list of network "friends," and the streams of user-generated content (cf. Ellison & Vitak, 2015). On their personal profiles, users are asked to disclose their names, date of birth, personal pictures, profession, interests, and hobbies, political affiliation and further personal information. The platform policies require users to register on Facebook with their real identity (i.e., real name), which seems to be widely followed by users (Taddicken, 2014; Zhao, Grasmuck, & Martin, 2008). One part of the profile is the list of connections people have on this platform. People's Facebook network mostly consists of people they know from offline communication in the sense of close friends, acquaintances, co-workers, and/or family members (Ellison & Vitak, 2015). With these people, users are able to exchange information via many different channels: (a) via messages including two or more people on a private channel; (b) in a closed group of people that is mostly devoted to a specific topic; (c) through postings on one's or someone else's "wall" which usually reaches a larger audience, for instance, one's whole network or even the general public (i.e., every Internet user). Once users become Facebook friends, they automatically subscribe to each other's channels (unless indicated otherwise), meaning that person A gets notified when person B posts a status update (messages on one's wall), "likes," comments on, or shares other people's messages. These notifications are integrated in a continuously updated stream called news feed which serves as a personal Facebook home page appearing after logging on to this platform. On this news feed, people not only receive interpersonal information about their Facebook connections but also notifications about updates on Facebook channels which users have subscribed to before (such as the Facebook channel of the *New York Times*; cf. Messing & Westwood, 2014).

Video sharing platform: YouTube

YouTube was founded in 2005 and today counts more than 1 billion users (YouTube, 2016). Right behind Google and Facebook, YouTube is the third most accessed online platform worldwide (Alexa, 2016). On this platform, users are able to view, upload, and share videos of all genres. Moreover, users are able to comment on and rate their own or other

people's videos. In contrast to Facebook, it is not necessary to log in to YouTube to use the video-sharing service and it is not part of the policy to register with one's real name. On YouTube, users are also able to subscribe to someone else's channel, but one does not get notified in the event of others uploading or commenting on a video (Halpern & Gibbs, 2013). In line with typical characteristics of social media technologies, main messages (in the case of YouTube: a video) are presented in juxtaposition with peer comments and peer ratings, so that recipients can also see how others may evaluate this video (Walther, DeAndrea, Kim, & Anthony, 2010).

Microblogging service: Twitter

The Twitter service was established in 2006 and today has 320 million active users monthly (Twitter, 2016). The main concept of this platform is to allow the exchange of short messages called "tweets" (with a maximum of 140 characters). Besides posting plain text, Twitter enables users to integrate pictures, videos, and URLs in their tweets. Every Internet user can read the tweets on someone else's Twitter channel (unless the user has restricted visibility), however, only registered users can post tweets and comment on other users' tweets. Connecting on Twitter is possible by "following" someone else, meaning that one gets notified in the event that this person posts a tweet. Every Twitter channel, therefore, consists of tweets, the follower list (people who are following this channel), and the following list (people who are followed by this channel). What has become very characteristic of Twitter is a particular keywording and tagging culture. For example, hashtags which are a tag consisting of the hash character in front of an expression or sentence which enables users to assign a message to a specific topic. The use of hashtags is also possible on other social networking platforms such as Facebook, allowing users to find all messages that are devoted to a particular issue on this platform and, therefore, create discursive clusters (Bode, Hanna, Yang, & Shah, 2015).

What all social media types have in common is that they allow users to connect with each other, to collaborate, and to exchange messages, hyperlinks, multimedia material (texts, videos, music, pictures, etc.), and personal information in a technically easy manner. The combination of these opportunities not only increases the *amount of information* but also modifies the *quality of information* that is accessible to social media users: Thus, information which is spread all through a network does not necessarily have to be provided by professionals (such as journalists) but can also be generated or commented on by a group of

citizens (cf. "wisdom of the crowd" or "collective intelligence;" O'Reilly, 2005) or by a private individual. The fact that peer-to-peer communication can now have the same reach as mass media has been described as a convergence of mass and interpersonal communication channels (Fogg, 2008; Metzger, 2009; Walther, Carr, et al., 2010). With this development, the Internet users' roles are twofold: They have become creators and curators of media content and, at the same time, recipients of peer messages or messages from mass media sources (e.g., online news sites) that are accompanied by voices from peers (who can be either friends, acquaintances, or strangers).

As this dissertation will primarily focus on social networking sites as a particular type of social media, it is important to define this specific type. In this context, Ellison and boyd (2013) offered the following definition:

> A social network site is a *networked communication platform* in which participants 1)
> have *uniquely identifiable profiles* that consist of user-supplied content, content
> provided by other users, and/or system-level data; 2) can *publicly articulate*
> *connections* that can be viewed and traversed by others; and 3) can consume, produce,
> and/or interact with *streams of user-generated content* provided by their connections
> on the site. (p. 158)

This definition indicates that SNS comprise characteristics typically ascribed to social media such as the possibility for users to generate content; still, it accentuates (a) the importance of a dynamic profile that can be attributed to a person or an institution as well as (b) the visibility of interpersonal connections and the content people share within the network. Facebook but also further services such as Instagram (a photo- and video-sharing platform), Pinterest (a photo-sharing website), LinkedIn (a business networking service) as well as the microblogging services Sina Weibo and Twitter can be labeled as social networking sites based on this definition.

Confronted with the new form of mass interpersonal communication provided by these services, initial research has raised the question of whether social networking platforms not only serve as venues for interpersonal relationship maintenance but also as a means for information, opinion expression, and participation in the context of political and societal affairs. In the following, it is summarized how social media have been found to serve as facilitators of political information and instruments for political dialogue.

1.2.1 Social Media as a Source of Political and Societal Information

According to representative surveys among populations in Western countries such as the United States or Germany, television is still the primary source of political information (Bernhard, Dohle, & Vowe, 2014; Smith, 2011). However, for younger people especially, the Internet has become an important venue to gather political and civically relevant information, even more important than television, newspapers and radio (BITKOM, 2014). When German respondents aged 12 to 22 were asked for the most relevant online source of political information, 29.4% named online news sites such as *Spiegel Online*, while 25.4% stated that social networking sites such as Facebook are the platforms they used most often to deal with political information (Schmitt, 2014). According to statistics delivered by the Pew Research Center (Mitchell, Holcomb, & Page, 2013), 30% of the U.S. population receives news through the social networking site Facebook. In comparison, 10% of the U.S. population gets news through the video sharing site YouTube, while 8% get confronted with news via the microblogging service Twitter. Besides the many news organizations which have set up social media channels in order to reach a broader public, political blogs or channels on Twitter, Facebook, and YouTube created by individual journalists and politicians represent further sources of civically relevant information in the sphere of social media (Ekman & Widholm, 2015; Johnson & Kaye, 2014). Lee and Shin (2014) outlined the appeal of politicians' social media channels, pointing to the direct communication between citizens and candidates which – for citizens – creates the impression that political messages are more spontaneous and authentic than messages that were "filtered" by mass media such as newspapers. Given the variety of different sources of political and civic information online, Messing and Westwood (2014) elaborated on the unique potential of social media to pass along information to citizens. They argue that on social media platforms such as Facebook, news content from different news outlets and political sources can be provided on one single platform, which makes information gathering very comfortable for users. It was suggested that people do not necessarily deal deliberately with political information through social media: Glynn, Huge, and Hoffman (2012) demonstrated that consuming news makes up a minor part of social networking sites use, and users are confronted with political and societal issues incidentally, for instance, when friends or subscribed SNS channels of news organizations recommend a news story. This incidental exposure to political information through social media was found to foster passive learning in the sense of gaining political knowledge without having a particular motivation to do so (Bode, 2016). Most people do not appear to use Facebook for

example, specifically for the purpose of consuming news, but, – depending on users'
subscriptions and the Facebook algorithm EdgeRank determining which messages are shown
on the news feed (Bucher, 2012) – they have the chance to deal with recommended news that
they otherwise would not receive (Mitchell, Kiley, Gottfried, & Guskin, 2013). In this regard,
citizens appreciate social media as sources of information, stating that through services like
Facebook they are exposed to more diverse news and information (Hermida, Fletcher, Korell,
& Logan, 2012).

In comparison with traditional sources of political information, social media channels
not only include a greater quantity and diversity of information at one "personalized" spot but
also provide a new quality of context cues: As these platforms offer "social endorsements" in
the sense of showing how many people have already read and recommended a news story,
people are more likely to rely on such cues when it comes to selecting a news story than on
usual source cues (e.g., selecting news from a source that commonly supports one's point of
views; Messing & Westwood, 2014). Thus, social cues provided by social media seem to
modify the mechanisms operating when people gather information on political and societal
issues. Not only aggregated user information (e.g., "1830 people have liked this message")
but also messages and comments made by peers build a new "frame" for civically relevant
messages: In this regard, 75% of online news consumers stated that they received
recommendations of news stories through e-mails or posts on SNS (Purcell, Rainie, Mitchell,
Rosenstiel, & Olmstead, 2010). Many social media applications include features (such as
recommendation or sharing buttons as well as direct messages) that make it very easy for
users to disseminate news to other users (Macafee, 2013; Oeldorf-Hirsch & Sundar, 2015;
Weeks & Holbert, 2013). Thereby, social media users also function as citizen journalists or
"gatekeepers" picking specific topics to bring to the attention of their peers (Goode, 2009).
This kind of socially framed information diffusion led scholars to label news consumption
through social media as a "social experience" (e.g., Hermida et al., 2012; Lee & Ma, 2012),
meaning that receiving information about societal happenings is increasingly contextualized
by the responses of other citizens.

This modified flow of political and civically relevant information can not only have an
effect on an individual level (i.e., on individual's motives, cognitions, or actions) but can also
have wide-ranging consequences for political processes on a societal level: On the individual
level, initial research revealed that when receiving political information from friends or a note
that friends had voted on social media, people can be mobilized to vote (Baek, 2015; Bond et
al., 2012). Likewise, it was shown that receiving news recommendations from friends via

Facebook can increase the likelihood of one's seeking further news information from the recommended news outlet (Turcotte, York, Irving, Scholl, & Pingree, 2015). Another extensive line of research building on cross-sectional data demonstrated that consuming political information and news via social media is associated with civic engagement (e.g., working voluntarily for nonpolitical groups), offline political participation (e.g., participating in groups for political reform), and online political participation (e.g., sending online messages in a political context; Gil de Zúñiga, Copeland, & Bimber, 2014; Gil de Zúñiga, Jung, & Valenzuela, 2012; Gil de Zúñiga & Shahin, 2015; Kim, Chen, & Gil de Zúñiga, 2013; Vitak et al., 2011; Zhang, Seltzer, & Bichard, 2013). The causality of the relationship, in the sense of political social media use influencing people's subsequent political participation, was further supported by longitudinal data (Dimitrova, Shehata, Strömbäck, & Nord, 2014; Gil de Zúñiga, Molyneux, et al., 2014).

On a societal level, the informational use of social media has also been proposed as an instrument to stimulate extensive political change (Curtis, 2015; Howard & Parks, 2012). This was investigated in the context of the Arab Spring wherein citizens of the Arab world initiated waves of uprisings against authoritarian regimes. Based on interviews with Egyptian protesters, Tufekci and Wilson (2012) revealed that those who received information about the protests through social media were more likely to participate in the demonstration against the regime. A technical explanation for this enhanced information flow may lie in the improved information infrastructure in the sense of a greater global connectivity which is a consequence of the increasing international Internet bandwidth (Seo & Thorson, 2012). Because of the improved technological access, it is now easier for people in developing countries to exchange information and develop activism strategies with people from other regions. Another explanation that refers more to the nature of social media is given by the cute cat theory of digital activism (Zuckerman, 2008). This approach suggests that mainstream media channels (i.e., nonpolitical platforms) which are commonly used for sharing everyday experiences and low-value content (e.g., cat pictures or videos) offer an appropriate communication infrastructure for activists since it is much more difficult for government authorities to block or censor such popular media channels which are usually used for leisure purposes. Thus, popular participatory technologies such as Facebook enable a juxtaposition of different communication practices such as leisure and political activities offering a less governmentally controlled arena for public engagement in societal affairs and protests against authorities analogously to the public engagement allowed by nonvirtual public leisure spaces such as urban parks (Arora, 2015).

In summary, social media applications seem to have become important instruments for the exchange of civically relevant information due to the fact that these platforms (a) provide a great interpersonal connectivity and networked structure, (b) often function as a comfortable personalized "window" to several political sources which confront users incidentally with information and news, (c) offer technical features showing to what extent information has been noted or recommended by peers, and (d) can serve as "protected" spaces to critically deal with the governmental system, for instance, in repressing societies. Indeed, empirical research found the socio-technical infrastructure and common informational uses of social media to increase political and civic participation among citizens. While this research may allow initial conclusions on the informational use of social media, little knowledge is available about how people evaluate the politically and civically relevant information they encounter through social media: In what way does political information on social media influence users so that they are more likely to engage politically? How do people deal with the juxtaposition of political information and peer responses? Which social media cues (such as recommendations or comments) determine how users judge political or social information? There is a pressing need for research to take a differentiated view on the intervening processes between consumption and subsequent behaviors. For this purpose, the present work takes a psychological perspective and is intended to provide evidence on how people process politically relevant information embedded in the context of social media and how they respond to this information. In a political process, citizens' activities are subdivided into behaviors associated with lower and higher costs for citizens in terms of time, money, and skills. Consuming political information can be seen as an activity with the lowest amount of effort in a political process (in particular if the consumption happens incidentally) – however, this activity has been repeatedly found to be related to citizens' political expression on social media (for an overview see Vaccari et al., 2015). Therefore, expressing one's point of view seems to be a possible consequence of receiving political and civic information. In the following section, it is elaborated whether and how people exchange opinions through social media.

1.2.2 Social Media as a Venue for the Exchange of Opinions

A person's opinion can be defined as a personal judgment in the sense of a subjective evaluation, interpretation, or anticipation in relation to, for instance, a social or political problem (Insko, 1967). In social media, there are many places and ways for people to express

their opinion on public affairs: A series of content analyses revealed that social media applications such as Facebook (Fernandes, Giurcanu, Bowers, & Neely, 2010; Woolley, Limperos, & Oliver, 2010), Twitter (Dang-Xuan, Stieglitz, Wladarsch, & Neuberger, 2013; Tumasjan, Sprenger, Sandner, & Welpe, 2011), weblogs (Greuling & Kilian, 2014), or comment sections of online news websites (Weber, 2014) are used for political dialogue where citizens comment on electoral candidates and discuss public issues that are brought up by traditional media. For instance, 34% of U.S. American social media users stated that they use these technologies to express their viewpoints on political and social topics (Rainie, Smith, Schlozman, Brady, & Verba, 2012). People use different ways to publish their thoughts about ongoing events or issues: While 25% state that they comment on a news story, 17% post links to other websites through social networking sites, 11% tag content, 9% write messages in the sense of original news material or opinionated update and 3% tweet about news (Purcell et al., 2010).

The appeal of using social media technologies to promote one's opinion on public issues might manifest itself on different levels: Besides the advantages that were already provided by older Internet venues such as the textual and asynchronous nature of most online communication that gives users enough time to reflectively formulate one's point of view, social media applications are also supposed to offer a qualitatively different audience. Accordingly, on social media, individuals have the chance to publish their standpoint in a networked environment wherein a group of significant others such as family members, friends, acquaintances as well as strangers can read their opinionated contribution (Halpern & Gibbs, 2013; Wojcieszak, 2015). This semipublic sphere could encourage users to persuade a number of significant others (to adopt the published opinion on the issue) and/or to put themselves in a positive light by portraying themselves as a caring and socially interested person (Winter & Neubaum, 2016). Social media platforms with reduced anonymity such as Facebook were proposed to be "publicly private" environments, in which people can express private thoughts under their real identity in front of a broad audience mostly known from offline contexts (Papacharissi, 2009). Another appeal of participating civically via social media might be the ease of this endeavor: Social media allow very subtle forms of discourse participation such as "liking" (by clicking the "like"-button on Facebook) a posting and/or the corresponding comments or joining political groups, so that undertaking a political activity seems to be only a few clicks away. Although such actions might represent a form of participation, they have been criticized as useless "feel-good activism" (Mozorov, 2009) in the sense that individuals might feel satisfied when clicking just a few times, for instance,

when liking a political comment, although this mere liking will have zero political or social impact. What has been called "slacktivism" or "clicktivism" refers to concerns that social activism online is not based on the same strong political commitment as social activism offline (Christensen, 2011; Gladwell, 2010; Karpf, 2010).

Given the increasingly discursive nature of social media, the debate on the extent to which digital media can fulfill deliberative ideals and foster democracy has been revitalized (e.g., Baek, 2015; Halpern & Gibbs, 2013; Howard & Parks, 2012; Weber, 2014). Corresponding content analyses evaluated the deliberative nature of different social media platforms by analyzing discussions among citizens. Results showed that characteristics of social media technologies such as identifiability (in the sense that the user's real identity is commonly revealed) and connectivity (in the sense that one's network ties are notified when one comments on public issues) foster the politeness and argumentation quality of political discourses, involving more users and therefore leading to a more symmetrical participation (Halpern & Gibbs, 2013; Rowe, 2015). While discussions on Facebook were found to occur on a more polite level than, for instance on YouTube, a recent study found that young Facebook users generally associate rudeness and trouble with political discussions on this platform; yet those users who are especially interested in politics see Facebook as an appropriate venue in which to discuss political issues (Vraga, Thorson, Kligler-Vilenchik, & Gee, 2015). Survey research found that users expressing themselves politically more often on social media are more prone to engage politically and to mobilize others (Bode et al., 2014; Gil de Zúñiga, Bachmann, Hsu, & Brundidge, 2013; Gil de Zúñiga, Molyneux, et al., 2014; Rojas & Puig-i-Abril, 2009; Valenzuela, 2013). While these findings draw a positive picture of social media as an extending tool for civic and political participation, other lines of research suggest that people who share content and express themselves on public issues through these technologies have less political knowledge, which might lead to a less informed and less balanced political discourse (Ekström & Östman, 2015; Östman, 2012).

Furthermore, concerns in line with the idea of the fragmentation hypothesis were raised. Extending previous assumptions, the current claims are not only that people actively search for homogeneous discussants but also that filtering algorithms of today's Internet and social media technologies are set out to provide users with information that corresponds with their preferences, habits, and, ultimately, opinions (Pariser, 2011). To delineate the so-called "filter bubble" in which Internet users are supposed to be – unintentionally –, Pariser (2011) elaborates on the EdgeRank algorithm that predetermines which postings appear on people's Facebook news feed. This algorithm undertakes calculations of affinity (i.e., one's

relationship to the posting source which is computed relying on frequency of interaction among others), weight (i.e., the importance Facebook attributes to this posting), and timing of the posting (i.e., newer postings will be shown more prominently than older ones; see also Bucher, 2012). Given this algorithmic customization, people are supposed to merely encounter filtered online content congenial to their ideologies, even reinforcing biases in human information processing (such as selective exposure in the sense that human beings tend to pay attention to and process information which predominantly confirms their attitudes; Yeo, Cacciatore, & Scheufele, 2015).

Considering the ideals of democracy and deliberation, advocates of the filter hypothesis argue that due to the algorithmic "pre-selection" of content in contemporary Internet technologies, societal discourses become unidimensional and diverging ideas get virtually segregated (Bennett & Iyengar, 2008; Freelon, Lynch, & Aday, 2015; Scheufele, 2013; Scheufele & Nisbet, 2012; Sunstein, 2009; Warner, 2010). Consequently, if people express their opinion on public issues in social media, this opinion expression act would only echo the consonant voices raised before (cf. "echo chamber;" Sunstein, 2008). Empirical results revealed a mixed picture on ideological (self-)segregation and homophily in online realms: Bond and Messing (2015) relied on behavioral measures from Facebook users and analyzed which political figures users have "liked" on this platform, which political views (e.g., democrat or liberal) people stated on their Facebook profile, and how these views are distributed within social clusters (among Facebook friends). These data revealed that the closer the relationship between two users (measured by the frequency of interaction via Facebook), the more similar these users were ideologically, indicating that in virtual networks people are surrounded (and might therefore see content posted more often) by like-minded people. By employing a cluster analysis of political messages, Conover and colleagues (2011) found a more complex picture on Twitter. Here, retweeting (sharing a peer's tweet) appeared to occur within segregated parties (divided into political left or right), who rarely shared information with each other. However, mentioning another person's name in a tweet emerged cross-ideologically, meaning that users with opposing views also interact on Twitter. Along these lines, Colleoni, Rozza, and Arvidsson (2014) employed a machine learning technique and classified U.S. Democrats and Republicans on Twitter based on the content of their tweets. Furthermore, they conducted a social network analysis, calculating political homophily among users (as the ratio of outbound ties sharing the same political orientation and the number of all outbound ties). Results revealed that reciprocal relationships (in the sense that both users are following each other) are observable more often in politically

homogeneous groups, while one-way relationships (following someone who is not following you) have lower levels of homophily. The authors conclude that as a social channel (in terms of interaction), Twitter might be an echo chamber, but when it comes to consuming information, users might also get confronted with ideologically challenging content. On Facebook, U.S. users also cluster themselves according to political affiliations, however, more than 20% of a Facebook user's network was found to be affiliated to the opposing party (assessed by users' self-reported political affiliation in terms of conservative versus liberal on Facebook; Bakshy, Messing, & Adamic, 2015). The study further showed that composition of one's personal Facebook network determines how much cross-cutting content is presented on the News feed which consequently leads to users regularly encountering ideologically challenging postings. These findings are in line with previous research employing self-report measures: 73% of users of social networking sites (whose friends forward or comment on political content) state that they sometimes disagree with political postings from their SNS friends (Rainie & Smith, 2012). A study by Kim (2011) supported the pattern that the more people use SNS in a political way (e.g., by joining a political group on SNS), the more they encounter politically dissenting content; however, the exposure to challenging points of view was intensified when people engaged in political discussions (similar results were also presented by Barnidge, 2015). This mechanism was corroborated by further research (Gruzd & Roy, 2014; Lee et al., 2014) which still demonstrated that political discussions with a heterogeneous online network does not necessarily result in people adopting new opinions. Diehl, Weeks, and Gil de Zúñiga (2015), however, found that those social media users who engage in discussions with people with whom they disagree are more likely to change their opinion on political issues (based on the information they encounter on social media). In conclusion, while "echo chambers" or "egocentric publics" might exist on the Internet, people still seem to encounter networks and content which challenge their point of view during social media communication (Barberá, Jost, Nagler, Tucker, & Bonneau, 2015; O'Hara & Stevens, 2015; Wojcieszak, 2015). Nevertheless, this expanded interconnection with many heterogeneous social networks does not necessarily mean that people change their opinions or turn into more open-minded citizens (Lee et al., 2014).

As social media seem to function as easily accessible venues for the exchange of diverse opinions on public affairs, scholars, pollsters, and governments regularly use social media discussions for opinion mining, as these platforms are thought to allow a cost-effective "listening in" to citizen conversations (Anstead & O'Loughlin, 2015; Skoric, Liu, & Lampe,

2015). One of the underlying assumptions of these studies is that the opinion distribution expressed in social media may resemble the actual opinion distribution among the population (Gayo-Avello, 2013). In this context, initial research has already scrutinized the accuracy of estimates of public opinion through social media data, questioning how representative these data are but also pointing to the lack of theoretical frameworks that were used to interpret previous findings (Skoric et al., 2015). A theory-driven approach that systematically addresses *how* public opinion forms in online realms may contribute to the assessment of the informative value thereof. While earlier studies of social media-based predictions of public opinion may represent only a static cutout of opinion distribution, the formation and evolution of opinion climates in online realms may underlie social processes wherein individuals could influence each other's opinions and actions. The present dissertation is intended to specifically address this influence process. In order to advance theory-driven social media research, this work draws on theoretical propositions regarding the dynamics of public opinion and the psychological processes at work when individuals gauge opinion climates and express their opinions on social media. The following sections describe the theoretical lines that have guided the present work.

2 The Formation of Public Opinion: A Social Psychological View

This chapter reviews the theoretical understanding of the formation of public opinion by considering social psychological processes. Building on this knowledge, an integrative theory of public opinion – the spiral of silence theory – is presented in order to subsequently outline its potential to explain public opinion dynamics in social media communication.

2.1 Conceptualizations of Public Opinion

Dealing with the concept of public opinion has fascinated scholars for centuries, as public opinion has been presumed to be a powerful force in society. Despite its vitality and prominence in the social sciences, public opinion still remains one of the fuzziest terms in this research area (Donsbach & Traugott, 2008). Given the literature, there may be two general approaches of analysis: The normative (how public opinion should form and how it should affect people) and the descriptive view (how public opinion actually forms and how it really influences people). The following sections give a brief overview of the prevailing

understanding of public opinion and, ultimately, elaborate on their relevance for the present research interest.

With the advent of the Enlightenment, the formation, function, and effect of public opinion have gained increasing interest, since it was predicted to be a crucial instrument in democracy (for detailed historical reviews see Gunnell, 2010; Noelle-Neumann, 1965/2014, 1995; Price, 1992). In eighteenth-century Europe, public opinion was presumed to be formed during discussions in London's coffeehouses or Paris' salons, where citizens openly exchanged ideas and arguments about societal problems (Price, 1992). Building on this model, scholars understood public opinion as "sentiment on any given subject which is entertained by the best informed, most intelligent, and most moral persons in the community" (Mackinnon, 1828, p. 15) or as "opinions on matters of concern to the nation freely and publicly expressed by men outside the governments who claim a right that their opinions should influence or determine the action, personnel, or structure of their government" (Speier, 1950, p. 376). These descriptions emphasize that public opinion may result from rational debates held by citizens, which, ultimately, can have effects on government policies. This idea forms the basis for the normative view on public opinion. In this context, the philosopher Jürgen Habermas (1962, 1974) provided a comprehensive framework dealing with how public spheres should be structured and how public opinion should result from this structured system. According to Habermas, London's coffee houses and Paris' salons are examples of public spheres, referring to areas that "mediate[s] between society and state" (1974, p. 50) to which all citizens should have access and where they are able to organize themselves. Here, citizens become informed and educated so that they – after holding open-minded and diverse discourses – can or ought to form an opinion on matters of common concern (Habermas, 1962; see also Berelson, 1952). Public opinion formed as a result of an egalitarian and reasoned debate is supposed to serve as input that is given from the "bourgeois public sphere" (i.e., the citizens) to the "political public sphere" (i.e., government authorities) to make democratic decisions. To serve as an instrument for policy makers, public opinion started being conceptualized as the aggregation of individual preferences in the sense of how many people are in favor, against, and indifferent about an idea (Allport, 1937; Converse, 1987; Gallup & Rae, 1940). Regarding public opinion as the result of representative surveys, the logical empirical counterpart to this practical definition, was met with criticism: Skeptics argued that poll results are based on evaluations of average citizens who are not well-informed and who do not have enough resources to form elaborated opinions on a myriad of public issues (Bourdieu, 1979; Bryce, 1888; see also Dewey, 1927; Lippmann, 1922, 1925).

Likewise, it was suggested that poll results merely reflect the opinion promoted by mass media, the government, or dominating elites who pursue their own interests and exert pressure on the broad mass of citizens (Blumer, 1948; Ginsberg, 1986; Herbst, 1992; Mills, 1956). This criticism led to normative scrutiny whether government should use poll results for policy decisions and whether poll results should be published since they are supposed to "domesticate" public opinion in the sense of influencing citizens' opinions in the direction preferred by the "ruling class" (Asher, 2012; Daschmann, 2000; Ginsberg, 1986). In 1948, Blumer emphasized the dynamic nature of public opinion and how citizens' opinions might be a function of their social environment: "[…] the key person who has to act on public opinion is usually subject to a variety of presentations, importunities, demands, criticisms, and suggestions that come to him through the various channels in the communicative structure of society" (p. 545). Therefore, the conceptualization of public opinion as a mere distribution of individuals' reasoned preferences was suggested to be the definition of an illusion which treats society as free from social dynamics (see Bishop, 2005).

The idea that public opinion may not merely be the result of many individuals' rational answers about their opinions had already been suggested by the philosopher John Locke (1836) who stated that the "law of opinion or reputation" determines human behavior and that "[…] no man escapes the punishment of their censure and dislike, who offends against the fashion and opinion of the company he keeps, and would recommend himself to" (p. 255). Similarly, Tocqueville (1835/2007) argued that society imposes ways of thinking on the individual:

> The same equality which renders him independent of each of his fellow-citizens taken severally, exposes him alone and unprotected to the influence of the greater number. The public has therefore among a democratic people a singular power, of which aristocratic nations could never so much as conceive an idea; for it does not persuade others to certain opinions, but it enforces them, and infuses them into the faculties by a sort of enormous pressure of the minds of all upon the reason of each. (pp. 16–17)

After reviewing these descriptions and further ideas from David Hume and Jean-Jacques Rousseau, Noelle-Neumann (1979a, 1995; Noelle-Neumann & Petersen, 2004) posited a definition of public opinion that considers the social psychological mechanisms underlying its formation. She proposed public opinion to be "opinions on controversial issues that one can express in public without isolating oneself" (1993, p. 62). In other words, she

suggests these opinions to be unwritten rules to which society members have to adhere, otherwise one would be punished by society. Public opinion, according to Noelle-Neumann, has a specific function in society which is "social control" in the sense of ensuring social integration and a societal consensus on which citizens' judgments and behavior have to be based. This function, in contrast to the rational understanding of public opinion ensuring democracy, is supposed to be unintended and unconscious:

> [P]ublic opinion derives its power from man's social nature, which has developed over the course of evolution, from the modes of behavior that promote social life – and these are not based on rational or logical thought but on emotional, reflexive, subconscious reactions. (Noelle-Neumann & Petersen, 2004, p. 341)

Noelle-Neumann explicitly differentiates her social psychological conceptualization of public opinion from the prevailing rational definition by elaborating on her different understanding of the terms "public" and "opinion:" While "public" within the rational concept refers to the content that is discussed concerning the whole community, Noelle-Neumann (1995) understands "public" as an attribute meaning accessible or visible to all society members (cf. "for all eyes to see;" p. 46). Moreover, the rational point of view sees "opinion" as the individual judgment toward an issue, whereas Noelle-Neumann (1995) refers to "opinion" as to different kinds of public expressions, be it verbal statements or symbols representing a particular opinion in the form of clothes, flags, or buttons.

For the present work, a social psychological perspective on public opinion is taken, regarding its formation as a social process. This social process is thought to manifest itself in areas where people come together and have the means to discuss ideas of societal relevance. According to the current state of research (see Chapter 1.2), social media are popular social spheres which broaden the channels of citizen communication and, therefore, may serve as new versions of London's coffee houses or Paris' salons. However, and as was shown by empirical research, citizen discussions on social media may not always underlie rational discourses (as they were supposed in the coffee houses and salons) but seem to be contingent on social dynamics. In other words, public opinion may also manifest itself and evolve on social media. If public opinion is as powerful as predicted in its theoretical conceptualizations, its force should also become observable in people's perceptions and behaviors on social media. Following this line of thought, it seems fruitful to ask how public opinion forms online and whether the social psychological mechanisms at work in offline communication are

applicable to social media communication. Before making assumptions on how particularities of social media may modify these processes, the following sections illustrate the social influence mechanisms that social psychological research has identified throughout its development (Chapter 2.2) and outline how these mechanisms may explain the formation of public opinion under the umbrella of the spiral of silence theory (Chapter 2.3).

2.2 Pioneering Research on Social Influence Processes

For social psychology, one of the most crucial questions is how human beings mutually influence each other's opinions and actions. According to Price, Nir, and Cappella (2006) studies of social influence and public opinion "go hand in hand" (p. 47) since the processes that make an opinion a *public* opinion are supposed to be social psychological. Within the present work, theoretical approaches and empirical findings in social influence research will be used as foundations for examining how social media users process other people's opinions and how those, in turn, influence their communication behavior on these platforms. This chapter therefore gives an overview of social influence research and derives its implications for the present research project.

Early approaches of conformity research

The basic idea of social influence is rooted in classical conformity research which aimed to identify the conditions under which individuals comply with opinions and rules of a group (Levine & Prislin, 2013; Kitayama & Burnstein, 1994; Turner, 1991). Pioneering research in this field was presented by Muzafer Sherif (1936) who conducted a series of perception experiments wherein participants were asked to estimate the amplitude of movement of a dot of light in a dark room. While the small light in fact did not move, a perceptual phenomenon ("the autokinetic effect") conveys the impression that it moves. Since participants did not have a point of reference to assess the movement in the dark environment, the individual estimates about the amplitude differed significantly between participants ("the range and reference point established by each individual are peculiar to himself when he is experimented upon alone;" Sherif, 1936, p. 96). However, when participants had to rate the movement in groups of two or three people, they came to a compromise estimate and their judgments aligned. Sherif (1936) concluded that "[w]hen individuals face the same unstable, unstructured situation as members of a group for the first time, a range and a norm (standard) within that range are established, which are peculiar to the group" (p. 104). Thus, interaction among group members within the experimental sessions allowed them to establish a common

rule serving as a frame of reference for all people involved. The power and stability of this norm was delineated by the fact that when participants had to make estimates in an individual session after the group session, their estimates still were in line with the norm settled by the group before.

To show that human beings adopt these social norms in a rational way (in the sense of believing that the established rule is right and desirable), Salomon Asch (1955) conducted a series of experiments which have been widely discussed in social influence research. During the experiment, participants were asked to compare lengths of lines and judge which line out of three would match the length of the line on another card. In individual sessions (i.e., participants assessing on their own which line was the best match), the mistake rate was less than 1%. Thus, the correct answer appeared to be obvious. However, in group sessions (consisting of one participant and the rest were confederates), in which confederates were instructed to make erroneous judgments, the mistake rate was about 36.8%. In terms of experimental arrangements, participants were always able to hear the incorrect judgments of the confederates before stating their own judgments as they had to make their statements as penultimate participant. Given this apparent compliance with the majority (here defined as the opinion group including a larger number of individuals than the other groups; cf. Martin, Hewstone, Martin, & Gardikiotis, 2008), Asch (1955) was surprised that one third of participants agreed with the judgments of the previous speakers, although they were obviously wrong. This pattern of majority influence was replicated and supported in a large number of additional studies, emphasizing that conformity effects are greater in collectivistic cultures (in comparison to individualistic ones; Bond & Smith, 1996).

After considering the main effect of a majority's norm on the individual's judgment and behavior, from a social psychological point of view, it became relevant to explore (a) the boundary conditions and (b) the reasons why individuals comply with the majority.

Boundary conditions of majority influence

An extensive line of research identified several personality and contextual variables that moderate the majority influence of a group: For instance, Darley (1966) revealed that people with a higher *disposition of fear* are more likely to conform to the majority than those with a lower disposition of fear. More recently, Imhoff and Erb (2009) demonstrated that the dispositional and situational *need for uniqueness* (i.e., the need to differentiate oneself from a mass of people) reduces the influence the majority has in the sense that people with a high need for uniqueness agree less with the majority's opinion. In terms of situational variables,

Asch (1955) argued that the *size of the group* who opposes one's opinion has an effect on one's willingness to comply or to make a stand: According to his data, the majority influence increased with the size of the group up to the number of three opponents – further increases in group size did not enhance the majority pressure. Social impact theory (Latané, 1981; Latané & Wolf, 1981) posits that the larger the group, the larger the majority influence, still, every additional member's influence is less in terms of a power function (see also Tanford & Penrod, 1984). Furthermore, the influence *group's unanimity* appeared to be influential: Once the present group is not unanimous (in the sense there is at least one like-minded person present), the majority's influence appeared to be depleted (Allen, 1975; Asch, 1955). Besides the influence of the group size, social impact theory (Latané, 1981; Latané & Wolf, 1981) suggests that the effect of an influence source is also contingent on its *strength* (i.e., its status and relationship with the influence target) as well as its *immediacy* (i.e., its closeness in space and time). From a psychological point of view, these boundary conditions raise the question of what motives people pursue when conforming to others. These are specified in the following.

Reasons for conformity to the majority

In 1950, Festinger posited that conformity behavior stems from people's wish for social approval and objective evaluations of opinions. Based on qualitative interviews with participants in his pioneering experiments, Asch (1956) found preliminary support for these claims: Some participants stated that they consciously agreed with the wrong judgments because they did not want to appear different to the others or because they did not want to feel lonely. Other participants doubted their own accuracy of judgment and started believing that confederates were right and they were wrong. Asch (1956), therefore, summarized "[s]ubjects expressed fear of conspicuousness, of public exposure of personal defects, and of group disapproval; they felt the loneliness of their situation" (p. 70). Drawing on these observations, Deutsch and Gerard (1955) systematized people's different ways of conforming to others and proposed a dual-process model of social influence. Accordingly, the authors differentiate between normative social influence, i.e., "an influence to conform with the positive expectations of another" (p. 629) and informational social influence, i.e., "an influence to accept information obtained from another as evidence about reality" (p. 629). In other words, normative social influence refers to public compliance in the sense of people publicly sticking to prevailing rules or norms without private commitment (i.e., behaving according to the norm without internally believing or accepting this norm; see also Kelman, 1958). This type of

influence may represent what Asch (1955) observed in those cases where participants agreed with the majority's statement although they knew that this was wrong. Informational social influence, in contrast, represents a conformity processes entailing private acceptance in terms of accepting and/or believing in the correctness of an opinion or a rule. This kind of social influence might have been operating in Sherif's (1936) studies, since people were confronted with an uncertain situation in which the group's judgment helped to approach valid evidence about reality. In terms of specific motives, Deutsch and Gerard (1955; see also Turner, 1991) suggested that two different factors drive these processes: While normative social influence is supposed to be based on people's wish of to *receive social approval and be liked by others* ("goal of affiliation;" cf. Cialdini & Goldstein, 2004), informative social influence may be driven by the motive of to *receive valid information about reality* ("goal of accuracy;" cf. Cialdini & Goldstein, 2004). Empirically, these two motives have been repeatedly found to elicit conformity to majority (for an overview see Cialdini & Goldstein, 2004; Prislin & Wood, 2005), however, research has also shown that conformity that is induced by affiliation motives can also have informational outcomes in the sense that people align their attitudes with their social environment not only publicly but also privately (Lundgren & Prislin, 1998). Hence, critical reflections on the dual-process models state that these two influence types can go hand in hand and are not mutually exclusive (Price et al., 2006; Prislin & Wood, 2005). Especially, Prislin and Wood (2005) emphasized that normative and informational motives have been simplified throughout the development of social psychology and that motivations for complying with groups may comprise many more facets than previously conceptualized.

Besides the motive of affiliation ("the need to relate to others") and the motive of accuracy ("the need to understand"), Prislin and Wood (2005) proposed a further core motive: the *need to evaluate oneself* (cf. "identification" in Kelman, 1958, and the "goal of maintaining a positive self-concept" in Cialdini & Goldstein, 2004). The need to evaluate oneself is rooted in the principle that individuals continuously strive to defend or repair their self-concept (Baumeister, 1999; Festinger, 1954). To define their self-concepts, people commonly consider the characteristics of individuals or groups whom they have evaluated positively (Turner, 1982). By doing so, people develop a social identity that can be activated when members of this social category are physically present or when they are cognitively salient. Based on this social identity, individuals determine which norm or opinion prevails in the currently salient group and may adapt his/her behavior accordingly (Turner, 1991). In empirical terms, it has been repeatedly shown that people's wish to categorize and validate themselves can drive conformity, meaning that people are more likely to align their stance

with a group that they value as an ingroup than with a group that they do not identify with (i.e., outgroup; see e.g., Haslam, Oakes, McGarty, Turner, & Onorato, 1995; Pool, Wood, & Leck, 1998; Wood, Pool, Leck, & Purvis, 1996). Prislin and Wood (2005) explain that being in line with one's ingroup "enhances people's subjective certainty and conveys coherence by suggesting that the shared attitudes reflect external reality and the objective truth of the issue" (p. 683). As will be shown in the following, identifying with groups can even dampen the influence of a majority, for instance, when the ingroup is a minority group. For a long time, social influence research was based on the assumption that only majorities can exert influence on individuals (see Dickel & Bohner, 2012; Martin et al., 2008). As a counterintuitive response, Moscovici and colleagues started to explore how minorities or even individuals can be sources of social influence and, by doing so, initiate social change and innovation.

Minority influence

Social psychological research on minority influence has developed from the idea of testing how a numerically smaller group can influence the larger one to the systematic comparison of the mechanisms and effects of minority and majority influence (Martin et al., 2008). Focusing on minority influence, Moscovici (1976) claimed that a numerical minority can impose its deviant ideas and exert influence on a majority in the event that this smaller group expresses its ideas and opinions consistently (across time and situations). The consistent presentation of deviant ideas is supposed to radiate certainty and confidence, increasing the cognitive pressure on the majority to reconsider their stance. The premise of this claim was further developed in Moscovici's (1980) later conversion theory stating that messages by minorities are processed in more depth (considering and scrutinizing arguments) compared with messages by majorities. The comparison between the impacts of majority versus minority sources within the conversion theory suggests that while majority influence is based on a peripheral comparison process in the sense of individuals aligning their opinion with that of the majority without scrutinizing its correctness, minority influence is stimulated by a validation process. More specifically, the validation process is initiated by a cognitive conflict that minority groups create by expressing a stance which challenges the prevailing opinion or norm. This cognitive conflict induces a greater allocation of attention to the minority's message and a more detailed examination of its arguments. This kind of critical reflection enables individuals to develop an understanding for the minority's position, leading individuals to "convert" their way of thinking. In other words, while majority influence may lead to a superficial compliance without directly changing people's internal beliefs, minority

influence evokes reflective thinking resulting in a progress of reasoning (cf. the two processes predicted by the elaboration likelihood model; Petty & Cacioppo, 1986). Similarly, Nemeth (1986) posited two different paths of information processing depending on whether there is a majority or minority source. According to Nemeth, being confronted with opposing majority views causes stress narrowing the individual's attention to the majority's stance. Due to this stressful situation, the person merely focuses on accepting the correctness of the majority's judgment ("convergent thinking"). Being exposed to opposing minority opinions, in contrast, is less stressful (since the influence target does not perceive him/herself as deviant from the majority) and enables "divergent" thinking in the sense of considering new ideas and solutions to the specific issue. Considering these theoretical predictions, Nemeth (1986) even adopts a normative position: "[…] it is assumed that the finding of truth or correct solutions is a more likely consequence of the divergent thinking characterized by persons exposed to dissenting minority views" (p. 30).

Empirically, research comparing minority and majority influence has provided mixed results, not always supporting the theoretical ideas outlined above: The general assumption that minority views are attended and processed in a more elaborate way than majority views could not be supported empirically as a main effect of the source (see Martin & Hewstone, 2003). Instead, research showed that the effect of source status (majority vs. minority) on information processing is conditional on the individuals' topical relevance and prior opinion (Erb, Bohner, Rank, & Einwiller, 2002; Martin, Hewstone, & Martin, 2007): People elaborate minority views more extensively when these views contradict their own and when their topical relevance is intermediate or high. Moreover, in line with theory, a series of studies revealed that minorities who express their views *consistently* can exert influence on majorities and modify their stances (Moscovici, Lage, & Naffrechoux, 1969; Wood, Lundgren, Oullette, Busceme, & Blackstone, 1994). The meta-analysis by Wood et al. (1994), though, demonstrated that minority sources can influence those individuals' private opinions (i.e., stances which are not expressed publicly) which are only indirectly related to the topic of influence. The pattern that minorities can have a greater impact on people's private, rather than on public, attitudes/behaviors was supported by a more recent study (Sinaceur, Thomas-Hunt, Neale, O'Neill, & Haag, 2010). Likewise, a further line of research showed that minorities can exert indirect influence on a person in the event that he/she perceived the minority group as the ingroup (e.g., Alvaro & Crano, 1997; David & Turner, 1996). In comparison, persuasion attempts by minorities who are labeled as outgroups lead to a polarization away from the minorities' position.

Pioneering and current research on social influence revealed that views from both numerical majorities and minorities can have an influence on a network of people. While research on majority influence especially elaborated on people's motives for complying with others, works on comparing majority and minority sources placed a special focus on cognitive processes and the question of how individuals process and interpret opinions from different sources. Consideration of these basic human principles of social influence should contribute to explanations of how affordances of social media technologies – and what they may represent to an individual's perceptions – drive these social influence processes. A large number of works have already applied, extended, and revised social influence mechanisms to and in the context of computer-mediated communication (e.g., Lee & Nass, 2002; Miller & Brunner, 2008; Postmes, Spears, Sakhel, & de Groot, 2001; Smilowitz, Compton, & Flint, 1988; Walther, DeAndrea, et al., 2010). Many of these studies have built on the social identity model of deindividuation effects (SIDE; Lea & Spears, 1992; Spears & Postmes, 2015) focusing on how visual anonymity and social identification make individuals susceptible to group influence in online environments. This line of research – as is also the case for most classical approaches to social influence – commonly presumed or exclusively focused on unidirectional effects in the sense that either a majority or a minority group can have an influence on an individual. But considering the latest conceptualizations of public opinion as the result of a social process wherein individuals continuously exert impact on each other, the formation of a social consensus or an opinion climate – be it in offline or online communication – should be seen as an "ongoing chain process of reciprocal and continuing influence" (Nowak, Szamrej, & Latané, 1990, p. 365), where a person can simultaneously be the source and recipient of social influence. The dynamic social impact theory (Latané, 1996, Latané & Bourgeois, 2001) makes suggestions about how individual interactions accumulate to create societal changes, suggesting that society is a continuously self-organizing system in which reciprocal influences between individuals occur nonlinear (in the sense of attached to situational conditions) and lead to spatial clustering. This spatial clustering manifests itself as people become similar (in terms of beliefs and actions) to their spatial neighbors and opinion diversity reduces (i.e., minorities reduce in size). However, due to the nonlinear influence pattern, absolute unanimity is rare. After supporting these assumptions about influence accumulation through the use of computer simulations and experiments in computer-mediated small group communication (Latané & L'Herrou, 1996; Latané & Bourgeois, 1996; Nowak & Latané, 1994; Nowak et al., 1990), Latané and Bourgeois (2001) conclude that on a societal

level, the assertion of minority views is possible (under certain circumstances), but their reduction "seems to be the rule rather than the exception" (p. 240).

Although the present work – in contrast to the dynamic social impact theory – will not focus on the cumulative influences observable on a societal level, the paradigm of reciprocal relationships between an individual and society, meaning that "individuals create and are shaped by society" (Latané & Bourgeois, 2001, p. 254), seems applicable to the context of social media assuming that the users' interactions through social media imply two-way influence processes. When considering the participatory nature of social media, it could be posited that through social media a network of people may influence individual opinions and actions and that these individual opinions and actions, in turn, can influence a network of people. In light of this bidirectional relationship, it seems important to analyze two points: (a) how and to what extent does social media content convey depictions of public opinion to individual users and (b) whether and how individual users publicly respond to congruent or incongruent opinion climates on social media and, therefore, contribute to the formation of public opinion. A theoretical framework on the development of public opinion that addresses conformity processes within the reciprocal relationship between individual and social environment and, at the same time, considers the influence of (mass) media is presented in the following chapter.

2.3 The Spiral of Silence Theory

Since it was first published internationally in 1974, the spiral of silence theory (Noelle-Neumann, 1974) has gained wide attention in both the public and the scientific community. The increased interest in this theory might be attributable to its integrative nature in the sense that it generalizes social psychological evidence (micro-level) to societal predictions (macro-level) by considering the influence of time. Likewise, this theory has implications for democratic societies since it elaborates on the question of why people do not make use of their freedom of speech, which is a basic principle in modern democracies (Matthes et al., 2010). This chapter outlines the assumptions of this theory, corresponding empirical evidence in offline and online communication, its criticism, and extensions. Building on this knowledge, a psychological framework for exploring opinion dynamics in the social web will be proposed (Chapter 4).

2.3.1 Theoretical Propositions and Empirical Support

With the spiral of silence theory, the opinion researcher Elisabeth Noelle-Neumann aimed to explain how public opinion forms in society. For this purpose, she presented a series of hypotheses which have been refined throughout the history of this theory. In the following, these theoretical hypotheses are presented (for the latest publications of the theory's founder see Noelle-Neumann & Petersen, 2004, 2005; Noelle-Neumann, 2006), followed by a summary of the empirical state of knowledge thereof.

(1) Human beings have a fundamental fear of isolation.

By reviewing psychological and sociological works by John Locke, Jean-Jacques Rousseau, George Herbert Mead, Erving Goffman, and with a special focus on social psychological conformity research (Asch, 1955; Sherif, 1936), Noelle-Neumann (1993; Noelle-Neumann & Petersen, 2004) elaborates on the "social nature" of individuals as a foundation for the subsequent hypotheses. Accordingly, she explains that throughout evolution, human beings have developed a basic motive of affiliation in the sense that they unconsciously seek to be liked and accepted by others and to avoid any form of isolation (Noelle-Neumann, 1993). What social psychologists have called the need to belong (Baumeister & Leary, 1995), the need for relatedness (Ryan & Deci, 2000), or the avoidance of ostracism (Williams, 2001) serves as a key variable in this theory and is supposed to explain why individuals are motivated to conform to each other.

Empirically, there is a broad body of research from social psychology providing evidence about human beings having a fundamental need to form and maintain interpersonal relationships (Baumeister & Leary, 1995). Threats to the fulfillment of this need (such as the dissolution of social bonds) are supposed to induce particular cognitive, affective, and behavioral responses that can affect the individual's physical and mental health (Cacioppo & Patrick, 2008). As was shown in the extensive line of research on ostracism (for an overview see Wesselmann, Hales, Ren, & Williams, 2015), people who are ostracized (i.e., ignored and excluded) by others feel pain, have a sense of losing control, lower levels of self-esteem, and a reduced sense of belonging (e.g., Eisenberger, Lieberman, & Williams, 2003; Nezlek, Wesselmann, Wheeler, & Williams, 2012). Even when people get excluded by physically absent and unknown others via the Internet, the psychological effects are so aversive that they tend to conform to obviously erroneous norms of the group in order to re-establish the social bonds (Hartgerink, van Beest, Wicherts, & Williams, 2015; Williams, Cheung, & Choi,

2000). Given that the prospect of experiencing social exclusion and social pain was found to hurt more than imagined future physical pain (Chen & Williams, 2012), it seems justified to assume that the fear of being socially isolated is a powerful driving factor in human behavior (see Baumeister & Tice, 1990).

(2) Individuals (unconsciously) punish opinion deviants with social sanctions.

Noelle-Neumann (1993) argues that people's fear of isolation is justified since society is supposed to threaten its deviant members with isolation. More specifically, society can sanction deviant members in many different ways, for instance, nonverbally by turning away from or laughing at someone or by explicitly stating or showing that deviant opinions or actions will not be accepted.

This hypothesis has been subjected to social psychological research. Schachter (1951) presented a pioneering experiment on the effects of opinion deviance and demonstrated that groups are prone to reject nonconformists (i.e., people who oppose the majority) and exert pressure on them to conform. An overwhelming body of research has empirically supported the groups' tendency to exclude or ostracize deviant opinion holders and found that reasons for rejection may include group members perceiving a threat to the identity, cohesion, distinctiveness, or achievement of the group (Jetten & Hornsey, 2014; see also research referring to the black sheep effect by Pinto, Marques, Levine, & Abrams, 2010). However, nonconformists are not always confronted with social rejection but sometimes with admiration or respect, when – for instance – the deviant view of the nonconformist contributed to a better performance of the group (Fielding, Hogg, & Annandale, 2006).

(3) The fear of isolation leads the individual to systematically observe his/her social environment.

Because of the fundamental fear of isolation, people are motivated to monitor their social environment in order to learn which opinions and actions are approved by society and which lead to social sanctions (Noelle-Neumann, 1977, 1993; Noelle-Neumann & Petersen, 2004). To explain this psychological mechanism, Noelle-Neumann posits that individuals have a "quasi-statistical organ" (1974, p. 44) or a "quasi-statistical sense" (1977, p. 145), defined as the capability to observe one's social environment "by assessing the distribution of opinions for and against his ideas, but above all by evaluating the strength (commitment), the urgency, and the chances of success of certain proposals and viewpoints" (1974, p. 44). This theoretical idea is in line with the more current belonging regulation model (Gardner, Pickett,

Jefferis, & Knowles, 2005; Pickett & Gardner, 2005) stating that a person's belonging needs stimulate his/her perception of their environment in the sense that given a higher belonging need, people observe socially-relevant cues in their surroundings more thoroughly in order to find opportunities for social inclusion.

While this hypothesis can be seen as a premise for the subsequent process, related empirical studies are scarce in communication research. One exception was provided by the empirical work of Hayes, Matthes, and Eveland (2013). After developing a unidimensional scale in order to appropriately assess the trait-like fear of social isolation (by employing items such as "One of the worst things that could happen to me is to be excluded by people I know"), the authors' survey research showed that the higher people's fear of social isolation is, the more attention they pay to public opinion polls – this relationship was found across six of eight countries. Concluding that this "fear does serve to stimulate the quasi-statistical organ to tune into signal of public opinion transmitted through mass media" (p. 456), Hayes and colleagues empirically supported the hypothesis initially proposed by Noelle-Neumann (1977). However, this research does not allow conclusions on how accurately people interpret the prevailing opinion landscape based on the observed social cues. While a line of social psychological research supported the idea that belonging needs increase the attention and the accuracy of perceiving or decoding social cues such as facial expressions (Gardner et al., 2005; Pickett, Gardner, & Knowles, 2004; Xu et al., 2015), initial research exploring whether belonging needs also increase the accuracy of gauging opinion climates, revealed that people's need to belong biases the perception of others' opinions (Morrison & Matthes, 2011): The higher people's need to belong was, the more they projected their own opinion onto others in the sense of perceiving a higher consensus with others – especially for those topics which were personally important to them. These potential misperceptions of opinion climates are one subject of the basic criticism of the spiral of silence theory (see Chapter 2.3.2).

Besides the psychological mechanism of how people monitor others' opinions, Noelle-Neumann's (1983) suggested that individuals can use two sources to survey which opinions and actions are approved by society. Firstly, individuals can gauge the distribution of opinion through interpersonal discussions with their network (i.e., friends, family members, co-workers, etc.) and direct observation thereof. The fact that interpersonal discussions in offline and online realms can influence perceptions of opinion climates was repeatedly supported by previous research (Eveland & Hutchens, 2013; Huckfeldt, Beck, Dalton, & Levine, 1995; Wojcieszak & Price, 2009; Wojcieszak & Rojas, 2011), still, these inferences about public

opinion are considerably shaped by people's own opinions. Secondly, Noelle-Neumann suggested that exposure to mass media can also lead individuals to perceptions of public opinion. The extent to which mass media can affect perceptions of public opinion are summarized under Hypothesis 9 in this chapter.

(4) Holders of a minority opinion are more likely to remain silent in the public while holders of a majority opinion are more likely to publicly express their point of view (the silence hypothesis).

Building on the idea that individuals steadily fear being isolated from others, the spiral of silence theory suggests that when people feel that their opinion on a controversial issue is represented by a minority or is losing ground, they are prone to withhold their opinion publicly. In the event that people notice that their opinion is or will be shared by a majority, they will express their viewpoint freely and self-confidently (Noelle-Neumann, 1974, 1993; Noelle-Neumann & Petersen, 2004). This mechanism is theoretically rooted in classical conformity research (see Chapter 2.2) which revealed that human beings adapt their opinion and behavior to the norm that is promoted by a dominant group. In terms of Deutsch & Gerard's (1955) dual-process model, Noelle-Neumann clearly refers to normative social influence in the sense of focusing on people's public behavior rather than on their internal opinions (cf. Price et al., 2006).

The silence hypothesis has been treated as the key assumption of the spiral of silence theory and has therefore been mostly in the center of the correspondent empirical research. Noelle-Neumann, who also worked as a pollster, commonly corroborated her hypotheses with data from opinion polls: First, she (1973a) presented data from a poll among German drivers asking whether they supported or opposed reducing the blood-alcohol limit for drivers and whether they would be willing to discuss this topic with an unknown person during a five-hour train ride. The latter question is widely known as the "train test," a hypothetical scenario used by Noelle-Neumann (and, later on, by other scholars) in surveys in order to simulate a social situation with a medium level of public exposure ("it allowed everyone entry, and people were there whose names and attitudes the respondents did not know. At the same time it involved so little exposure that even a shy person might participate, were he in the mood to do so;" Noelle-Neumann, 1993, p. 20–21). The poll results revealed that in the numerically larger opinion group, "the winning faction" (those who supported the reduction: 75%), more people were willing to express their opinion during the train ride than in the numerically smaller opinion group, "the losing faction" (those who opposed the reduction: 17%). Noelle-

Neumann found the same pattern supporting the silence hypothesis for many other topics, such as spanking as a legitimate means of parenting (1973a), nuclear energy (1993) or political party and candidate preferences (1977, 1993; Noelle-Neumann & Petersen, 2005). In these empirical studies, Noelle-Neumann commonly differentiated between the actual majority as the winning faction and the actual minority as the losing faction, assuming that people would be aware that they are members of a majority or minority. Most of the subsequent research on the silence hypothesis, though, measured whether people *perceived* themselves on the winning or the losing side and tested whether this perception (i.e., perceived congruence of one's opinion with the prevailing opinion climate) is significantly related to one's willingness to voice his/her opinion. The line of research exploring this correlation was considered in two meta-analyses – one including 17 published and unpublished studies (Glynn et al., 1997) and the more current one comprising 12 further studies (Glynn & Huge, 2014). The correlation in both works indicated a positive relationship in line with the silence hypothesis, meaning that the higher the perceived congruence with the opinion climate, the more willing people were to express their opinion. Although the overall correlation was statistically significant, it was small in size (Glynn et al., 1997: Pearson $r =$ .054, 95% CI from .028 to .080 / Glynn & Huge, 2014: Pearson $r =$ .053, 95% CI from .042 to .064). In accordance with Noelle-Neumann's (1974) suggestions that not only the current but also the future opinion trend might be influential in one's decision to speak up, many studies also assessed people's perception of the future opinion climate. In their meta-analysis, Glynn and colleagues (1997) nevertheless found that "the correlation between perceptions of support for one's own opinion and willingness to speak out does not differ as a function of whether the perception refers to 'current' or 'future' support" (p. 460).

In her first formulation of the silence hypothesis, Noelle-Neumann (1974) also pointed to a boundary condition of this mechanism: People who stick to their opinion regardless of the prevailing opinion climate – the so-called *hard cores*. Noelle-Neumann (1993) described the hard cores as "the minority that remains at the end of a spiral of silence process in defiance of the threats of isolation" (p. 170). Matthes and colleagues (2010) specified hard core individuals as those who strongly believe in the correctness of their opinion (cf. Smith, Fabrigar, MacDougall, & Wiesenthal, 2008; Tormala & Rucker, 2007) and found that hard cores are more prevalent in societies than Noelle-Neumann originally assumed. While the prevalence of high attitude certainty may vary from issue to issue, the idea of hard cores points to a factor potentially breaking the silence mechanism. In this context, Noelle-Neumann (1993) also elaborated on the concept of *avant-garde*, stating that hard cores could

sometimes feel as member of the avant-garde, that is, as people who bring new and challenging ways of thinking to society. Those are supposed to either not fearing social isolation or see social isolation as the price which has to be paid to advance society (by promoting an unconventional viewpoint).

(5) Over time, the dominant camp will become more salient publicly while the losing camp will appear weaker and weaker.

This hypothesis represents the dynamic nature of the spiral of silence theory, projecting how the silence hypothesis will affect the public distribution of opinion over time (Scheufele, 2008). Thus, public opinion forms in terms of a mutually reinforcing spiral process wherein "[s]peaking out loudly and gladly enhances the threat of isolation directed at the supporters of the opposing opinion, reinforcing the sense of standing along with their opinion and thus also their growing tendency to conceal their opinion in public" (Noelle-Neumann & Petersen, 2004, p. 349). Consequently, the spiraling process is supposed to lead to perceptual biases in public opinion, in the sense that the publicly represented opinion may not be equivalent to the distribution of privately held opinions. Scheufele and Moy (2000) illustrated on a time axis how the camp which is apparently gaining affects people's willingness to voice their opinion (see Figure 1).
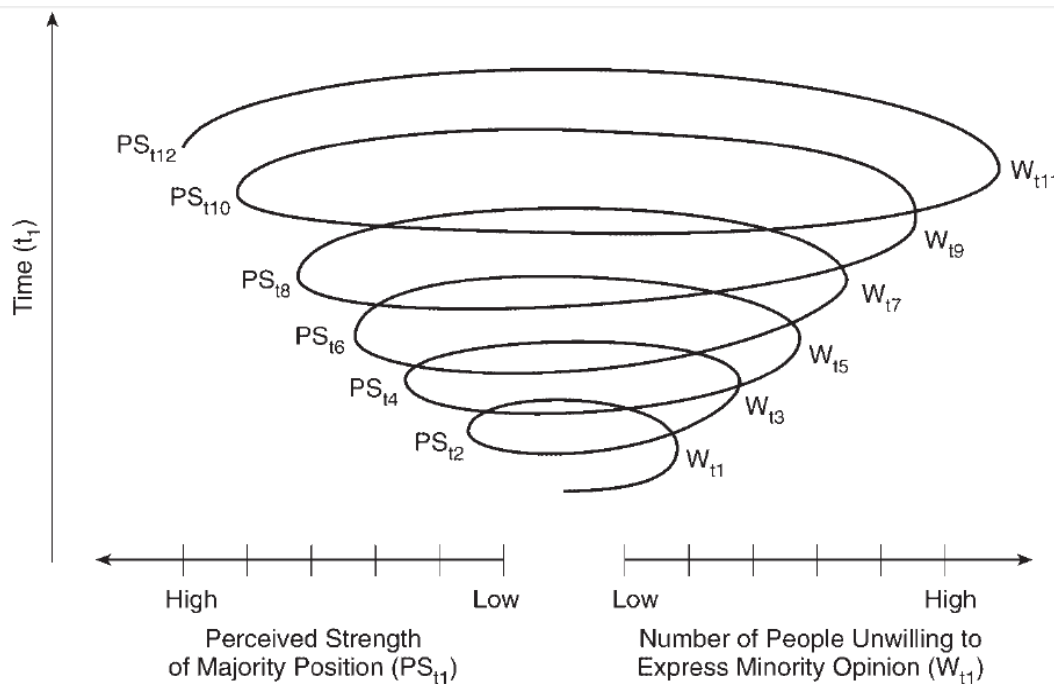
Figure 1. How time induces a spiraling process within the formation of public opinion (taken from Scheufele & Moy, 2000).

More recently, this hypothesis was broken down into four distinct hypotheses which elaborate on the different stages of this process (Matthes & Hayes, 2014):

(a) The *social conformity hypothesis* predicts a simple correlation between perceived opinion climate and one's subsequent willingness to express one's opinion. More specifically, the more public support people attribute to their point of view, the more willing they will be to voice their opinion.

(b) The *change hypothesis* projects the social conformity hypothesis over time. It states that changes in the perceived opinion climate will also induce changes in one's outspokenness, meaning that if the opinion climate becomes more and more divergent to one's opinion over time, one's reluctance to remain silent will increase over time, too.

(c) The *reinforcing spiral hypothesis* generalizes the two previous hypotheses to a societal level, predicting that one camp will be the gaining one, establishing public opinion as a norm and becoming more visible over time, while the other camp will be losing ground in the public scene.

(d) The *paralysis hypothesis* assumes that after a certain amount of time the shifts of opinion climates will stop, in the sense that the majority group reaches a maximum number of members, while society still comprises the hard cores.

While the first two of these four hypotheses remain on a micro-level in the sense of zooming in on individual behavior as a function of social influence, the latter two elaborate on macro-processes referring to how individual behavior induces societal dynamics.

Indeed, these hypotheses considering the dynamic character of the spiral of silence theory have rarely been subjected to empirical approaches (Scheufele, 2008). To measure shifts in opinion climates and opinion expression behaviors over time, panel studies including multiple waves of measurement are necessary (Matthes & Hayes, 2014). Building on panel data, Shamir (1997) found only weak support for the effect of perceived opinion climate on people's willingness to express their opinion. Instead people's political knowledge and interest had a higher predictive value. Matthes (2015) claimed that the opinion dynamics that are predicted by the theory may be detected when observing changes in variables at an

individual-level over time. Using data from a three-wave panel survey among Italians, Matthes identified a reciprocal relationship between people's perceived opinion climate and the frequency of political discussion: The more Italians perceived general support for their opinion on unemployment, the more willing they were to discuss this topic and this increased discussion willingness, in turn, increased the perceived congruence with the opinion climate over time. While this approach, as Matthes (2015) acknowledges, may not grasp the full complexity of relationships within the theory, it provides the first empirical support for reciprocal effects among the key variables of the theory.

(6) The spiral of silence process will only be observable for controversial, moral- and value-laden topics.

According to Noelle-Neumann (1993), the public issue that becomes the subject of a spiral of silence has to be morally charged. Topics that can be judged morally in many different ways provide the greatest potential for dispute and, therefore, the greatest pressure on individuals to fear isolation in the case of disagreements. The morally charged context of a topic makes it difficult to objectively evaluate which position is right or wrong. This automatically implies that issues can be evaluated differently according to which values and ideologies one holds. Since values and ideologies might differ between individuals, ethical value-laden issues may create conflict when it comes to making a judgment (for a review on the role of moral loading in the spiral of silence see Roessing, 2009).

The spiral of silence will not come into effect if there is a social consensus on a topic. To delineate this prediction, Noelle-Neumann and Petersen (2004) state that while a spiral of silence may not arise with respect to whether one should protect the environment (since there is a common agreement that it is important to protect the environment), it will when the question is whether environmental protection should be a more important goal than, for example, economic growth. Hence, controversy is needed to induce the spiraling process.

Empirically, a large amount of spiral of silence research used societal topics that were controversial and morally debatable. Examples of such topics engaged in previous studies are the death penalty (Hayes, 2007; Noelle-Neumann, 1973a), abortion (Hayes, Shanahan, & Glynn, 2001; Salmon & Neuwirth, 1990), legalization of same-sex marriage (Ho, Chen, & Sim, 2013), possible invasion of Iraq (Neuwirth, Frederick, & Mayo, 2007), or preferences for political parties/candidates (Neuwirth, 2000; Noelle-Neumann & Petersen, 2005). The level of controversy and moral conflict may vary between these topics and this variation may also influence whether theory-based predictions are supported or not. However, to my knowledge,

no systematic empirical comparison of topical characteristics and an exploration of their influence on the spiraling process have been provided yet.

(7) There may be a divergence between the actual opinion distribution and the opinion distribution visible in the public scene.

A consequence of the spiraling process can be a distorted picture of public opinion. A minority group, for instance, can become very active and be in the public spot promoting its point of view to a wide audience, while the opposing majority remains silent, assuming that most others share the minority opinion (Noelle-Neumann, 1974). This phenomenon, which has been termed "silent majority" (Noelle-Neumann, 1974, p. 46), can have detrimental societal effects, for example, when policy makers think that they act in the majority's interest while the publicly expressed opinions do not reflect most people's true opinions (Moy, 2008).

Noelle-Neumann (1994) reported a phenomenon that she observed in her poll data from 1976, wherein German citizens were asked whether they are in favor of or against members of a communist party being appointed as judges. While most people were opponents of this idea and were aware that they were in the majority, they were less willing to discuss this issue publicly than members of the minority group (supporters of this idea) who were conscious of their minority status. Back then, Noelle-Neumann explained this finding as a potential media effect, stating that the majority perceived that the opinion trend promoted in media coverage was against them (see Hypothesis 8), so they preferred to remain silent rather than contradict the tenor in the media.

The divergence predicted in this hypothesis can also be rooted in "pluralistic ignorance" (Prentice & Miller, 1993; Shamir, 2014), referring to the phenomenon when people think their private opinions are not shared by most others, although in fact they are. This misperception of course can be fueled by the slant in media coverage (Gunther & Chia, 2001; Shamir & Shamir, 1997), conveying the impression that a specific viewpoint is socially approved.

(8) (Mass) Media can influence perceptions of public opinion and determine which stance becomes the dominant one in the public scene.

With this hypothesis, Noelle-Neumann (1973a, 1973b) proposed the "return to the concept of powerful mass media" as a counter-development to media effects models assuming limited or indirect effects of media on individual's attitudes and actions. These models (see e.g., Klapper, 1960; Lazarsfeld, Berelson, & Gaudet, 1944) posited that mass media can

merely reinforce – but not change – people's opinions, since people commonly select media content that is in line with their pre-existing opinions. Noelle-Neumann (1973a, 1973b), however, argued that the *consonant, cumulative, and ubiquitous nature of mass media* has been neglected by previous empirical research and that these factors are those which make mass media so powerful in influencing people's way of thinking. More specifically, she suggested that there is a high homogeneity between different media outlets in the way they portray controversial public issues. Individuals, therefore, are confronted with the same or similar viewpoints across a range of news channels. This consistency throughout different media channels is supposed to undermine people's selectivity of media content that is in accordance with their points of view. Moreover, Noelle-Neumann presumed that consonant media coverage has a cumulative effect on recipients, meaning that opinions that are promoted publicly, persistently, and repeatedly by mass media will have a larger effect on recipients over time. It was suggested that mass media have two crucial functions in this regard. First, Noelle-Neumann (1993) argued that mass media determine the specific public issues people pay attention to, think about and discuss ("agenda-setting function," p. 153). A second proposition is that mass media have an "articulation function," as they "provide people with the words and phrases they can use to defend a point of view. If people find no current, frequently repeated expressions for their point of view, they lapse into silence; they become effectively mute" (Noelle-Neumann, 1993, p. 173). According to this idea, the mass media are assumed to be so powerful that a "dual climate of opinion" can emerge, referring to them promoting a stance on a public problem that differs from what most people "on the street" think (Noelle-Neumann, 1993). Such a dual climate of opinion is observable when people who are less exposed to the mass media hold a different opinion on a public topic compared with people who use mass media more frequently. With all these suggestions, Noelle-Neumann revitalized the discussion about powerful media effects and assumed a clear position, stating that – over time – mass media can affect which societal topics people think about and convey an "opinion climate" to them (McQuail, 2014).

Besides providing anecdotal evidence on the consonance of media coverage and its influence on public opinion, for instance as outlined regarding the issue of death penalty (Noelle-Neumann, 1973a), Noelle-Neumann and her colleagues also presented a series of empirical studies on the role of the media and its impact on the public opinion climate (e.g., Kepplinger, Donsbach, Brosius, & Staab, 1989; Noelle-Neumann, 1973a, 1979b, 1979c, 1980, Noelle-Neumann, Donsbach, & Kepplinger, 2005; Noelle-Neumann, Kepplinger, & Donsbach, 1999; Noelle-Neumann & Mathes, 1987). Results, for instance, demonstrated that

expectations about which party was going to win the German federal election in 1976 differed between citizens depending on how frequently they viewed political TV broadcasts – this difference also remained after controlling for citizens' political interest (Noelle-Neumann, 1980). Likewise, a study including content analyses of media coverage and surveys among citizens revealed that shifts in how chancellor candidates were portrayed in the media (especially in leading media) preceded shifts in citizens' evaluations of the candidates with a time lag of three to six months (Kepplinger et al., 1989). More recently, Peter (2004) focused on the effect of *consonant* media coverage and explored this in relation to the issue of European integration considering content analyses and survey results from 13 European countries. Findings indeed showed that only when media coverage was consonant within a country, did citizens adapt an opinion in line with the media tone. Accordingly, when media content was dissonant throughout different channels, coverage did not shape people's opinions.

These empirical studies may indicate how influential (mass) media can be. Still, a series of empirical works demonstrated that the influence of media content on people's opinions and their inferences about the opinion climate is contingent on further, various factors such as media selectivity patterns (Dvir-Gvirsman, Garrett, & Tsfati, 2015; Tsfati, Stroud, & Chotiner, 2014), people's general attitudes toward (news) media and their presumed influence on other people (Gunther, 1998; Gunther, Christen, Liebhart, & Chia, 2001; Tsfati, 2003), and how the medium and its content are constituted (Brosius & Bathelt, 1994; Zerback, Koch, & Krämer, 2015). The latter factor will be discussed extensively in the course of the present work.

(9) Public opinion is limited to time and place.

One boundary condition of the spiral of silence theory is that the spiraling process is limited to a specific time and space. In the theory, it is explicitly mentioned that one will not find evidence for all hypotheses in all situations (Noelle-Neumann & Petersen, 2004). For instance, empirical support for the silence hypothesis may only be found in a specific phase of the public discussion process. Following this line, Bodor (2012) argued that spiral of silence research should consider the political communication context and, accordingly, the timing of measurement. In the U.S. presidential campaign in 2004, Bodor showed that at some points of time, candidate preference and perceived incongruity with the opinion climate can predict the frequency of people's political discussions at the workplace, whereas at other points of time

no relationship was found. Empirical data, therefore, underline the relevance of the timing factor when the spiral of silence is considered as a multilevel theory.

Besides the limitation to timing, the role of the place was proposed as pivotal: While it was suggested that there might be a "world public opinion" on certain topics such as the Apartheid in South Africa (Rusciano, 2014), Noelle-Neumann and Petersen (2004) posited that most spiraling processes will be best observed within national borders.

(10) Public opinion serves as an instrument of social control.

As was already outlined in Chapter 2.1, the spiral of silence theory assumes that public opinion serves as a social control in the sense that it ensures a social consensus and, therefore, social cohesion (Noelle-Neumann, 1993). With this view, Noelle-Neumann (1993) elaborates on the function of a spiraling process in a society which stems from the social nature of human beings. Since individuals strive to build groups which are cohesive and have shared values and goals, a spiral of silence merely follows social principles that are anchored in human nature striving for social inclusion and stabilization (see Chapter 2.2).

Given the number of hypotheses and their causal chain, it seems evident that the spiral of silence theory cannot be tested in its full complexity by individual studies (Matthes & Hayes, 2014). The complexity of this framework lies especially in the fact that it simultaneously focuses on micro processes on the individual level (e.g., the relationship between one's perceived opinion climate and willingness to express one's opinion) and macro processes on a societal level (e.g., the development of the public opinion landscape over time). The present research project which is interested in whether and how individuals use social media to infer public opinion climates and to express their opinions will exclusively focus on hypotheses predicting individual behavior. However, evidence on a micro-level may allow predictions on how individual behavior may contribute to societal dynamics.

2.3.2 Critique and Extensions

The spiral of silence theory has not only been associated with a comprehensive line of empirical research but also with extensive criticism referring to particular assumptions of the theory and their empirical operationalization (for comprehensive overviews see Salmon & Kline, 1985; Donsbach & Stevenson, 1986; Donsbach, Tsfati, & Salmon, 2014). This chapter

will give an overview of this critique which has given impetus to the refinement of the basic hypotheses of the theory (Scheufele, 2008).

2.3.2.1 Theoretical Critique

The quasi-statistical sense and its accuracy

Noelle-Neumann's concept of the quasi-statistical sense was criticized, particularly for its understanding of human perception. Assuming that people continuously observe and communicate with their environment, Noelle-Neumann (1977, 1993) claimed that the quasi-statistical sense is very sensitive to trends in public opinion, mostly leading to an accurate assessment of the prevailing opinion climate. This presumed accuracy of people's quasi-statistical sense was the starting point for criticism. Taylor (1982) and Salmon and Kline (1985) argued that a person's observation of his/her environment is often subjected to his/her perceptual biases such as the pluralistic ignorance, projection tendency, or looking glass effect. All of these concepts describe the mismatch of one's perceptions with actual social reality: Pluralistic ignorance as the erroneous inference that most others may have a different opinion than oneself assumes an underestimation of the general popularity of one's opinion (O'Gorman, 1975; Prentice & Miller, 1993). In contrast, the social projection hypothesis and the looking-glass perception (Fields & Schuman, 1976) posit that people project their own opinion onto others, which sometimes can lead to a misperception in the sense of overestimating the commonness of one's views or beliefs (Ross, Greene, & House, 1977). It was proposed that these cognitive biases reduce the accuracy of people's quasi-statistical sense (Kennamer, 1990; Price & Allen, 1990), as people would estimate an opinion climate that does not correspond to the actual one. Extensive lines of research have corroborated the existence of these perceptual biases empirically (Chia & Lee, 2008; Dvir-Gvirsman, 2015a; Fabrigar & Krosnick, 1995; Gunther & Christen, 2002; Marks & Miller, 1987; Wojcieszak, 2008) and have provided a series of explanations: Pluralistic ignorance has been explained by external factors such as a distorted visibility of opinion climates (e.g., when minorities are overly represented in the media; Shamir & Shamir, 1997) and by internal processes such as believing that others fear embarrassment less than oneself, so that they are more likely to express their private opinion openly (Miller & McFarland, 1987). Projection tendencies have been explained by self-serving motives in the sense that it fortifies the ego to think that others agree with oneself (Morrison & Matthes, 2011) or by the availability heuristic, meaning that one's personal opinion is very easily accessible and retrievable when it comes to making

inferences about others (Marks & Miller, 1987). Recently, Zhang and Reid (2013) offered the explanation that perceptions of opinion consensus occur because people have prototypes of groups and their norms; consequently, projections are observable especially when people identify with the target group (the group whose opinion is of interest). In summary, a series of reasons were proposed explaining why perceptions of public opinion are not always accurate.

While Noelle-Neumann (1977) stated that her assumptions on the quasi-statistical sense "do not negate the fact or importance of patterned misperceptions of other people's opinions" (p. 144) and she explicitly integrated the concept of pluralistic ignorance in her theory (1993; see also Chapter 2.3.1), her negligence of further perceptual biases such as the projection tendency remained a fundamental criticism of the spiral of silence theory (Donsbach et al., 2014; Scheufele & Moy, 2000). The permanence of this criticism might be due to the fact that the projection tendency is supposed to challenge a basic premise of the spiral of silence theory (Price & Allen, 1990). The idea that people generally tend to believe that others think similarly to themselves contradicts the prerequisite for people being silent in Noelle-Neumann's understanding, that is, perceiving that others have a different opinion than themselves. According to Kennamer (1990), the projection tendency limits the prevalence of the spiraling process, as people would commonly openly express their personal stance since they perceive that their opinion is common. To date, there has been less research on whether and how these two lines of reasoning, the projection hypothesis and the spiral of silence theory, fit together. In this context, it seems conceivable that people project their opinion onto a certain part of the population, while being aware that another part may not hold this view, which could leave enough room for the silencing mechanism to become operative.

Consonance in mass media

Critics have also scrutinized Noelle-Neumann's understanding of powerful mass media. The principal argument against this concept was that media coverage does not consistently present debatable issues in a homogeneous way (Merten, 1985; Price & Allen, 1990; Salmon & Kline, 1985). As Noelle-Neumann (1973) based her assumptions on observations within the German media landscape, some scholars outside Germany argued that the presumed consonance in media coverage may not apply, for instance, to American mass media: "The underlying pluralism which characterizes the American political system is reflected in pluralistic mass media" (Salmon & Kline, 1985, p. 20). Even in Germany, contradicting Noelle-Neumann's assumption and empirical work by Kepplinger (1982), Merten (1983) presented a content analysis showing that media coverage of the German

chancellor election in 1976 was ideologically balanced, deducing that journalists' political views do not influence their work.

In today's media landscape, concerns about the consonance of media coverage have been allayed for two reasons (Donsbach et al., 2014; Mutz & Silver, 2014). Firstly, ideological outlets in mass media have been established in many countries (e.g., Fox News or MSNBC in the USA), allowing recipients to consume diverse viewpoints on societal problems (Tsfati et al., 2014). Secondly, the advent of Internet technologies and their pull-nature enable people to seek ideologically congruent information and networks, offering a myriad of possibilities to exchange non-mainstream information and opinions (Knobloch-Westerwick & Kleinman, 2012; Moy & Hussain, 2014). While the latter implies new risks, such as polarization and self-segregation (see Chapter 1.1), the premise that people are powerlessly subjected to one-sided or skewed media coverage can no longer be maintained. Given today's media system, it seems more commendable to ask how people deal with this fragmented media landscape and how the abundance of (diverse) media affects people's perceptions of public opinion and, ultimately, their personal opinion (see e.g., Dvir-Gvirsman, 2014; Dvir-Gvirsman, Tsfati, & Menchen-Trevino, 2014; Tsfati & Chotiner, 2015).

The function of the fear of isolation

People's fear of isolation as the supposedly driving force behind the spiral of silence has been questioned on two grounds: Firstly, it has been scrutinized whether fear of isolation can fully explicate conformity behaviors or whether other motives such as attraction to or identification with a group (which does not necessarily have to be the opinion majority) may also account for people adhering to a norm (Salmon & Kline, 1985). Along these lines, Price and Allen (1990) asked whether the fear of being isolated from the majority can generally explain people's behavior when considering how unanimity of the opinion climate can influence people's actions: "When even a single experimental confederate sided with the subject, conformity rates declined dramatically from the usual 33% or so to about 5% (Asch, 1951)" (p. 372). This argument questions whether small-group research, as conducted in social psychological works like Asch's studies, allows conclusions on processes on a societal level. While this criticism has raised many questions on the role of the fear of isolation, less research has been done to reveal its actual function and whether and under which circumstances other motives may serve as better explanations for people's behavior.

The lack of systematic research on the fear of isolation was brought up by a second line of criticism. It has been argued that the fear of isolation has been presupposed as a given

constant factor without scrutinizing its stability or manifestation (Glynn & McLeod, 1985). Accordingly, Glynn and McLeod (1985) proposed understanding people's fear of isolation as a factor that may vary among individuals which should be measured or controlled empirically (see also Petrič & Pinter, 2002). While subsequent research has treated fear of isolation as a trait-like and sometimes as a state-like variable (see Hayes et al., 2013), there is still little research on which of those views may explain more in people's opinion expression behavior. In theoretical terms, it should be acknowledged that the fear of isolation is still underspecified. For instance, to date it remains unclear whether the fear of isolation applies equally to all situations or whether some situational factors might amplify or attenuate the effect of people's fundamental fear of being socially rejected. A situational approach evaluating how people's fear of isolation manifests itself differently according to environmental factors such as the relationship to one's interaction partners, could do justice to the complexity of diverse social situations and its effects of people's social fears.

The influence of individual characteristics

As many studies testing the silence mechanism were not able to find the patterns predicted by Noelle-Neumann, it has been argued that the spiral of silence theory does not account for individual characteristics such as trait-like dispositions which could further explain differences in people's opinion expression behavior (Lasorsa, 1991; Salmon & Kline, 1985). While Noelle-Neumann (1974, 1993) found that male, younger, better educated, and financially well-placed people were more likely to express their opinion on controversial topics (at least in Germany), subsequent research hypothesized and explored the influence of further personality variables. Empirical studies showed that people are more willing to pronounce their opinion publicly, the less shy they are (Hayes et al., 2005a), the less they generally fear communication (Neuwirth et al., 2007), the more interested they are generally in politics (Baldassare & Katz, 1996; Lasorsa, 1991), the more important the particular topic is to them personally (Oshagan, 1996; Salmon & Neuwirth, 1990) and the more certain they are of their opinion (Matthes et al., 2010; Lasorsa, 1991). Opinion certainty was even found to attenuate the effect of the perceived opinion climate in the sense that while people with a low or moderate opinion certainty are more likely to express their opinion in the event that they are in the majority, people with high opinion certainty do not consider the opinion climate when expressing their opinion (Matthes et al., 2010). Moreover, Hayes and colleagues (2005a, 2005b) conceptualized a dispositional tendency to self-censorship, referring to the "withholding of one's true opinion from an audience perceived to disagree with that opinion"

(2005a, p. 299). In this regard, it was found that self-censorers (i.e., those who generally have a greater willingness to self-censor) make their decision on whether to express their opinion or not, more contingent on the prevailing opinion climate than people who are generally less willing to self-censor (Hayes, Uldall, & Glynn, 2010). A cross-cultural study by Matthes and colleagues (2012) also demonstrated that in eight out of nine countries people's willingness to self-censor was positively related to their dispositional fear of isolation. This series of studies indicates the importance of considering differential factors when exploring people's willingness to express their opinion.

The influence of reference groups

Drawing on the idea that people's perceptions, opinions, and actions are particularly influenced during interpersonal communication with reference groups, e.g., close friends and family (Katz & Lazarsfeld, 1955), scholars demanded the inclusion of reference groups in the theoretical framework of the spiral of silence (Glynn & McLeod, 1985; Glynn & Park, 1997; Katz, 1983; Krassa, 1988; Salmon & Kline, 1985). With regard to the process of public opinion perception, Salmon and Kline (1985) posit: "what individuals perceive as the dominant opinion in their opinion environment is the dominant opinion of important reference groups" (p. 10). Following this line of reasoning, people are supposed to be more outspoken in a hostile opinion climate among the national population if they know that their reference groups agree with them. Reference groups have been proposed not only as influential sources for perceptions of the opinion climate but also as a more relevant audience of one's opinion expression act than the rather abstract "general public." Corresponding empirical results did not consistently support this argument: Whereas some studies showed that the perceived opinion climate among reference groups influences people's outspokenness more than the perceived opinion distribution among a more general group such as the national population (Moy, Domke, & Stamm, 2001; Oshagan, 1996), other studies demonstrated a reverse pattern, indicating that a more general opinion climate (e.g., among a nation) is more influential than that of local or reference groups (Glynn & Park, 1997; Salmon & Neuwirth, 1990; Salwen, Lin, & Matera, 1994). These discrepant findings have been attributed to the diverging operationalizations of people's willingness to express their opinions in corresponding studies (Scheufele & Moy, 2000). Despite this inconclusive state of knowledge, many scholars still emphasize the value of focusing on people's direct environment in terms of peer groups and social network ties (Eveland, 2014; Zhang & Reid, 2013). Thus, aggregating the knowledge of how interpersonal and small group communication influence people's perceptions and

communication behavior, is thought to contribute to linking micro-level processes to macro-level dynamics (Eveland, 2014).

Differentiation between actual and perceived climate of opinion

In her empirical observations, Noelle-Neumann (1993) commonly analyzed whether people who were in the actual majority (based on percentages) were more likely to voice their opinion than those who were in the minority faction (see Chapter 2.3.1). Several scholars questioned this procedure as they argued that people are often subject to perceptual biases, meaning that the actual opinion distribution often differs from that which the individual perceives as the dominant opinion climate (Donsbach & Stevenson, 1986; Mutz, 2006; Scheufele, 2008; Scheufele & Moy, 2000; Salmon & Kline, 1985). This line of reasoning proposes that people's *perceptions* of the opinion climate may explain their subsequent actions better than the factual distribution of opinions. Indeed, the major portion of spiral of silence research has explored the relationship between the perceived opinion climate and people's opinion expression (Glynn & Huge, 2014). Still, Noelle-Neumann (1992) justified her approach by theorizing that people's inferences about public opinion are formed (e.g., through the consumption of mass media) below their threshold of perception. To date, there has been a debate on whether actual or perceived majority status may encourage people's outspokenness (see Roessing, 2009). That actual majority and minority distributions may be more influential than perceived opinion climates seems to contradict Noelle-Neumann's own prediction (see Hypothesis 7 in Chapter 2.3.1). Even if people have the ability to monitor opinion climates accurately, the spiral of silence theory also expects that – over time – the opinion climate that is visible in the public scene will not correspond to the actual opinion climate (because of the silencing process). In other words, the theoretical framework requires that people's perceptions of public opinion diverge from the actual opinion climate. Following this line of reasoning, it seems plausible to assume that people's perceptions of the opinion climate may be a more influential determinant of people's behaviors than the actual opinion climate.

Normative and informational social influence

In terms of the social psychological influence processes, the spiral of silence theory predominantly considers the mechanism of normative social influence, assuming that others' opinions may affect people's public behavior but not necessarily their private opinions (Glynn, 1996; Price & Allen, 1990; Price & Oshagan, 1995; Scheufele & Moy, 2000).

Following the dual-process model of social influence by Deutsch and Gerard (1955; see Chapter 2.2), Price and Allen (1990) critically remarked that the spiral of silence theory disregards the potential existence of informational social influence in the sense of public opinion perceptions influencing not only public behavior but also private opinions: "People submit to majority views, not just to avoid embarrassment or isolation, but because they take the responses of others as useful evidence in adjudicating their own point of view" (p. 380). This criticism seems justified when considering that moral-laden topics (which are supposed to be in the center of the spiraling processes; Noelle-Neumann & Petersen, 2004) are ambiguous and may elicit a certain level of uncertainty in people's evaluations. Moreover, given the abundance of political issues, people cannot have a (firm) opinion on each and every societal problem (Bishop, 2005; Meffert, Guge, & Lodge, 2004; Moy, 2008). Therefore, it is conceivable that people adhere to public opinion not primarily because of normative pressure but because of their wish to make an informed judgment. Price and colleagues (2006) provided evidence that the opinion climate in group discussions can influence both people's expressive behavior and their internal opinions. This line of argumentation suggests the consideration of both social influence processes and, hence, two dependent variables within the spiraling process: public behavior and private opinions (see also Shamir, 2014).

Cross-cultural applicability

Forty years after the first international publication of the spiral of silence theory, Matthes and Hayes (2014) stated that tests of the theory's universality were still very scarce in existing research. While the spiral of silence has been investigated in many cultural contexts, predominantly in North American, European, and East Asian countries, systematic cross-cultural comparisons have not been at the center of the empirical studies. From a theoretical point of view, it has been argued that cultural orientation along the continuum between the prioritization of self-expression/individualism and social harmony/collectivism, may moderate the spiraling process (Rosenthal & Detenber, 2014; Scheufele & Moy, 2000). More specifically, Rosenthal and Detenber (2014) state that "[e]thics of individualism and resistance to social pressure tend to engender or at least facilitate, non-mainstream expression; whereas, the prioritization of collectivism and conformity can seed the spiral of silence" (p. 190). The assumption that the silencing process is more probable in collectivistic than in individualistic cultures has dominated previous works. Empirically, Huang (2005) found support for the silence mechanism in Taiwan (a rather collectivistic culture) but not in the United States (a more individualistic culture). Likewise, the silence hypothesis received

partial support among Singaporean but not among North American participants (Lee et al., 2004). These findings indicate that the silence mechanism may apply more to collectivistic cultures where society's conformity may be a more valuable commodity than in individualistic cultures where independent opinions are not judged, per se, as negative (Rosenthal & Detenber, 2014). Still, Matthes and colleagues (2012) found a positive relationship between the fear of isolation and willingness to self-censor in Germany, USA, United Kingdom, France, South Korea, Russia, Mexico, and Chile but not in China which can be regarded as a prototypical country with a rather collectivistic culture. An explanation for the nonsignificant correlation in China could be that self-censorship is not rooted in people's fear of isolation because being isolated from society is supposed to be very unlikely in collectivistic cultures (Matthes et al., 2012) – conformity in these cultures may be better explained by people's wish to maintain social harmony (Huang, 2005). Matthes et al. (2012) further argue that besides people's cultural predispositions, structural factors such as the political and media landscapes (which are inevitably associated with the predominant cultural orientation in a country) will also exert impact on people's communication behavior. For instance, in countries where freedom of speech is restricted, people may be less willing to publicly express an opinion that deviates from the prevailing opinion climate.

One major challenge when testing the cross-cultural applicability of the spiral of silence theory is finding scenarios that are comparable across national and cultural boundaries (Scheufele & Moy, 2000). In this regard, it seems commendable to use the same controversial issue in cross-cultural research in order to create the same conditions and to keep scenarios comparable. Nevertheless, using the same topic in cross-cultural research can also be the reason why settings are not comparable, as a particular topic may be controversial in one country but not in the other (Matthes & Hayes, 2014). Therefore, cross-cultural research demands a systematic consideration of contextual factors. This challenge should still not impede research intended to test the cross-cultural validity of theoretical predictions.

2.3.3.2 Methodological Limitations

Besides the methodological limitations outlined when presenting the spiral of silence theory (see Chapter 2.3.1), for instance, with respect to the lack of longitudinal research assessing the dynamic nature of spiraling processes (cf. Bodor, 2012; Scheufele, 2008; Matthes, 2015), the following section will discuss those limitations that are of particular interest for the present research project.

Hypothetical scenarios versus realistic situations

In the methodological tradition of spiral of silence tests, many studies have used hypothetical scenarios like the train, bus ride, or social gathering test: "Suppose you are sitting in a long bus or taxi ride next to a stranger who disagrees with you on [controversial issue]. Would you be willing to enter into a discussion with this person or wouldn't you?" (cf. Shamir, 1997). Glynn et al. (1997), Hayes et al. (2001), and Scheufele, Shanahan, and Lee (2001) criticized this methodological approach for several reasons. First, they argued that a hypothetical scenario may not create the same level of social pressure that might prevail in real situations: "people may not appreciate the power of the situation and thus underestimate how unwilling they would be to express an unpopular viewpoint around others" (Hayes et al., 2001, p. 47). Second, a written or verbal hypothetical scenario is supposed to eliminate potential influence factors such as whether the subject feels confident in the particular situation in front of a specific audience. Consequently, hypothetical approaches may not elicit the psychological states – such as situational fear of isolation – that are stated in the theoretical predictions of the spiral of silence theory (Glynn et al., 1997). Thus, it has been recommended extending the state of knowledge by *observing* people's behavior in face of *realistic threats* (Matthes & Hayes, 2014). Initial studies intended to address this criticism by observing people's willingness to discuss particular topics after they were told that a real discussion with other study participants would follow up (Hayes et al., 2001; Ho & McLeod, 2008; Scheufele et al., 2001). In line with the silence hypothesis, these studies showed that the less public support they attributed to their opinion concerning this topic, the less willing people were to participate in a discussion or to talk about a particular topic. Results even showed stronger relationships between the perceived opinion climate and the willingness to discuss than studies employing hypothetical scenarios had (Hayes et al., 2001; Scheufele et al., 2001). Further studies also involved participants in real discussions with confederates or other study participants in order to assess how they actually responded to friendly and hostile (experimentally manipulated) opinion climates (e.g., Hayes et al., 2010; McDevitt, Kiousis, & Wahl-Jorgensen, 2003; Wang, Eveland, & Cortese, 2004). Results of these studies revealed rather small or even absent effects of the opinion climate on the people's outspokenness. Given the low number of studies that employed real conversational settings, there is still an urgent demand for research that systematically manipulates situational variables such as the audience and creates realistic threats in order to (a) identify further moderators of the spiraling process and (b) gather authentic responses from individuals (Matthes & Hayes, 2014).

The operationalization of "speaking out"

In the original spiral of silence theory, people's public behavior was considered as twofold: They either express their opinion or keep silent. As a proxy for expressing one's opinion, Noelle-Neumann (1993) also suggested different forms of public actions such as wearing a campaign button, attaching a bumper sticker to one's car, hanging up a poster with a political message on one's house, or participating in a demonstration (see also Salmon & Oshagan, 1990). Whereas these may be different forms of "speaking out," Hayes (2007) and Neuwirth et al. (2007) argued that the operationalization of people's communication behavior in spiral of silence research does not do justice to real social discourses wherein people can express or withhold their opinion in less explicit ways. Therefore, they proposed different opinion expression *engagement* and *avoidance strategies*. Likewise, McDevitt and colleagues (2003) suggested that there is a difference between "speaking up" and "speaking out." Speaking up refers to participating in a discussion without taking an explicit stand (e.g., asking for information or for further opinions), speaking out, in contrast, means clearly expressing one's personal opinion. In terms of avoidance strategies, Hayes (2007) presented methods such as reflecting a question, expressing uncertainty or ambivalence, expressing indifference, talking about someone else's opinion, changing the topic of discussion, pretending to agree, saying nothing at all, or walking away from the discussion. Empirically, Hayes (2007) found that people are more likely to use these avoidance techniques in front of a hostile opinion climate compared with a friendly opinion climate. This study also showed that reflecting a question, expressing uncertainty, or changing the subject in face-to-face conversations are more likely responses than saying nothing at all. Thus, a more differentiated view on people's reactions (besides lapsing into silence) might contribute to increasing the ecological validity of analyses.

Lack of experimental research

In conjunction with the previously mentioned methodological shortcomings, a lack of experimental approaches in spiral of silence research has been lamented by several scholars (Matthes & Hayes, 2014; Moreno-Riaño, 2002; Yun & Park, 2011). Indeed, survey-based studies have dominated this particular field to date and the number of experimental works is still low, albeit increasing. In line with the shortcomings outlined above, experimental research could create situations where the social pressure is made more salient to participants, more than it might be in surveys wherein subjects have to imagine the situation and could therefore underestimate the power of the social environment. Scheufele and colleagues (2001)

warned that experimental approaches can reduce ecological validity: when settings are too artificial, the generalizability of results may be very limited. Against this background, it seems that there is a pressing need for upcoming research to exploit the potential of experiments in order to approach causal relationships (e.g., the influence of media messages on public opinion perceptions) and likewise to maximize the ecological validity in terms of reproducing conversational situations as realistically as possible. While experimental approaches may appear more suitable for some research interests than for others, it is remarkable that particularly when it comes to apply the spiral of silence theory to computer-mediated contexts, many scholars choose experimental methods. Apparently, online technologies seem to facilitate the exertion of experimental control over environmental factors such as the opinion climate more than offline environments do. The following chapter presents empirical research testing how predictions within the spiral of silence theory may be valid in discursive areas on the Internet.

2.3.3 The Spiral of Silence Theory in Online Realms

With its convergence of micro- and macro processes, the spiral of silence theory promises to guide research interested in how opinion dynamics occur in social spheres like social media. With the advent of online communication, a series of studies has tested whether the mechanisms assumed in the spiral of silence theory may also apply to the online context. The conceptual and methodological approaches of this research are very diverse and needed to be systematized. Within the corresponding literature, six broad areas of research were identified: (1) Online media as a source of public opinion perceptions, (2) The silence hypothesis within computer-mediated communication, (3) Comparison of face-to-face versus computer-mediated environments, (4) Opinion expression strategies in social media, (5) Characteristics of CMC environments moderating the spiral of silence process, (6) Characteristics of online discussions. Table 1 provides an overview of the categories and corresponding works exploring the spiral of silence theory in online communication. Following this, evidence within each of these categories is summarized. It should be noted that these categories are not exclusive; however, they should help to give a general idea on the current state of the art.

Table 1

Overview of studies related to the spiral of silence theory in online communication

Author	Primary research objective	Specific online medium	Method	Sample size / origin	Issue
Online media as a source of public opinion perceptions					
Kim, Kim, & Oh (2014)	Does the Internet function as a venue for public opinion perception and opinion expression?	Internet in general	Survey	$N = 1,200$ / South Korea	Genetically modified food
Lee (2012)	Do user-generated comments influence hostile media perceptions mediated through public opinion perceptions?	Online news sites	Experiment	$N = 214$ / South Korea	Corporal punishment in schools
Lee & Jang (2010)	Do other users' comments influence recipients' perceptions of public opinion, media influence, and own opinion?	Online news sites	Experiment	$N = 252$ / South Korea	Animal testing / Content regulation in TV
Porten-Cheé & Eilders (2015)	Do public opinion perceptions inferred from user-generated content differ from those inferred from mass media? Which media-related factors determine opinion expression online?	User-generated content (blogs, SNS, miscellaneous websites)	Online diary for seven days	$N = 444$ / Germany	Climate change
Tsfati, Stroud, & Chotiner (2014; Study 1)	Does exposure to ideological (online) media influence public opinion perceptions?	Right-wing online platforms	Survey	$N = 519$ / Israel	Israeli disengagement from the Gaza strip
Wojcieszak (2008)	Do interactions with ideologically homogeneous online groups foster the false consensus effect?	Ideological Internet forums	Survey	$N = 121$ / North America	Equal rights / Globalization
Schulz & Rössler (2012)	Do predictions about public opinion perceptions within the spiral of silence theory also apply to computer-mediated environments?	Internet in general	Theoretical review	-	-
Hwang, Kim, & Huh (2014)	Does uncivility in online discussions influence perceived political polarization of the public and expectations of public deliberation?	YouTube	Experiment	$N = 154$ / USA	Health reform bill
The silence hypothesis within computer-mediated communication					
Lee & Kim (2014)	Do South Korean journalists express their opinion on Twitter independently from the opinion climate?	Twitter	Survey	$N = 118$ / South Korea	Performance of President / Free Trade Agreement
Liu & Fahmy (2011)	To what extent do perceived opinion climates predict people's willingness to express their opinion online and offline?	Internet in general	Survey	$N = 503$ / USA	Legalization of same-sex marriage
Miyata, Yamamoto, & Ogawa (2015)	Does the perceived opinion climate influence opinion expression on Twitter?	Twitter	Survey + Log Analysis	$N = 1,276$ / Japan	Nuclear power
Price, Nir, & Cappella (2006)	How do dynamics in online group discussions influence the individual's opinion expression behavior and personal opinion?	Online discussion groups	Content analysis + survey	$N = 306$ / USA	U.S. presidential candidate in 2000
Wojcieszak & Price (2012)	Does perceived or actual disagreement with others influence online deliberation?	Online discussion groups	Content analysis + survey	$N = 915$ / USA	10 societal topics such as death penalty, gun control, crime regulation, etc.

Comparison of face-to-face versus computer-mediated environments

Hampton, Rainie, Lu, Dwyer, Shin, & Purcell (2014) (Pew Research Center)	Do spiral of silence patterns also appear in social media?	Facebook / Twitter	Survey	*N* = 1,801 / USA	Government's surveillance of Americans' telecommuni-cation
Ho & McLeod (2008)	Are people more willing to express a minority opinion in face-to-face communication or in a virtual chat?	Online chat	Experiment	*N* = 352 / USA	Legalization of same-sex marriage
McDevitt, Kiousis, & Wahl-Jorgensen (2003)	How do people perceive and express opinions in computer-mediated compared with face-to-face discussions?	Online chat	Experiment	*N* = 48 / USA	Abortion
Wang, Eveland, & Cortese (2004)	Do people perceive less fear of isolation in CMC and are more willing to express their opinion in CMC compared with face-to-face communication?	Online chat	Experiment	*N* = 104 / USA	Death penalty

Opinion expression strategies in social media

Gearhart & Zhang (2014)	Which individual characteristics influence how people respond to a controversial discussion on Facebook?	Facebook	Experiment	*N* = 760 / USA	Tolerance toward homosexuals
Gearhart & Zhang (2015a)	How do individual factors affect people's speaking out and silencing strategies on social networking sites?	Social networking sites	Survey	*N* = 2,353 / USA	Political issues in general
Lin, Huang, Wan, & Lin (2015)	How do people's attitudes toward the political use of Facebook influence how they engage in discussions on this platform?	Facebook	Survey	*N* = 398 / Taiwan	Political issues in general

Characteristics of CMC environments moderating the spiral of silence process

Jang, Lee, & Park (2014)	To what extent do network size and individual characteristics influence people's opinion expression on Facebook?	Facebook	Survey	*N* = 442 / USA	Gay rights / political issues in general
Kwon, Moon, & Stefanone (2015)	To what extent do people's fear of isolation and characteristics of their Facebook network influence their willingness to self-censor political expression?	Facebook	Survey	*N* = 403 / USA	Political issues in general
Ling, Kristle, Jamie, & Madeleine (2011; Study 2)	Does social anonymity influence whether and how people express their opinion during a virtual chat?	Online chat	Experiment	*N* = 150 / Singapore	Foreign talent policy
Luarn & Hsieh (2014)	How do anonymity and familiarity with discussants influence people's opinion expression on Facebook?	Facebook	Experiment	*N* = 147 / Taiwan	Legalization of same-sex marriage
Nekmat & Gonzenbach (2013)	Do the ideological homogeneity versus heterogeneity and the opinion climate on an online platform influence people's willingness to express their opinion?	Online news site / Activist website	Experiment	*N* = 248 / USA	Tolerance toward homosexuals
Rössler & Schulz (2014)	To what extent do anonymity and identifiability on the Internet influence people's expectation of sanctions and their opinion expression behavior?	Internet in general	Theoretical review	-	-

Yun & Park (2011)	Do anonymity and the opinion climate on an online forum influence people's willingness to express their opinion?	Online forum	Experiment	N = 126 / USA	Abortion
Characteristics of online discussions					
Pang, Ho, Ko, Low, Zhang, & Tan (2015)	Do the discussion civility and the opinion climate affect whether and how people respond to a discussion on Facebook?	Facebook	Experiment	N = 502 / Singapore	Foreign talent policy

Online media as a source of public opinion perceptions

As Internet technologies have become increasingly ubiquitous in people's lives, the extent to which online platforms may function as sources which convey prevailing climates of public opinion to their users, has been explored. A survey study among South Koreans by Kim, Kim, and Oh (2014) revealed that people's perception that Internet users are in favor of genetically modified foods is associated with their perception that their reference groups (i.e., friends and family) and the national population are and will be in favor, too. In terms of experimental research, Lee and Jang (2010) as well as Lee (2012) demonstrated that user-generated comments related to an online news article can influence the recipients' inferences about public opinion insofar as recipients project the viewpoint advocated in these comments onto the "general public" (see also Hwang, Kim, & Huh, 2014). While this evidence indicates that user-generated content may be a source of perceptions of the opinion climate, this pattern could not be replicated in the field: Focusing on the climate change debate, Porten-Cheé and Eilders (2015) used an online diary method to explore whether content received via online media shapes people's perceptions of public opinion in a different way than mass media. They found that none of these media types influence people's inferences about public opinion.

Apparently, the effects of online media on people's public opinion perception may be contingent on the particular issue and the specific media platform: For instance, Israeli participants who are exposed to like-minded right-wing online outlets are more likely to infer public opinion through a "right-wing lens" as they estimated that most Israeli citizens would not support an Israeli pullout from the Gaza strip (Tsfati et al., 2014; Study 1). However, the participants' own opinion was a stronger predictor of their estimates of public opinion than was exposure to right-wing media. The fact that people project their own opinion onto others (Fields & Schuman, 1976) and sometimes overestimate public support for one's opinion, can even be intensified through interacting with like-minded groups on the Internet: A survey by Wojcieszak (2008) showed that the more frequently and intensely neo-Nazis participated in like-minded online discussion groups, the more they tended to overestimate the extent to which others held the same opinion as themselves. This pattern, however, was not found to be

the same for radical environmentalists: An increasing exposure to like-minded online discussion groups did not predict their overestimating public support for their own opinion.

The power of people's dispositions and beliefs in their inferences about public opinion has been examined a current review in the theoretical context of the spiral of silence: Schulz and Rössler (2012) argue that the effects of contemporary online communication on inferences about public opinion may be far more complex than four decades ago when the spiral of silence was first proposed. The authors state that when using today's communication technologies such as social media, people are subject to their own selection patterns in the way they choose and pay attention to media content, but also with regard to the network of people who surround them virtually (cf. "filter bubble" and fragmentation hypothesis in Chapter 1.2.2). Consequently, Internet users are supposed to perceive public opinion highly subjectively through social media, as individuals may often infer an opinion climate that echoes their own opinion. According to Schulz and Rössler (2012), this pattern may limit the spiral of silence, as the perception of a hostile opinion climate is the prerequisite for the silence mechanism. Still, the authors acknowledge that "it is not always possible to avoid dissonant information online completely, even if the individual intends to do so" (Schulz & Rössler, 2012, p. 352).

The silence hypothesis within computer-mediated communication

In almost every spiral of silence study in online realms, the silence hypothesis has been researched as a core assumption of the theory. The effects of the opinion climate on people's outspokenness were explored in two different ways: Firstly, in some studies the relationship between the perceptions of a general opinion climate in society, among Internet users or within one's personal network and people's opinion expression behavior online has been researched (Ho & McLeod, 2008; Kim et al., 2014; Kwon et al., 2015; Miyata, et al., 2015; Lee & Kim, 2014; Liu & Fahmy, 2011; Porten-Cheé & Eilders, 2015). Whereas, secondly, it has been investigated whether an experimentally manipulated opinion climate (congruent or incongruent to the subject's opinion) in a virtual chat (McDevitt et al., 2003), online forum (Yun & Park, 2011), activist website or news website (Nekmat & Gonzenbach, 2013) influences people's responses in this particular situation. Both investigation techniques yielded mixed empirical results, revealing an association between opinion climate and opinion expression (Ho & McLeod, 2008; Kim et al., 2014; Lee & Kim, 2014; Miyata et al., 2015; Nekmat & Gonzenbach, 2013; Yun & Park, 2011), but also finding no relationship (Kwon et al., 2015; Liu & Fahmy, 2011; McDevitt et al., 2003). Porten-Cheé and Eilders (2015) even

found that encountering an incongruent opinion climate online increases people's likelihood to express their opinion in a blog where they are registered with their name and on Facebook by using the "like"-button.

Besides survey and experimental research, initial evidence was provided based on field data. A content analysis of online group discussions among citizens during the 2000 U.S. presidential election campaign revealed that discussants were more likely to express a favorable stance toward candidate Bush (or Gore) in the event that previous discussants also expressed their support for candidate Bush (or Gore; Price et al., 2006). Moreover, analyses demonstrated that people adhered to the argumentative norm of the group discussion, meaning that a higher argumentative level of discussants' contributions encouraged subsequent discussants to substantiate their own comments through arguments. In these online groups, therefore, normative influence processes seem to determine not only *what* people state but also *how* they express their viewpoint. A further content analysis of group discussions about societal topics, such as the death penalty or gun control, during the 2000 U.S. presidential election campaign, supported the silence hypothesis but only for certain topics (Wojcieszak & Price, 2012): Perceived and objective disagreement with other users' opinions inhibited people's expression of their own viewpoint.

Comparison of face-to-face versus computer-mediated environments

A pivotal question in spiral of silence research has been whether people's willingness to express their opinion on controversial topics varies across online and offline environments. One line of reasoning was built on the equalization effect (e.g., Dubrovsky et al., 1991; see Chapter 1.1), stating that anonymity and the lack of social context cues in computer-mediated communication encourage people – regardless of their social status – to participate in discussions (Ho & McLeod, 2008). It was proposed that the mediated nature of communication reduces people's fear of isolation, as the physical absence of others was supposed to lower the perceived likelihood of social sanctions (McDevitt et al., 2003). Scholars argued, therefore, that mediated communication attenuates conformity processes in the sense that individuals do not feel the same pressure to comply with majority judgments as they do in face-to-face communication.

Empirical results in this regard have been inconclusive: An experiment by Ho and McLeod (2008) indicated that users may see the Internet as a place for egalitarian participation, as people were more willing to join a discussion with a hostile opinion climate in a virtual chat room than in a face-to-face setting. In contrast, an experiment by Wang and

colleagues (2004) revealed that the likelihood of people expressing a minority opinion did not differ between a virtual chat condition and a face-to-face condition. The authors still identified that people are generally more willing to talk about a controversial topic in offline than in online communication (measured by analyzing when people brought up the controversial topic during the discussions). By analyzing how people express their opinions depending on the communication environment, McDevitt and colleagues (2003) found in their experiment that participants of a discussion via virtual chat rooms expressed their opinions more moderately (in the sense of less extremely) than participants in a face-to-face discussion. The authors explained this pattern by arguing that the lack of social context cues in CMC encourages holders of minority opinions to "speak up," in the sense of contributing to a discussion without clearly expressing one's opinion, while in face-to-face communication members of an opinion minority would simply lapse into silence. While these findings exclusively referred to the comparison between virtual chat and face-to-face discussions, a more recent study investigated people's willingness to express their opinion across different online and offline situations (Hampton et al., 2014). Results from a survey among U.S. Americans showed that more participants were "very" or "somewhat" willing to discuss the controversial topic of government surveillance programs at a family dinner (75%), at a restaurant with friends (71%), at a community meeting (68%), at work (66%) than posting messages about this topic on Facebook (43%) or on Twitter (41%; please note that the last two percentages only considered people who usually use this platform). In both online and offline communication, people were more willing to join a conversation about this topic when they felt that others might agree with them.

Opinion expression strategies in social media

As social media technologies provide many ways of expressing oneself, initial research in the context of the spiral of silence has started analyzing which factors determine different strategies to express one's opinion or to avoid voicing one's viewpoint. Gearhart and Zhang (2014) used hypothetical scenarios in the context of the social networking site Facebook and manipulated the opinion climate therein (either friendly or hostile to subjects' pre-existing opinion). Results revealed that even in a friendly opinion climate, people who are prone to self-censoring themselves are less likely to contribute to a discussion on tolerance toward homosexual people in society. In contrast, the more important this issue was for participants, the more likely they were to comment on this discussion and the less likely they were to just ignore it. While Gearhart and Zhang do not report any direct effects of the

experimentally manipulated opinion climate on people's response strategies, the congruence with the perceived opinion climate among friends and family and among the national population did not exert any impact on people's outspokenness. Additionally, it was shown that the more time people usually spent on SNS, the more willing they were to contribute to this discussion – regardless of whether the opinion climate was hostile or friendly. This could indicate that familiarity with social networking platforms may lower personal barriers to voice one's opinion on controversial topics in such environments. This pattern was corroborated by a further study by Gearhart and Zhang (2015a; a secondary analysis of survey data reported in Rainie & Smith, 2012). In this secondary analysis, the authors also showed that on SNS, 26.9% of participants (U.S. American adults) tended to comment on the political post of a friend with which they disagreed (see also Rainie & Smith, 2012). Conversely, 66.5% indicated that they usually ignore friends' political posts they disagree with. Participants' likeliness to respond to posts with which they disagreed was positively predicted by their tendency to see and use SNS as a forum for political information and discussion. People's outspokenness also seems to be determined by the feedback they had received from people in the past (Gearhart & Zhang, 2015a): Those who received negative feedback on their own political posts (63.3% of participants) were less likely to respond to posts they disagreed with. Still, these people were also more likely to "like" political content on SNS (47.4%) and to write positive responses to political posts (38.6%). It seems that people who had negative experiences with political discussions online use less precarious response strategies in order to avoid conflicts in those environments. Ultimately, 22.5% of participants stated that they have decided – at least once in the past – not to post political content because of the worry of offending someone.

For many Internet users, SNS may not be an appropriate place to discuss politics. A survey among Taiwanese Facebook users demonstrated that while 21.4% of participants stated that Facebook may be a valuable venue for exchange of political information and opinions, 45.7% indicated that for them, Facebook was not the right place to discuss political topics seriously (30.7% had an ambivalent attitude toward the political use of Facebook; Lin, Huang, Wan, & Lin, 2015). This study further showed that those who did not see Facebook as a forum for political discussion were less likely to actively engage in political discussions and were more likely to think that political discussions on Facebook would not have any effect on them (e.g., in terms of increasing their interest in the corresponding issue). Thus, people's responses to political discussions on social media appear to be contingent on their general attitudes toward the political use of these technologies.

Characteristics of CMC environments moderating the spiral of silence process

Another strand of research investigated the particular characteristics of online media that could amplify or mitigate the spiraling process online. In line with early assumptions about the deliberating effect of anonymity in CMC, several studies focused on this characteristic: Assuming that online anonymity (in the sense of not revealing one's real identity) would encourage people to voice their opinion in a hostile opinion climate, Yun and Park (2011) conducted an online experiment manipulating the anonymity and the opinion climate within an online forum. In the nonanonymous condition, participants were asked to register with their real name in an online forum, while no personal information was requested in the anonymous condition. Subsequently, participants were confronted with a discussion on the topic of abortion within an online forum, whose comments unanimously advocated a stance either supporting or opposing participants' pre-existing opinion. Results showed that while the experimentally manipulated opinion climate influenced people's likelihood to enter the discussion, as assumed in the silence hypothesis, the level of anonymity did not have any impact on people's outspokenness. Although the authors expected that anonymity would insulate subjects from their fear of isolation and therefore increase their willingness to voice their opinion, results did not support this hypothesis. In contrast, an experiment by Ling, Kristle, Jamie, & Madeleine (2011; Study 2) varied social anonymity during a virtual chat on three levels (high: participants were not identifiable at all; moderate: participants revealed their full names; low: participants saw each other via muted web cameras and received personal information about each other) and showed that the level of social anonymity determines the extent to which subjects avoid or engage in a controversial discussion. More specifically, this study revealed that participants in the low social anonymity condition were more likely to engage in opinion expression avoidance strategies (e.g., giving neutral comments or asking a question) and less likely to employ discussion engagement strategies (e.g., defending one's minority viewpoint). Subjects' outspokenness did not vary between the high and moderate social anonymity conditions. Another experiment demonstrated that participants who registered with a pseudonym on Facebook during the course of the study were more willing to express their opinion, even if this opinion contradicted the prevailing opinion climate in a closed Facebook group than participants who registered with their real name (Luarn & Hsieh, 2014). In addition, findings showed that subjects were more likely to express their deviant opinion when they had interacted with other group members (i.e., the other discussants) before. This indicates that the relationship with the interaction partner or the audience might be critical when people are discussing controversial topics.

In a theoretical review, Rössler and Schulz (2014) elaborated on the role of the audience and argued that to explain a person's online outspokenness, it is not only whether the subject is identifiable (i.e., revealing his/her identity) that is decisive but also whether the audience is identifiable (i.e., knowing who is reading one's comment). According to the authors, the identifiability of both the subject and the audience in online environments determines the extent to which subjects expect sanctions from others in the event that they express their opinion. To delineate this assumption, Rössler and Schulz draw on the SIDE model (Lea & Spears, 1992; Postmes et al., 2001) which assumes that visual anonymity in CMC makes individuals more susceptible to group influence. More specifically, visual anonymity is supposed to initiate a process of depersonalization. During this process, individuals reduce their attention toward their personal uniqueness and devote greater attention toward within-group similarities, meaning that one's social identity becomes mentally salient (Lee, 2006). Given a salient social identity, individuals are supposed to adhere more easily to these group's norms. Building on these theoretical principles, Rössler and Schulz (2014) develop a series of assumptions about the interplay between the subject's and the audience's identifiability in online environments and its effects on people's willingness to express their opinion. When the audience's identifiability is low, the group is supposed to appear more homogeneous and the group's norms are assumed to be more salient. In such an environment, people are supposed to conform more strongly to the group's norm (e.g., holding back one's opinion in a hostile opinion climate), fearing social sanctions in the event of not adhering to the norm. When the individual user is identifiable, he/she is supposed to comply with the group's norm, since deviant behavior may entail social retribution (as the silence hypothesis would also assume). So, in social media environments such as Facebook, where both the individual and the audience are identifiable, Rössler and Schulz (2014) would also predict a strong adherence to the group's norm, as it is expected that on a platform such as Facebook the norm or the opinion of a salient ingroup (i.e., a group one identifies with) will affect the individual's behavior. Thus, the relationship to the salient audience is thought to be an important factor when analyzing spiraling processes in online environments.

The idea that the potential audience on the Internet platforms may influence people's outspokenness has been corroborated by initial studies. Nekmat and Gonzenbach (2013) assumed that people would be more willing to express their opinion on a controversial topic in front a group with a shared identity (e.g., on an ideologically similar activist group discussion forum) than in front of ideologically heterogeneous commenters of a mainstream news website. While results from their experiment were in line with the silence hypothesis in the

sense that people were more likely to contribute to a discussion when they were in the opinion majority, the ideological nature of the website or the audience did not exert any effect. In the context of Facebook, a survey study by Kwon and colleagues (2015) showed that users with a very diverse network (consisting of people from many different social backgrounds) are more prone to censor themselves when it comes to expressing their opinion on a controversial topic. The size of a people's Facebook network, though, did not have any effect on the willingness to self-censor. Still, Jang, Lee, and Park (2014) found a negative relationship between the number of Facebook friends and people's willingness to talk about political issues on Facebook, indicating that larger networks reduce the individual's likelihood to initiate or enter political discussions.

Characteristics of online discussions

Besides the characteristics of the particular platform, conversational attributes have been supposed to influence the mechanisms predicted in the spiral of silence theory. As one characteristic of a functioning deliberative society, the civility of online discussions and its effect on people's opinion expression behavior has been investigated. By means of an online experiment, Pang, Ho, Ko, Low, Zhang, and Tan (2015) tested the hypothesis that users who encounter a polite discussion will be more willing to participate in this conversation than those who are met with uncivil behavior. Findings showed that people faced with civil comments on Facebook were more willing to "like" particular comments than people faced with uncivil comments. Nevertheless, the civility of the discussion did not affect the likelihood of people commenting on it.

Taken together, the spiral of silence theory and the mechanisms predicted in this framework have already gained attention in the context of online communication. The systematization of the corresponding literature in this chapter revealed that – in online research – certain aspects of the theory have been subjected to empirical tests more intensely than others. The validity of the silence hypothesis in online environments has been tested by a large number of studies, providing discrepant findings. Similarly, one of the most prominent questions that came up with the advent of online communication, which is "[c]an the Internet help to diminish the social pressure that keeps people from expressing a minority view?" (Kim et al., 2014, p. 715), has met with contradictory answers, especially when comparing people's outspokenness online versus offline. Many of the contradictions and limitations of previous spiral of silence research in online realms may be due to conceptual fuzziness within

the traditional theory (see Chapter 2.3.2.1). Still, only a few of those works have systematically addressed the particularities of Internet-based technologies in order to unravel how online communication may interfere in the spiraling process. The following chapter will further elaborate on limitations of previous online research in this theoretical context in order to outline pertinent research demands.

2.3.4 Gaps in Online Research

The literature review on the application of the spiral of silence theory in computer-mediated communication provides the first evidence on the validity of this framework on the Internet. Likewise, this review raises several questions regarding how this theory warrants refinement in order to reflect reality in online realms. Generally, it has to be acknowledged that the number of studies which tested relationships among particular variables within the spiral of silence framework (e.g., perceived public opinion and online outspokenness) outweigh the number of those which explicitly aspired to identify Internet-specific boundary conditions of the theory (e.g., the role of anonymity). Within the present work, it is argued that evidence on the boundary conditions considering attributes of Internet technologies will contribute to explaining why mere tests of the spiral of silence theory have produced discrepant findings. In the following, the corresponding limitations of previous research are presented which should stimulate a research agenda guiding the present dissertation.

With respect to whether and how online media can convey pictures of public opinion to users, research is generally in its infancy, especially regarding the psychological process of public opinion perception through the Internet. While some survey studies have related the frequency of online media use to perceptions of public opinion, fine-grained analyses on the particular content and the specific features that shape inferences about the opinion climate are urgently needed. Contemporary online applications offer many features and cues that could influence people's ideas of what other people may think about a particular topic. Despite initial evidence on the effects of user-generated content on perceptions of public opinion (Lee, 2012; Lee & Jang, 2010; see Chapter 2.3.3), it has remained unclear under which circumstances people pay attention to those cues and whether they place special weight on particular cues (e.g., the number of likes or user-generated comments) to "read out" the prevailing opinion climate. Considering the criticism concerning the actual accuracy of the quasi-statistical sense (see Chapter 2.3.2.1), it seems commendable to approach perceptual biases when processing online information. In this regard, analyzing the interplay between

online messages and people's pre-existing opinions when it comes to estimate public opinion appears fruitful in order to uncover the psychological process of perceiving opinion climates in online communication.

As was the case for spiral of silence research outside the Internet, the fear of isolation as a key variable in this theoretical framework received hardly any attention in online research. Studies measuring (or at least reporting the measurement of) people's fear of isolation are the exception rather than the rule (e.g., Ho & McLeod, 2008). This is surprising as – given the theoretical lines proposed by Noelle-Neumann – fear of isolation serves as a psychological explanation at different stages, not only as a stimulator for gauging public opinion but also as an inhibitor for expressing one's opinion in the face of a hostile opinion climate. It seems that the implicit premise of previous research, treating fear of isolation as a universal constant (cf. Hayes et al., 2013), has also been incorporated in online research. One reason for this apparent negligence could be the lack of appropriate measurements (cf. Matthes & Hayes, 2014) or absent effects, meaning that scholars excluded fear of isolation from analyses when this variable did not predict people's behavior. However, when it comes to applying a theory to different settings, for instance to online environments, it would appear obvious to make use of the constructs that were implemented in the original framework before taking alternative variables or explanations into account. Hence, there seems to be a pressing need for upcoming spiral of silence research in online realms to incorporate the fear of isolation in theoretical and empirical analyses.

Empirical results in relation to the silence hypothesis in computer-mediated communication were inconclusive: When (perceptions of) the opinion climate had an effect, if any, on people's willingness to pronounce their opinion online, this effect was mostly small in size. This pattern should encourage scholars to question not only empirical operationalizations but also theoretical arguments. Along these lines, it seems conceivable to consider situational variables that could moderate the silence mechanism in the sense of intensifying or attenuating the predicted effect. In the context of online research especially, wherein experimental methods often allow greater control of environmental variables compared with observations of face-to-face communication, it appears worthwhile to concentrate on conditional processes.

Situational factors, in terms of attributes of online environments, have already gained attention in corresponding research. Some studies focused on the influence of anonymity on people's outspokenness and elaborated on original CMC theories such as SIDE (cf. Rössler & Schulz, 2014; Yun & Park, 2011). Still, empirical results, including anonymity in the spiral of

silence framework, have been inconclusive. While this discrepancy may be rooted in the ever-present conceptual fuzziness of anonymity in CMC research (Carr, 2010), the nature of today's participatory technologies casts doubts on whether visual anonymity may play an important role within the spiraling processes in contemporary online communication. On platforms such as Facebook, the individual user and also his/her audience are commonly identifiable. Due to the existence of profiles with personal information, pictures, and a timeline, individualities may be very salient on corresponding social media platforms (Walther, 2011). Thus, depersonalization in terms of an attention shift from a personal to a social identity (due to visual anonymity) may be of limited explanatory value for influence processes in those particular environments. It should be an objective for research to identify further particularities of groups or audiences in online environments which could affect people's perceptions, beliefs, or actions. The role of audiences has gained increasing interest in social media research as they are supposed to influence people's communication behavior (Baym & boyd, 2012; Litt, 2012). A systematic incorporation of the potential influence of the audience has been neglected in previous spiral of silence research.

Future endeavors to analyze how the attributes of online environments interfere in the mechanisms predicted in the spiral of silence theory should still draw comparisons with offline communication. A pivotal question in this regard should be whether the effects found in computer-mediated communication are unique to these environments or may also be present in face-to-face communication (cf. Walther, 2011). This approach will not only contribute to identifying (non-)differences between online and offline communication but also offer potential extensions or missing links within the original spiral of silence theory.

The present research project is intended to address these research demands when investigating the circumstances under which the perceptions of public opinion and opinion expression behavior occur in social media communication. The following chapter will summarize the theoretical framework and make central premises that should guide this work.

3 Summary

Since the emergence of the Internet, the scientific community and the public have been interested in the deliberative potential of online communication technologies. Do online environments enhance the way people learn about and discuss civically relevant issues? The fact that the Internet facilitates the flow of political information, political discussions, and the

connectivity among people of different backgrounds, has to be contrasted with a potential digital divide, an inequality in users' participation and a probable fragmentation in the sense of enabling the formation of homogeneous networks (Bimber, 1998; Dahlgren, 2005; Hill & Hughes, 1998; Papacharissi, 2002; Siegel, 1986; Sunstein, 2007; van Dijk, 2000). Thus, the actual deliberative potential of the Internet can only be assessed by analyzing how people make use of online platforms for information and discussion purposes.

The advent of social media communication which has lowered the barriers of networking and the provision of user-generated content has revitalized the public discourse on how deliberative the Internet can be (Halpern & Gibbs, 2013; Howard & Parks, 2012). In social media platforms such as Facebook or Twitter, people often get incidentally confronted with socially relevant information (that they otherwise would not receive) and this information is regularly contextualized by the recommendations or comments of other users and/or personal ties (Glynn et al., 2012; Oeldorf-Hirsch & Sundar, 2015; Turcotte et al., 2015). Moreover, social media communication seems to have a certain appeal for political participation, as corresponding technologies offer easy ways to contribute to discussions by "liking," "retweeting," or commenting on discourses before a networked audience which can comprise people from many different backgrounds (Halpern & Gibbs, 2013; Purcell et al., 2010). Nevertheless, as in previous online environments, social media may also involve the risk of allowing a certain level of network fragmentation, wherein people can only discuss with people who share the same views as themselves (Scheufele & Nisbet, 2012; Sunstein, 2009). Despite the potential of social media to enable exchanges of opinions through many different channels and in many different forms, previous research has left open how opinion landscapes form in those environments.

In theoretical terms outside online communication research, the formation of public opinion has been discussed, inter alia, from a rational and from a social psychological point of view. Whereas the rational view assumes that public opinion consists of every citizen's opinion on a public issue, the social psychological perspective proposes that public opinion underlies social dynamics and can therefore only be assessed by observing influence processes among individual members of society (Allport, 1937; Habermas, 1962; Noelle-Neumann, 1993). As shown in social psychological research, people are prone to adhere to prevailing norms and opinions in order to pursue fundamental motives such as social affiliation, accuracy, or the need for a positive self-evaluation (Cialdini & Goldstein, 2004; Deutsch & Gerard, 1955; Prislin & Wood, 2005; Turner, 1991). While these motives were used to explain majority influence processes, in the sense that an individual conforms to the

norms given by the numerically larger group, minorities are also able to have an impact on society and convert prevailing ways of thinking, provided that the minority group stands up for its opinion in a consistent and confident manner (Moscovici, 1976, 1980). These different patterns of social influence point to a reciprocal relationship between the source and target of influence that can also be applied to the study of public opinion (Latané & Bourgeois, 2001): Individuals can be affected by climates of public opinion just as they can also shape the climate of public opinion themselves.

To approach the formation of opinion climates in social media communication, the present work builds upon the spiral of silence theory which is intended to explain the dynamics of public opinion by considering the social psychological processes (Noelle-Neumann, 1974, 1993). According to this theory, people have a fundamental fear of isolation that encourages them to continuously observe their environment to find out which opinions and actions are accepted by their social environment. Based on this assessment of the opinion climate, people voice their opinion on a controversial topic when they feel part of an opinion majority and they keep silent when they perceive themselves on the minority side. This mechanism is believed to be rooted in people's fear of social isolation which prevents them from publicly deviating from prevailing norms or opinions in order not to risk social rejection or isolation. The consequence of this mechanism is that – over time – the supposed majority faction becomes more and more dominant in the public scene while the minority faction increasingly loses its public visibility. Many of these assumptions have been met with inconclusive empirical evidence and were therefore criticized extensively. However, systematic tests of these hypotheses in the context of online communication technologies which are increasingly used for public discourses are still pending.

Following the argument that the Internet's deliberative potential can only be estimated when it is known how people make use of these platforms, the spiral of silence theory appears to be a fruitful framework as it suggests how people make inferences about other people's opinions and whether and how they respond to these subjectively assessed opinion climates. Addressing these psychological processes in the context of social media can shed light on (a) the circumstances under which people participate in discourses online and (b) the extent to which opinion landscapes in those environments may resemble actual opinion distributions.

Before applying the spiral of silence theory to social media realms, five premises should summarize why it seems worthwhile to investigate the validity of this theory in this particular media context.

Social media communication is ubiquitous

According to Noelle-Neumann (1973), mass media have to be considered as influential since they are ubiquitous in people's lives. The ubiquity argument gains renewed relevance in a time where – due to the increasing use of mobile devices – social media are available everywhere and individuals are able to read news, comments and opinions without any temporal and locational restrictions (Koch & Frees, 2015; Smith, 2015). Therefore, it seems justified to assume that repeated exposure to social media provokes an intense interaction between public opinion climates and individual opinion expression.

Homogeneity versus heterogeneity of online networks

A fundamental concern of social media communication is that people's selection of self-reinforcing information and networks, as well as technological algorithms, could create like-minded networks ("echo chambers") leading to ideological homogeneity within these groups. If echo chambers do exist to the extent proposed in the literature, one could argue that spirals of silence may not occur very frequently online as people might only encounter friendly opinion climates and do not see the necessity to lapse into silence. Scheufele and Nisbet (2012) even argued that online echo chambers may induce a "spiral of self-reinforcing attitude polarization" (p. 50). Conversely, one could also ask whether echo chambers may emerge *because of* spirals of silence: Do homogeneous online networks exist because individuals with deviant opinions publicly adhere to the prevailing majority opinion or ideology concealing their actual attitudes? Are silencing mechanisms responsible for networks becoming – at least in the public scene – ideologically uniform? This question and the preliminary evidence that while echo chambers may exist online, people still encounter cross-cutting information and opinions within social media communication (Kim, 2011; Lee et al., 2014; Rainie & Smith, 2012), invite scholars to explore to what extent silencing mechanisms are operative within these communication technologies.

Social media provide an abundance of opinion cues and features to express oneself

At the time the spiral of silence theory was being developed, the only way for citizens to survey other citizen's opinions on public issues was through interpersonal communication with one's reference groups or through media coverage including average citizens as exemplars (Gunther, 1998; Noelle-Neumann, 1993). Today, people encounter media messages such as online news articles routinely, side by side with user-generated comments or numeric representations such as ratings or likes. Assuming that these message types

function as cues for other people's opinions (Walther & Jang, 2012), it could be argued that the abundance of these cues lowers the barriers for social media users to learn what a large group of other people beyond their reference groups may think about a particular issue. Hence, social media offer novel sources for the perception of prevailing opinion climates.

Likewise, these platforms facilitate the way citizens express themselves publicly: While writing a Tweet, a Facebook status update, or YouTube comment on a public issue requires less effort than is needed to write a letter to a newspaper editor, more subtle expressive acts such as "liking" or retweeting content require only a few clicks. One may question which of these activities represents a real act of opinion expression; still, social media seem to offer a wide range of features to participate in public debates with more or less effort.

Social media platforms blur the line between private and public

The networked structure of social media applications was thought to complicate the meaning of "private" and "public." The range of different communication channels, such as private messages, closed groups, or public streams, represent many different layers of publicness which may challenge users' competence to predict to whom and to how many people their speech act may become visible (Baym & boyd, 2012). As fearing isolation from others was proposed as the main explanation for people withholding a deviant opinion (Noelle-Neumann, 1974), it might be relevant for people to know to whom they are revealing their stance (Kwon et al., 2015). In her understanding of "public opinion expression," Noelle-Neumann (1994) suggested that silencing mechanisms may only be observable when people are confronted with moderate public (e.g., talking to strangers during a train ride). When people are situated in a too private (e.g., a conversation with friends) or too public situation (e.g., giving a TV interview), other psychological mechanisms may underlie their opinion expression behavior. However, publicness as a boundary condition of the silencing mechanism has never been subjected to an empirical test. Because of the emergence of different and commonly diffuse layers of publicness in social media, the influence of publicness on people's outspokenness demands systematic analysis.

The networked audiences in social media

Besides offering different layers of publicness, the networked structure of social media technologies enables people to form and interact with a large network of ties to whom they are related differently. Here, the one-to-many communication occurs in front of people from

many different contexts (e.g., close friends, acquaintances but also strangers), meaning that people speak to an audience of an unprecedented quality (Vitak, 2012). While the particularities of the audience have never played a critical role in spiral of silence research (cf. Hayes et al., 2001), one could argue that the greatest fear of isolation should exist when people are about to express their opinion on a controversial topic in front of their whole network (comprising a wide range of tie strengths) jeopardizing personal and professional relationships (Metzger, 2009). This unique form of networked audiences in social media may create new ways for individuals to calculate the costs and benefits of expressing their opinion publicly. On this basis, it seems reasonable to examine whether the predictions of the spiral of silence theory can withstand empirical tests in these new social contexts.

4 Research Model

The previous chapter outlined the potential for social media technologies to provoke dynamics within the formation of opinion climates online. Drawing on these premises, this chapter will present a research model that is intended to systematically conceptualize the mechanisms operating when people are confronted with politically and civically relevant discussions on social networking platforms. This model aims to consider (a) the state of knowledge in relation to the spiral of silence theory (see Chapter 2.3.1), (b) pertinent research demands concerning this theory in online realms (see Chapter 2.3.4), and (c) features and characteristics of social networking sites that are supposed to be involved in the processes of interest (see Chapters 1.2 and 3). Therefore, the proposed relationships within this model represent extensions or specifications of mechanisms suggested within the spiral of silence theory with a particular focus on how attributes of SNS intervene in these processes. It is important to note that the model presented in this chapter does not aspire to conceptualize opinion dynamics on SNS at a macro-social level, as some hypotheses within the spiral of silence did. The present work assumes a micro-perspective and will, therefore, focus on how an individual uses SNS and how SNS use may influence his/her opinions and behavior from a social and media psychological point of view.

The model includes two basic entities: the user and the social networking site. The user entity is conceptualized on two levels; the upper one covers stable characteristics and traits of a user, while the lower one refers to situational processes that are triggered when the individual enters into an interaction with a medium. This situational level is subdivided into two principal stages, which are (1) the process of monitoring opinion climates and (2) the

process of expressing one's opinion through SNS. In the following, these two stages, and the role of SNS components therein, will be depicted in greater detail. Figure 2 displays the research model.

Stage 1: Monitoring the opinion climate

The first process examined in this model is thought to be initiated by people's trait-like fear of isolation. In line with Noelle-Neumann's (1993) argument that people's fundamental fear of being socially rejected triggers a systematic scanning of one's environment, it is proposed that the fear of isolation fosters people's attention toward potential opinion cues in their surroundings. On SNS, a series of message types may function as opinion cues: One person's or many people's viewpoints on a public issue can be expressed in a Tweet, in a Facebook status update, in a mem posted on Facebook or Instagram, an online article linked on the Facebook channel of an online news website, in user-generated comments related to main messages, and also in the number of how many have "liked" or rated a main message or a comment (for an overview of different message types on participatory websites see Walther & Jang, 2012).

Having heeded these potential opinion cues on SNS, they are supposed to shape people's perceptions of public opinion. In other words, it is assumed that a user will integrate his/her observations of other people's opinions expressed in SNS messages into their general perceptions of the prevailing opinion climate. As an example, imagine a user logging in on Facebook and browsing through his/her news feed which, among many other messages, includes a status update from an online news channel taking up the story of the former CIA-agent Edward Snowden and his revelations of the U.S. Government's surveillance. This status update is accompanied by a certain number of likes and a series of user-generated comments, in which other users advocate a particular stance on whether it is right or wrong to observe citizens' telecommunications to combat terror attacks. Building on the viewpoints expressed by other SNS users through these opinion cues, people are thought to adapt their mental conceptualizations of what other people *generally* think about this issue. While this generalization mechanism, in terms of projecting mediated acts of opinion expressions onto a larger group, has already been proposed in the spiral of silence theory (Noelle-Neumann, 1993), more message-oriented frameworks such as the exemplification theory (Zillmann & Brosius, 2000) will be used to outline whether and how diverse opinion cues may influence perceptions of public opinion differently (see Chapter 5.2).

Addressing earlier spiral of silence research, perceptions of opinion climates should be considered on different levels (Glynn & Park, 1997; Salmon & Kline, 1985): On a macro-level, in the sense of the perceived opinion climate among the national population (or a perceived world public opinion in the context of internationally relevant topics; cf. Rusciano, 2014), on a meso-level referring, for instance, to users of a particular SNS and on a micro-level in terms of the perceived opinion distribution among one's reference groups (e.g., friends and family).

When examining the process of how people make inferences about public opinion, perceptual biases such as looking glass-perception (Fields & Schuman, 1976) should be taken into account. As it was found that people were prone to project their own opinions onto others (Dvir-Gvirsman, 2015a; Wojcieszak, 2008), it is expected that a user's perceptions of opinion climates will also be based on his/her own pre-existing opinion which is assumed to alter the effect of mediated opinion cues on inferences about public opinion. Likewise, following the idea of informational social influence (Deutsch & Gerard, 1955), it seems conceivable that the socially mediated perceptions of public opinion, in turn, shape people's post-exposure opinion in the sense that they adapt their opinion to the existing climate of opinion on a particular issue (Price et al., 2006).

While opinion cues on SNS and their interaction with users' pre-existing opinions are of crucial interest within this model, they may not be the only influential factors: Following Noelle-Neumann's (1993) assumption, interpersonal communication (e.g., face-to-face conversation with friends or co-workers) as well as exposure to mass media (e.g., watching TV news) should still be seen as pivotal sources for people's public opinion perceptions.

As outlined above, the main dependent variable in Stage 1 is a person's perception of the prevailing opinion climates on a controversial issue which, in turn, serves as an influence factor for Stage 2.

Stage 2: Expressing one's opinion

The second principal process examined in the present model is based on the silence hypothesis (Noelle-Neumann, 1974) predicting an effect of public opinion perceptions on people's willingness to voice their opinion. More specifically, it is expected that the greater the public support people perceive for their opinion, the more likely they will be to express their viewpoint. The silence hypothesis, therefore, is also expected to hold true on SNS, at least, to a certain extent. Still, further influence factors should be taken into account. As identified by previous spiral of silence research, individual characteristics such as cultural

background (Huang, 2005; Lee et al., 2004), political interest (Lasorsa, 1991), general shyness and willingness to self-censor (Hayes et al., 2010), topical importance (Oshagan, 1996) and certainty about one's opinion (Matthes et al., 2010) should be considered as important factors which also influence people's outspokenness online.

One proposition within Stage 2 of this research model is that characteristics of the social networking environment such as the publicness level of a communication channel moderate the effect of the opinion climate on users' outspokenness. Explanations for this interaction effect are offered by drawing on a pivotal construct within the spiral of silence theory: In line with the argument that people's fear of isolation is the reason why people may withhold their opinion in hostile opinion climates (Noelle-Neumann, 1993; Noelle-Neumann & Petersen, 2004), this model incorporated an effect of fear of isolation on people's willingness to express their opinion. Still, on this situational level, people's fear of isolation should be re-conceptualized and approached by giving consideration to environmental factors (i.e., characteristics of the SNS). It is suggested that not only a hostile opinion climate increases people's situational fear of isolation but also that, depending on the environmental variables, fear of isolation may manifest itself differently. For instance, as proposed by Yun and Park (2011), anonymity in an online forum or on YouTube may reduce people's fear of isolation as they may not be held accountable for their expressed opinion. Likewise, one could argue that people's fear of isolation increases when they are about to express their opinion on a very public channel on Twitter or in front of a large and important audience on Facebook (cf. Jang et al., 2014; Kwon et al., 2015). The fact that content on SNS is persistent in the sense that it remains recorded and/or archived online (boyd, 2010) is also thought to be influential as people may envision a potential risk of isolation if their opinion expressions were to be seen or used against them by future ties. Obviously, these environmental factors on SNS can only have an impact of people's situational fear of isolation and outspokenness if they themselves evaluate the communication situation giving consideration to these particular environmental factors. Therefore, the effect of characteristics of SNS on people's willingness to pronounce their viewpoint may be contingent on the interaction between their situational fear of isolation and situational perceptions (e.g., the salience of how anonymous or public a communication channel is).

The logical sequel of people's willingness or intention to behave in a certain way (in this model: to express one's opinion) is the actual performance of this behavior (cf. Ajzen, 2012). Consequently, this model also incorporated people's actual expressive behavior as a dependent variable. While people's real outspokenness has rarely been explored in spiral of

silence research, initial evidence has already indicated the diversity of people's strategies to respond to friendly versus hostile opinion climates (cf. Hayes, 2007): People might express their opinion explicitly but also express ambiguity or ask a question in order to avoid disagreements. In social media, users have different features to express themselves in the context of a public debate. User-generated comments, for instance, might allow many of the opinion expression and avoidance strategies that have already been identified in offline situations (e.g., expressing uncertainty). Moreover, social networking platforms offer more subtle forms of participation such as "liking," "rating," or "sharing" a message or another user's comment. Thus, depending on the topical importance or potential risks of isolation, people may select different features, which are more or less explicit, to participate in a discussion.

People's different forms of opinion expression on SNS, in turn, make up a part of the opinion cues that are available to other users and from which these users may derive their inferences about public opinion. In fact, every opinion expression act online contributes to the actual opinion climate online that can be visible to users – regardless of how accurately they perceive this online climate.
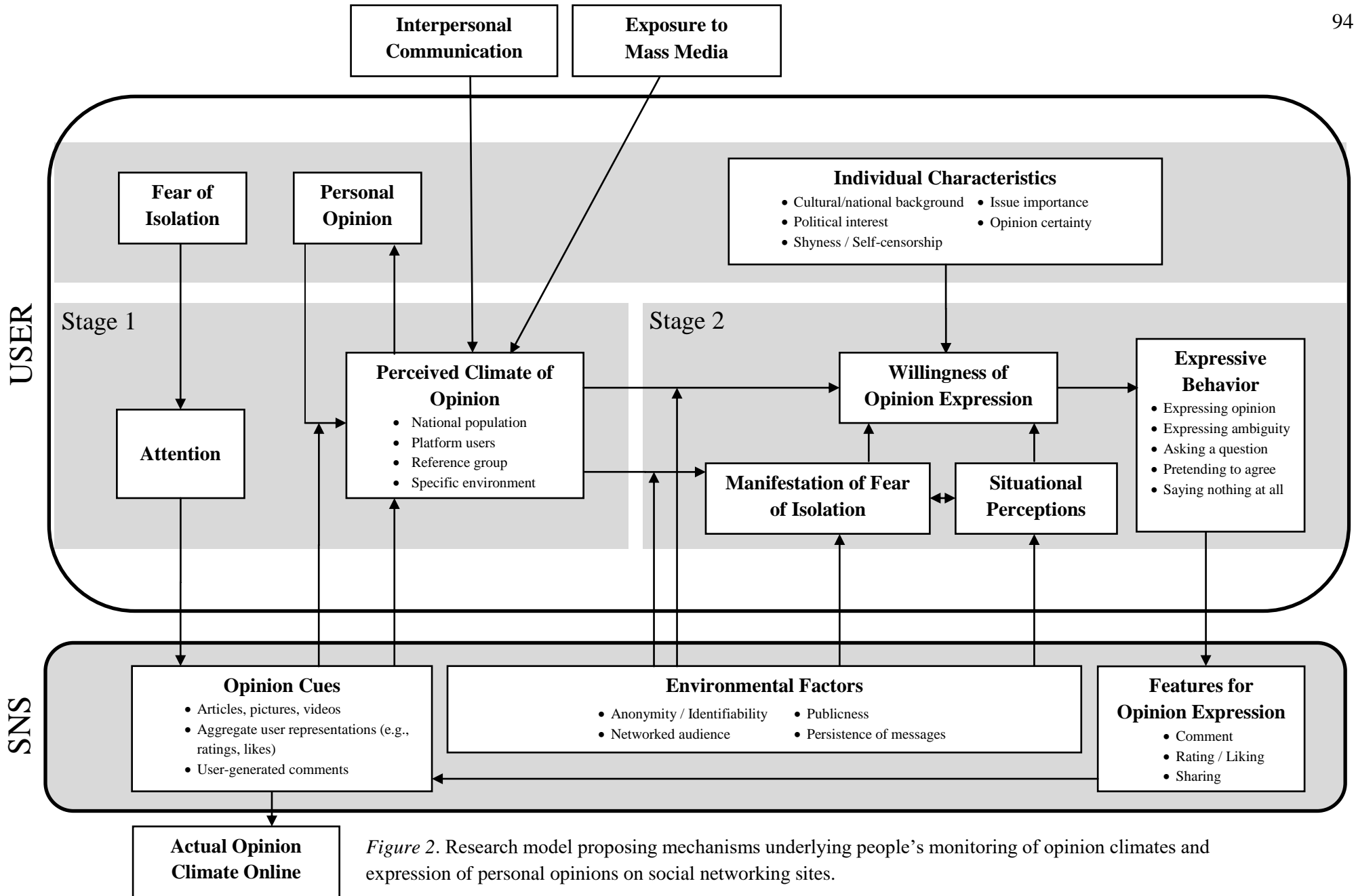
Figure 2. Research model proposing mechanisms underlying people's monitoring of opinion climates and expression of personal opinions on social networking sites.

This dissertation is intended to offer empirical tests of a series of mechanisms proposed in this research model. To this end, the empirical investigations are organized along the two principal stages of this model: The process of monitoring opinion climates and the process of expressing one's opinion on SNS. As outlined above, these two processes and their interdependence are supposed to explain the dynamics of public opinion on social networking platforms.

Stage 1 of this research model will be addressed by the first study of this dissertation. Accordingly, this study will investigate experimentally the psychological process of public opinion perception via SNS and offer preliminary results on the effects of these perceptions on people's personal opinions and communication behavior. Several mechanisms proposed in Stage 2 of the research model will be subjected to empirical tests by Study 2, 3, 4, and 5. By employing qualitative and experimental approaches, the second and third study of this dissertation will zoom in on the situational manifestations of people's fear of isolation and how those vary in accordance with environmental factors (such as the communication channel and the audience). Building on these findings, the fourth study will experimentally test to what extent people's willingness to express their opinion and situational fear of isolation are contingent on the publicness level of the communication on SNS and whether this effect depends on the cultural background of the users. Finally, Study 5 will address the role of the audience on SNS, analyzing to what extent people's relationship to the audience can influence their outspokenness with a regard to a controversial topic online.

In order to keep continuity across all empirical studies, the present work will predominantly focus on the social networking platform Facebook. The reason for this choice lies not only in the ongoing popularity of this technology (Alexa, 2016; Duggan, Ellison, Lampe, Lenhart, & Madden, 2015; Facebook, 2016) but also in the particular social sphere that is provided by this platform (Marwick & boyd, 2014): The ubiquitous use of Facebook in people's everyday lives is supposed to imply an increasing potential to convey pictures of public opinion to users. Furthermore, the particular size and composition of networks built through this technology are suggested to alter social pressures on individuals when it comes to discuss controversial public issues. In the following, the empirical approach of the present work is presented.

III MONITORING THE OPINION CLIMATE

Along the presented model (see Figure 2), this thesis will first focus on Stage 1 referring to the process of public opinion perception through social networking sites. In communication and psychological research, exploring how people gauge public opinion has become a highly relevant subject, since people's inferences about public opinion were found to influence their own opinion (Tsfati et al., 2014), public opinion expression (Glynn & Huge, 2014; Miller & Morrison, 2009), and political participation (Dvir-Gvirsman et al., 2015). Despite the potential far-reaching effects of public opinion perceptions, systematic analyses of whether and how people may also infer prevailing opinions of society through social media are still scarce (see Chapter 2.3.4).

Addressing these questions seems of particular relevance when considering that on social media platforms, mass media and interpersonal conversations – as the two principal sources of people's public opinion perceptions (Noelle-Neumann, 1983) – seem to converge: Here, users can view messages on topics of public interest (posted by news channels) along with aggregated representations of other users (such as Facebook likes) and/or opinionated messages of other citizens in the form of user-generated comments (Walther, Carr, et al., 2010; Walther & Jang, 2012). Given that social media may serve users as a "window" (Messing & Westwood, 2014, p. 1058) to the public, it seems a pressing need for research to identify the mechanisms explaining the psychological process of public opinion perception online.

The goal of this chapter is to address this psychological process by applying the spiral of silence theory and the projection hypothesis to the context of social networking sites. The first study of this dissertation is guided by the questions: (a) What drives people's attention toward opinion cues on social networking sites, (b) how can different opinion cues on these platforms influence recipients' inferences about public opinion, and (c) how do perceptions of public opinion via social networking sites affect subsequent opinions and actions? The following sections will elaborate on these questions in greater detail.

5 Study 1: Psychological Mechanisms Underlying Public Opinion Perceptions on SNS

5.1 The Quasi-Statistical Sense at Work in SNS

As outlined in Chapter 2.3.1, the spiral of silence theory suggests that all individuals have a particular ability – the quasi-statistical sense – to assess which opinions and actions are socially accepted and which may lead to social sanctions (Noelle-Neumann, 1977). This quasi-statistical sense is fueled by a person's fundamental fear of isolation, meaning that people's motivation not to be socially rejected stimulates their ability to scan their environment for cues that help them to build or maintain social relationships. Thus, the existence of a dispositional fear of isolation with interindividual variance (cf. Hayes et al., 2013) can be seen as the motivational premise for monitoring existent opinion cues and, therefore, making inferences about public opinion.

When asking how the quasi-statistical sense may function in virtual social environments, it seems plausible to assume that individuals will also make use of the cues available to estimate what society may approve or not. One could go so far as to state that very popular SNS such as Facebook that are ubiquitous in people's daily lives and include a very broad networked audience (see Chapter 3) serve as the most comfortable window to learn the viewpoints of a large group of people (Kim, 2011; Lee et al., 2014; Rainie & Smith, 2012; see Chapter 1.2.2). From a motivational point of view, it seems worthwhile to identify the psychological factors that drive users' attention to potential opinion cues such as Facebook likes or user-generated comments. Besides issue importance, which is thought to draw recipients' attention to these cues (Morrison & Matthes, 2011; Winter et al., 2015), following the mechanism predicted in the spiral of silence theory, it is assumed that people's dispositional fear of isolation stimulates the monitoring process and that those who have a greater isolation fear would pay greater attention to potential opinion cues online:

Hypothesis 1 (H1): People's fear of isolation is positively associated with (a) a higher attention toward potential opinion cues and (b) a more accurate recall of these cues in SNS.

5.2 Sources for Monitoring Public Opinion

In social media, different message types can function as potential sources for users to infer public opinion. Generally, Walther and Jang (2012) identified three broad types of messages that are available in social media technologies, albeit these can manifest in different ways: proprietor content, aggregate user representations, and user-generated content. Proprietor content refers to main messages such as online news articles or Facebook status updates including text, pictures, or videos that were created or posted by one principal author or institution. Aggregate user representations are numeric displays, describing how many people have conducted a particular action toward a message. Walther and Jang (2012) differentiate between (a) deliberate aggregate user representations in the sense of numbers representing users' deliberate action such as liking, sharing, or rating a message and (b) incidental aggregate representations in terms of descriptive statistics of "users' behaviors that were not enacted with the purpose of signaling anything to others" (p. 5) such as the number of views of YouTube videos. User-generated content as the third type refers to reactions to online messages undertaken by nonproprietary users, for instance, writing textual comments in relation to a main message or to another user-generated comment. All these message types may imply different potentials to convey opinion climates to their viewers. These potentials will be discussed in the following sections.

5.2.1 Aggregate User Representations

The idea that explicit numeric information about other people's attitudes and actions may influence recipients' perceptions of public opinion seems quite plausible. A statement such as "78 percent of the national population agrees that active euthanasia should be legalized" expresses summative information clearly indicating a majority ratio that people – in the event that this information is available to them – may easily transfer to their inferences about the current opinion climate. Indeed, empirical evidence repeatedly observed that recipients integrate numeric cues such as survey results in their public opinion perceptions (e.g., Daschmann, 2000; Sonck & Loosveldt, 2010; Zerback et al., 2015).

Aggregate information online, however, manifests in many different forms, representing diverse user behaviors (e.g., agreements, ratings, or views) and providing both relative and absolute numbers. Previous studies showed that a larger number of views of news articles (Yang, 2015) or videos (Fu, 2012) and a larger number of people explicitly recommending an online article (Knobloch-Westerwick, Sharma, Hansen, & Alter, 2005;

Messing & Westwood, 2014) increase people's likelihood to select this article or video for further reading/viewing or for consuming it for a longer time. Likewise, empirical works revealed that viewing that a large number of people have approved an opinion (Peter, Rossmann, & Keyling, 2014) or that a larger number of close friends conducted a particular behavior (i.e., voting; Bond et al., 2012) has an, albeit weak, effect on recipients' own judgments and behaviors (in the direction advocated in these messages). With regard to the perception of public opinion based on numeric information in social media, initial studies showed that manipulating the number of Facebook likes ("512 vs. 40 people liked this"; Winter et al., 2015) and approval ratings ("8 people disapproved while 48 approved …"; Lee & Jang, 2010) related to a news article did not influence recipients' inferences about public opinion. The absent effects were explained by the interpretational ambiguity of numeric information in these contexts, as recipients may not interpret numeric approvals/ disapprovals of an online article as clear expressions of a viewpoint (Lee & Jang, 2010) and *like* numbers may not be influential when they are not put in relation to a number of disapprovals or "dislikes" (Winter et al., 2015). However, effects of aggregate user representations on public opinion perceptions may become visible when there is a greater difference between a higher and a lower number of people liking a promoted stance. Building on the argument that a high aggregated number of likes could be used as a bandwagon or consensus heuristic representing the opinion of several others (Chaiken, 1987; Sundar, Oeldorf-Hirsch, & Xu, 2008), it is expected that these cues can shape people's perceptions of public opinion:

> *Hypothesis 2 (H2)*: Recipients of an opinionated message on SNS accompanied by a high number of likes assume a greater public support of this opinion than recipients of an opinionated message displayed side by side with a low number of likes.

5.2.2 User-Generated Comments

In today's participatory technologies, peer comments have become popular means for citizens to express their viewpoints on publicly discussed issues (Rainie, Smith, et al., 2012; Weber, 2014). Individual comments were found to commonly consider exclusively one side of a controversial topic (Toepfl & Piwoni, 2015). Comments are usually generated by a single user and represent therefore the subjective stance of an individual "case." According to exemplification theory (Zillmann & Brosius, 2000), exemplars as one specific case or "model" (e.g., by presenting a person's subjective and anecdotal experiences in news reports,

fiction, or interpersonal communication) are vivid and concrete examples of a rather abstract problem or issue. Owing to this vividness, the information contained in this depiction is easier to process and comprehend for recipients than pallid and impersonal number-based or base-rate descriptions of reality (see also Mutz, 1998). This mechanism is explained by human beings' limited processing capacity and their common use of mental heuristics (Zillmann & Brosius, 2000). The authors further argue that in the case of exemplified information the availability heuristic (Tversky & Kahneman, 1973) may be operating in the sense of people making judgments and forming opinions based on concrete exemplars that are salient in their minds. Empirically, a line of research demonstrated that people indeed are more inclined to base their estimates of public opinion distribution or their own opinion more on an available exemplar than on more representative descriptions such as statistical information (e.g., Brosius, 1999; Brosius & Bathelt, 1994; De Wit, Das, & Vet, 2008).

Initial studies also provided evidence on the effect of user-generated comments as exemplified opinion expression acts on recipients' perceptions of public opinion (see Chapter 2.3.3): Lee and Jang (2010) as well as Lee (2012) showed that users reading peer comments (which accompanied an article on an online news site) holding a particular stance toward public issues estimated public opinion (in the sense of what the "general public" may opinionate) in line with the position of the comments. By contrast, Winter and colleagues (2015) found no effects of the valence of user-generated comments on Facebook on recipients' inferences about public opinion. One explanation could be that the main effect of comment valence was overridden by the additional experimental manipulation of this study, which also varied the quality of comments (subjective vs. argumentative). Focusing solely on comment valence, the present study follows the logic of exemplification theory (Zillmann & Brosius, 2000) and assumes that opinions expressed in user-generated comments shape the way people infer the prevailing opinion climate:

> *Hypothesis 3 (H3)*: User-generated comments on SNS holding a particular viewpoint toward a controversial topic shape people's inferences about public opinion (in the direction of the comment).

While the effects of aggregate user representations and user-generated comments in social media on people's opinions and perceptions have been investigated regarding their unique influence, less research has been conducted exploring their relative impact. Following empirical evidence from exemplification research (Brosius, 1999; Brosius & Bathelt, 1994;

De Wit et al., 2008), one could assume that user-generated comments as more vivid opinion cues may exert greater impact on people's public opinion perceptions than pallid aggregate user representations. At the same time, the number of likes comprises a greater number of individuals than isolated opinion expression in the form of comments. Consequently, it is asked:

> *Research Question 1 (RQ1)*: What is the relative influence of aggregate user representations and user-generated comments on recipients' inferences about public opinion?

5.3 Cognitive Biases in Public Opinion Perceptions

In spiral of silence theory, Noelle-Neumann (1983) proposed that people commonly make use of two sources to gauge public opinion: mass media messages (e.g., news articles) and interpersonal discussions (e.g., conversations with peers). As social media are able to unite both mass and interpersonal communication (Walther, Carr, et al., 2010), these technologies appear likely to influence people's inferences about prevailing opinion climates. However, the spiral of silence theory has been criticized for neglecting a third source that is believed to determine perceptions of public opinion (Kennamer, 1990; Salmon & Kline, 1985; see Chapter 2.3.2.1): people's own pre-existing opinion. What has been called the false consensus effect (Ross et al., 1977), looking glass effect (Fields & Schumann, 1976), or projection hypothesis (Krueger, 1998) refers to the idea that when people are asked to estimate other people's opinions or beliefs, they project their own opinion onto others. The projection bias is not a misperception per se. Projection turns into an inaccurate inference in the event that a person perceives his/her opinion as relatively common in a population although this in fact is not the case (see Eveland & Glynn, 2008). Given that the general projection bias has been supported empirically by a large body of research (e.g., Dvir-Gvirsman, 2015a; Fabrigar & Krosnick, 1995; Gunther & Christen, 2002; Marks & Miller, 1987; Wojcieszak, 2008), a person's pre-existing opinion should be considered as an important determinant of public opinion perceptions, and it should be taken into account how this bias can be influenced by social media communication.

Within an ongoing debate of whether the projection bias is based on cognitive (availability heuristic) or motivational processes (social motivations; for an overview see Dvir-Gvirsman, 2015b; Zhang & Reid, 2013), previous research has identified a series of boundary conditions of this perception bias. It was shown that more extreme opinions

(Wojcieszak & Price, 2009), identification with the group on whom one's opinion is projected (Zhang & Reid, 2013), and greater fear of isolation (Morrison & Matthes, 2011) amplify the projection tendency. By contrast, higher education (Foslyn, 1999) and greater accuracy goals (Nir, 2011) mitigate the bias. Initial studies also examined whether general media consumption and exposure to opponent viewpoints may also intervene in the projection process: Dvir-Gvirsman (2015b) found that although media consumption leads to more accurate perceptions of the opinion climate, it does not reduce the projection effect. However, when people are exposed to cross-cutting media (i.e., media with an opposing or different political perspective) and engage in discussions with ideologically heterogeneous networks online and offline, they appear to project their opinion onto others less (Wojcieszak & Price, 2009; Wojcieszak & Rojas, 2011).

Following the idea of the "filter bubble" (Pariser, 2011) or the "echo chamber" (Sunstein, 2008), people are not likely to encounter cross-cutting opinions and ideologies in social media, as networks with similar others and personalizing algorithms in these technologies are thought to create homogeneous information and discussion cocoons for every user. However, empirical works based on network analyses and surveys revealed that users are still frequently confronted with cross-cutting social networks and opinionated messages in SNS (Bakshy et al., 2015; Conover et al., 2011; Colleoni et al., 2014; Kim, 2011; Rainie & Smith, 2012). When taking into account that exposure to dissimilar opinions can attenuate the projection bias, one could assume that opinion cues on social networking sites expressing a stance opposing the recipients' opinion may also reduce users' projection tendency. On this basis, it is expected that:

> *Hypothesis 4 (H4)*: Opinion cues opposing recipients' prevailing opinion attenuate the relationship between recipients' opinion and the perceived opinion climate.

5.4 The Effects of Public Opinion Perceptions

The significance of public opinion perceptions through social media may be assessed in the light of the potential effects of these perceptions. For the purpose of the present work, two kinds of effects will be focused on: those on people's opinion and those on their communication behavior.

An extensive line of research revealed that messages on social media can influence people's post-exposure attitudes or beliefs on the corresponding issue (e.g., Anderson, Brossard, Scheufele, Xenos, & Ladwig, 2014; Diehl et al., 2015; Edwards, Edwards, Quing,

& Wahl, 2007; Walther, DeAndrea, et al., 2010; Winter et al., 2015). These studies may indicate that user-generated content can exert informational social influence in the sense that people transfer the stance that is expressed in the presented content into their own opinion because they may believe in the validness of this viewpoint (Deutsch & Gerard, 1955; see Chapter 2.2). The existence of informational social influence has been scarcely discussed in spiral of silence research (Price & Allen, 1990; see Chapter 2.3.2.1). Along these lines, perceptions of public opinion could function as an explanation for informational social influence: In mass media research, it has been proposed that mass media content has an effect, if any, on recipients' opinions and beliefs through informing them about the distribution of opinion in society (Mutz, 1998; Tsfati et al., 2014). Indeed, initial research also showed that user-generated content influences recipients' perceptions of public opinion (Lee, 2012; Lee & Jang, 2010). Bringing these lines of research together, it could be hypothesized that the perceived opinion climate serves as a mediating factor explaining why user-generated content exerts an impact on people's subsequent opinions:

> *Hypothesis 5 (H5)*: Perceptions of the opinion climate explain the effect of opinion cues on SNS on recipients' personal opinions.

The core assumption of the spiral of silence theory (Noelle-Neumann, 1974) states that people are more likely to voice their opinion when they perceive that the opinion climate is congruent with their opinion. In other words, people adapt their public behavior to the prevailing norms and opinions. In the long run, this individual mechanism accumulates to a distorted picture of public opinion, as the apparent majority becomes more and more visible while deviant opinions vanish from the public scene. Since the relationship between congruence with the opinion climate and people's opinion expression behavior has been supported in both offline and online conversational environments (e.g., Glynn & Huge, 2014; Yun & Park, 2011; Nekmat & Gonzenbach, 2013), it is expected that:

> *Hypothesis 6 (H6):* The greater the congruence of one's opinion with perceived opinion climate (inferred from opinion cues on social networking sites), the higher a person's willingness to enter the discussion on social networking sites.

The hypotheses regarding the process of monitoring other people's opinions through social networking site are illustrated in Figure 3.
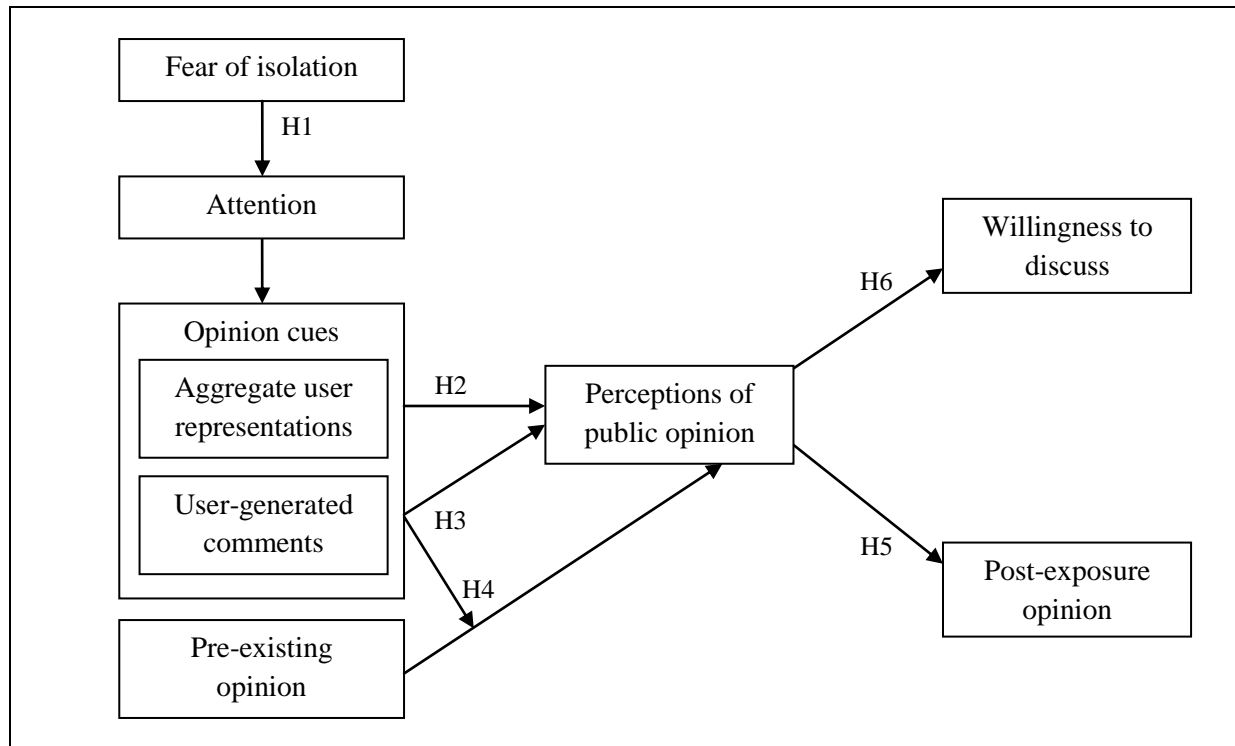
Figure 3. Conceptual framework summarizing the hypotheses of Study 1.

5.5 Method

5.5.1 Design

The hypotheses and research question were tested by means of a two-session online experiment ($N = 657$) with a 2 (valence of main message: positive vs. negative) x 2 (number of likes: high vs. low) x 3 (valence of comments: positive vs. negative vs. balanced) between-subjects factorial design. The procedure of the study was approved by the local IRB.

5.5.2 Sample

Participants were recruited from the German SoSci panel, a noncommercial online pool of volunteers who registered to participate in online research (Leiner, 2014). For Session 1 (activated from May 20 to June 3, 2014), 8,800 panelists were invited to participate in the two-wave experiment, of which 1,021 completed the first questionnaire. Although it was intended to invite only those who completed the first questionnaire to Session 2 (activated from June 3 to June 18, 2014), owing to a technical error all 8,800 panelists who were invited in the first round (including those who did not complete the first questionnaire) were invited again. However, the analyses reported here included only data sets from participants who (a) participated in both sessions, (b) completed the first session at least 5 days before the second

session, and (c) viewed the main stimulus in Session 2 for at least 5 s. Moreover, two participants were excluded since they gave unrealistic and uniform answers when they were asked to recall the number of positive and negative comments presented in the stimulus (e.g., "77777") and another participant was excluded because of the extreme value of the time he/she spent viewing the main stimulus (4.75 hr). The final sample included 657 participants (387 females) whose age ranged from 16 to 75 years (age: $M = 33.80$, $SD = 12.16$). In terms of education, 89.7% of participants had at least a university-entrance qualification. The sample consisted of high proportions of employees (42.8%) and students (32.3%). All participants were Facebook users (which was mandatory for participation) and the majority used Facebook on a daily basis (63.9%) or once or more times a week (21.2%). On average, participants spent 37.02 min ($SD = 55.02$) on Facebook every day.

5.5.3 Stimulus Material

As stimulus, a fictitious Facebook news feed was produced with a graphics editing software (see Figure 4). To achieve a greater generalizability of results, the stimulus was developed for two different societal topics. A boundary condition of the spiral of silence theory is that the predicted micro- and macro-processes may become observable only in the context of controversial and moral-laden issues (Noelle-Neumann & Petersen, 2004). To ensure that the topics involved in the experimental manipulation were highly controversial and potential for disputes, a pilot study ($N = 120$, 79 females; age: $M = 24.43$, $SD = 6.99$; 98.3% had at least a university-entrance level qualification) tested eight different public issues (which were currently debated in Germany at the time the present research project was conducted) beforehand. In the pilot study, participants were asked to rate the societal issues based on their controversy ("What do you think: How controversially is [topic] debated in Germany?" on a 7-point scale from 1 = *not controversial* at all to 7 = *very controversial*). Then, the two topics that had the greatest controversy potential according to participants' assessment were selected for the main experimental study: Legalization of euthanasia (perceived controversy: $M = 5.37$, $SD = 1.65$) and the introduction of an adoption right for same-sex couples (perceived controversy: $M = 5.13$, $SD = 1.80$). For each topic, a Facebook post from a fictitious channel labeled with the neutral name "Foresight" was created. This post included the experimental manipulations regarding the main message, the number of likes, and the related user-generated comments.

Figure 4. Example of the stimulus material showing a Facebook news feed.

Manipulation of the main message

The post included an Internet meme showing a picture illustrating the topic of interest, namely, either a homosexual couple sitting with a child on a bench or a hand of an elderly person held by a younger person. Within the meme two text lines expressed a rather supportive ("A real family. Supporting the #AdoptionRightForHomosexuals" or "The right to help others. Supporting #ActiveEuthanasia") or opposing stance ("A real family? Opposing the #AdoptionRightForHomosexuals" or "No right to shorten life. Opposing #ActiveEuthanasia") toward the topic. For the manipulation check, participants of the main study evaluated the valence of the meme on a 5-point scale from 1 = *opposing [topic]* to 5 = *supporting [topic]*. As intended, memes holding a negative stance were perceived as rather opposing, $M = 2.56$, $SD = 1.69$, compared with memes with a positive viewpoint that were rated as rather supportive, $M = 4.54$, $SD = 0.79$; $t(460.57) = -19.24$, $p < .001$, Cohen's $d = -1.50$.

Manipulation of number of likes

The number of Facebook likes related to the main message was manipulated by displaying a relatively high (39,548 likes) or a relatively low number (three likes). To determine an appropriate amount of likes for the higher and the lower level, Facebook news channels and how the popularity of posts evolves within 1 day were observed. It is important to note that the Facebook post used in this study displayed a time record that it was posted some hours ago ("Yesterday 10:40 a.m."). The number of likes selected for the present experiment corresponds to the typical number of likes of posts on Facebook channels that become very popular or remain less popular within a couple of hours. After exposure to the stimulus, participants were asked to rate on a 7-point scale whether they perceived the number of likes of this post as 1 = *very low* up to 7 = *very high*. The manipulation check revealed that viewers of a higher number of likes rated them as significantly higher, $M = 4.33$, $SD = 1.52$, than viewers of a lower number, $M = 3.37$, $SD = 1.25$; $t(648.43) = -8.91$, $p < .001$, Cohen's $d = -0.69$. Although the difference reached statistical significance, the descriptive values and the effect size indicate a rather moderate effect of manipulation (cf. Cohen, 1992), which should be kept in mind when interpreting the results.

Manipulation of comment valence

A total of four user-generated comments were displayed below the main post and the number of likes. Depending on the experimental condition, participants viewed four positive

or four negative or two positive and two negative comments. Since argument quality of user-generated comments was shown to have an influence on readers (Winter et al., 2015), comments merely included a very general (supporting or opposing) argument toward the topic such as: "A right that enables homosexuals to adopt children would change a lot – I support that…," "We should support active euthanasia – this will advance our society," "I think this adoption right is the wrong way – A definite no!" or "Active euthanasia would be a negative signal that we should not discuss anymore." To maximize experimental control, the wording of positive and negative comments was systematically balanced (e.g., "A right that enables homosexuals to adopt children would change a lot/would not change anything – I support that/ I am against that…"). Conditions including both positive and negative comments presented four different wordings. Furthermore, the order of the two positive or two negative comments was systematically varied. To test whether the manipulation was successful, participants were asked to rate on a 7-point scale whether the presented comments assumed 1 = *an opposing*, 4 = *both an opposing and supporting,* or 7 = *a supporting stance* toward the topic. As intended, readers of positive comments evaluated the comments as more supportive, $M = 6.01$, $SD = 1.39$, than did readers of both stances, $M = 4.08$, $SD = 1.38$, and readers of negative comments, $M = 2.07$, $SD = 1.55$. A one-way analysis of variance (ANOVA) using the Welch's F test (as Levene's test results suggested that variances were not equal across groups) identified the main effect of comment valence as significant, *Welch's* $F(2,433.09) =$ 386.75, $p < .001$, $\omega^2 = .55$, while post hoc comparisons with Bonferroni correction indicated that all three conditions differed at $p < .001$.

Considering the experimental design (containing 12 conditions), the inclusion of two topics and the systematic variation of the order of comments (in the conditions with a balanced number of positive and negative comments), a total of 32 different stimulus pages were created. To increase ecological validity, the post about the issue of interest was embedded as the third post in the news feed alongside four further Facebook posts. Three of the distraction posts were status updates from other people who were rather private in nature ("Thanks for all the good wishes! :-)" or "Three days left until vacation…:-)"). Another distraction post was obviously posted by an online news Facebook channel and dealt with women's quota in industry and society. All these distraction posts also included either aggregated user representations or user-generated comments (or both), so that the main posting with the experimental manipulation was not the only message including peer

reactions. All profile pictures and names of private users included in the fictitious news feed were presented in a blurred form.

5.5.4 Measures

Fear of isolation

The extent to which participants generally fear being socially isolated was measured in the sense of a trait with interindividual variance by means of the fear of isolation scale developed by Hayes et al. (2013). The scale consists of five items such as "It would bother me if no one wanted to be around me" or "I dislike feeling left out of social functions, parties, or other social gatherings." Participants stated their agreement with these items on a 5-point scale from 1 = *strongly disagree* to 5 = *strongly agree*. A higher mean of this scale, therefore, reflected a higher fear of isolation. The scale had an internal consistency of Cronbach's α = .80.

Pre and post-exposure opinion

During Session 1 (which took place at least 5 days before presenting the stimulus material in Session 2), participants first indicated their opinion toward the topic of interest on a 7-point scale with 1 = *I strongly oppose [topic]*, 4 = *I neither support nor oppose [topic]* and 7 = *I strongly support [topic]* (cf. Gunther & Christen, 2002; Zhang & Reid, 2013). Moreover, participants were asked whether they would decide for or against the legalization of euthanasia/the adoption right for same-sex couples (item: "If you had to decide whether to oppose or to support [topic] – what would you do?" with 1 = *support* and 2 = *oppose*). This dichotomous decision served not only as a control variable for comparison with the continuous measure but also to divide participants into two opinion camps that were necessary for the tests of *H4–H6*. Participants who indicated a neutral stance on the continuous scale (*n* = 73) and participants whose statements regarding the continuous measure were not congruent with the dichotomous measure (*n* = 13) were excluded for the tests of these hypotheses. For research interests focusing on how people's stance influences their information processing, it is a common procedure to exclude participants with no or a neutral stance on the corresponding topic (see e.g., Lee, 2012). In Session 1, pre-exposure opinions were assessed alongside filler items asking participants for their opinion toward two other societal topics (e.g., women's quota), so that the subject of the study was not too salient when participants were presented with the stimulus in Session 2. Post-exposure opinion in Session 2 was assessed with the same continuous measure as used in Session 1.

With regard to the opinion distribution among the sample (as measured in Session 1), 84.8% ($n = 280$) of participants who viewed the stimulus material on the adoption right for same-sex couples were in favor of the introduction of such a right in Germany, while 15.2% ($n = 50$) were against. Among the viewers of the Facebook post on euthanasia, 81.7% ($n = 267$) were in favor of the legalization of active euthanasia in Germany, whereas 18.3% ($n = 60$) were against.

Perception of opinion climates

In Session 2, after receiving the stimulus, subjects' perceptions of public opinion were measured. Overcoming the research tradition that has asked recipients for the perceived opinion of the "general public," which may be very abstract in a subject's mind (Mutz, 1998), this work used measures that do justice to claims that in people's perceptions the climate of opinion may vary across different groups (Glynn & Park, 1997; Salmon & Kline, 1985; Zhang & Reid, 2013). Therefore, participants were asked to estimate the opinion climate on the corresponding topics among (a) the national population, (b) Facebook users, and (c) people in one's reference group (friends and family). The wording was: "What do you think, what is the opinion of the national population/Facebook users/people around you (family and friends) on [topic]?" Participants had to indicate their estimates on a 7-point scale from 1 = *strongly opposes [topic]*, 4 = *neither opposes nor supports [topic]*, to 7 = *strongly supports [topic]*. Furthermore, participants were instructed to estimate the percentage of opponents, neutrals, and supporters within these three groups ("What do you think, how is the opinion distribution on [topic] within/among the national population/Facebook users/the people around you?"). Here, participants had to add up their estimates to 100% and were notified if they did not. Considering participants' dichotomous decision of supporting or opposing the discussed issue (measured in Session 1), it was computed to what extent participants perceived congruence between their and other people's opinion.

Attention to different message types

To assess participants' attention to diverse message types displayed in the Facebook post, self-report items such as, "How much attention did you pay to the user comments presented below the picture?" were employed. Participants had to indicate their attention to the main picture as well as the related number of likes and user comments on a 7-point scale from 1 = *no attention at all* to 7 = *great attention*. Descriptive analyses revealed that participants paid the greatest attention to peer comments, $M = 4.57$, $SD = 1.84$, followed by

the main picture, $M = 4.10$, $SD = 1.80$, and the number of likes, $M = 2.69$, $SD = 1.82$. An ANOVA with repeated measures yielded a significant effect of the within-subject factor message type, *Greenhouse–Geisser F*(2, 1310.89) = 254.58, $p < .001$, $\eta^2_p = .28$, revealing that self-reported attention differed between all message types at $p < .001$ (based on a post hoc comparison with Bonferroni correction).

Recall accuracy

How accurately participants recalled the opinion cues (i.e., the number of likes and the comments) was measured by asking participants to type in the number of likes and positive and negative user comments related to the post of interest. Subsequently, three new variables indicating the mathematical difference between participants' answers and the actual number of (a) likes, (b) positive, and (c) negative comments were calculated. Difference values below zero were recoded into positive ones, so that the higher the value of this variable, the less accurately could a person recall numerical details of these opinion cues.

Intentional responses to the post

After stimulus exposure, participants were asked to state how likely they would perform particular behaviors as a response to the presented post. On a 7-point scale from 1 = *very unlikely* to 7 = *very likely*, participants indicated how likely they were to (a) read further comments within the presented discussion or (b) contribute themselves to the discussion below this specific post.

5.5.5 Procedure

Participants were invited via e-mail to an online study consisting of two temporally separated sessions exploring how Facebook users deal with public issues. In this electronic invitation, participants received a personalized link to Session 1 and the instruction that they would be receiving a link to Session 2 two weeks later. In Session 1, all participants had to complete the same survey on their general Facebook use, opinions on three politically and civically relevant debates, dispositional fear of isolation, individualistic and collectivistic tendencies[1], and sociodemographic characteristics. On average, the time span between Session 1 and 2 was $M = 14.85$ days ($SD = 2.62$). Consequently, after approx. 2 weeks,

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[1] These variables were not the subject of the present work and are therefore not considered in the subsequent analyses.

participants received a personalized link to Session 2 that included the experimental manipulation. By clicking on the link, participants were randomly assigned to one of the 32 experimental conditions. Before being exposed to the stimulus, participants completed a questionnaire on their self-perceived loneliness[1] and were then instructed to take the time they needed to view the Facebook news feed that was about to be presented to them. The average time for viewing the stimulus was $M = 63.63$ s ($SD = 90.64$). Participants then completed dependent measures that included evaluations of the Facebook news feed[1], perceptions of opinion climates, intentional responses to the stimulus, presumed influence of the post[1], attention to different message types, recall tasks, and the manipulation check. After completing the second session, participants had the chance to participate in a lottery for four gift cards from an online retail shop and were debriefed. Owing to the personalized link distributed for both sessions, the two data sets for each participant were merged for data analysis.

5.6 Results

With *H1*, it was assumed that people's fear of isolation is positively related to a higher attention to opinion cues and a more accurate recall of these cues. A nonparametric correlational analysis (based on Spearman's rho) revealed a significant positive relationship between fear of isolation and self-reported attention toward user-generated comments, $r = .16$, $p < .001$, but no significant relationships between fear of isolation and the attention to the main message or the attention to the number of likes. In terms of recall accuracy, the correlation analysis indicated a significant negative relationship between fear of isolation and how accurately the number of positive and negative comments was recalled, $r = -.10$, $p = .015$. Since a lower value of recall accuracy reflects a higher accuracy, this correlation indicates that the higher people's fear of isolation was, the more accurately they recalled the number of positive versus negative comments. However, no significant relationship between fear of isolation and recall accuracy regarding the number of likes was found. While the significant correlations supported the tendencies assumed in *H1* with regard to user-generated comments, it has to be noted that coefficients indicate rather weak relationships between these variables. In this context, it should also be reported that a further significant positive correlation, $r = .12$, $p = .002$, indicated that the higher the fear of isolation, the higher the participants' self-reported likelihood to read more user comments with respect to the topic.

While *H2* predicted an interaction effect of the main message and the number of likes, *H3* assumed a main effect of the comment valence on people's perception of the opinion

climate. To test these hypotheses, a 2 (valence of main message) x 2 (number of likes) x 3 (valence of comments) multivariate analysis of variance (MANOVA) was employed, considering the perceived opinion climate among (a) the national population, (b) Facebook users, and (c) the reference group as dependent variables. Box's test of equality of covariance matrices was not significant ($p = .272$), indicating that the homogeneity assumption is tenable. Bartlett's test of sphericity, $\chi^2(5) = 358.01$, $p < .001$, indicated that correlations between the three dependent variables were sufficiently high to use them as a group. The MANOVA yielded significant multivariate main effects for the valence of the main message, Wilks's $\lambda = .99$, $F(3,643) = 3.05$, $p = .028$, $\eta_p^2 = .01$, and the valence of the comments, Wilks's $\lambda = .94$, $F(6,1286) = 6.89$, $p < .001$, $\eta_p^2 = .03$, but no significant multivariate main effect of the number of likes and no multivariate interaction effects. Univariate statistics revealed that the valence of the main message had a significant main effect on the perceived opinion climate among the national population, $F(1,645) = 4.48$, $p = .035$, $\eta_p^2 = .01$, and among one's reference group, $F(1,645) = 4.67$, $p = .031$, $\eta_p^2 = .01$. Surprisingly, viewers of a negative main message inferred a more supportive opinion climate among the national population ($M_{neg} = 3.92$, $SD_{neg} = 1.31$) than did viewers of a positive main message ($M_{pos} = 3.71$, $SD_{pos} = 1.31$). The same pattern was found for the perceived opinion climate among one's reference group ($M_{neg} = 5.04$, $SD_{neg} = 1.42$; $M_{pos} = 4.79$, $SD_{pos} = 1.57$). No main effect of the main message valence on the perceived climate among Facebook users and no interaction effects of the main message valence and the number of likes were found. Therefore, *H2* was not supported.

Supporting *H3*, univariate tests indicated significant main effects of comment valence on perceived opinion climates among the national population, $F(2,645) = 4.52$, $p = .011$, $\eta_p^2 = .01$, among Facebook users, $F(2,645) = 17.90$, $p < .001$, $\eta_p^2 = .05$, but not among one's reference groups (see descriptive information in Table 2). Post hoc pairwise comparisons (with Bonferroni correction) revealed that participants presented with unanimously negative comments perceived a more negative opinion climate among the national population than did participants confronted with both negative and positive comments ($p = .040$) and participants exposed to unanimously positive comments ($p = .020$). The latter two conditions did not differ among each other. Likewise, post hoc pairwise Bonferroni-corrected comparisons yielded the same pattern for the perceived opinion climate among Facebook users: Negative comments provoked more negative inferences about the opinion climate among Facebook users than comments including both valences ($p < .001$) and comments with a positive valence ($p < .001$). Again, the latter two conditions did not differ significantly.

Table 2

Means and standard deviations in parentheses for perceived opinion climates separated by experimental manipulations of comment valence

Perceived opinion climate among...	Experimental Condition		
	Negative Comments $n = 214$	Negative and positive comments $n = 226$	Positive Comments $n = 217$
National population	3.59 (1.30)$_a$	3.90 (1.30)$_b$	3.94 (1.33)$_b$
Facebook users	4.06 (1.37)$_a$	4.52 (1.16)$_b$	4.77 (1.26)$_b$
Reference group	4.94 (1.47)$_a$	4.90 (1.44)$_a$	4.89 (1.61)$_a$

Note. Different subscripts in a row indicate significant differences with $p < .05$ using Bonferroni-corrected post hoc comparisons.

To address *RQ1* asking about the relative influence of opinion cues on perceived opinion climates, three hierarchical regression analyses (one for each dependent variable) were performed. Predictors were entered in the following order: valence of the main message (first block), number of likes (second block), interaction term of main message valence and number of likes (third block), two dummy variables to compare the different valences of comments (Dummy 1: both valences vs. negative valence; Dummy 2: both valences vs. positive valence; fourth block). For the perceived opinion climate among the national population, the first model including the valence of the main message, $b = -.11$, $SE_b = .05$, $\beta = -.08$, $t = -2.09$, $p = .037$, was significant, $F(1,655) = 4.35$, $p = .037$, $\Delta R^2 = .007$. In the following models, only the comparison between negative comments and two-valence comments, $b = -.31$, $SE_b = .12$, $\beta = -.11$, $t = -2.52$, $p = .012$, emerged as a significant predictor in the fourth step, $F(5,651) = 3.06$, $p = .010$, $\Delta R^2 = .014$ (final $R^2 = .023$). With the perceived opinion climate among Facebook users as criterion, only the fourth step considering the comparison of two-valence and negative comments (Dummy 1), $b = -.46$, $SE_b = .12$, $\beta = -.17$, $t = -3.83$, $p < .001$, and the comparison of two-valence and positive comments (Dummy 2), $b = .25$, $SE_b = .12$, $\beta = .09$, $t = 2.07$, $p = .039$, was found to contribute significantly toward explaining variance, $F(5,651) = 7.66$, $p < .001$, $\Delta R^2 = .051$ (final $R^2 = .056$). The last regression analysis with perceived opinion climate within one's reference group as criterion only yielded the first model entering the valence of the main message, $b = -.13$, $SE_b = .06$, $\beta = -.09$, $t = -2.17$, $p = .030$, as significant, $F(1,655) = 4.73$, $p = .030$, $\Delta R^2 = .007$. While the results from regression analyses are equivalent to the results from the MANOVA, they explicitly compare the relative influence of the different opinion cues and revealed the greater influence of comments on people's inferences about public opinion. Throughout all models,

the contribution of comment valence to the explanation of variance was greater compared with the effect of the other cues. Therefore, only comments as the most influential opinion cues are considered in the subsequent tests of hypotheses.

H4 predicted that opinion cues on SNS moderate the extent to which people project their pre-existing opinion onto the perceived opinion climates. To test *H4*, those participants were considered who (a) expressed a predominantly positive or predominantly negative opinion on the topic and (b) were exposed to either unanimously positive or unanimously negative comments, so that people with a neutral stance or those exposed to a balanced opinion climate in the comments were excluded for this analysis (see Chapter 5.5.4). This subsample included 375 cases. *H4* was tested with three hierarchical regression analyses, one for each perceived opinion climate as dependent measure. The first step of the regression model considered sex and age as control variables. Next, participants' mean-centered pre-existing opinion (second step) was entered. In the third step, a variable Comment Concordance representing whether participants viewed comments that were discordant ($n = 200$) or concordant ($n = 175$) to their pre-existing opinion was entered. Owing to the unequal size of groups, this variable was weighted effects-coded with the value -0.875 for discordant comments and 1 for concordant comments (cf. Cohen, Cohen, West, & Aiken, 2003). In the last step, the interaction term of pre-existing opinion and valence concordance was entered.

As indicated in Table 3, pre-existing opinions (in the second step) significantly contributed to explaining the variance in all three dependent variables: perceived opinion climate among the national population, Facebook users, and one's reference group. However, the predicted interaction effect of pre-existing opinion and valence concordance was only found for the perceived opinion climate among Facebook users. As shown in Figure 5, a simple slope analysis revealed that participants projected their opinion onto Facebook users when comments were concordant, $b = .25$, $SE_b = .08$, $t = 3.38$, $p = .001$. However, the projection tendency was not significant when participants were confronted with discordant comments, $b = -.03$, $SE_b = .04$, $t = .72$, $p = .470$. Since this interaction effect was not found for the opinion climates among the national population and one's reference group, *H4* was only supported for the perceived opinion climate among Facebook users.

Hierarchical regression analyses also revealed that participants viewing comments concordant with their opinion were more prone to estimate a more positive opinion in all three groups (see Table 3). These significant effects may emerge owing to the fact that most participants were in favor of either introducing an adoption right for same-sex couples or the legalization of active euthanasia (see Chapter 5.5.4).

Table 3

Hierarchical multiple regression analyses including main and interaction effects of comment concordance and pre-existing opinion on perceived opinion climate (n = 375)

	National population					*Facebook users*					*Reference group*				
	b (SE$_b$)	*β*	*t*	*p*	*ΔR²*	*b (SE$_b$)*	*β*	*t*	*p*	*ΔR²*	*b (SE$_b$)*	*β*	*t*	*p*	*ΔR²*
Step 1					.006					.012					.013
Sex (1 = female / 2 = male)	-.22 (.14)	-.08	-1.49	.137		-.28 (.15)	-.10	-1.91	.058		-.18 (.17)	-.06	-1.10	.273	
Age	.00 (.01)	.03	.47	.640		-.00 (.01)	-.03	-.54	.592		-.01 (.01)	-.09	-1.70	.089	
Step 2					.068					.012					.361
Pre-opinion	.22 (.04)	**.26**	5.21	< .001		.09 (.04)	**.11**	2.10	.036		.57 (.04)	**.61**	14.62	< .001	
Step 3					.024					.044					.009
Comment concordance	.23 (.07)	**.16**	3.16	.002		.31 (.07)	**.21**	4.16	< .001		.15 (.07)	**.09**	2.27	.024	
Step 4					.003					.026					.001
Pre-opinion x Comment condordance	.05 (.05)	.06	1.15	.251		.15 (.05)	**.17**	3.23	.001		-.04 (.04)	-.04	-.90	.369	
Total R²					.101					.093					.384
Step 1	*F*(2,372) = 1.13, *p* = .324					*F*(2,372) = 2.22, *p* = .110					*F*(2,372) = 2.47, *p* = .086				
Step 2	*F*(3,371) = 9.85, *p* < .001					*F*(3,371) = 2.96, *p* = .032					*F*(3,371) = 73.80, *p* < .001				
Step 3	*F*(4,370) = 10.05, *p* < .001					*F*(4,370) = 6.63, *p* < .001					*F*(4,370) = 57.25, *p* < .001				
Step 4	*F*(5,369) = 8.31, *p* < .001					*F*(5,369) = 7.53, *p* < .001					*F*(5,369) = 45.94, *p* < .001				

Note. Values in bold indicate significant relationships.
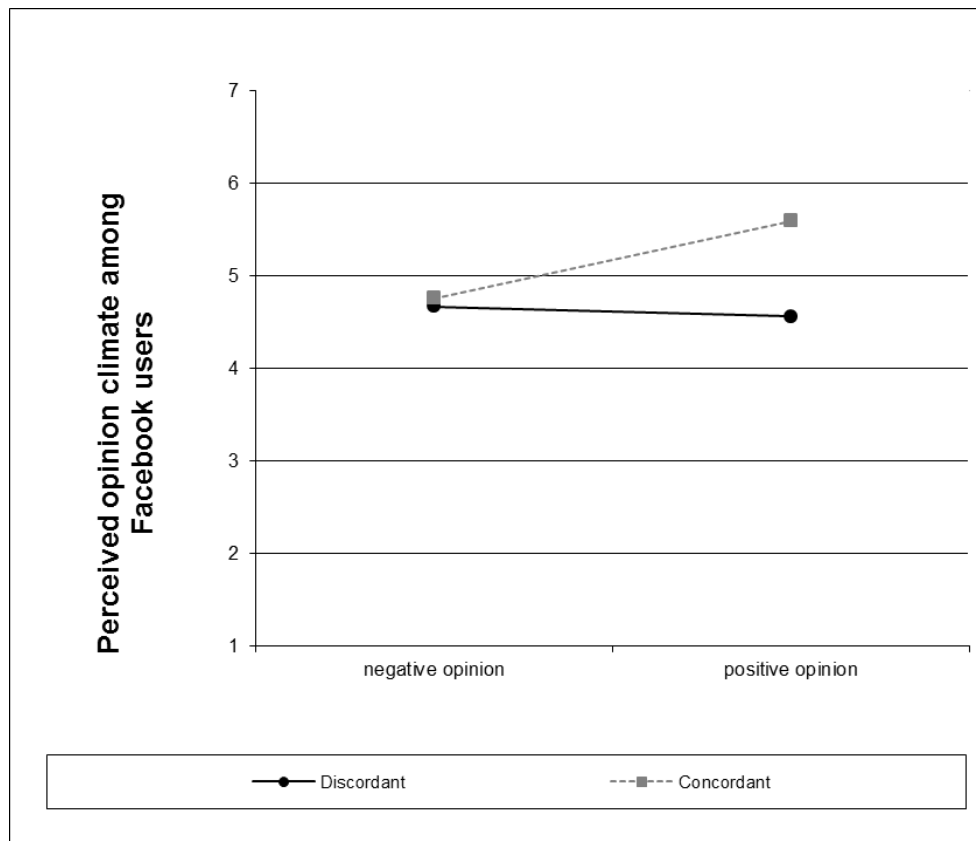
Figure 5. Simple slopes for the perceived opinion climate among Facebook users, including the interaction between the pre-existing opinion and the concordance with user-generated comments.

H5 expected that perceived opinion climates explain the influence of opinion cues on social networking sites on recipients' subsequent opinions. This hypothesis was tested with mediation analyses using the INDIRECT macro (Preacher & Hayes, 2008) with 5,000 bootstrap resamples (percentile-based 95% confidence interval). Since perceived opinion climates highly correlated with each other (correlation coefficients: $r = .54$, $p = < .001$ between national population and Facebook users, $r = .42$, $p = < .001$ between national population and reference group and $r = .30$, $p < .001$ between Facebook users and reference group), the unique explanatory potential of each mediator was tested in separate models in order to prevent mediators mutually controlling for each other's effects. Three models were computed including comment valence as independent variable (considering the subsample of those who viewed either positive or negative comments; $n = 431$) and one of the three perceived opinion climates as mediator. As dependent variable, the difference between post-exposure opinion (measured in Session 2) and pre-existing opinion (measured in Session 1) was calculated, so that negative values indicated a negative opinion shift and positive values reflected a positive opinion shift ($n = 431$: $M_{shift} = .03$, $SD_{shift} = .94$). The first model with

perceived opinion climate among the national population as mediator revealed a significant effect of comment valence on the mediator, $b = .17$, $SE_b = .06$, $t = 2.70$, $p = .007$, but no significant effect of the perceived opinion climate on recipients' opinion shift and no significant indirect effect. The second mediation model with perceived opinion climate among Facebook users identified a significant effect of comment valence on the mediator and a significant effect of the mediator on recipients' opinion shift (see Figure 6 for further values). Although the total effect of comment valence on opinion shift was not significant, Hayes (2013) and several methodologists (see, e.g., MacKinnon, 2008) suggested that indirect effects can also exist when the total effect is not statistically significant. Indeed, a significant indirect effect through the perceived opinion climate among Facebook users was found (see Figure 6; path estimate for the indirect effect: $b = .03$, $SE_b = .01$; 95% CI [.0037, .0595]), indicating that the effect of comment valence on opinion shift decreased when the mediator was considered in the model.
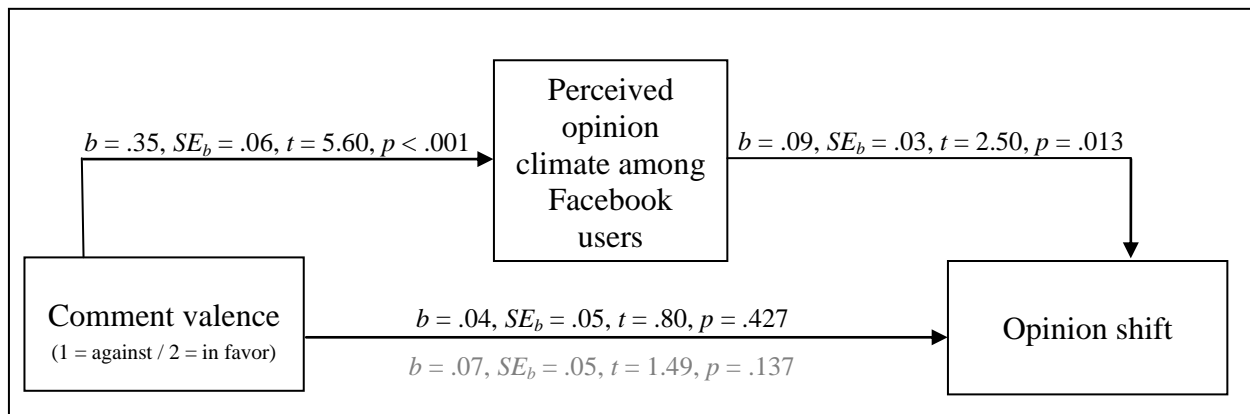
Figure 6. Simple mediation model ($n = 431$) including unstandardized regression coefficients, standard errors, t- and p-values for the effect of valence of the comment (independent variable) through perceived opinion climate among Facebook users (mediator) on opinion shift (outcome variable). The gray values indicate the path between independent and dependent variable without controlling for the mediator. Model summary: $R^2 = .02$, $F(2,428) = 4.24$, $p = .015$.

While the third mediation model revealed no significant effect of comment valence on the perceived opinion climate among one's reference group, the latter had a significant positive effect on recipients' opinion shift, $b = .06$, $SE_b = .03$, $t = 2.01$, $p = .045$. However, because of the absent effect of the independent variable on mediator, no indirect effect was present. Therefore, *H5* was only supported for the perceived opinion climate among Facebook users when considering that the total effect was not significant.

In *H6*, it was hypothesized that the congruence of one's opinion with the perceived opinion climates explains the effect of opinion cues on social networking sites on people's willingness to contribute to the discussion. Again, as the three mediators correlated highly with each other (correlation coefficients: $r = .66$, $p = < .001$ between national population and Facebook users, $r = .60$, $p = < .001$ between national population and reference group, and $r = .55$, $p < .001$ between Facebook users and reference group), three separate mediation analyses with 5,000 bootstrap resamples (percentile-based 95% confidence interval) were performed to test this hypothesis. Comment concordance served as independent variable ($n = 375$; see Chapter 5.5.4), perceived congruence with the opinion climate (either among the national population, Facebook users, or one's reference group) as mediator, and the willingness to contribute to the presented discussion on Facebook as dependent variable. While the first model with perceived opinion congruence with the national population as mediator yielded a significant effect of the mediator on the willingness to discuss, $b = .10$, $SE_b = .05$, $t = 2.26$, $p = .024$, the effect of comment concordance on the mediator and the indirect effect were not significant. The second model revealed a significant effect of comment concordance on the mediator congruence with the perceived opinion climate among Facebook users which, in turn, had a significant effect of subjects' willingness to participate in the discussion (see Figure 7 for further values). Again, while the significant total effect of comment concordance on willingness to contribute to the discussion was absent, a significant indirect effect through the perceived congruence with Facebook users' opinion emerged, path estimate for the indirect effect: $b = .07$, $SE_b = .04$, 95% CI [.0096, .1593].
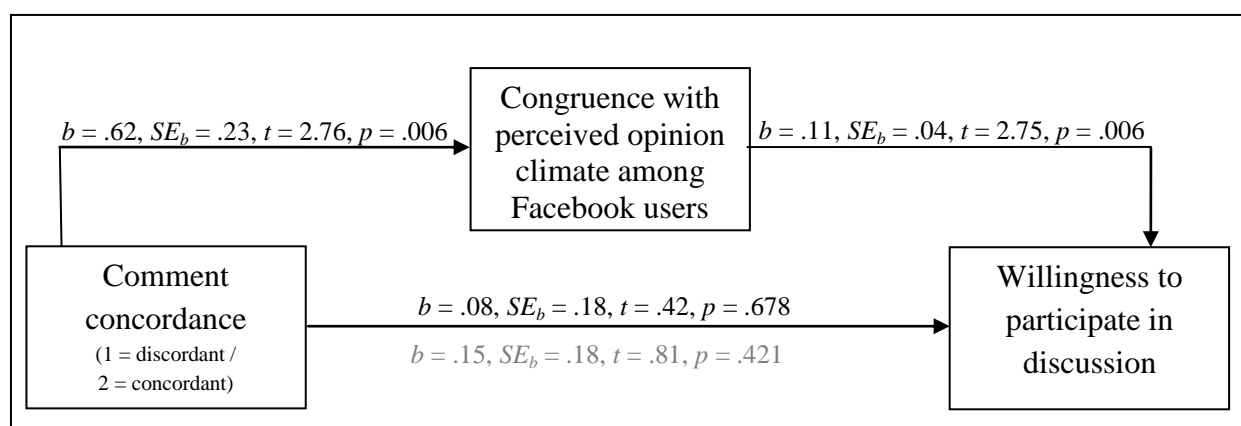
Figure 7. Simple mediation model ($n = 375$) including unstandardized regression coefficients, standard errors, t- and p-values for the effect of comment concordance (independent variable) through congruence with the perceived opinion climate among Facebook users (mediator) on willingness to participate in a discussion on Facebook (outcome variable). The gray values indicate the path between independent and dependent variable without controlling for the mediator. Model summary: $R^2 = .02$, $F(2,372) = 4.11$, $p = .017$.

The third model including perceived opinion congruence with one's reference group as mediator revealed a significant effect of the mediator on the outcome variable willingness to participate in the discussion, $b = .09$, $SE_b = .03$, $t = 2.63$, $p = .009$; still the effect of comment concordance on mediator and the indirect effect were not significant. Consequently, *H6* was only supported for the congruence with the perceived opinion climate among Facebook users when taking into account that the total effect was not significant.

5.7 Discussion

To test the first stage of the research model proposed in this dissertation (see Figure 2), the first study intended to explore when and how people monitor other users' opinions through the social networking site Facebook and which effects this monitoring process can have. For this purpose, a two-session experiment was conducted, varying potential opinion cues (proprietor content, aggregate user information, and user-generated comments) and exploring how recipients transfer these cues to their perceptions, opinions, and actions.

As a theoretical premise for the monitoring process (cf. Noelle-Neumann, 1977), this study first tested to what extent people's trait-like fear of isolation increases the attention they pay to opinion cues on Facebook. The findings reflect the relevance of user-generated comments as opinion cues on two levels: The more people tend to fear isolation, the greater attention they allocated to comments, as they reported retrospectively. This self-report was consistent with the more objective measure of recall accuracy: The greater the fear of isolation, the more accurately subjects recalled the number of positive and negative comments that were shown. Although these relationships were quite weak, this pattern reveals that user-generated comments may serve as important cues for people who want to learn other users' opinions and, thereby, which viewpoint may be approved by others. Apparently, peer comments seem to be more informative than the number of people liking an opinionated message, as fear of isolation was associated neither with self-reported attention nor with recall accuracy regarding these numeric cues. The significance of comments was underlined by the finding that people with a higher fear of isolation would have liked to see more comments related to the presented discussion. While the fear of isolation as a driving force behind people's continuous observation of their environment is a basic assumption of the spiral of silence theory (see Noelle-Neumann, 1993), its effects have not been extensively studied by previous works (Hayes et al., 2013). The present research fills this gap by showing that people's quasi-statistical sense is also stimulated by the fundamental fear of isolation while

using social networking sites and that user-generated comments function as informative sources in this regard.

Consistent with this pattern were results of the experimental test on whether the number of likes or the valence of comments exerts greater impact on users' inferences about public opinion. Findings show that while user-generated comments were able to weakly shape people's perceptions of the opinion climate, numeric representations of peer reactions in the form of likes were not. This pattern is in line with previous works (Lee, 2012; Lee & Jang, 2010), which already revealed that comments as exemplified opinion expression acts are superior in their influence than pallid aggregated information whose meaning appears to be ambiguous to recipients (even though high and low numbers were more extreme in the present study). This study's results, however, extend previous research revealing that the effects of user-generated comments on public opinion perceptions differ depending on the target group that subjects are asked about: While inferences about public opinion referred to the opinion of the "general public" in prior studies, based on the present results, user-generated comments affected the perceived opinion distribution among the national population and among Facebook users but not among subjects' reference group. This indicates that recipients mentally differentiate between different opinion climates (cf. Glynn & Park, 1997; Salmon & Kline, 1985; Zhang & Reid, 2013) and project opinions expressed by unknown commenters onto more "distant" groups such as the national population and Facebook users in general. In this context, it seems remarkable that four comments (written by strangers) are sufficient to alter recipients' inferences about macro-level opinion climates.

Although a major effect of the main message's valence was not specified in the hypotheses, the effects identified should be discussed for the sake of completeness. It is noteworthy that the valence of the main message (a meme either expressing a stance in favor of or against the adoption right for same-sex couples / active euthanasia) weakly shaped perceptions of the opinion climate in a direction opposed to that advocated in the meme: When subjects viewed a meme expressing a viewpoint in favor, they were more likely to estimate an opposing viewpoint among the national population and their reference group (and vice versa). One explanation for this pattern could be that memes are seen as rather "alternative" means that offer perspectives that deviate from the majority and are thought to draw society's attention to this non-mainstream point of view. Accordingly, recipients' line of reasoning could be that such memes were posted owing to a majority having the opposite opinion so that they perceived an opinion climate in reverse. Based on the data at hand, this interpretation is and remains speculative as the valence of the main message did not have any

interaction effect with the opinion cues, which might have served to clarify the emerging pattern.

Besides the direct effects of opinion cues, this research explored whether opinion cues intervene in human beings' perceptual biases when estimating public opinion. In line with expectations, the present study detected that encountering user-generated comments that are discordant with the subject's pre-existing opinion attenuate the projection bias (Fields & Schuman, 1976). This finding is consistent with previous survey research that demonstrated that encountering opposing others reduces one's tendency to assume that most other people hold the same opinion as oneself (Wojcieszak & Price, 2009; Wojcieszak & Rojas, 2011). It should be noted that opinion cues on Facebook only reduced the projection bias with regard to perceptions of the opinion climate among Facebook users but not with respect to the perceived opinion distribution among the national population and subjects' reference groups. Still, this finding has theoretical implications: The spiral of silence theory (Noelle-Neumann, 1974) states that people hold back their opinion when they perceive that the opinion climate is opposing their own opinion. However, criticism has been voiced stating that the premise for this mechanism, that is, people perceiving a hostile opinion climate, may not occur regularly as most people are subjected to projection bias and may therefore scan their environment selectively, coming to the conclusion that most other people think the way they do (Kennamer, 1990; Salmon & Kline, 1985). According to the present results, recipients consciously perceive opposing opinion cues on Facebook and also generalize these to the opinions of all other Facebook users. Therefore, social networking sites appear to be spaces where people discern opposing opinion climates (reducing their projection tendency), which might offer a venue wherein prevailing opinion climates and norms can exert impact on the individual's behavior, as was proposed by the spiral of silence theory.

Indeed, the present findings also showed that the greater the perceived opinion congruence with Facebook users, the more willing were subjects to participate in this discussion. In other words, when subjects perceived that the prevailing norm or opinion deviated from their own, they were more inclined to keep silent and to not contribute to the discussion (supporting the core assumption of the spiral of silence theory; Noelle-Neumann, 1974). In this context, it should be considered that all three opinion climates (i.e., the national population, Facebook users, and reference groups) influenced the subjects' willingness to join the discussion equally. The preliminary evidence for the presence of the silence mechanism in social networking sites indicates that – in the long run – public opinion climates in these spaces may become distorted as the most strongly represented opinion camp (which does not

necessarily correspond to the actual majority) may be reinforced by affirmative comments while deviant viewpoints may become less and less visible. Future research should test this assumption by systematically analyzing the dynamics of opinion distributions in social media discourses over time.

Moreover, the opinion climates perceived via Facebook were found to explain shifts in people's own opinions. Comments indirectly influenced recipients' attitudes through the prevailing opinion climate that these comments convey to the viewers. Consequently, to some extent users seem to perceive the presented opinion climate as a prevailing norm, which they tend to adhere to. Still, it has to be acknowledged that comment valence did not directly influence people's opinion shift and effects of perceived opinion climates on recipients' opinion were rather weak. Moreover, descriptive values generally indicate a rather low extent of opinion shift among participants. Nonetheless, the current findings point to a reciprocal relationship between users' opinions and their public opinion perceptions. Pre-existing opinions (measured on average 15 days before stimulus exposure) were found to determine people's inferences about prevailing opinion climates, and the latter, in turn, contributed to changes in post-exposure opinions. These findings lend support for Price and Allen's (1990) suggestion that – within the mechanisms regarded in the spiral of silence theory – the process of informational social influence can also be at work. That is, people may use prevailing opinion climates also as sources to learn which standpoint is morally right and may, at least minimally, adjust their opinion in accordance with the opinion climate.

Limitations

The current results should be interpreted in light of this study's limitations: As already mentioned, the effects identified in this research were consistently weak. This indicates that people's opinions and public opinion perceptions are influenced by a large series of additional factors such as prevailing values and standards, interpersonal discussions with reference groups, or mass media coverage (see Figure 2). Therefore, more research is needed to identify the relative weight of social media communication in shaping users' opinions and perceptions. While the observed effects may be attributable to priming or to the availability heuristic and may be of short duration, two lines of thinking should be considered. First, short-term effects on people's perceptions of opinion distribution can become relevant when focusing on immediate follow-up responses, for instance, when it comes to contributing to the corresponding conversation (as was shown by the present study). Second, SNS users are exposed to such discussions not only once but regularly. Hence, the presently observed effects

based on a one-time exposure might accumulate in real-life settings, so that – over time – opinion distributions on SNS might get reflected in people's inferences to a greater extent.

The static stimulus material in the present experiment did not allow recipients to gather further information of the opinion climate among commenters, for instance, by browsing through more comments to get a "bigger picture." In fact, 23% of participants stated that it is very likely or somewhat likely that they might have attended to further comments in this discussion. While the static stimulus material increased experimental control, it reduced ecological validity. This limitation demands for further tests of how selectively people choose or attend to user-generated content to learn more about other users' viewpoints.

Another limitation lies in the fact that this work did not focus on cognitive processes such as self-categorization as a potential explanation for biases in opinion climate perception. As recent research revealed (see Zhang & Reid, 2013), a salient ingroup identity and perceptions of the ingroup's norms can influence the perception of opinion climates. In this work, it remained unclear to what extent subjects identified with commenters, which appeared to be the most influential source of conveying opinion climates. Future research is needed to disentangle these cognitive processes that may become more and more important in online environments such as Facebook, where offline and online networks converge.

Taken together, the first study of this dissertation offers preliminary support for particular mechanisms represented in the guiding research model (see Figure 2): First, this study provides evidence that individuals' dispositional fear of isolation encourages them to attentively scan their virtual surrounding for opinion cues. Accordingly, people were found to use opinion cues on social networking sites to infer prevailing opinion climates on public issues. In this context, user-generated comments stand out against the number of likes, as the former were attended to more thoroughly by users and also had larger effects on users' public opinion perceptions. Second, this research points to the potential of opinion cues on SNS to weaken cognitive biases, as user-generated comments were shown to attenuate the human tendency to project one's opinion on others. Third, as this study found public opinion perceptions through SNS to influence users' subsequent willingness to participate in discussions, this research indicates that SNS may be venues in which – in the long run – spiraling processes could occur. Given these findings, it seems worthwhile to investigate (a) why people may hold back their opinion on SNS and (b) whether these platforms somehow differ from the social environments in which the spiral of silence theory has been explored to date. These questions are addressed in the next chapter.

IV EXPRESSING ONE'S OPINION

While the previous chapter focused on the process of monitoring opinion climates on social networking sites as the first stage of this thesis's research model (see Figure 2), this chapter will provide theoretical and empirical analyses of the second stage focusing on processes that underlie the expression of one's opinion on social media. As previously discussed throughout this work, platforms such as Facebook or Twitter have become social spheres wherein people are able to not only receive politically and civically relevant information (Bakshy et al., 2015; Dimitrova et al., 2014; Gil de Zúñiga, Molyneux, et al., 2014; see Chapter 1.2.1) but also exchange ideas and opinions about current public issues and politics (Bode et al., 2014; Rainie, Smith, et al., 2012; Vraga et al., 2015; see Chapter 1.2.2). With the incorporation of social media as a forum for political expression, questions arise about the deliberative potential of these platforms (Halpern & Gibbs, 2013; Rowe, 2015). As a social psychological view on the formation of public opinion suggests, the diversity of opinions expressed during political discourses can be suppressed by social dynamics such as majority pressure, for instance, in the form of normative and informational social influence (Noelle-Neumann & Petersen, 2004; Price & Oshagan, 1995). Following this line of thought, one could assume that political opinion expressions on social networking platforms underlie the same social psychological processes, which the spiral of silence theory has proposed for discourses outside social media (cf. Noelle-Neumann, 1974, 1993). The first study of this dissertation corroborates this notion by providing preliminary support for two presuppositions: First, people were found to use opinion cues on SNS to infer prevailing opinion climates. Second, the silence hypothesis received preliminary empirical support as this study showed that on Facebook people are less willing to contribute to a discussion on a public issue, the less support they perceive for their viewpoint among Facebook users. However, empirical tests of the silence hypothesis in online realms (including social media communication) yielded mixed findings (see Chapter 2.3.3), revealing significant and nonsignificant associations between the perceived opinion climate and the willingness to express one's opinion online. Along the propositions of this thesis's research model (see Chapter 4), it is argued that these empirical discrepancies may be attributable to characteristics of the social environment that was specifically used as scenario in each respective study. The preliminary assumption here is that – besides the influence of the perceived opinion climate – situational factors such as the particular audience may influence opinion expression.

This chapter is intended to provide explanations for the discrepant results on the silence hypothesis by approaching the environmental factors of conversational settings that may affect people's opinion expression on SNS. When focusing on situational variables, it seems plausible to consider both social media and face-to-face communication, as this approach should help to subsequently scrutinize to what extent the influence of situational factors exclusively exists on social media platforms or may also be operative in offline communication. Moreover, as suggested by this work's research model, this situational view should be linked to a key variable of the spiral of silence theory: the fear of isolation. This chapter will therefore analyze how environmental factors interact with people's situational fear of isolation, affecting people's likelihood to voice their opinion. In this regard, Studies 2 and 3 (Chapter 6) are intended to identify influential situational factors and to approach the diversity of people's social fears in online and offline communication. Subsequently, Studies 4 (Chapter 7) and 5 (Chapter 8) will build on previous analyses and zoom in on situational factors and test their actual influence on people's outspokenness on social networking sites.

6 Studies 2 & 3: Expected Sanctions and Situational Perceptions as Explanations for Differences in Opinion Expression Online and Offline

This chapter aims to identify how people's actions of opinion expression through contemporary social media technologies differ from opinion expression in face-to-face situations. Furthermore, this chapter addresses a central research demand in spiral of silence research, which is the specification of the fear of isolation (see Chapter 2.3.2.1). It is argued that situational factors influence people's expectations about how their social environment would punish them should they express their viewpoint in a hostile opinion climate. These expected sanctions are suggested to explain the variance in people's willingness to express a minority opinion across different social situations. Therefore, this chapter seeks to (a) disentangle the diversity of sanctions people anticipate in different offline and online situations, and (b) test whether expected sanctions and situational perceptions can contribute to explain how people respond to various minority situations. After providing a theoretical analysis, this chapter presents the empirical investigations of these questions that were addressed with a multi-methodological approach.

6.1 Expected Sanctions as Manifestations of Fear of Isolation

A key principle in Noelle-Neumann's spiral of silence theory is the idea of human beings steadily perceiving a fundamental fear of isolation, a need to not be rejected by others, but to be popular and respected (Noelle-Neumann, 1977). This fear of isolation is seen not only as significant driving force behind individual opinion expression behavior, but also as a trigger for macro-social processes, shaping how public opinion trends on controversial issues develop over time. Given its importance, the fear of isolation has been studied in some empirical works, using diverging conceptualizations: One school of thought has viewed this fear as a trait-like factor with interindividual variance (Hayes et al., 2013; Scheufele et al., 2001). This refers, for instance, to the extent to which a person usually fears being excluded from social gatherings. Empirically, the trait-like fear of isolation was shown to be (a) negatively related to people's willingness to participate in a controversial discussion (Scheufele et al., 2001), and (b) positively related to people's general tendency to self-censor in the sense of typically holding back one's deviant opinion in order to avoid negative social consequences (Matthes et al., 2012). On the other hand, scholars have also presented a situational perspective on the fear of isolation, meaning that individuals perceive a particular degree of fear depending on the specific situation in which they find themselves: In this context, Neuwirth et al. (2007) have explicitly differentiated the situational communication apprehension from the trait-like communication apprehension and issue-related fear of isolation. Empirically, they found that situational communication apprehension was positively related to strategies to avoid expressing one's opinion (the same was true for the issue-related fear of isolation) and negatively associated, albeit weakly, with strategies to engage in a discussion. Given these findings, Neuwirth and colleagues argued that measuring a state-like apprehension may "control" for situational factors that influence people's communication behavior.

The following analyses aim to bring the trait and the state perspective together by proposing fear of isolation as a personal disposition with interindividual variance which, however, manifests itself differently according to the specific social situation the individual is in. Depending on the situation, this social fear might operate not only to different degrees (i.e., higher vs. lower fear), but also on qualitatively different layers. In order to elaborate on different manifestations of fear of isolation, the present work draws on the concept of *expected sanctions* (cf. Rössler & Schulz, 2014): When faced with a majority opposing one's point of view, an individual will think about how his/her environment would react, should he/she express a deviant opinion (Jeffres, Neuendorf, & Atkin, 1999). These expectations

might include positive or neutral reactions from the social environment, but – according to the expectations of punishment posited by Noelle-Neumann (1974) – the reactions will be predominantly negative.

Previous research has already provided first indications regarding the diversity of "punishments" which people expect from their environment when they do not conform to the majority: One potential sanction mentioned implicitly by Noelle-Neumann (1993) was the fear of being judged or negatively evaluated by others, and therefore losing one's standing in a group or even in society. Yun and Park (2011), moreover, listed "isolation during the conversation, negative facial expression against minority opinions, verbal attacks […]" (p. 203) as further potential reactions from one's discussion partners. All of these potential sanctions are situation-specific reactions from one's environment, which could lead to a sense of social isolation in the short or long term.

While several works have dealt implicitly with some of these sanctions, to my knowledge, no previous study has analyzed the expectation of diverse sanctions systematically in concert with the social situation the individual is in. The present research aims to fill this gap by zooming in on expected sanctions in face-to-face and computer-mediated discussions and testing the explanatory value of these expectations regarding people's willingness to express minority opinions.

6.2 A Situational View on Offline and Online Communication

Situational operationalizations in offline communication

In spiral of silence research, investigations into the mechanisms operating when people express their opinions on a controversial issue have mainly focused – theoretically and empirically – on face-to-face settings. The small, albeit significant, relationship between perceived opinion climate and people's outspokenness (see Glynn & Huge, 2014; Chapter 2.3.1) has been explained by many reasons such as the neglected influence of personality traits or the unidimensionality of the dependent variable "willingness to speak out" (cf. Hayes, 2007; Matthes et al., 2010; Chapter 2.3.3.2). A further reason for the limited explanation of this effect of opinion climate may lie in the diverse methodological operationalizations of face-to-face situations: Most studies in the context of the spiral of silence theory employed hypothetical scenarios, asking participants to imagine a specific discussion situation and assessing whether or not they would voice their opinion in this situation. Across the body of research, participants were confronted with situations such as a

train journey (Noelle-Neumann, 1993), a bus ride (Salmon & Neuwirth, 1990), a social gathering (Hayes, 2007), a TV interview (Salmon & Oshagan, 1990), a wedding banquet (Willnat, Lee, & Detenber, 2002), or a public meeting (Gonzenbach, King, & Jablonski, 1999).

Given the diversity of operationalizations, early on, Salmon and Oshagan (1990) elaborated on situational factors that differentiate these scenarios, such as the degree of publicness or the degree to which the discussants are able to react immediately. Noelle-Neumann (1993) also indicated that the size of the public and the relationship to the discussion partners might have an influence on an individual's willingness to express a deviant opinion, meaning that in front of a larger public or a greater number of acquaintances, people would be more reluctant to voice their minority opinion than in more private settings or when talking with strangers (as an anonymous public). Nevertheless, she acknowledged that the "stigma attached to an embarrassing situation involving acquaintances is not final. There is always the opportunity to rectify the impression; but there is no recourse, no way to explain or excuse one's actions, when an anonymous public is involved" (p. 215). Building on these thoughts, it seems justified to assume that contextual factors exert an influence not only on one's opinion expression behavior but also on the sanctions people perceive in different situations. For instance, a person will expect different sanctions from an unknown audience than from a group of friends after having voiced an opposing viewpoint. The objective of the present research is to consider these contextual factors in order to explain how different expected sanctions can emerge.

Situational differences between offline and online communication

In order to address how people's opinion expression behavior may differ between offline and online communication, it seems worthwhile to identify the environmental differences between the two modalities. On the one hand, anonymity and lack of physical presence on the Internet were thought to relieve people's fear of isolation, thus creating a more democratic place for discussion in which contradictory viewpoints could be expressed side by side (Siegel et al., 1986; see Chapter 2.3.3). Accordingly, it was assumed that people would feel less threatened in the mediated social environment, as the anticipation of social sanctions was proposed to require the physical presence of another person or group (McDevitt et al., 2003). On the other hand, it was suggested that the anonymity and lack of social cues in computer-mediated communication might also provoke an online disinhibition effect (Suler, 2004), meaning that the mediated nature tempts individuals to flame or to attack others

(Buckels, Trapnell, & Paulhus, 2014; Lapidot-Lefler & Barak, 2012). If Internet users are aware of this potential disinhibited behavior online (cf. Rainie, Lenhart, & Smith, 2012), they will be more reluctant to participate in controversial discussions, as they will fear being attacked by others in these computer-mediated settings. Indeed, young Facebook users associate an uncivil and virulent tone of discourse with discussions of politics on this platform (Vraga et al., 2015). One could argue that it is not the characteristic of the environment itself (e.g., anonymity) but people's perception and subjective theories of this environmental characteristic that exert impact on people's communication behavior.

In this context, one may examine how people subjectively interpret the particular social environment by "importing" variables proposed by the theory of planned behavior (Ajzen, 2012), which elaborates on psychological antecedents of people's behavioral intentions and subsequent actions (cf. Neuwirth & Frederick, 2004, who already combined the theory of planned behavior and the spiral of silence theory). People's behavioral intentions are assumed to be contingent on people's subjectively perceived norms (what do others expect me to do?), behavioral control (to what extent do I feel capable of performing the behavior properly?), and attitudes (how do I evaluate the potential behavior?). Applying these constructs to the situation of expressing a minority opinion, a person's subjective norm may vary across online and offline situations: In asynchronous computer-mediated communication wherein perceived social presence of the interaction partners is reduced (compared with face-to-face conversations), people are expected to perceive a reduced "involvement obligation" in the sense of the pressure to participate in a discussion or to defend their viewpoint (McDevitt et al., 2003; referring to Goffman, 1966). Similarly, the behavioral control might also differ between communication channels: While a person has more time to reflect on and, therefore, has greater control over how he/she is going to disclose his/her argument in computer-mediated compared with face-to-face communication (Hesse, Werner, & Altman, 1988), he/she will perceive a greater loss of control due to the persistence of messages in online communication, especially in contemporary networked technologies such as Facebook (boyd, 2010). Once a person posts his/her opinion online, it can be recorded and archived and becomes, therefore, less rectifiable. According to boyd (2010), the persistence of messages in online communication "raises new concerns when it can be consumed outside of its original context" (p. 47). Attitudes toward opinion expression may be more general in nature, for instance, when a person generally believes that it is not appropriate to discuss politics or societal issues on a very public online platform such as Facebook (Vraga et al., 2015). These

psychological antecedents of behavioral intentions may theoretically explain people's willingness to express a minority opinion in different online and offline situations.

Situational operationalizations in online communication

Empirical answers to the question of whether the mediated nature of online environments fosters or suppresses people's opinion expression behavior have been inconclusive: An experimental study by Ho and McLeod (2008) supported the idea that users perceive a discursive democracy on the Internet, showing that people were more willing to join a hostile opinion climate in a virtual chat than in a face-to-face setting. Other studies, however, found that people express their opinion more moderately in a virtual chat than in offline environments (McDevitt et al., 2003), or showed that people are less willing to voice their personal opinion through social media (on Facebook or Twitter) compared with face-to-face (at a family dinner, in a restaurant with friends, at a community meeting, or at work; Hampton et al., 2014).

One reason for the discrepant findings regarding online/offline comparisons might lie in the different scenarios that were employed. According to the characteristics of the different offline and online situations used in these studies, people might have expected various social sanctions to different degrees. Along these lines, Rössler and Schulz (2014) argued that identifiability can have an impact on the degree of sanctions people perceive online. Here, it is differentiated between the individual user's identifiability, meaning that a person reveals his/her identity (e.g., one's name) on the Internet, and the audience's anonymity, which refers to not knowing who the audience is (e.g., having no access to the names of the audience's members, no information about how one is related to them or about their political position): While a high identifiability of oneself, as it is mostly given on the social networking site Facebook, is supposed to be more threatening (since one is more accountable for the minority opinion), a high identifiability of the audience is instead associated with low expectations of sanctions (since one might find the others' behavior to be more predictable). In addition, it is argued that the relationship to the audience (see Noelle-Neumann, 1993) might also be a critical factor influencing the expected sanctions in online realms. People might have higher expectations of social sanctions such as losing relationships or being negatively evaluated when expressing a minority opinion in front of a relevant social network mostly consisting of pre-existing offline connections (see Baym & boyd, 2012; Metzger, 2009) than in front of an anonymous audience in an online forum. Especially on a networking platform such as Facebook where people are networked with heterogeneous social groups ranging from close

friends, family members, co-workers, acquaintances, as well as strangers at the same time (cf. collapsed contexts; boyd, 2010), it seems that considerations of the audience and its diversity (in connection with potential future sanctions) may be more important in these contexts than in situations where the audience is extensively unrelated to individuals. The fact that messages in these platforms are persistent might reduce the individual's behavioral control and additionally amplify the expectation of sanctions in the long run.

In sum, it is argued that different conversational situations (be it offline or online) influence people's expectations of social sanctions when it comes to expressing a minority opinion. Despite the theoretical potential of these expected sanctions to explain the individual's opinion expression behavior in controversial discussions, no empirical research has been presented in this respect to date. The following two studies are intended to remedy this shortcoming by employing a multi-methodological design.

6.3 Study 2: A Qualitative Exploration of Situational Factors and Expected Sanctions Underlying People's Opinion Expression Online and Offline

6.3.1 Objective and Research Questions

The second study of this dissertation is exploratory in nature and aims to identify factors that affect the individual's behavior in a controversial discussion when he/she is in the minority. This exploration should provide a basis for subsequent experimental analyses addressing the influence of the identified factors in a more systematic way. While the largest body of spiral of silence research has focused on the perception that one is in the minority as a determinant of reduced outspokenness, further situational and psychological determinants have rarely been explored in previous studies. As suggested by this thesis's research model (see Figure 2), situational factors such as the particular audience or a person's anonymity are assumed to influence people's situational manifestations of the fear of isolation (i.e., fears emerging in accordance with particularities of the situation). This study represents a first step in investigating the interplay of these environmental characteristics and situational fears in different settings of face-to-face and social media communication. Addressing these variables promises not only to advance the spiral of silence theory and find its boundaries but also to identify whether and how psychological processes leading to public opinion formation operate differently when offline and online communication are compared. To approach potential influence factors in both realms, this study employs a qualitative analysis that

enables users to refer to these factors and describe their perceptions toward them in their own words.

Before examining situation-specific factors, it seems commendable to explore the underlying premise of the present study, which is that people's responses in a minority position vary according to the context of the situation. Although initial studies pointed out that people's responses are more complex than "expressing one's opinion" or "saying nothing at all" (cf. Hayes, 2007; Neuwirth et al., 2007), no research has addressed whether the use of different expression strategies is contingent on the particular situation a person finds him/herself in. Consequently, the first research question is:

Research Question 1 (RQ1): How do individuals react when they are faced with a majority opposing their viewpoint on a controversial issue in different offline and online situations?

Initial works have given the first hints toward potential situational variables such as anonymity or the level of publicness that could influence people's outspokenness in offline and online communication (Ling et al., 2011; Matthes & Hayes, 2014; Rössler & Schulz, 2014; Salmon & Oshagan, 1990; Yun & Park, 2011); however, to date there has not been any systematic analysis of these variables. To further disentangle the environmental factors incorporated in this thesis's research model (see Chapter 4), the second research question is as follows:

Research Question 2 (RQ2): Which situation-specific variables can affect people's expression of minority opinions?

According to the research model guiding the present thesis, environmental factors influence people's willingness to express their opinion through the situational manifestations of people's fear of isolation (see Chapter 4). These manifestations have been conceptualized as people's expectation of sanctions in the sense of which punishments people anticipate from their environment in the event that they express an opinion that deviates from the majority's opinion (see Chapter 6.1). Although previous research implicitly elaborated on diverse sanctions people expect in different situations such as being negatively evaluated by others (Noelle-Neumann, 1993) or encountering negative facial expressions (Yun & Park, 2011), the diversity of anticipated sanctions has not been explored in a systematic form. Nevertheless, it

should be considered that the environment's reactions as a consequence of one expressing a minority opinion can also be positive (e.g., in the sense of admiration; cf. Fielding et al., 2006) or neutral. Thus, the third research question refers generally to social responses and not only to social sanctions when asking for other people's responses:

Research Question 3 (RQ3): Which social responses do individuals expect from their environment after they have expressed a minority opinion in different offline and online situations?

According to the spiral of silence theory (Noelle-Neumann, 1993) and evidence from social psychology (cf. Jetten & Hornsey, 2014; see Chapter 2.3.1), societies and groups are prone to punish individuals who deviate from the majority's norm or opinion. As has been discussed in the present work, the individual's fear of being punished for voicing a minority opinion may vary in accordance with the environment and its situational characteristics such as the individual's anonymity or the particular audience (see Chapter 4). Thus, when comparing different online and offline situations, it seems worthwhile to investigate whether people attribute different levels of social threat to these situations, meaning that they find some situations more threatening than others. This reflection leads to the fourth research question:

Research Question 4 (RQ4): How do people rank different online and offline situations according to their level of social threat in the event of expressing a minority opinion?

6.3.2 Method

A qualitative approach was employed in order to gain a broad insight into people's reactions in as well as their perceptions and expectations of different social environments when it comes to a controversial discussion. Qualitative research combined with an inductive analysis procedure is an established method in social sciences that provides the opportunity to derive latent variables from people's narrations extending the boundaries of a determined theoretical framework (Corbin & Strauss, 2015; Hopf, 2004; Schreier, 2012). Given that environmental factors and situational manifestations of the fear of isolation have not been analyzed systematically within spiral of silence research, an open-ended methodology appears appropriate to detect previously unknown or unconsidered influencing factors.

For this purpose, semi-structured interviews with 12 adult social media users were conducted between December 2013 and March 2014. The interview protocol was organized according to a series of questions referring to how people perceive and express opinions on the Internet compared with in face-to-face situations. Following the research questions derived for the second study, the following sections will exclusively elaborate on participants' answers regarding their expectations in different offline and online environments and how they would respond in these situations. The local IRB approved the procedure planned for this qualitative study.

6.3.2.1 Sample

Since the primary purpose of qualitative research in social sciences is usually to offer in-depth analyses of conditions of human behavior and not to provide evidence of the prevalence or frequency of observed patterns, samples in this area are commonly small in size (Ritchie, Lewis, Elam, Tennant, & Rahim, 2014). Still, as outlined by Ritchie and colleagues (2014), sample selection criteria should be developed in order to ensure that the diversity of aspects related to the subject under investigation is covered by the data. The population targeted in the second study comprised social media users who use platforms such as Facebook or YouTube on a regular basis and thus have no difficulties with envisioning discussion situations in these environments. Aside from experience with social media, in terms of demographic criteria, a balanced gender distribution was taken into consideration to ensure that the observed mechanisms are not only attributable to a particular gender. Consequently, participants were six females and six males, aged between 19 and 28 years (age: $M = 23.17$, $SD = 3.81$). Of these, 11 were full-time students, while one male participant was a part-time student with a full-time job at a company. All were recruited via announcements on the campus and in a student online forum on Facebook. As was mandatory for participation, all respondents used Facebook and YouTube on a regular basis. Specifically, 11 out of 12 participants used Facebook on a daily basis, while one visited the platform every second day. Four respondents used YouTube on a daily basis, whereas the others used the platform one to six times every week.

6.3.2.2 Procedure

Respondents were first informed about the topic and procedure of the interview and were told that the interview would be audio-recorded. The data analyzed in the present work

were gathered in the second part of the interview. In order to create a minority situation, the interviewer first asked the interviewee for his/her opinion on a societal issue, namely, whether he/she supports or opposes the idea of laypeople actively searching for criminal suspects on social media. This topic was chosen as a discussion issue because of its controversial nature, implying arguments in favor of (e.g., combating criminality) and against (e.g., publicly defaming a person; Neubaum, Rösner, Ganster, Hambach, & Krämer, 2016). After the interviewee stated his/her opinion on this topic, the interviewer presented him/her with fictitious current results of a national poll, revealing that 78% of the population has the opposite viewpoint on this issue. The interviewer then asked the participant to imagine him/herself in six different discussion situations in which – equivalent to the (fictitious) national poll – the majority is opposing the participant's opinion. Participants were instructed to go through all six situations by answering specific questions according to the interview protocol (see Chapter 6.3.2.3).

Finally, demographic data were assessed by the interviewer, and after the interview respondents were debriefed and given course credit, if necessary. Interviews lasted between 46 and 75 min.

6.3.2.3 Interview Protocol and Hypothetical Scenarios

The protocol for the part of the interview analyzed here was developed along the research questions outlined previously. Before presenting each of the six scenarios, participants were instructed to think about how they would react in a particular situation (cf. *RQ1*). The original wording was:

(1) Now, I'm going to give you different social situations and would like to ask you to think about how you would react in this environment.

To gather a wide range of different responses, hypothetical scenarios presented during the interviews covered social situations that varied with regard to the communication channel, number of interactants, degree of acquaintanceship, and identifiability. The first offline situation presented was the TV reporter test (see, e.g., Salmon & Neuwirth, 1990), in which the subject should imagine that a TV reporter approaches him/her and asks for an interview on the controversial topic. The second scenario was a social gathering (see, e.g., Hayes, 2007), for instance, a party where the subject knows some people but not others. The subject's stance is in the minority at the party, and he/she has to decide whether or not to speak out.

The third scenario was based on the traditional train test (see, e.g., Noelle-Neumann, 1993): The subject is asked to imagine a discussion in a compartment with three strangers with whom he/she will be traveling for a couple of hours. For the online scenarios, participants were first asked to imagine a large-scale public discussion about this topic on the social networking site Facebook, where the majority of comments are opposing the subject's viewpoint (fourth scenario). As a fifth scenario, the same large-scale discussion emerges, but on the video platform YouTube. For the sixth scenario, participants had to imagine that they were observing a discussion in an online forum in which they would not be identifiable if they wished to participate. All of these situations present a controversial discussion in which the subject is in the minority and has to decide whether and how he/she wants to get involved in the discussion. To support the interviewees' imagination and to ensure a systematic elaboration on every setting, each situation was depicted on a card.

After participants went through each situation, they were asked to identify characteristics between those situations that made them act differently across them (cf. *RQ2*). Of course, this question was allowed to be asked only under the condition that respondents actually stated that they would react differently depending on the situation. Since this was true for all participants, all of them were asked:

(2) What do you think, how do these situations differ from each other so that they prompt you to react differently?

In line with *RQ3*, interviewees were then asked to go through all the situations and state which reactions they would expect from the people/the environment in the event that interviewees would express their minority opinion:

(3) If you would express your minority opinion in each of these situations, which responses would you expect from other people or from the environment?

After asking participants to reflect on situational factors and potential social responses, respondents were instructed to make an overall comparison of all six situations. Assuming that participants would also mention negative reactions in terms of social sanctions as responses to Question 3 (which was the case in the replies of all 12 respondents), participants were then asked to rank all six situations according to their level of social threat:

(4) Which of those situations do you find most threatening or most risky when it comes to expressing a minority opinion? Please put the situations in order according to which you find most to least threatening.

6.3.2.4 Data Analysis

All interviews were transcribed and analyzed with MAXQDA, a software program for qualitative data analysis. This program enables an exploratory approach, such as the data-driven coding strategy (Schreier, 2012). While the main coding dimensions were derived from the research questions, the subcategories were built by going through the transcripts iteratively line-by-line. When generating subcategories from the text material, each category was defined by a name, a description, an example, and (if necessary) a decision rule (cf. Schreier, 2012). For each passage, it was verified whether the content was covered by an existing subcategory or whether a new subcategory should be added. After finishing the inductive coding scheme, all main and subcategories were extracted and the number of participants who had mentioned each respective category was counted. It should be noted that interviewees' replies did not consistently include explanations, for instance, of why some situational variables could affect their outspokenness. When respondents did not provide reasons for their points, the interviewer asked for further explanations; still, some of the answers were too unspecific to be assigned to subcategories.

A second rater coded 25% of the transcripts (three interviews) in order to assess intercoder reliability. The second rater used the existing coding scheme that was developed by the first rater. Intercoder reliability in terms of Krippendorff's alpha (Hayes & Krippendorff, 2007) ranged from .76 to .77.

6.3.3 Results

6.3.3.1 Subjects' Responses to Minority Situations

RQ1 focused on how individuals would react in different offline and online situations. Table 4 provides an overview of the various responses participants would show in the different situations and how many of them would react accordingly. For each situation, respondents sometimes named more than one potential response, mentioning themselves conditions under which they would become more or less outspoken.

Table 4

Participants' responses to different offline and online situations stated during qualitative interviews

Situation	Response	# of interviewees
TV interview	Expressing opinion	9
	Passing by / no response	5
	Expressing opinion under certain conditions (e.g., if the certainty of the opinion is high)	2
	Mentioning pro and con arguments	1
Social gathering	Expressing opinion under certain conditions (e.g., depending on one's mood)	6
	Expressing opinion	5
	Merely listening to the discussion	5
	Not trying to convince others	3
	Mentioning pro and con arguments	1
Train	Expressing opinion more cautiously (e.g., expressing opinion as less extreme than it is)	6
	Expressing opinion under certain conditions (e.g., depending on one's mood)	3
	Pretending to agree	2
	Expressing opinion	1
	Merely listening to the discussion	1
	No response	1
Facebook	No response	11
	Expressing opinion	1
	"Liking" comments that express one's opinion	1
YouTube	No response	11
	Expressing opinion under certain conditions (i.e., depending on whether one is registered)	1
	Expressing opinion	1
Online forum	Expressing opinion under certain conditions (e.g., depending on the tone of the discussion)	6
	Expressing opinion	4
	No response	2

In the offline situations TV interview and social gathering, most participants would express their opinion, at least under certain conditions. With regard to the TV interview, five would first try to avoid being interviewed on the street, but if they were asked to give a statement a total of nine participants would express their opinion right away. At a social gathering, six participants would become outspoken only under certain conditions. These conditions can be of internal or external nature: For some, their outspokenness during a social gathering is contingent on their current mood ($n = 3$):

"[I would be] maybe kind of cautious. I would not…It somehow depends on my mood. If I'm in a good mood, I would seek a little bit a discourse. If I'm in an intermediate mood, I would

hold myself back. If I really don't feel like discussing issues extensively, I would stay out of the discussion. Otherwise, I would state my opinion." (male, 28)

On the other hand, an external condition mentioned by three participants was how they evaluate their discussion partners. More specifically, respondents stated that they would be outspoken if they thought that the others are good discussion partners. Still, five respondents would voice their opinion at a social gathering right away. Some participants stated that it would be important for them to listen to the discussion and see what kind of arguments people bring up ($n = 5$).

Participants' replies on how they would react during a train ride included diverse strategies. One strategy was voicing one's opinion in a cautious way, meaning that they would not express their viewpoint right away but would first formulate their opinion as less extreme than it actually is ($n = 6$). Similarly to the responses during a social gathering, three participants would pronounce their opinion under the condition that they are in the mood ($n = 2$) or they have the impression this would be a fair discussion ($n = 1$). In the train ride setting, two participants would even pretend to agree:

"I would probably say: Yes, you're right. […] Tell me about it. I would not feel like getting worked up about that and would not like to invest energy." (male, 24)

Responses in online situations showed a different pattern: On Facebook and YouTube, most participants stated that they would not respond to the discussion at all:

"I would not comment on that. I would stay out of that." (female, 19, referring to Facebook)

"It is likely that everything has already been said, so I would not make the effort to outline my opinion." (female, 20, referring to YouTube)

Only one participant would express a minority opinion in both situations, while another participant would express agreement with a commenter by "liking" the comment. In an online forum, respondents would be more inclined to express their opinion. However, people's outspokenness in an online forum also depends on certain conditions such as being in the mood ($n = 2$), making sure that it is an anonymous forum ($n = 2$), assessing that one's opinion has not been represented yet ($n = 1$), and participating in the form of a poll within the

forum (*n* = 1). Still, four participants stated that they would speak out their opinion right away.

6.3.3.2 Situation-Specific Variables Influencing Subjects' Reactions

To address *RQ2*, the interviewer asked participants to elaborate on the differences they perceive between the six social situations. Based on the responses, 12 factors were identified, which were then clustered into four dimensions of a situation: interactants, audience, communication environment, and nature of discussion (see Table 5).

Table 5
Four situational dimensions including 12 characteristics influencing people's outspokenness

Interactants	Audience	Communication environment	Nature of discussion
1) relationship 2) predictability	1) size of the audience 2) Identifiability of the audience 3) relationship to the audience	1) possibility to retreat 2) One's identifiability 3) visibility of one's contribution 4) persistence of one's contribution 5) situational appropriateness 6) Mediacy of communication	1) tone of discussion

It has to be remarked that the boundary between interactants and audience is often blurred, since a member of the audience can quickly become an interactant and vice versa. Here, for illustrative purposes, it is differentiated between interactants and audience in the sense of interactants as the people actively contributing to the discussion, while the audience functions as "observer" of the discussion. Table 6 displays which categories were identified within each dimension, how they were defined, and how many interviewees elaborated on each category. Moreover, Table 6 shows how many respondents mentioned each category in relation to a particular situation. In the following, each category is presented in greater detail, revealing respondents' explanations for how each situational characteristic could influence their outspokenness. Please note that the fact that a participant mentioned a situational characteristic does not necessarily imply that he/she explicitly explained the particular influence of this characteristic on his/her willingness to express a minority opinion (see Chapter 6.3.2.4).

Table 6

Scheme for coding situational variables across all six scenarios

Code	Definition	# of interviewees in total	TV interview	Social gathering	Train	Facebook	YouTube	Online forum
Interactants								
Relationship to interaction partners	Statements regarding how the subject is related to the people he/she is in a discussion with. These statements do *not* refer to the relationship of the subject to the *potential audience* of the opinion expression act.	12	0	9	10	3	1	1
Predictability of interaction partners' behavior	Statements related to the extent to which the subject can predict how the others would respond to his/her minority opinion expression.	6	2	4	0	3	0	0
Audience								
Size of the public	Statements referring to how many people have access to this discussion and could see the subject's contribution to the discussion.	11	6	1	0	8	1	0
Identifiability of audience	Statements referring to the extent to which the subject can identify his/her audience, i.e., whether he/she has knowledge about their identity and personal attributes.	8	1	0	0	4	4	1
Relationship to the audience	Statements regarding how the subject is related to the people who could see his/her contribution to the discussion.	6	1	0	0	6	0	1
Communication environment								
One's identifiability	Statements related to the extent to which one's opinion expression can be traced back to one's identity.	9	1	0	0	5	2	5
Possibility of retreat	Statements about whether it is easy to leave the situation or not.	8	0	4	6	2	2	2
Visibility of one's contribution	Statements about how salient one's contribution would be within a controversial discussion.	6	3	0	0	3	1	1
Persistence of one's contribution	Statements pointing to whether the opinion expression will be recorded and archived.	5	4	0	0	4	3	0
Situational appropriateness	Statements regarding whether subjects find the discussion is taking place in an appropriate environment.	5	0	5	1	0	0	3
Mediacy of communication	Statements referring to whether the discussion takes place face-to-face or computer-mediated.	4	1	0	1	2	1	1
Nature of discussion								
Tone of discussion	Statements elaborating on the intensity of the discussion in each situation.	7	0	4	0	5	4	2

Interactants

The statements subordinated to this dimension pointed to how participants perceived their interaction partners and how these perceptions varied across the six different situations. All 12 interviewees named the *relationship to their interaction partners* as a pivotal factor influencing their communication behavior. The primary question here was whether the subject knows or does not know his/her interaction partners. According to their responses, interviewees feel comfortable when expressing their opinion in front of people they know at a social gathering ($n = 8$). On the other hand, participants did not like the idea of voicing their minority viewpoints in front of strangers during a train ride ($n = 6$), on Facebook ($n = 2$), or at a social gathering ($n = 1$).

"I believe it makes a difference. If you don't know the people, you want them to like you somehow and if you make yourself unpopular with a very unpopular opinion, they will not like you. But if you know the people for many years, you say what you think." (female, 20)

"I would also, I mean, if you know the person and you know he likes have discussions loudly or so, then you will enter this discussion since you know him and you know he will not take it [my opinion] amiss. There are people who like to discuss [issues] enthusiastically and then it's ok. So, it [the discussion] might be more uninhibited." (male, 26)

"That is something different. You will encounter friends there [at the social gathering]. Here, I would definitely express myself honestly, since they know me and I trust them." (female, 20)

Reasons for this pattern may be found in participants' statements about the *predictability of their interactants*. When discussing something with familiar people at social gatherings, participants would be more outspoken because they feel able to predict that their discussion partners will accept or respect their opinion ($n = 3$). By contrast, participants stated that the low predictability of unknown interactants on Facebook would discourage them to express their opinion ($n = 3$). Taken together, the data suggest that people feel more comfortable discussing controversial issues with people they know, as they trust that these people are more tolerant toward deviant opinions than people they do not know. It seems that in front of strangers, people want greater control of what kind of impression they are leaving.

Audience

With regard to the audience of the situation, the *size of the audience* emerged as an important topic for participants when evaluating the scenarios (mentioned by 11 interviewees). Statements in this regard referred to how many people will be able to see, hear, or read the subject's opinion expression act. Nine participants stated that the larger the audience, the more threatening or embarrassing they perceive the situation to be, should they express a minority opinion. This aspect applied especially when participants elaborated on characteristics of Facebook ($n = 7$) and the TV interview ($n = 6$):

> "I would not use Facebook [to express my opinion] because a lot of people who don't even know me can access my personal information and it is well known that you can find people really quickly on Facebook, so I'd rather stay private." (female, 20)

> "It's like…it's not that my life depends on it, but everybody can see that. Yes, it's very embarrassing for me if anyone sees what kind of opinion I have." (male, 26, referring to Facebook)

One female even raised the point that expressing one's opinion on TV (during an interview), which can be seen by a large number of people, can have consequences on Facebook:

> "[Giving a TV interview is threatening] because you don't know how many people are going to see it. Maybe not many people will see it. But if there are many who see this, they may find out who has said that and may persecute one. On Facebook you can find people very quickly and can contact them." (female, 19)

On the other hand, interviewees also saw a greater audience on TV ($n = 2$) and on Facebook ($n = 1$) as an ideal chance for influencing others and changing their minds on a controversial topic:

> "[When] the camera is running and a huge mass of people see that [the interview], you are more willing to express your personal opinion since you are able to influence other people's thoughts, leading them not to hold such an opinion." (female, 24, referring to the TV interview)

Thus, it seems that while a larger audience may commonly be associated with negative consequences, some people see the potential of a greater audience as it allows a large group of others to be reached.

A further aspect related to the audience is its *identifiability* in the sense of knowing *who* will have access to one's opinion expression act. Five participants did not like the idea of disclosing their personal point of view on a controversial topic in front of an audience whose members' identities are difficult to determine. This problem was mentioned when the audience is anonymous as is commonly the case on YouTube ($n = 2$), in an online forum ($n = 1$), and when an interview is shown on TV ($n = 1$):

"This is a huge amount of people. You don't know what kind of people they are – you cannot see them. Instead of getting bogged down in an endless discussion in which people get aggressive, I'd rather keep out of it." (female, 19, referring to YouTube)

Furthermore, three participants mentioned the identifiability of the audience in the context of Facebook. While Facebook users are commonly identifiable on this platform (as most use their real names in their profiles), the potentially large audience on Facebook makes it difficult for users to determine who may be the ultimate viewers of their opinion expression act:

"With regard to that [not knowing who the audience is], Facebook seems threatening to me. You don't know who is reading it; maybe he would take it the wrong way." (male, 27)

Moreover, participants also reflected on the *relationship to the audience* (mentioned by six participants). The data suggest that people differentiate between audience members who they know versus who they do not know. In the context of Facebook, four respondents stated that they feel uncomfortable knowing that their friends could also see their opinion expression on this platform. While at first sight this seems to contradict the finding that people feel comfortable expressing their opinion in front of people they know (see above), it seems to make a difference whether one is interacting with these people in the situation or if these people can read one's opinion as an uninvolved person. According to participants' replies, they do not like the idea of not knowing how one's opinionated message may be interpreted by people they know, especially if they are not included in the discussion. Furthermore, interviewees found it unpleasant to know that strangers on Facebook ($n = 2$) and

unknown viewers of the TV interview ($n = 1$) also have access to one's comments in a controversial discussion:

> "And that's the reason why I would not participate [in this discussion] because I'm afraid that any random strangers see me and I don't know what will happen. They may persecute me or make fun of me. And you don't know these people but they can see you." (female, 19, referring to Facebook)

Communication environment

The characteristics subordinated to this dimension refer to the nature of the communication channel. One principal theme in participants' replies was the *subject's identifiability* in the sense of whether other people could associate the opinion expression act with the subject's identity (named by 9 participants). This point was especially brought up when evaluating an online forum and the social networking site Facebook. According to participants' statements, they would express their minority opinion more freely and more insistently under anonymous conditions in an online forum ($n = 5$) or on YouTube ($n = 2$), while identifiability on Facebook ($n = 5$) and in a TV interview ($n = 1$) was mentioned as reducing their willingness to speak out:

> "[Posting one's opinion on Facebook is threatening] because it is not anonymous, and one is extremely networked and among a lot of people who know but also do not know you. So, not only my friends but all other people would read it." (female, 24)

In this context, participants stated that they feel that voicing a deviant opinion when they are not identifiable will not entail negative consequences for them personally as their statements would not be traceable to their identity.

Another factor that appeared important to participants was the *possibility to retreat* from the situation (mentioned by eight participants). Six respondents referred to the situation in the train cabin in the sense that they would express their opinion more cautiously, would not express their opinion at all, or would even pretend to agree with others since they do not see a possibility to leave the situation:

> "Well, in the train, I think this is horrible, because you have to stay seated and you cannot leave and the flight reflex...so, the possibility that you have at a party – here, you can always say: 'Bye folks, I have to go,' or something." (male, 27)

As can be seen in this comment, some participants compared the obligation to stay in the situation during a train ride with the possibility to leave the situation at a social gathering ($n = 4$) or in computer-mediated communication ($n = 3$). With regard to the latter, participants mentioned that it is really easy to leave the situation on Facebook, on YouTube, and in an online forum, as it only requires leaving the platform or turning off the computer.

For participants, the *visibility of their opinion expression* was also an issue when looking at the different scenarios ($n = 6$). This factor refers to how salient or prominent their opinion expression act will appear in the particular communication environment. Obviously, visibility may be intertwined with the number of other people's comments or messages, meaning that the more people comment on a topic, the less visible would an individual message be. Here, the effect of a comment's visibility appears to be ambivalent: On the one hand, a greater visibility, for instance, in an online forum wherein the number of contributions is manageable ($n = 1$), encourages people to express their opinion as they perceive a chance to persuade others. On the other hand, one participant stated that a greater visibility of one's comment, for example, when the interview is broadcast on TV, also means a risk of being ridiculed. Likewise, a lower visibility was found to discourage people from participating in a discussion. Especially on Facebook, three participants felt that controversial discussions are not worth commenting on since, given a multitude of other people's comments, they supposed that an individual comment would get lost in the shuffle:

> "[I would not respond to a discussion on Facebook] because, I don't know, it makes no sense. They do not read all comments carefully anyway. They only read what they want to read and yes, why should I talk to other people about it if I have nothing to do with them?" (female, 20)

Especially in the context of mediated communication, participants elaborated on the *persistence of their contribution* (mentioned by five), referring to the fact that one's comment on a controversial issue (or in this case, the expression of a supposedly minority opinion) is recorded, archived, and could be accessed in the future. For three participants, it felt uncomfortable expressing their opinion during a TV interview as once it is recorded and broadcasted, it is "out in the world," cannot be corrected, and may be archived in video repositories such as YouTube. Similarly, Facebook is also seen as a permanent repository wherein individual comments are archived and may be accessed in the future ($n = 2$):

"This [a public channel on Facebook] is incredibly vast and that is one of the reasons why I would never ever hold such a discussion. Since it is out there and will never ever be removed, whoever wants to find it will find it somehow." (male, 28)

People's outspokenness also appeared to be guided by situational norms such as how appropriate it is to lead a controversial discussion in the particular environment (*situational appropriateness;* mentioned by five participants). While some participants find it appropriate to hold discussions in an online forum ($n = 3$) or at a social gathering ($n = 3$), others see social gatherings ($n = 2$) and a train ride sitting next to strangers ($n = 1$) as inappropriate situations for discussing controversial topics.

A further characteristic identified in participants' replies was the mediacy of communication, that is, whether a discussion occurs face-to-face or through a medium. In this context, participants stated that they generally do not express their opinion or comment on the Internet and that it is more comfortable for them to discuss opinions face-to-face ($n = 4$). A reason for this preference was that respondents liked to look their interaction partners in the eye and stand physically next to them when it comes to discussing something controversial.

Nature of discussion

For participants, the tone of the discussion was a factor influencing their decision on whether to participate in a conversation or not ($n = 7$). More specifically, respondents stated that they are less willing to express their opinion when the discussion has an aggressive tone during a social gathering ($n = 4$), on Facebook ($n = 4$), and on YouTube ($n = 3$). The negative tone of discussions on YouTube and on Facebook was contrasted to the more objective tone of discussions in online forums ($n = 2$):

"With respect to Facebook, I have a negative attitude toward discussions and the culture of debate going on there. Since there is always a nasty tone and in these forums…it depends. But I have the impression that people discuss [issues] in a more positive way [in online forums]." (male, 27)

6.3.3.3 Expected Social Responses

RQ3 asked for subjects' expectations about how their environment would react to them expressing a deviant opinion. Respondents' answers were organized along the valences: positive, neutral, and negative.

Positive responses

In terms of positive responses, one expectation that emerged in participants' responses was *compliance* in the sense that other people could agree with the minority statements participants make (mentioned by three). Such reactions were expected in the context of the TV interview (i.e., some people watching TV could agree with the participants' opinion; $n = 1$), at a social gathering ($n = 1$), and on Facebook ($n = 1$). A male participant (27 years) elaborated on the different ways that other people could agree on Facebook:

> "And maybe there are also people who contribute [to the discussion] by complying with or "liking" my comment or so."

Another participant also expected an *increase in respect* as a positive consequence in terms of others respecting the participant more after he expressed a minority opinion on Facebook.

Neutral responses

In terms of other people responding neutrally to one's expression of a minority opinion, four different forms of reactions were identified. One neutral form brought up by nine participants was to receive *no response* at all (mentioned by nine). A female participant (20 years) illustrated how her social environment would respond after the interview was broadcast on TV:

> "In a private environment, I think, people will ignore it. Maybe they talk about it: 'Yes, I do not understand this opinion.' But nobody will talk to you personally, if it is not important."

Non-responses after giving a TV interview were also expected by five further respondents as they explained that the TV reporter (as the direct social environment in this situation) is bound to neutrality and would therefore neither applaud nor offend the interviewee for expressing a deviant opinion. Similar non-responses were also expected after minority opinion expressions on YouTube ($n = 2$), the train ($n = 2$), Facebook ($n = 1$), an online forum ($n = 1$), and at a social gathering ($n = 1$).

For participants it was also conceivable that others would simply *accept their minority opinion* (mentioned by seven). These reactions were especially expected in offline situations: during the TV interview ($n = 5$), the train ride ($n = 1$), and at a social gathering ($n = 2$).

Another expected neutral reaction was that others could try to persuade one to change one's mind (mentioned by three). These *persuasion attempts* were anticipated during the train ride ($n = 2$), at a social gathering ($n = 1$), on an online forum ($n = 1$), and on Facebook ($n = 1$).

The expectation of having a fair exchange of views was brought up by nine participants. Especially when thinking of a social gathering ($n = 5$) and an online forum ($n = 4$), interviewees described that a fair discussion could emerge after having realized that the opinions on an issue diverged in this situation:

"A forum is obviously different since it is a closed circle with a more private discussion. Guests can also access and look at some comment, but I think reactions would be different compared with Facebook or YouTube. People will discuss things and respond at a more objective level than on YouTube or Facebook." (male, 28)

However, participants also anticipated fair discussions during a train ride ($n = 2$), after giving a TV interview (in direct communication with their reference groups; $n = 2$), or on Facebook ($n = 1$).

Negative responses

From participants' responses, seven different forms of potentially negative reactions from their social environment were identified. The reaction that was mentioned most often (by eight participants) was the expectation of *being personally attacked* by others. These statements implied expectations of being insulted or intimidated by one's social environment after having expressed a minority opinion. Notably, all of these statements referred exclusively to online situations: Seven participants mentioned this in relation to Facebook, three in relation to YouTube, and two in relation to an online forum. One male participant (28 years) explained his expectations on Facebook as follows:

"I think you can easily receive negative answers, or not negative … [but] offensive responses. There are enough idiots – if I may say so – who do not understand that this is public and they might also think that on the Internet they can insult everyone who has a different opinion."

Participants also anticipated *being personally judged* based merely on their opinions ($n = 8$). In this regard, interviewees were concerned that other people could form inaccurate or superficial impressions of them, perceiving them as "weird." This expected sanction was mentioned both in offline and online contexts. One male participant (20 years) explained:

"[I do not contribute to discussions on Facebook], first, because I am not interested in such a huge audience. Second, I think, there is a risk that if I expressed my opinion, nobody could handle it. This mass of people will then see me in the wrong light and might judge me and it would have consequences for me personally."

Besides him, four other participants also had concerns about being personally judged on Facebook. Four interviewees expected that this reaction could also occur at a social gathering. As one female participant (20 years) explained:

"[Consequences could be] that you feel excluded or that the others do not like you. If they do not know someone, they build their impression about me based only on this [my opinion]."

This statement illustrates that such a reaction is associated with negative relational outcomes. The fear of being personally judged was also present in a train discussion ($n = 3$). A further social reaction that emerged from participants' responses was the anticipation of general *indignation*, meaning that others would be very upset about one's deviant opinion ($n = 8$). According to the statements, this indignation is not necessarily directed at the holder of the opinion, but is general in nature, in the sense of people becoming louder or responding in a highly emotional way. Such reactions were expected on Facebook ($n = 3$), YouTube ($n = 4$), at a social gathering ($n = 3$), after the broadcasting of a TV interview ($n = 1$), and on a train ($n = 1$).

Indignation might be closely related to a *lack of comprehension*, a reaction that seven participants brought up. Interviewees expected that others would be unsympathetic toward their minority opinion and would repeatedly ask the interviewees why they hold this viewpoint. This reaction can be distinguished from indignation insofar as it is less emotional and operates on a more argumentative level. Participants anticipated this form of reaction especially after a TV interview (in their reference groups; $n = 4$) and at a social gathering ($n = 3$). Lack of comprehension was also expected on Facebook ($n = 1$) and during the train ride ($n = 1$).

Four participants also believed that – after having expressed a minority opinion – others might *turn away verbally or nonverbally*. These reactions could be manifested in turning away physically, giving an angry look, or asking the holder of the minority opinion to leave the situation. All participants' responses in this regard referred to offline situations. With respect to the social gathering, one male participant (28 years) explained:

"[I expect] that I will not get directly excluded, but that people will behave more reservedly toward me and maybe not talk as freely as they were talking five minutes earlier."

Two other interviewees expected such reactions on a train, and another interviewee anticipated that others could turn away from her after having seen the TV interview.

Moreover, two interviewees had the anticipation of *being personally persecuted* should they express a minority opinion. This includes the expectation of others trying to find out the subject's identity and following or monitoring him/her. This reaction was expected once on Facebook, YouTube, after a TV interview, and at a social gathering.

The expectation of *being humiliated* emerged from two participants' responses: They imagined others laughing at or shaming them as holders of minority opinions. One participant expected to be humiliated on Facebook, while another expected this reaction at a social gathering.

6.3.3.4 Level of Threat

After elaborating on situational characteristics and expected reactions from others that might affect their outspokenness, participants were asked to generally indicate how the six different scenarios vary with regard to their potential to entail personal negative consequences after expressing a deviant opinion. For this purpose, interviewees were instructed to rank the situations according to the level of social threat (*RQ4*). Table 7 gives an overview of respondents' rankings. While this table is not intended to display representative patterns, it offers a general impression of how situations were estimated by respondents at a more abstract level. It is striking that Facebook was selected as the most threatening space to express a minority opinion by seven interviewees and as the second most threatening by three. While the TV interview was chosen twice as the most threatening, seven participants selected the interview as the second most threatening situation of those presented. The social gathering, the train ride, and a discussion on YouTube were estimated quite differently by participants: While the social gathering was evaluated twice as the most threatening, it was selected twice as the least threatening scenario in which to express a minority opinion; a similar pattern can be observed for the train ride and YouTube. Discussions in an online forum, still, were generally associated with low levels of threat, as six participants selected an online forum as the least threatening and three as the second least threatening scenario to express a minority opinion. Participants corroborated their rankings by further explicating

situational characteristics and expected sanctions that were considered in the results reported above. The upcoming discussion will interpret these rankings in light of situational characteristics and expected sanctions.

Table 7

Situations ordered from a high (left) to a low (right) level of threat

Interviewee	Situations
Female1	Social gathering > interview / train ride > Facebook > YouTube > online forum
Female2	Facebook > YouTube > online forum > interview > train ride > social gathering
Female3	Interview > Facebook > social gathering > train ride > YouTube > online forum
Female4	Facebook > YouTube > interview > train ride > online forum > social gathering
Male5	Social gathering > interview > train ride > online forum > Facebook > YouTube
Female6	Interview > Facebook > YouTube > train ride > social gathering > online forum
Female7	Facebook > interview > social gathering > YouTube > online forum > train ride
Male8	Train ride > social gathering / Facebook > Interview > YouTube / online forum
Male9	Facebook > interview > social gathering > online forum > YouTube > train ride
Male10	Facebook > interview > social gathering > train ride > YouTube > online forum
Male11	Facebook > interview > social gathering > train ride > online forum > YouTube
Male12	Facebook / YouTube > interview > train ride > social gathering > online forum

Note. A slash between two situations indicates that interviewees ordered both scenarios as equally threatening

6.3.4 Discussion

This qualitative study was set out to identify factors that influence people's outspokenness in different offline and online situations besides the perceived congruence with the opinion climate. In this context, people's perceptions of situational characteristics and expected sanctions for expressing a minority opinion were of particular interest. In the following, each of the six scenarios which were explored in the present study will be described along the present findings:

TV interview

According to participants' replies, if they were asked by a TV reporter to give a short interview about a controversial topic (in relation to which they supposedly have a minority opinion), many of them would first try to avoid giving an interview (e.g., by passing by) but if

they had no choice, most of them would express their opinion right away. Most of the respondents still found this situation relatively threatening. One reason stated by interviewees is in line with previous claims with regard to the size of the audience (Noelle-Neumann, 1994; Salmon & Oshagan, 1990): People do not like the idea that one's opinion expression act will be visible to a large group of people (in case the interview is broadcast on TV), especially since they do not have an overview of whom it will be visible to. In terms of potential negative responses from the environment, some participants anticipated being met with a lack of comprehension and rejection within their reference groups (after them having watched the interview). However, the reason why most participants would voice their opinion during the interview may be that they expect no immediate response from the social environment (in this case: the TV reporter). Thus, potential negative feedback for being deviant may not emerge immediately but in the long run (in the event that other people view this interview on TV). In sum, voicing a minority opinion on TV might not directly entail negative consequences, still, it is generally perceived as a threatening situation as the potential audience appears rather large to people.

Social gathering

When imagining a social gathering wherein a controversial discussion comes up, most participants were willing to express their minority opinion, at least under certain conditions such as being in the right mood or holding a discussion with a civil tone. In this social context, the most frequently mentioned characteristic that could influence outspokenness was the relationship to the discussion partners. People seem to feel more comfortable discussing their minority opinion in front of people they know compared with strangers. One explanation for this pattern was provided by interviewees themselves: In front of friends, people feel better able to anticipate how their friends will respond to a deviant opinion than when voicing the opinion to strangers who do not have any background knowledge about oneself. A social gathering has often been used as a scenario for spiral of silence research (e.g., Hayes, 2007; Moy et al., 2001; Mutz, 1989): While in some studies the social gathering included exclusively strangers, others used a social gathering with both strangers and familiar people. According to the present findings, it seems worthwhile to systematically address how the relationship to the discussion partners influences people's communication behavior.

Another reason why people would be more likely to express a minority view may be that some participants saw discussions at a social gathering as a fair exchange of opinions, meaning that they envisioned a scenario wherein people listen to each other carefully and

argue in a civil manner. As suggested by participants' replies, some think that a social gathering such as a party is an appropriate venue for discussing public issues, still others stated the contrary. This inconclusive pattern was resembled in respondents' ranking on the general level of perceived threat; one explanation could be that perceived precariousness is contingent on people's general attitude toward social gatherings as suitable places for discussing politics and/or on the relationship to the people present at this particular gathering. Especially when having discussions with people they do not know very well, respondents anticipated the potential risk of being judged because of having a different opinion. They also anticipated indignation and a lack of comprehension by others when expressing a deviant viewpoint.

Train ride

In the classic scenario that has been used in early spiral of silence research (Noelle-Neumann, 1993), namely, a train ride, people generally appear to be cautious when expressing their minority opinion. For instance, they would formulate their viewpoint as less extreme than it actually is. There seem to be two principal reasons for this strategy: First, because during a long train ride people see hardly any possibility to leave the situation, they would not like to create a negative atmosphere right away when contradicting their (unknown) travel partners. Thus, since people feel trapped in the train cabin, they would make particular efforts to have a peaceful time. Second, people do not feel comfortable discussing controversial topics with strangers. Since the strangers in the train do not know anything about oneself, people perceive a fear of being judged based on one's deviant opinion leading to others turning away from oneself. The threat level of the train situation was estimated differently by participants, which again may point to certain circumstances such as the impression of the interaction partners or one's personal mood making people's outspokenness during a long train ride conditional.

Facebook

On the social networking platform Facebook, most participants did not want to express their minority opinion. Respondents' answers offer a series of explanations for this finding. The audience on Facebook, that is, people who could see one's opinion expression act, is perceived as very large, which makes users feel in a very public spot. This very public nature appears to be perceived as threatening because of a combination of further particularities of the Facebook platform: First, the person who publicly expresses his/her opinion on Facebook

is commonly identifiable (by his/her name and a personal profile; Zhao et al., 2008), which increases the accountability for one's expressive actions. Second, owing to the large size of the audience, it seems unpredictable to determine who is going to see one's opinion expression act. While several strangers may form the audience, one's Facebook friends may also have access to this message (Baym & boyd, 2012; Litt, 2012). Generally, people do not seem to like friends viewing one's opinion expression without being able to discuss it with them directly, that is, having friends as a passive audience. In this context, people may perceive that they are not able to immediately rectify the impression they have left by stating something that could be controversial. Third, people seem to be aware that messages on Facebook will be permanently archived and retrievable by anybody in the future (boyd, 2010). Hence, the knowledge that one may be accountable for an individual opinionated message for a long time in the future seems to reduce people's outspokenness on Facebook.

Besides the public nature of discussions on Facebook, which seems to influence people's communication behavior, people appear to associate a rather negative tone with public discourses on this platform. Some participants stated that there is a very uncivil and aggressive culture of discussion on Facebook that stops them from participating in such discourses (see Vraga et al., 2015, for similar results). This lay conceptualization of the online disinhibition effect (cf. Suler, 2004) seems to lead to particular expectations of sanctions. When it comes to speculating how people (friends and strangers) on Facebook would respond to oneself expressing a deviant opinion, the most salient response was the expectation of being personally attacked (e.g., by being insulted or offended by others). These statements underline people's belief that on Facebook there is little chance to hold a fair discussion with a civil exchange of arguments. This subjective theory on the aggressive culture of discussion stands in contrast to preliminary evidence that public discourses on Facebook have a more civil/polite nature than discussions on YouTube or in comment sections of an online news website (Halpern & Gibbs, 2013; Rowe, 2015). One explanation accounting for this negativity bias in users' perceptions of Facebook discussions (although incivility is not directly mirrored in content analyses) could be that frequent media coverage on Facebook trolling referring to inflammatory behavior on this platform (e.g., Alvarez, Ciesinger, & Tretbar, 2014; Applebaum, 2015) fuels general beliefs that discussions on Facebook are mostly of an aggressive nature.

In addition to being personally attacked, participants also mentioned the expectation of being judged by the mass of people who could see one's disclosure of a minority opinion. The expectation of being judged based on one's opinion may play a particular role when

considering that the permanence of Facebook messages allow (present and future) friends, acquaintances, co-workers, and employers to access one's contributions on controversial issues.

Taken together, Facebook seems to be perceived as a particularly threatening environment in which to discuss controversial topics (see results from participants' ranking on the situational levels of threat) as the audience and the persistence of communication appear to heighten people's expectation of negative social responses, reducing people's willingness to participate in the discussion.

YouTube

According to interviewees' replies, most of them would not voice an opinion deviant from the opinion climate on the video-sharing platform YouTube. One reason may be the anonymity on this platform: Although participants stated that they would express themselves more freely under anonymous conditions (e.g., when they are registered by a nickname; cf. Siegel et al., 1986), some appeared to believe that YouTube's anonymity prompts other people to become vulgar within discourses and attack others when ideological disagreements come up. In other words, while some participants felt less accountable for expressing a minority opinion and therefore less vulnerable on YouTube, others expected severe sanctions from the anonymous audience. This ambiguity among respondents was mirrored in their estimations of YouTube's level of threat as the platform's position clearly diverged between the individual rankings.

Online forum

In comparison with Facebook and YouTube, people stated that they would be more outspoken when discussing a controversial topic in an anonymous online forum. This may be due to the low identifiability commonly given in online forums so that people feel safe when expressing a viewpoint that could be unpopular. This pattern supports the argument that anonymity fosters people's outspokenness since it reduces accountability and therefore the fear of being socially isolated for being deviant (Ho & McLeod, 2008; Yun & Park, 2011). Moreover, in people's perceptions, online forums are seen as appropriate venues for discussing societal topics because these platforms are commonly set up to offer spaces for discussion. That is why most participants expected rather neutral responses from other forum users such as a fair exchange of arguments or persuasion attempts. While some participants still anticipated that other forum users could attack them after expressing a minority opinion,

they ascribed a very low level of threat to the scenario of voicing a minority viewpoint in an online forum.

Generally, these results revealed a higher willingness to become outspoken offline than online. In offline situations, respondents find different ways to contribute to a discussion (e.g., by mentioning pro and con arguments) without explicitly expressing a deviant opinion (see Hayes, 2007). In online situations, respondents might not perceive the necessity to respond to these discussions (since they are not explicitly addressed verbally or nonverbally), so they are less willing to express a minority opinion, except when they are in an anonymous forum. Here, participants might feel "safer" to express a minority opinion than on Facebook, where most participants are identifiable and therefore accountable for their opinion. The present results also show that people's opinion expression is situationally conditional, meaning that it does not only depend on the prevailing opinion climate but also on their surroundings in terms of their interaction partners, their audience, and their possibilities to prevent negative social consequences. When examining the particularities of social networking platforms that could influence people's opinion expression, these qualitative data propose a diversity of different factors such as the size and the composition of the audience (on Facebook), the persistence of postings from identifiable users (on Facebook), and users' identifiability (high on Facebook and low on YouTube).

As expected (see Chapter 6.1), the amount of expected negative responses from the social environment (after having expressed an opinion deviant from the majority) outnumbered the expected positive or neutral responses. Given the expected negative reactions from others throughout all six scenarios, Facebook stands out against all other situations because respondents anticipate personal attacks and judgments when expressing a minority opinion in this environment.

Limitations

The following limitations of this study should be noted: Many of the situational factors identified in people's replies were inherent to the given scenarios (e.g., identifiability), so that some of the present answers could be interpreted as manipulation checks. Still, most of the responses explicitly referred to situational characteristics that – according to participants' perceptions – encourage or discourage their outspokenness.

While qualitative interviews contributed to the analysis of people's perceptions and expectations in depth, they also forced participants to verbalize thoughts and potential actions

that may occur impulsively and unconsciously in real-life situations. In this context, the existence of socially desirable answers considering that it is advisable to speak out one's personal opinion (disregarding what the majority thinks) cannot be ruled out. Evidence from future observational studies should back up (or rebut) the findings of the present study.

Moreover, the sample considered in this study was quite homogeneous as most participants were students between 19 and 28 years of age. Although this range represents the age group that uses social media applications most intensely (cf. Frees & Koch, 2015), it should be scrutinized whether the latent variables identified within the qualitative statements also apply for older participants.

Lastly, owing to the limited number of scenarios and participants, the present findings cannot be generalized to theoretical principles without any further systematic tests. Following this thought, this dissertation will present three further studies which intend to explore some of the factors identified in this explorative study.

This qualitative study offered preliminary hints on which situational factors may influence people's outspokenness in offline and online realms. In this context, potential independent and moderator variables such as the size and composition of the audience were presented, demanding further scholarly attention. Additionally, the qualitative approach contributed toward gaining a situational perspective on people's fear of isolation in terms of expected social consequences that may emerge in the event of expressing a minority opinion. The present data suggested a large diversity of different social sanctions such as being attacked, being judged, or being persecuted, which people seem to expect in accordance with the particular social context. Given the aim of this dissertation and its guiding research model, this qualitative study shed light on characteristics of social media technologies and how these exert impact on people's perceptions and manifestations of the fear of isolation. Whether and how these variables serve as explanatory links between the particular social environment and people's willingness to express their personal opinion will be analyzed by the following studies in a systematic way.

6.4 Study 3: An Experimental Test of the Explanatory Value of Expected Sanctions and Situational Perceptions

6.4.1 Objective and Hypotheses

The third study of this dissertation aims to quantitatively test the mechanisms underlying people's opinion expression that were identified by the second study. Following this work's research model (see Figure 2), this study should further illuminate the interplay of environmental characteristics (e.g., the particular audience) and situational manifestations of the fear of isolation (i.e., expected sanctions) as influence factors of people's outspokenness in face-to-face and social media communication. To this end, the present study aspires to experimentally explore (a) how the willingness to express a minority opinion varies across different social settings, (b) which different sanctions people expect in these settings when expressing a minority opinion, and (c) whether the expected sanctions in these situations can contribute toward explaining people's opinion expression behavior and avoidance strategies.

As proposed in the theoretical section and revealed by the second study, the starting point for the hypotheses is that people's opinion expression behavior is contingent not only on the (perceived) opinion congruence with others, but also on the social nature of the situation. In this regard, it is argued that the fear of isolation (which is the driving force behind individuals remaining silent in minority situations; Noelle-Neumann, 1993) manifests *in accordance with the social situation*. In other words, when a person is in a minority position, his/her fear of social isolation manifests in expectations of how others would punish him/her for expressing a deviant viewpoint. In order to capture the nature of different social situations and to determine how this influences the perception of social sanctions as well as the subsequent actions of opinion expression, it will be differentiated between offline and online communication.

The literature review suggests that in face-to-face communication (compared with computer-mediated communication) people may perceive a greater conversational obligation which may increase their likelihood of participating in a discussion (McDevitt et al., 2003). Moreover, in online communication, people may anticipate that written expressions of opinion are longer "persistent" and therefore less rectifiable (boyd, 2010). The second study corroborated this notion and suggested that people are generally more inclined to enter into a controversial discussion offline than online. Considering these theoretical and empirical differences between offline and online communication, it is proposed that:

Hypothesis 1 (H1): The likelihood of opinion expression will be higher in offline than in online communication.

The second study of this dissertation has offered diverse explanations for differences in opinion expression behavior offline and online. One of these suggests that people's expectation of sanctions decreases their likelihood of pronouncing their opinion and increases the likelihood of engaging in opinion expression avoidance techniques. While people were found to expect social sanctions in both offline and online communication, owing to the communication persistence and the large and diverse audiences in contemporary online networks (Baym & boyd, 2012), people may expect more far-reaching consequences for expressing their opinion on a controversial topic in online than in usual offline communication. In terms of negative consequences, people may find it more likely – in the long run – to encounter social sanctions in online rather than in offline environments (in the event that they voice their viewpoint). Thus, it is assumed that expected sanctions explain the main effect of the communication channel:

Hypothesis 2 (H2): The effect hypothesized in *H1* will be mediated by the social sanctions people perceive online and offline.

Another way to define the social nature of a situation is by considering in front of *whom* a person expresses a minority opinion. Against this backdrop, one theoretical argument in spiral of silence research suggested that when there is a risk of becoming isolated from other people, some groups would be more valuable for the individual than others (e.g., Oshagan, 1996). While the classic train scenario includes an audience whom the individual will probably never see again, a social gathering involves people who are, or could become, relevant in one's future. In terms of online communication, the audience in an online forum might not be as relevant for an individual as the audience on Facebook, where not only close friends but also acquaintances (who could become a reference group in the future) are "watching." Noelle-Neumann (1993) suggested that people are more inclined to keep silent when they know that it will be more difficult to rectify the impression they leave after expressing a controversial opinion. Data from the second study of this dissertation are indicative that people do not like expressing their opinion on Facebook because they do not know who is going to view their opinion expression act and they feel less able to remedy potential false impressions among the audience in comparison with face-to-face conversations

wherein synchronous communication allows direct feedback. Accordingly, when facing a relevant audience in the offline realm, individuals might feel more capable of "controlling" the situation or the reactions of their environment than they do with a relevant but less visible audience on Facebook:

Hypothesis 3 (H3): The effect of the communication channel (online vs. offline) on the likelihood of opinion expression will be stronger for people who are exposed to a relevant audience than for people exposed to a less relevant audience.

Hypothesis 4 (H4): Given a relevant audience, people will perceive a greater loss of control over the reactions of their environment in online rather than offline contexts and this effect will explain why people showed a reduced willingness to express their opinion online compared with offline.

6.4.2 Method

The present study employed a between-subjects experimental design by manipulating the social nature of a discussion situation. In the four social situations that served as stimulus, the communication channel (online vs. offline) and the relevance of the audience (high vs. low) were manipulated. Approval by the local IRB was obtained before collecting data.

6.4.2.1 Sample

Data were gained from a web-based study conducted with 376 participants in July and August 2014. Of these 376 participants, eleven were excluded: One participant was younger than 16 years, another participant responded to all items by choosing the lowest level of agreement, and nine participants who were in the Facebook condition did not have a private Facebook account. In the remaining sample of 365 participants (216 females), the age ranged from 17 to 68 years ($M = 25.85$, $SD = 8.81$). 95.9% of the sample had at least university entrance-level qualifications; 72.3% were students, 15.6% were employees, 3.6% were self-employed, 2.5% were in an apprenticeship, 1.4% were school pupils and 1.4% were unemployed. Participants were recruited by means of announcements in German-speaking online forums, Facebook groups or via student e-mail distribution lists. As an incentive for

participation, respondents were able to enter a lottery (after completing the study) for four vouchers from an online retail shop.

6.4.2.2 Materials and Hypothetical Scenarios

To ensure that the mechanisms observed in this study are not only valid for one societal topic, two were considered based on the pilot study reported in Chapter 5.5.3. Again, two topics which were perceived as highly controversial by participants were used in the third study of this dissertation: (a) the legalization of euthanasia (perceived controversy on a 7-point scale from 1 = *not controversial at all* to 7 = *very controversial*: $M = 5.37$, $SD = 1.65$) and (b) the government's surveillance of telecommunication in order to combat terrorism (perceived controversy: $M = 5.03$, $SD = 1.69$). A preliminary MANOVA testing whether the topic of discussion as a fixed factor significantly influenced the dependent variables (opinion expression, avoidance techniques and expected sanctions) was computed. Since no significant effect was found, data for both topics were collapsed for subsequent analyses.

As a stimulus for participants, the present work employed hypothetical scenarios. Each participant received one of four written scenarios and was asked to imagine the situation described and how they would respond to this situation. All scenarios presented a situation in which people are discussing a controversial topic and the majority of these people oppose the opinion of the respondent. The different situational contexts were a bus ride, a social gathering, a discussion on Facebook, and a discussion in an online forum. With these scenarios, not only the communication channel (offline vs. online) but also the relevance of the audience were varied: The relevance of the audience on a bus ride with strangers and in an online forum with anonymous discussants might be perceived as relatively low. By contrast, the audience at a party with friends and people who could become relevant in the future (as was indicated in the written scenario) and the audience on Facebook, where close friends and also acquaintances could see the opinion expression, was assumed to be estimated as more relevant. In terms of a manipulation check, participants were asked to estimate the perceived relevance of the audience in every condition (item: "If I expressed my opinion in this situation, people who are important to me could become aware of it." to be rated on scale from 1 = *strongly disagree* to 7 = *strongly agree*). An ANOVA, $F(3,361) = 29.27$, $p < .001$, $\eta^2_p = .20$, demonstrated that the relevance of the audience was perceived as significantly higher at a social gathering ($M = 4.96$, $SD = 1.33$) and on Facebook ($M = 5.06$, $SD = 1.35$) than in the bus situation ($M = 3.29$, $SD = 1.89$) and in an online forum ($M = 3.56$, $SD = 1.84$).

Post hoc pairwise comparisons (with Bonferroni adjustment) showed that responses in the Facebook and the social gathering condition differed significantly from those in the bus situation ($p < .001$) and the online forum ($p < .001$). However, there was no significant difference between the Facebook and the social gathering situation. Furthermore, perceived relevance of the audience did not differ significantly between the bus situation and the online forum.

Each of these four scenarios was created in two versions: One version comprised a discussion about euthanasia and the other a discussion about the government's surveillance of telecommunication (see the Table 8 for translated examples of the wording of each scenario).

Table 8
Examples of the hypothetical scenarios used in Study 3

"Consider the following hypothetical situation. As you read through the description of this situation, imagine that you are actually in this situation as the events unfold. Imagine what you'd be seeing and feeling.

Imagine the following situation:"

Offline: Bus ride

"You're on a five-hour journey by bus. At a rest area, the bus stops for a break and all passengers get out of the bus. In a group of passengers (whom you don't know and probably will not be in touch with in the future), you get involved in a discussion. At one point during the discussion, someone in the group brings up the topic of the **government's surveillance of telecommunication in order to combat terrorism**. The discussion deals with the question of whether one should support or oppose this kind of surveillance. It is apparent as you are listening to the discussion that the **people in this group disagree with your opinion** about the government's surveillance of telecommunication in order to combat terrorism. That is, the majority in this group has **a different opinion** than you do on this topic."

Offline: Social gathering

"You are attending a party with two friends. Here, you meet a lot of people whom you have not met before; however, you may interact with these people in the future. You get involved in a discussion with a group of these people. At one point during the discussion, someone in the group brings up the topic of the **government's surveillance of telecommunication in order to combat terrorism**. The discussion deals with the question of whether one should support or oppose this kind of surveillance. It is apparent as you are listening to the discussion that the **people in this group disagree with your opinion** about the government's surveillance of telecommunication in order to combat terrorism. That is, the majority in this group has **a different opinion** than you do on this topic."

Online: Facebook

"You are browsing through your Facebook news feed. Here, you find several messages from your Facebook friends and from other channels you are subscribed to. One of these channels has posted a public message on **legalizing euthanasia**. Within the comments related to this message, the question comes up of whether one should support or oppose the legalization of euthanasia. It is apparent as you are reading through the discussion that the **discussants disagree with your opinion** about legalizing euthanasia. That is, the majority in this group has **a different opinion** than you do on this topic."

Online: Forum

"You visit an online forum in which users discuss different topics. Users usually discuss anonymously in this forum, so you are registered with a pseudonym. In a forum thread, the topic of **legalizing euthanasia** comes up. Within the comments of this thread, the question comes up of whether one should support or oppose the legalization of euthanasia. It is apparent as you are reading through the discussion that the **discussants disagree with your opinion** about legalizing euthanasia. That is, the majority in this group has **a different opinion** than you do on this topic."

6.4.2.3 Measures

Opinion expression and avoidance strategies

After asking participants to think about how they would respond to this scenario, likelihood of them responding in different ways was assessed. Building on opinion expression engagement and avoidance strategies identified by previous research (Hayes, 2007; Neuwirth et al., 2007), subjects' likelihood to express their opinion (item: "I would participate in this discussion and express my personal opinion."), express ambivalence (item: "I would participate in this discussion and present arguments for and against in a balanced way."), express indifference (item: "I would participate in this discussion and state that I don't care about this topic."), pretend to agree (item: "I would agree with the majority opinion in this discussion (although I have a different opinion).") and say nothing at all (item: "I would not say anything.") were measured. Ratings were given on a 7-point scale from 1 = *absolutely unlikely* to 7 = *absolutely likely*.

Expected sanctions

To assess the sanctions people might fear in different situations, 32 items were derived from the pool of participants' statements from the qualitative interviews (see Chapter 6.3.3.3). While the first half-sentence was the same for all items ("I would fear …"), the other half differed, and covered various aspects mentioned by participants of the qualitative study. In the present study, participants were asked to indicate to what extent they would expect these sanctions from the social environment should participants really express an unpopular opinion in the given scenario. The items were rated on a scale from 1 = *strongly disagree* to 7 = *strongly agree*.

In order to reduce the number of items to factors, an exploratory factor analysis (principal axis analysis with varimax rotation) was conducted. Building on Horn's parallel analysis (Horn, 1965), the appropriate number of factors was calculated: While the empirical eigenvalue from the first (15.96), second (2.34) and third (1.69) factor was higher than the eigenvalue calculated by the parallel analysis (1st factor: 1.69, 2nd factor: 1.61, 3rd factor: 1.57), the empirical eigenvalue from the fourth factor (1.35) was lower than the eigenvalue from the parallel analyses (1.52). In conclusion, Horn's parallel analysis suggested a three-factor solution. Subsequently, a second exploratory factor analysis with an oblique rotation (principal axis analysis with promax rotation) and a fixed number of three factors was conducted to verify the factor loading of each item. To increase the validity and reliability of

the concept of expected sanctions, items which had a low main factor loading (< .5) and/or a high parallel loading (> .2) on other factors were removed. According to these criteria, 19 items were successively excluded from further analyses. Following this, a final exploratory factor analysis (principal axis analysis with promax rotation) was conducted: The three-factor solution including 13 items explained 66.66% of the variance (see Table 9 for factor loadings). The first factor, *fear of being judged*, with five items, referred to the fear of others judging oneself negatively (Cronbach's α = .88). The second factor, *fear of being rejected*, comprised four items and referred to the fear of others turning away from oneself (Cronbach's α = .90). The third factor, *fear of being personally attacked*, included four items which referred to expecting others to offend oneself (Cronbach's α = .89).

Table 9
Factor loadings of the three variables representing the expected sanctions (Study 3)

I would fear …	1	2	3
Factor 1: Fear of being judged			
…building a bad reputation.	**.833**	-.010	.066
…experiencing negative consequences on a personal and/or professional level in the future.	**.805**	-.071	-.073
…losing potentially important relationships.	**.791**	.096	-.131
…losing face.	**.780**	.055	.028
…being personally picked on.	**.683**	-.077	.132
Factor 2: Fear of being rejected			
…being excluded by others.	-.029	**1.024**	-.134
…being rejected by others.	-.086	**.812**	.114
…being avoided by others.	.131	**.713**	.078
…being ignored by others.	.018	**.603**	.152
Factor 3: Fear of being personally attacked			
…being insulted by others.	-.029	-.079	**.954**
…being verbally attacked.	-.143	.083	**.883**
…being attacked publicly.	.155	.027	**.702**
…being laughed at.	.100	.129	**.588**

Note. Main factor loadings are in bold type.

Situational perceptions

Furthermore, it was assessed how participants perceived the situation of the given scenario. The items relevant for the present study referred to how participants evaluated their relationship to the people present in this situation (cf. manipulation check) and how

controllable they estimate the reactions of the environment to be ("If I expressed my opinion in this situation, I would not be able to control the reaction of the others."). Participants indicated their agreement with these statements on a scale from 1 = *strongly disagree* to 7 = *strongly agree*.

Control variables

In terms of control variables, participants' pre-existing opinion about the topic was measured. A dichotomous measure on participants' opinion ("If you had to decide whether to oppose or to support the legalization of euthanasia/the government's surveillance of telecommunication in order to combat terrorism – what would you do?" responses were 1 = *support* or 2 = *oppose*) yielded the following opinion distribution among the sample: 81.2% ($n = 155$) of participants who were exposed to the stimulus material dealing with the legalization of euthanasia supported the legalization, whereas 18.8% ($n = 36$) were against. Among those who were presented with the stimuli on government's surveillance of telecommunication in order to combat terrorism, 40.2% ($n = 70$) were in favor of the surveillance, while 59.8% ($n = 104$) opposed this endeavor. Building on this dichotomous variable and participants' estimates of the current opinion climate among the national population and their personal network ("Please estimate the percentage of the national population/people in your personal network that would 'agree with [topic]', 'neither agree nor disagree with [topic]' or 'disagree with [topic]'"), two new variables were created which indicated the percentage of people (in the national population and personal network) who held the same opinion as participants. Moreover, subjects' trait-like fear of isolation was measured based on five items such as "It is scary to think about not being invited to social gatherings by people I know." (Hayes et al., 2013; Cronbach's $\alpha = .79$).

6.4.2.4 Procedure

Participants were recruited by means of announcements in online forums, Facebook groups or via student e-mail distribution lists. After volunteers clicked on the URL, the online questionnaire software randomly assigned them to one of the eight experimental conditions (4 situations x 2 discussion topics). While the first part of the study contained questions and scales about participants' pre-existing opinion, perceptions of the opinion climate, fear of isolation and further personality traits (which are not analyzed within the present work), the second part presented the hypothetical scenario. Subsequently, questionnaires were presented

on participants' responses to the hypothetical scenario, expected sanctions and perceptions. The final part included demographic information, the registration process for participating in the voucher lottery (as incentive) and the debriefing.

6.4.2.5 Data Analysis

Data were analyzed with the SPSS software, version 22.0 for Windows (IBM SPSS Statistics) using general linear models to test main and interaction effects. To test mediation effects, the SPSS macro INDIRECT by Preacher and Hayes (2008) was used. Here, 5,000 bootstrap resamples (with a percentile-based 95% confidence interval) were performed. The indirect effects were considered as significant when the corresponding confidence intervals did not include zero.

6.4.3 Results

Effects of communication channel and expected sanctions on opinion expression

H1 and *H2* expected a main effect of the communication channel (offline vs. online) on subjects' response strategies (expressing opinion, expressing ambivalence, expressing indifference, pretending to agree and saying nothing at all) and that this effect will be mediated by the expectation of sanctions. These assumptions were tested by computing five multiple mediation analyses including communication channel as independent variable, response strategies as dependent variables (in five separate models), and the three forms of expected sanctions (fear of being judged, fear of being rejected, fear of being personally attacked) as mediators. Since people's trait-like fear of isolation and perceived congruence with the opinion climate among the population and one's personal network were found to influence subjects' outspokenness (Glynn & Huge, 2014; Matthes et al., 2012; Oshagan, 1996), these variables were included in all models as covariates. As shown in Table 10, mediation analyses yielded a significant effect of communication channel on three response strategies: Subjects' likelihood to express their opinion and express ambivalence was greater offline than online. Likewise, participants were more inclined to say nothing online than offline. While the likelihood of expressing indifference in offline communication was marginally greater than in online communication, there was no significant effect of communication channel on pretending to agree. Consequently, data supported *H1* for the strategies of expressing opinion, expressing ambivalence and saying nothing at all.

As a prerequisite for a mediation effect (*H2*), mediation analyses demonstrated a main effect of communication channel on the mediator fear of being personally attacked (which was greater online than offline), but not on the other two mediators (see Table 10). In terms of indirect effects, bootstrap results revealed that the effect of the communication channel on the likelihood to express a minority opinion decreased when controlling for the three mediators, path estimate of the total indirect effect: $b = -.14$, $SE_b = .07$; 95% CI [-.2775, -.0086]. In the mediation model, however, only the indirect effect of the fear of being personally attacked emerged as a significant mediator, path estimate of the indirect effect: $b = -.11$, $SE_b = .06$; 95% CI [-.2448, -.0017], while the mediation of the fear of being judged and the fear of being rejected was not significant. For all the other response strategies, no indirect effect through the expected sanctions emerged as significant. However, Table 10 shows that the fear of being judged is positively associated with the likelihood of expressing indifference, pretending to agree and saying nothing at all. Hence, although *H2* received only support for the fear of being attacked (explaining the reduced likelihood to express opinions in online communication), results indicate that the fear of being judged can also be a significant predictor for avoidance strategies.

Besides the hypotheses test, Table 10 also shows that the trait-like fear of isolation did not significantly predict any of the response strategies. Moreover, perceived opinion congruence with the national population served as a weak predictor for expressing indifference and pretending to agree, while perceived congruence with subjects' personal network weakly predicted the likelihood of expressing one's opinion and expressing indifference.

Table 10

Multiple mediation analyses with communication channel as independent variable, expected sanctions as mediators and opinion expression / avoidance strategies as dependent variables

	Mediators								
	Fear of being judged			Fear of being rejected			Fear of being personally attacked		
	b (SE_b)	t	p	b (SE_b)	t	p	b (SE_b)	t	p
Offline = 1 /Online = 2	.02 (.14)	.13	.894	-.18 (.16)	-1.09	.278	.71 (.18)	4.00	< .001

	Outcome variables														
	Expressing opinion			Expressing ambivalence			Expressing indifference			Pretending to agree			Saying nothing at all		
	b (SE_b)	t	p	b (SE_b)	t	p	b (SE_b)	t	p	b (SE_b)	t	p	b (SE_b)	t	p
Offline = 1 / Online = 2 (c)	-1.54 (.19)	-8.00	< .001	-1.18 (.20)	-5.92	< .001	-.24 (.13)	-1.84	.067	-.05 (.09)	-.56	.573	1.79 (.21)	8.53	< .001
Offline = 1 / Online = 2 (c')	-1.40 (.20)	-6.92	< .001	-1.19 (.21)	-5.64	< .001	-.24 (.14)	-1.73	.084	-.01 (.10)	-.10	.921	1.67 (.22)	7.58	< .001
Fear of being judged	-.08 (.09)	-.95	.341	-.11 (.09)	-1.22	.224	.20 (.06)	3.51	< .001	.15 (.04)	3.58	< .001	.20 (.09)	2.15	.032
Fear of being rejected	.14 (.09)	1.61	.107	.12 (.09)	1.32	.187	.02 (.06)	.31	.754	.06 (.04)	1.44	.151	-.13 (.09)	-1.40	.163
Fear of being attacked	-.16 (.08)	-1.95	.053	.04 (.08)	.50	.619	-.01 (.05)	-.14	.886	-.05 (.04)	-1.30	.193	.13 (.09)	1.52	.128
Covariates															
Fear of isolation	-.19 (.12)	-1.56	.121	-.05 (.13)	-.36	.718	-.03 (.08)	-.39	.700	.01 (.06)	.23	.819	.12 (.13)	.90	.368
Opinion congruence NP	.00 (.01)	.64	.521	.01 (.01)	1.05	.294	.01 (.00)	2.84	.005	.01 (.00)	2.05	.041	.01 (.01)	.76	.447
Opinion congruence PN	.01 (.00)	2.53	.012	.00 (.00)	.89	.374	-.01 (.00)	-2.83	.005	-.00 (.00)	-1.13	.259	-.01 (.00)	-1.08	.283
	Adj. R^2 = .18 *F(7,356) = 12.52, p < .001*			*Adj. R^2 = .09* *F(7,356) = 6.33, p < .001*			*Adj. R^2 = .06* *F(7,356) = 4.30, p < .001*			*Adj. R^2 = .04* *F(7,356) = 3.40, p = .002*			*Adj. R^2 = .18* *F(7,356) = 12.42, p < .001*		

Note. (c) = total effect; (c') = direct effect (controlling for the mediators); NP = national population, PN = personal network

Effects of audience relevance on opinion expression

   H3 assumed an interaction effect of the communication channel and the relevance of the audience. As the manipulation check was successful (see Chapter 6.4.2.2), a new two-level variable was generated, collapsing the Facebook and social gathering conditions representing a high relevance of the audience, and collapsing the bus and online forum conditions as a relatively low relevance of the audience. Subsequently, *H3* was tested by conducting a MANOVA with the relevance of the audience and the communication channel as fixed factors and the five response strategies as dependent variables. Besides significant main effects of the communication channel which were already demonstrated by mediation analyses (see above), the MANOVA yielded a significant multivariate main effect of audience relevance, *Wilks' λ* = .96, $F(5,357)$ = 2.79, p = .017, η^2_p = .04, and significant multivariate interaction effect of communication channel and audience relevance, *Wilks' λ* = .88, $F(5,357)$ = 9.47, p < .001, η^2_p = .12. Univariate tests revealed a main effect of audience relevance on the likelihood of expressing opinion, $F(1,361)$ = 5.53, p = .019, η^2_p = .02, and expressing ambivalence, $F(1,361)$ = 11.20, p = .001, η^2_p = .03, insofar as participants' likelihood to express their opinion and ambivalence was higher for those faced with a less relevant audience (opinion: M = 4.69, SD = 1.85; ambivalence: M = 4.46, SD = 1.90) than for those faced with a more relevant audience (opinion: M = 4.30, SD = 2.17; ambivalence: M = 3.85, SD = 2.05). For the other response strategies, no significant main effects of audience relevance were shown. Besides main effects, the MANOVA revealed interaction effects of audience relevance and communication channel on four response strategies (see Table 11): More specifically, participants faced with a relatively highly relevant audience were more willing to express their opinion and express ambivalence offline rather than online. However, the likelihood of expressing opinions and ambivalence among those faced with a less relevant audience differed slightly between offline and online communication. Conversely, given a relatively highly relevant audience, the likelihood of saying nothing at all was greater online rather than offline, under conditions of a less relevant audience the effect of the communication channel was weaker. The pattern of the means (see Table 11) indicates that for these three response strategies the interaction effect qualifies the main effect of the audience relevance but not the main effect of communication channel. For the likelihood of expressing indifference a weak, albeit significant, disordinal interaction effect qualified the (marginally significant) main effect of communication channel: Participants reported the greatest likelihood to express indifference in front of a relatively highly relevant audience in offline realms, followed by the situations in front a less relevant audience offline and online,

while the lowest likelihood of expressing indifference was reported when a relatively highly relevant audience was present in online communication. For pretending to agree, no interaction effects were found. Consequently, the pattern expected in *H3* received empirical support for the strategies of expressing opinion, expressing ambivalence and saying nothing at all.

Table 11

Means and standard deviations for response strategies separated by experimental conditions

	Offline		Online				
	Audience relevance		Audience relevance		Interaction effect		
	low	high	low	high			
	Bus	*Social gathering*	*Online forum*	*Facebook*	*F(1,361)*	*p*	η^2_p
Expressing opinion	4.96 (1.81)	5.55 (1.50)	4.41 (1.85)	2.94 (1.96)	30.34	< .001	.08
Expressing ambivalence	4.61 (1.78)	4.86 (1.63)	4.29 (2.02)	2.76 (1.90)	21.39	< .001	.06
Expressing indifference	1.74 (1.14)	1.91 (1.54)	1.79 (1.33)	1.35 (.97)	5.37	= .021	.02
Pretending to agree	1.41 (.89)	1.43 (.85)	1.40 (.88)	1.35 (.96)	.16	.69	.00
Saying nothing at all	3.17 (2.00)	2.37 (1.53)	3.94 (2.05)	5.22 (2.09)	26.47	< .001	.07

Indirect effects of situational perceptions on opinion expression

H4 predicted that the effect of the communication channel on opinion expression behavior among those faced with a highly relevant audience would be mediated by participants' perceptions of loss of control over the reactions of their environment. To test this hypothesis, a mediation analysis was conducted for every response strategy with the subsample of those who were given a scenario with a highly relevant audience (*n* = 179). The independent variable was the communication channel (social gathering vs. Facebook), the response strategies were the dependent variables, and the perceived loss of control was the mediator. As a general prerequisite for an indirect effect, all mediation analyses indicated a significant main effect of the communication channel on perceived control as the mediator (*b* = 1.23, SE_b = .25, *t* = 4.92, *p* < .001). Effects of communication channel and perceived loss of control are displayed in Table 12. Supporting results of the MANOVA reported above, subjects reported a greater likelihood to express their opinion, ambivalence and indifference in offline rather than in online communication. Likewise, participants were more inclined to say nothing online rather than offline. The likelihood of pretending to agree remained

unaffected by the communication channel. Regarding significant effects of the mediator perceived loss of control over others' reactions on response strategies, Table 12 shows that the more subjects perceived a loss of control, the less likely they would express their opinion, pretend to agree and the more likely they would say nothing. For these three outcome variables, bootstrap results yielded significant indirect effects of communication channel through perceived loss of control. Thus, the significant effect of communication channel on the likelihood of opinion expression, path estimate of the indirect effect: $b = -.20$, $SE_b = .10$; 95% CI [-.4054, -.0025], and saying nothing at all, path estimate of the indirect effect: $b = .21$, $SE_b = .12$; 95% CI [.0090, .4754], decreased when controlling for the perceived loss of control. Although communication channel did not have a significant effect on pretending to agree, indirect effects are supposed to also exist when significant total effects are absent (Hayes, 2013). Here, the mediation analysis indicated a decrease of the total effect on pretending to agree when considering the mediator, path estimate of the indirect effect: $b = -.13$, $SE_b = .05$; 95% CI [-.2488, -.0379]. However, this indirect effect does not support the pattern expected in *H4*, since it was assumed that a greater perceived loss of control would increase the likelihood of an avoidance technique such as pretending to agree. As no indirect effects for expressing ambivalence and indifference were found, *H4* received support for the likelihood of expressing one's opinion and saying nothing at all.

Table 12

Simple mediation analyses with communication channel (social gathering vs. Facebook) as independent variable, perceived loss of control as mediator and opinion expression / avoidance strategies as dependent variables (n = 179)

	Outcome variables													
	Expressing opinion			Expressing ambivalence			Expressing indifference			Pretending to agree			Saying nothing at all		
	$b\ (SE_b)$	t	p	$b\ (SE_b)$	t	p	$b\ (SE_b)$	t	p	$b\ (SE_b)$	t	p	$b\ (SE_b)$	t	p
Offline = 1 / Online = 2 (c)	-2.53 (.26)	-9.88	< .001	-2.07 (.27)	-7.80	< .001	-.63 (.19)	-3.25	.001	-.09 (.13)	-.70	.483	2.86 (.28)	10.32	< .001
Offline = 1 / Online = 2 (c')	-2.34 (.27)	-8.62	< .001	-2.00 (.28)	-7.05	< .001	-.57 (.21)	-2.75	.007	.04 (.14)	.28	.782	2.65 (.29)	9.04	< .001
Perceived loss of control over others' reactions	-.16 (.08)	-2.07	.040	-.06 (.08)	-.72	.470	-.05 (.06)	-.84	.401	-.11 (.04)	-2.71	.007	.17 (.08)	2.04	.043
Covariates														
Fear of isolation	-.12 (.19)	-.62	.534	-.21 (.19)	-1.10	.272	.12 (.14)	.82	.413	.13 (.10)	1.36	.176	.07 (.20)	.34	.732
Opinion congruence NP	.01 (.01)	1.25	.215	.01 (.01)	1.25	.212	.01 (.01)	2.15	.033	.01 (.00)	2.50	.013	-.00 (.01)	-.29	.770
Opinion congruence PN	.01 (.01)	1.69	.093	.00 (.01)	.54	.588	-.01 (.00)	-2.41	.017	-.00 (.00)	-.73	.467	-.00 (.01)	-.01	.992
	Adj. R^2 = .40			*Adj. R^2 = .27*			*Adj. R^2 = .06*			*Adj. R^2 = .06*			*Adj. R^2 = .38*		
	$F(5,173)$ = 24.48, p < .001			*$F(5,173)$ = 13.97, p < .001*			*$F(5,173)$ = 3.43, p = .006*			*$F(5,173)$ = 3.45, p = .005*			*$F(5,173)$ = 23.09, p < .001*		

Note. (c) = total effect; (c') = direct effect (controlling for the mediator); NP = national population, PN = personal network

6.4.4 Discussion

Focusing on Stage 2 of this work's research model (see Chapter 4), the third study of this dissertation intended to disentangle the relationship between people's situational manifestations of the fear of isolation in terms of expected sanctions and their willingness to express a minority opinion. The concept behind expected sanctions was explored comparing social media and online communication with face-to-face communication.

The starting point for this study's line of reasoning was that individual opinion expression behavior varies depending not only on whether a person is on the side of the majority or the minority (Noelle-Neumann, 1993), but also according to contextual factors such as the communication channel or the audience with which the individual is faced. To explore this idea, participants were presented with minority situations in order to focus on how situational variables influence their behavior. With respect to the comparison between offline and online communication, results revealed differences in the likelihood of diverse responses: People would be more willing to express a deviant opinion in offline rather than online environments. A reason for this effect was found in the sanctions expected from other Internet users: People perceive a greater fear of being personally attacked on the Internet than face-to-face. Therefore, it seems that people have a lay conception of the online disinhibition effect (Suler, 2004) in terms of expecting others to flame and insult them if disagreements arise. This finding is in line with the data provided by Rainie, Lenhart, et al. (2012) who observed that Internet users experience insults and aggressive behavior on social networking sites. It appears that it is not necessarily the lack of identifiability but rather the mere mediated nature of online communication that leads users to expect personal attacks from their interactants. Here, people might suppose that other Internet users feel "safe" behind their computers and are more likely to attack others, no matter if they are identifiable or not. In general terms, it seems that people are better able to handle the expected sanctions in offline communication, such as being punished by nonverbal signals or incomprehension (see results of the second study), than the prospect of being attacked in online environments. This pattern is in line with results of this dissertation's second study which showed that people's fear of personal attacks on the Internet reduce their willingness to voice their viewpoint on controversial issues. These findings, in turn, reveal that – according to users' perceptions – the Internet is not a place of discursive democracy but rather an environment where controversial discussions can easily become personal, which tempts users to keep silent more than in face-to-face situations.

In offline communication, people are also more likely to bring up pro and contra arguments toward the topic (without explicitly expressing their subjective opinion) than in online communication. Likewise, participants reported a greater likelihood to express that they do not care about the topic in face-to-face than in computer-mediated conversations (when a relevant audience is present). Supporting the findings provided by the second study, these opinion expression avoidance strategies, already posited by Hayes (2007), appear to be used more offline than online. As already discussed in Chapter 6.2, one reason for this pattern of findings can be that people might perceive a generally higher "involvement obligation" in face-to-face communication than in online communication (see McDevitt et al., 2003), insofar as they wish to keep the conversation going. In online realms, one can easily quit the platform and, therefore, leave the social situation when it becomes uncomfortable. These opinion expression avoidance strategies in the sense of expressing indifference, pretending to agree, and saying nothing at all were driven by the fear of being judged. Hence, if a person anticipates a risk of building a bad reputation and losing important relationships after expressing their opinion on a controversial topic, they rather engage in avoidance strategies than stand by his/her real opinion. This pattern is in line with previous research which posited and empirically revealed a relationship between people's fear of isolation and willingness to express their opinion (Noelle-Neumann, 1993; Scheufele et al., 2001). The present study, however, extends this state of knowledge by assuming a situational view and revealing that different situational manifestations of the fear of isolation entail different behavioral responses: While the fear of being attacked reduces the willingness to express a minority opinion, the fear of being judged stimulates people's strategies of self-censorship (cf. Hayes, 2007). These mechanisms indicate that both, the fear of isolation and people's communication behavior, should be considered in their different forms according to the specific situation. Moreover, the present results show that a situational understanding of the fear of isolation (in terms of subjectively expected sanctions) can contribute to explain a greater variance in people's responses than the trait-like fear of isolation. Perceived support for one's opinion in society and one's personal network, as the usual predictor on people's opinion expression behavior (Glynn & Huge, 2014), weakly predicted some of participants' responses. In comparison, situational variables such as the communication channel and expected sanctions were more influential.

The present findings revealed that not only the communication channel but also the audience seems to be crucial for how people respond to a minority situation. Subjects reported the lowest likelihood of expressing their opinion in front of a relevant audience online (on

Facebook), while they stated the greatest opinion expression likelihood in front of a relevant audience in offline communication (at a social gathering). As already indicated by the second study of this dissertation, individuals appeared to perceive a higher level of control in terms of correcting the impression others form of them in a face-to-face setting compared with in front of a relevant audience on Facebook. This finding supports Noelle-Neumann's (1993) idea that expressing minority opinions in front of acquaintances might be risky; however, one might be able to re-shape the impression people had formed in upcoming conversations. This mechanism does not seem to apply in front of a relevant audience on Facebook, where people are more reluctant to voice a minority opinion. One reason for this finding was proposed by the second study: Facebook comprises a much larger audience than a social gathering. While a public discussion on Facebook may comprise a certain number of users (i.e., those who comment on the specific issue on the particular channel), there is a much larger "invisible" audience who can have access to this discussion, including e.g., close friends, acquaintances, co-workers but also unknown people (cf. Baym & boyd, 2012). Users may not always have knowledge about the opinion climate within this large group of people as they also do not know who ultimately will be able see one's political expression. People might generally assume that a larger audience encompasses a greater variety of opinions and, therefore, a larger number of people who could contradict or form the "wrong impression" of them. In this virtual environment, users might not feel able of correcting the impression that a large number of (relevant) people has formed of them. This pattern underlines the importance of the relational context when people have to decide whether to speak out or not. Besides relational aspects, it should be acknowledged that especially on Facebook, users might be aware that their comments will be recorded, archived, searchable, and visible to an even greater public in the long run (boyd, 2010). The second study revealed that this awareness may lead users to anticipate future sanctions concerning, for instance, their professional life in the sense of future potential employers seeing their opinion and evaluating them in a disadvantageous manner. The role of a relevant audience appears to imply a more complex pattern of expected sanctions, which may differ significantly between offline and online environments.

Limitations

The third study is not without its limitations: First, this study is based on hypothetical scenarios which assess people's potential but not actual response to a minority situation. Despite the criticism of the hypothetical approach (see e.g., Hayes et al., 2001), this seems an appropriate step to provide the first systematic evidence about the influence of situational

variables on the perceptions of sanctions and the willingness to express a minority opinion. Future research is called to conduct observational experiments to test whether the mechanisms observed here also apply to real situations with pressure from an actual majority.

Second, while this study aspired to consider common social situations to compare differences in people's outspokenness, the internal validity of these may be limited: With the manipulation of the communication channel (offline vs. online) not only the channel but also the size of the audience was inevitably manipulated. This is due to the fact that the number of people who are present at the discussion during a bus ride break or at a social gathering is commonly lower than the number of people having access to a discussion on a public channel on Facebook and in an online forum. Although this methodological procedure allows for a relative comparison, for instance, of people's outspokenness on Facebook with other common situations such as a social gathering, this limitation raises the question of which particular factors inherent to specific offline and online communication channels (which were identified in the second study) may be responsible for differences in people's outspokenness. The following studies of this dissertation are intended to further address this question.

Third, this study is limited to a sample consisting predominantly of students. In this regard, it has to be asked to what extent the present observations are generalizable to other age groups and to persons with different levels of education. Since the fear of isolation as a trigger for expecting sanctions has been posited as a fundamental human condition (Noelle-Neumann, 1974), it might be assumed that the mechanism of expecting punishments for being deviant from a group is applicable throughout the life span and across persons with different levels of education. However, further research is needed to support this assumption.

Fourth, the variety of expected sanctions presented in the second study could not be mirrored in the statistical analyses of this study, owing to the parsimonious procedure used in this regard. This might indicate that either the diversity of expected sanctions is not as complex as suggested by the second study or the measures used in the third study were not appropriate to grasp the full complexity of people's expectations of sanctions. Despite these shortcomings, the present findings point to the potential explanatory value of expected sanctions when focusing on people's willingness to express their opinion.

Complementing evidence provided by the second study of this dissertation, the current study presented a more differentiated picture of the fear of isolation in the context of minority situations: This fundamental fear appears to manifest in the individual's consciousness in more complex perceptions and expectations than previous research has assumed. Given the

present findings, subsequent studies investigating the effects of minority situations should (a) elaborate more explicitly on the qualities of specific situations such as the size of or the relationship to the audience and (b) associate these with people's expectations regarding how they could be treated by others if they enter into the discussion. Given that fear of isolation seems to have an explanatory value when considered in light of the particular social situation, it seems worthwhile for future research to continue considering and measuring this construct in a more explicit way.

Regarding the application of the spiral of silence theory to social networking platforms, the third study demonstrated not only that people's silence in online environments is attributable to different expected sanctions than those in offline environments, but also that virtual spaces such as Facebook are seen as threatening environments in terms of expressing unpopular opinions, due to the unique form of social sphere. Are users' expectations of sanctions contingent on the size or the composition of the public on SNS? Which strategies do individuals use to express deviant opinions in front of such a public? The following two studies of this dissertation seek to give answers to these questions.

7 Study 4: The Publicness Effect on Opinion Expression on SNS

The fourth study of this dissertation draws on the findings of the second and third studies and aspires to further disentangle the influence of the audience on people's outspokenness on SNS. Approaching the stage of opinion expression proposed in this thesis's research model (see Figure 2), the previous studies of this work indicated that perceptions in relation to the audience on the social networking platform Facebook can have an impact on people's willingness to voice their opinion on a controversial topic. Specifically, the qualitative data of the second study indicated that people perceive the audience on Facebook as relatively large and that a larger audience of a controversial discussion reduces people's willingness to express their opinion. Complementing this knowledge, the experimental data of the third study suggested that given an equally important audience at a face-to-face social gathering (including friends and potential future ties) and on Facebook, people are less likely to voice their opinion on Facebook than at a social gathering because they have a sense of losing control over their audience. This sense of losing control may be rooted in the fact that social media technologies such as Facebook blur the line between private and public spaces, creating a new form of "socially mediated publicness" which occasionally makes it difficult

for users to determine who the ultimate audience of one's postings or comments will be (Baym & boyd, 2012). Users may sometimes be confronted with a clearly defined audience (e.g., when exchanging private messages) and other times be met with an invisible public whose size and composition are seemingly impossible to estimate (e.g., in a public channel that is accessible for all Internet users). Thus, different levels of publicness in terms of the extent to which a message is accessible and visible to other people may create some variance in people's outspokenness. Within the spiral of silence theory, Noelle-Neumann (1994), early on, posited that knowing that one's opinion expression will be visible to a large group of people reduces the willingness to express one's opinion – independently of the prevailing opinion climate. Although this theoretical claim on situational publicness points to a boundary condition of the presumed silence mechanism, less research has been done to corroborate this proposition empirically.

This study seeks to fill the research gap by exploring how different levels of publicness could influence people's willingness to voice their opinion on a controversial topic on the social networking platform Facebook. To integrate the role of publicness into the theoretical framework of the spiral of silence, the effects of publicness will be connected – theoretically and empirically – to the driving force of the spiraling process: people's fear of isolation and its manifestations in different situations (Noelle-Neumann, 1993). Publicness, however, may have different effects on people's outspokenness depending on structural context factors such as the country's institutionalized freedom of speech. With that said, this study will explore the influence of online publicness in different societal contexts, conducting a cross-cultural comparison between Singapore and Germany.

7.1 Characterizing the Publicness Effect

To explain why empirical works on the silence hypothesis in online contexts on the Internet have yielded mixed results, the present dissertation suggested that situational variables may be responsible for these differences (see Chapter 2.3.3). More specifically, across the respective studies different online platforms and therefore different social situations served as settings for exploration. As outlined by research in offline realms, situational factors such as the size of the audience can moderate the effect of the prevailing opinion climate on people's communication behavior (Matthes & Hayes, 2014). Noelle-Neumann (1994) already elaborated on the effect of contextual factors and referred to the private versus public nature of a situation. She argued that the influence of the opinion climate on people's outspokenness may not be observable in too private (e.g., a conversation with family and friends) and in too

public situations (e.g., during a TV interview). The silence mechanism may only work in front of a relatively moderate public:

> Situations that are essentially private are not suited for this sort of inquiry – for example, the willingness to speak out in public (coram publico) that is important to the process of public opinion. Situations should, however, be chosen in which the "public" ("Everyone has access") is kept as small as possible […] The larger the public, the more personal characteristics – security, self-confidence, practice in speaking, education, role – will influence responses, independently of the climate of opinion. (p. 111)

The potential influence of the private versus public nature of a situation becomes more important when social networking sites, which are increasingly used as venues for discussing controversial topics (Gil de Zúñiga, Molyneux, et al., 2014; Vaccari et al., 2015), blur the lines between private and public by providing spaces with varying levels of publicness (Baym & boyd, 2012). In this study, publicness is defined as the potential reach of a communication channel in terms of how visible and easily accessible messages are or can become for members of society. Social media users may perceive a relatively low publicness when they are discussing issues within a closed interest group where the audience is relatively clearly defined. By contrast, on public spaces of SNS such as news channels (where no registration is required to access messages on the channel), users could feel a loss of control over who has access to their opinion expression as the audience may appear an unimaginable mass of people (Litt, 2012). With respect to people's behavior as a function of different levels of publicness, initial evidence showed that Facebook users with larger networks are less willing to talk about controversial topics such as politics on this platform (Jang et al., 2014; see results of this thesis's second study). Bateman, Pike, and Butler (2011) demonstrated that the perception of a greater publicness lowers the amount and breadth of people's self-disclosure. Similarly, Facebook users expressed concerns that online disclosures may become too public, so they avoid broadcasting information about themselves (Vitak & Ellison, 2013; see also Brandtzæg, Lüders, & Skjetne, 2010). Thus, it seems that the public nature of a situation influences the extent to which people disclose personal information and opinions. Surprisingly, the effect of publicness has not been investigated in the context of spiral of silence research. On this basis and relying on Noelle-Neumann's (1994) presumed power of a highly public situation, it is expected that a greater publicness on a SNS not only directly

reduces people's willingness to express their opinion on a controversial issue but also moderates the silence mechanism in the sense that it mitigates the effect of the opinion climate:

Hypothesis 1 (H1): People are more willing to express their opinion in a less public than in a highly public channel on SNS.

Hypothesis 2 (H2): The effect of congruence with the opinion climate on people's willingness to express their opinion is larger in a less public than in a highly public channel on SNS.

7.2 Explaining the Publicness Effect

When using social networking sites, individual perceptions of publicness are inevitably intertwined with a person's envisioning of the potential audience (Baym & boyd, 2012). The "imagined audience" is defined as the "mental conceptualization of the people with whom we are communicating" (Litt, 2012, p. 331). According to research on self-presentation (Goffman, 1959; Leary & Kowalski, 1990), human beings steadily envision the recipients of their utterances and tailor their communication behavior according to this particular audience. Owing to the absence of physical cues and (in many cases) the lack of audiovisual cues in computer-mediated communication, people are thought to mentally imagine the target of their disclosures (Marwick & boyd, 2011). Especially in contemporary online networks such as Facebook, which blur the boundaries between highly public and closed private spaces (Baym & boyd, 2012), users are met with difficulties in ascertaining the actual audience of a message (Bernstein, Bakshy, Burke, & Karrer, 2013). To determine the potential audience, social media users are assumed to make inferences about the size and the composition of the audience (Hayes, Smock, & Carr, 2015; Vitak, 2012).

With regard to perceptions of audience size, previous research revealed that users consistently underestimate the size of their audience when posting messages on Facebook (Bernstein et al., 2013). However, when the size of the audience is made salient to social media users, they are able to differentiate between small and large audiences and appear to feel more vulnerable when disclosing personal information to a larger audience (Moll, Pieschl, & Bromme, 2013).

The composition of the audience in social media has been described as a context collapse (Marwick & boyd, 2011), meaning that social groups from many different contexts

(close friends, family members, acquaintances, co-workers, and strangers) build the aggregate audience to whom the individual user is "speaking." In this regard, users were found to feel ambivalent about the context collapse: While Facebook users find it very efficient to be able to reach an entire network (e.g., when posting a status update), they also feel concerned about providing the same information to people from different social contexts (Vitak & Ellison, 2013). This is indicative of people being aware of the diversity of their "audience" in social networking sites.

Considering that people constantly envision their potential audience (Goffman, 1959; Leary & Kowalski, 1990), this study argues that people's perceptions of publicness will be based on estimates of the audience size and composition. Specifically, it is assumed that a greater publicness of a SNS channel, that is, a greater reach in terms of visibility and accessibility, will lead users to estimate the audience as larger and as more diverse.

Hypothesis 3 (H3): In a highly public channel on SNS, people perceive the audience (a) as larger and (b) as more diverse than in a less public channel.

Besides this, it seems pivotal to address why publicness, manifesting in the size and the composition of the audience, may influence people's communication behavior. In her understanding of the "public," Noelle-Neumann (1993) claims that a situation "in the spotlight," where one's statement is "for all to see, for all to hear" (p. 194), will be perceived as embarrassing by the individual. Further, Noelle-Neumann (1993) argued that the subjective unpleasantness of a highly public situation can be traced to human beings' fundamental fear of isolation as a larger public increases the pressure to create an impression that is approved or accepted equally by a large number of heterogeneous others. In line with this argument, the previous chapters of this work proposed that people's fundamental fear of isolation manifests differently depending on the social nature of the conversational situation. Empirically, Study 3 identified three situational manifestations of the fear of isolation which were termed as expected sanctions: The fear of being attacked (in the sense of being insulted by others), the fear of being rejected (in the sense of getting excluded or avoided by others), and the fear of being judged (in the sense of losing face and building a bad reputation). Drawing on this research, this study assumes that the size and composition of the audience define the social nature of a conversational situation and may elicit different types of expected sanctions.

In social media realms, it has already been discussed that the size and composition of the audience may be associated with individual fears and tensions when it comes to disclosing

personal information and opinions. Focusing on the size of the audience, Moll and colleagues (2013) posited that a "larger group is not only more difficult to control but necessarily contains more members that are less trusted" (p. 3093). Moreover, this work's third study showed that in online public spaces (an online forum and on Facebook), where the audience is relatively large, people perceive a greater fear of being attacked when expressing their opinion on controversial issues (compared with offline situations such as a social gathering or a bus ride). Given that 49% of people were found to have witnessed offensive behavior in social media (Rainie, Lenhart, et al., 2012) and people tend to presume an aggressive tone in controversial discussions in these environments (Vraga et al., 2015), one could assume that they also anticipate a greater likelihood of being attacked when expressing their opinion on a controversial topic in front of a large audience on SNS:

Hypothesis 4 (H4): The perception of a larger audience on SNS is related to a greater fear of being attacked when voicing one's opinion.

With respect to the composition of the audience, previous research demonstrated that users perceive a certain tension when disclosing information to groups from different backgrounds (Binder, Howes, & Sutcliffe, 2009). Hogan (2010) proposed that faced with a heterogeneous audience people may disclose the "lowest common denominator of what is normatively acceptable" (p. 383). While Vitak (2012) found a positive relationship between people's network diversity (defined as the number of different social contexts one's Facebook friends' list consist of) and the amount of personal disclosures, Kwon and colleagues (2015) revealed that the greater the network diversity of Facebook users, the more they tend to self-censor themselves when expressing personal opinions. Still, it remained unclear why network diversity is associated with self-censorship on social networking sites. The pattern that people are prone to hold back their opinions in front of a diverse audience on Facebook might be rooted in people's fear that their personal opinion might appear appropriate for some friends but not for others. Thus, they could expect that some members of the audience form a negative impression of them. As shown by the third study of this dissertation, the fear of being judged is positively associated with people's tendency to avoid expressing their opinion in social situations. Drawing on the concept of expected sanctions, it is expected that the greater the perceived diversity of the audience on SNS, the greater people's fear of being judged and rejected in the event that they express their opinion on a controversial issue:

Hypothesis 5 (H5): The perception of a more diverse audience on SNS is related to a greater fear of being (a) judged and (b) rejected when expressing one's opinion.

Since previous research suggested that people's fear of isolation reduced their willingness to express their opinion (Ho et al., 2013; Noelle-Neumann, 1993), this study applies this assumption to the conversational context of social networking sites. As outlined above, it is assumed that perceptions of size and composition of the audience (as a function of the publicness of the channel) lead users to have particular expectations of potential sanctions. Consequently, it is expected that the more intensely users expect social sanctions, the less willing they will be to express their opinion in front of the audience:

Hypothesis 6 (H6): The greater the expectations of being attacked, judged, and rejected, the less likely are people to express their opinion on SNS.

7.3 A Cross-Cultural Comparison of the Publicness Effect

The publicness of a situation may exert different effects on people depending on the extent to which people feel free to express their thoughts publicly in the country they are living. While social media technologies such as blogs or SNS were proposed to allow people to practice their freedom of opinion and expression (Coe, 2015), many regimes exert pressure on social media users to adhere to the principles of self-regulation in the sense of withholding seditious speech acts that may threaten social harmony (Rosenthal & Detenber, 2014). In such political systems, people's willingness to pronounce an opinion that is deviant from the national legislation or from the prevailing public opinion may be very sensitive to the social environment in which this potential opinion expression is about to take place. While previous cross-national spiral of silence research found that people from collectivistic cultures (e.g., in Singapore or Taiwan) are more likely to hold back their opinion when faced with a hostile opinion climate than people from individualistic cultures (e.g., in the U.S.; Huang, 2005; Lee, Detenber, Willnat, Aday, & Graf, 2004), it has not been systematically researched whether this pattern varies in concert with situational factors such as the publicness of a conversation. Especially governments of rather collectivistic countries place particular weight on social harmony, which may be threatened when citizens express their opinion on controversial topics in a highly public environment. Thus, it seems worthwhile to ask whether people from

collectivistic cultures are more likely to be subjects of the silence mechanism under conditions of high publicness than people from individualistic cultures.

To investigate cross-cultural differences of the influence of publicness, this study will compare the presumed effects between Germany and Singapore. Both countries were found to differ in their press freedom index (Reporters Without Borders, 2015), which indicates to what extent journalists, media institutions, and Internet users are free to express and disseminate information. In 2015, given a range from 0 (= *a maximum of freedom*) to 100 (= *a minimum of freedom*) points, Germany scores 11.47 and Singapore 45.87 (Reporters Without Borders, 2015). Therefore, these two countries appear to represent a certain variety in the institutionalized freedom of speech. Especially when exploring the effect of the publicness of a discussion, it seems commendable to consider subjects in their societal context and ask whether differences in institutionalized freedom of speech have an impact on people's communication behavior across different levels of online publicness:

> *Research Question 1 (RQ1)*: Are there differences regarding the publicness effect on people's willingness to express their opinion on SNS between Singapore and Germany?

7.4 Method

7.4.1 Design

In a 2 x 2 between-subjects factorial experiment, the level of publicness (high vs. low) and the opinion climate (congruent vs. incongruent with subjects' opinion) served as independent variables. The procedure of this study was approved by the local IRB at the division of Computer Science and Applied Cognitive Science at the University of Duisburg-Essen in Germany and at the Wee Kim Wee School of Communication and Information at the Nanyang Technological University in Singapore.

7.4.2 Sample

A total of 366 participants (173 in Singapore, 193 in Germany) completed a web-based experiment. As the experimental design required participants to have an opinion on a public issue, participants with no or a neutral opinion on the present study's focal topic (14.20%, $N = 52$: 43 in Singapore, 9 in Germany) were excluded from data analyses. Moreover, two cases with striking response patterns were removed as all items were

responded to with the same scale point. For data analyses, a final sample consisting of 312 subjects (240 females) was used. Participants' ages ranged from 18 to 63 years ($M = 22.35$, $SD = 4.46$). Of the participants, 128 (93 females) were recruited in Singapore (age: $M = 20.16$, $SD = 1.36$; range: 18–25 years) and 184 (147 females) took part in Germany (age: $M = 23.87$, $SD = 5.18$; range: 18–63 years). The sample in Singapore was gathered via a departmental subject pool at the Nanyang Technological University that offered students course credit for research participation. Here, the sample consisted of 92.2% Chinese, 2.3% Malay, 2.3% Indian, and 3.1% other. In Germany, the sample was recruited by posting participation invitations in German student groups on Facebook (named, e.g., "surveys" or "Study Life and Work"). In the German sample, 88.6% of participants were university students, 3.3% employees, 1.6% unemployed, 1.1% apprentices, and 1.1% public servants. In terms of origin, 82.1% were German (as they indicated not having migrant background), 4.3% were from Russia, 1.6% were from Poland, 1.6% were from Turkey, while the rest originated from other countries or did not specify their country of origin.

As required for study participation, all subjects were Facebook users and the majority used Facebook every day (79.5%) or at least once or several times a week (16%).

7.4.3 Stimulus Material

The stimulus material was a Facebook screenshot created with a graphics editing software that displayed a post alongside user-generated comments on a current public debate. As suggested by the spiral of silence theory (Noelle-Neumann & Petersen, 2004), the silence mechanism can only occur in the context of controversial and moral-laden issues. Thus, the public debate on adoption rights for homosexual couples was selected because this topic is potentially controversial in both countries involved in the present study. Debates around LGBT rights have already been identified as highly controversial and were therefore used by previous research in Germany and in Singapore (cf. Study 1 of this dissertation; Ho et al., 2013). A control measure within the present study asking participants for the perceived public controversy of this topic ("To what extent is the adoption right for homosexuals a controversial issue in Singapore/Germany?" on a scale from 1 = *not controversial at all* to 7 = *highly controversial*) revealed that subjects' perceived controversy of the topic did not differ significantly between the two countries, Singaporean sample: $M = 5.66$, $SD = 1.40$, German sample: $M = 5.40$, $SD = 1.33$, $t(310) = 1.62$, *n.s.*.

The Facebook screenshot showed a message in the form of a meme posted by a fictional channel with the neutral names "Singapore Today" vs. "Germany Today" (see

Figure 8). This meme included a picture with the shadow of two men holding hands with a child and displayed two text lines neutrally opening a discussion on this debate: "Adoption rights for homosexuals – right or wrong?" The two experimental manipulations were included in the visual context of this meme.

Manipulation of the publicness level

The publicness level of the communication channel on Facebook was manipulated by embedding the meme alongside comments either in a public channel or in a closed group on Facebook. In the stimulus version displaying a high level of publicness, the meme was shown without any contextual cue as it is presented on public channels on Facebook. By contrast, the stimulus version with a lower level of publicness (i.e., in a closed Facebook group) showed the explicit clue "Closed group" and a short group description on the right side of the screenshot (as was common on Facebook at the time the study was conducted). In order to ensure that participants noticed the different publicness levels, an instruction was implemented before presenting the stimulus, reading either: "The post and comments that are shown here were taken from a *public Facebook page*. A public Facebook page is an *open virtual space* for group communication. Contributions made by users on this page can be seen by (1) people who "liked" this public page, (2) the Facebook friends of the person who commented, and (3) by non-Facebook users who visit this public Facebook page"; or "The post and comments that are shown here were taken from a *closed Facebook group*. This kind of Facebook group is a *closed virtual space* for group communication. Contributions (e.g., comments) made by users in this group can be seen only by people who are members of this group." After stimulus exposure, participants were asked to estimate on a 7-point scale from 1 = *strongly disagree* to 7 = *strongly agree* how public the presented discussion on Facebook was. This manipulation check included four items such as, "The discussion is open for any Internet user to view" or "The discussion is really easy to access" (Cronbach's $\alpha = .94$), which followed the definition of publicness outlined above. A two-factorial ANOVA including the experimental manipulation of publicness and country as fixed factors revealed a significant main effect of the manipulation on the perceived publicness in the intended direction, $F(1,308) = 197.25$, $p < .001$, $\eta_p^2 = .39$, low level of publicness: $M = 3.58$, $SD = 1.70$, high level of publicness: $M = 5.95$, $SD = 1.12$. Moreover, the ANOVA showed that the Singaporean sample ($M = 4.92$, $SD = 1.60$) generally perceived a higher level of publicness than did the German sample ($M = 4.64$, $SD = 2.02$), $F(1,308) = 4.71$, $p = .031$, $\eta_p^2 = .02$. Likewise, an interaction effect of both factors on perceived publicness was found, $F(1,308) =$

16.36, $p < .001$, $\eta_p^2 = .05$, indicating that the experimental variations of publicness were perceived more clearly in the German sample (low level: $M = 3.15$, $SD = 1.64$; high level: $M = 6.06$, $SD = 1.12$) compared with the Singaporean sample (low level: $M = 4.15$, $SD = 1.60$; high level: $M = 5.76$, $SD = 1.12$).

Manipulation of the opinion climate

Following previous research demonstrating that user-generated comments can shape people's perception of prevailing opinion climates (the first study in this dissertation; Lee, 2012; Lee & Jang, 2010), the meme was presented alongside four comments that held either a supportive or an opposing stance on adoption rights for homosexual couples. The argument quality of these comments was kept constant, as this factor was shown to moderate the persuasiveness of user-generated comments (Winter et al., 2015). Thus, comments expressed very general arguments in favor of (e.g., "I think this adoption right is the right way – A definite yes!") or against adoptions rights, (e.g., "This adoption right would be a negative signal that we should not discuss anymore."). Furthermore, the wording of the comments was systematically mirrored in pro and con comments in order to prevent persuasive differences between the experimental conditions (e.g., "We should support the right for homosexuals to adopt children in Singapore/Germany – this will advance our society" vs. "We should not support the right for homosexuals to adopt children in Singapore – this will harm our society."). The experimental design required subjects to be presented with either an opinion climate that supported their pre-existing opinion (condition: congruent opinion climate) or an opinion climate that opposed their viewpoint (condition: incongruent opinion climate). When starting the web-based experiment, participants were randomly assigned to the congruent versus incongruent conditions. Depending on the assigned condition and whether participants expressed a supportive or opposing stance toward adoption rights for same-sex couples (before stimulus exposure), they were presented with supportive or opposing user-generated comments. As a manipulation check, participants were instructed to rate on a 7-point scale whether the stances held in the presented comments were congruent with their opinion or not (three items such as, "The opinions expressed in the comments are in line with my personal opinion;" Cronbach's $\alpha = .92$). A two-factorial ANOVA with the manipulation of congruence and country as fixed factors revealed a successful manipulation, $F(1,308) = 623.03$, $p < .001$, $\eta_p^2 = .67$, indicating that participants exposed to an friendly opinion climate ($M = 5.62$, $SD = 1.25$) perceived a higher congruence with their opinion than participants confronted with a hostile opinion climate in the comments ($M = 2.04$, $SD = 1.32$). An interaction effect of

condition and country was found, $F(1,308) = 63.38$, $p < .001$, $\eta_p^2 = .17$, revealing that the congruence manipulation elicited greater differences in the German sample (congruence: $M = 6.02$, $SD = 1.18$, incongruence: $M = 1.55$, $SD = 0.92$) than in the Singaporean sample (congruence: $M = 5.02$, $SD = 1.12$, incongruence: $M = 2.71$, $SD = 1.50$).
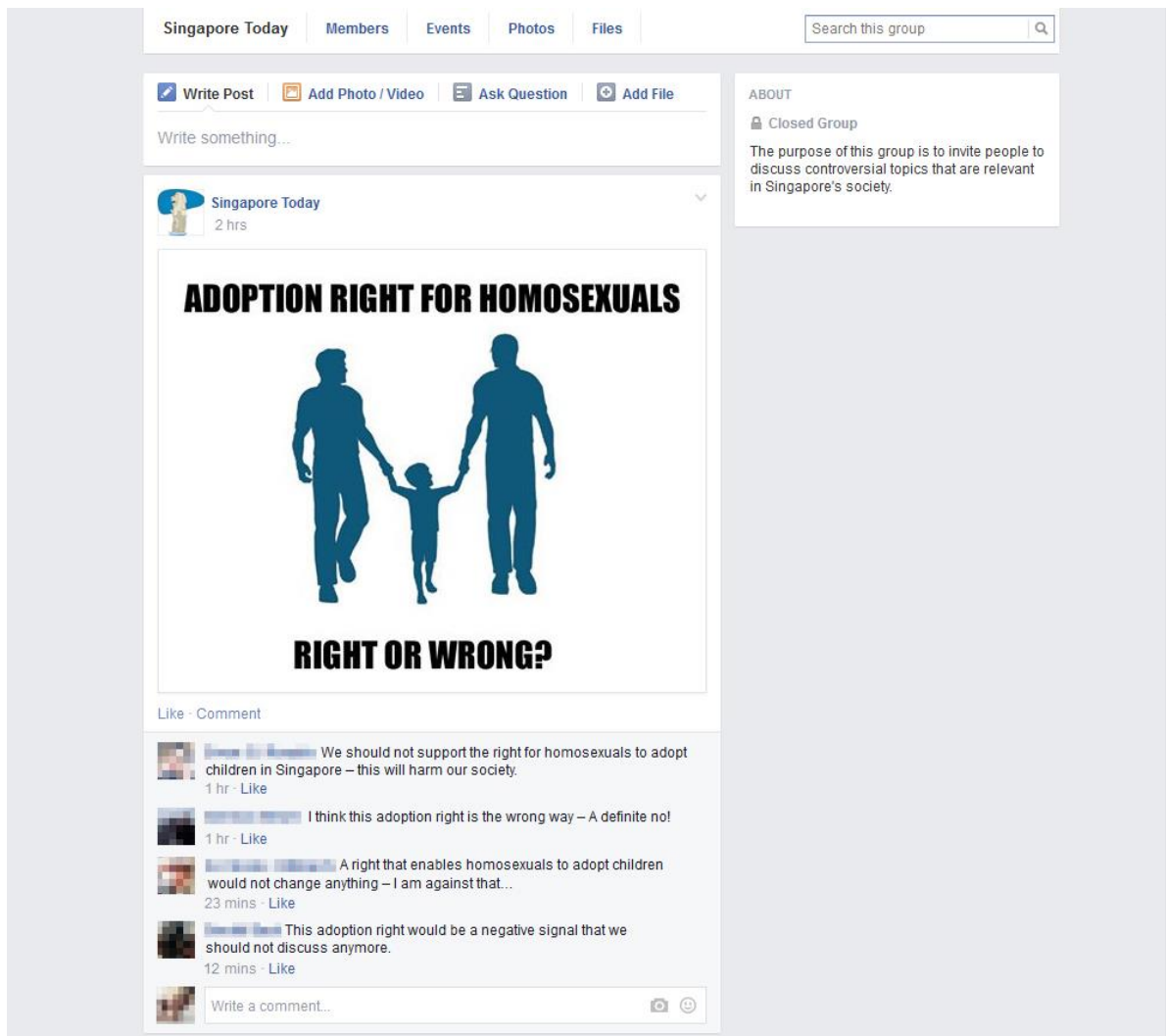
Figure 8. Example of the stimulus material showing a Facebook posting in a closed group.

7.4.4 Measures

Discursive use of social networking sites

The extent to which participants' habitually use social networking sites to disseminate or contribute to discussions about political and societal issues was measured by items such as, "How often do you use Facebook in order to provide information on political or societal issues?" or "How often do you use Facebook in order to express your opinion on political or

societal issues?" Subjects were instructed to respond to these statements on a 5-point scale from 1 = *never* to 5 = *always*. A higher mean reflected a more frequent discursive use (Cronbach's α = .80).

Privacy attitudes

As people's behavior in public may be contingent on their general appraisal of privacy (Dienlin & Trepte, 2015), people's general privacy attitudes were assessed as control variables. Based on measures proposed by Dienlin and Trepte (2015), participants' attitudes toward different dimensions of online privacy were considered. More specifically, subjects were instructed to evaluate particular behaviors that protect or threaten informational, psychological, and social privacy on social networking sites. On a 7-point semantic differential scale (including six items such as "not useful/very useful" or "very bad/very good" for each privacy dimension), participants expressed their attitudes toward informational ("I think that giving information on Facebook that identifies me [e.g., my name] is...," Cronbach's α = .85), psychological ("I think revealing my personal thoughts, feelings, attitudes, and values on Facebook is ...," Cronbach's α = .88), and social privacy behaviors ("I think that determining who has access to my comments and updates on Facebook is...," Cronbach's α = .82). After recoding the items, higher means represented more positive attitudes toward these privacy behaviors.

Pre-existing opinion

Before stimulus exposure, we assessed which stance subjects hold toward adoption rights for homosexual couples. As measured by previous research (e.g., Zhang & Reid, 2013), participants had to state their opinion on a 7-point scale from 1 = *I strongly oppose [topic]*, 4 = *I neither support nor oppose [topic],* to 7 = *I strongly support [topic]*. This measure was used to identify those participants who had no opinion or a neutral one on this topic (as these cases were excluded from analyses; see Chapter 5.5.4). Subsequently, participants were asked to make a dichotomous decision in favor of or against the adoption rights ("If you had to decide whether to oppose or to support the adoption right for homosexuals in Singapore, what would you do?"). Participants' answers on this dichotomous measure were used in the algorithm determining the stimulus material that is presented – depending on whether subjects were assigned to the congruence or incongruence condition. In terms of the opinion distribution, among the German participants, 90.2% (*n* = 166) supported the adoption right

while 9.8% (*n* = 18) opposed it. Among the Singaporean sample, 68% (*n* = 87) of participants were in favor of the adoption right and 32% (*n* = 41) were against it.

Opinion certainty and issue importance

Opinion certainty was measured by one item ("How certain are you in your opinion about the adoption right for homosexuals in Singapore/Germany?"; Matthes et al., 2010) on a 6-point scale from 1 = *very uncertain* to 6 = *very certain*. The personal importance people attribute to the focal topic was assessed by one item ("How important is the issue of adoption right for homosexuals in Singapore/Germany for you?") on a 7-point scale from 1 = *not important at all* to 7 = *very important*. For both measures, higher means reflected a higher certainty/importance.

Perceived opinion climate

To control how subjects generally perceived the prevailing opinion climate toward adoption rights (before stimulus exposure), they were asked to estimate the percentage of people who (a) support, (b) neither support nor oppose, and (c) oppose the adoption rights. The estimates should be made for three different groups: the national population, people in participants' Facebook friends list, and people in participants' personal network. Participants were asked to sum up their estimates to 100%. Based on their dichotomous choice of supporting or opposing the adoption rights (see above), three new variables were generated representing the percentage of people (in all three groups) who support subjects' stance on this topic. These variables were labeled *perceived congruence with the national population/Facebook friends list/personal network*. A higher percentage expressed in these variables indicated more support participants perceived for their opinion.

Political interest

Participants' general political interest was measured based on the short scale for political interest suggested by Otto and Bacherle (2011). This scale features five items such as "I observe political events with great interest" on a 5-point scale from 1 = *strongly disagree* to 5 = *strongly agree*. Higher means indicated greater political interest (Cronbach's α = .90).

Fear of isolation

Hayes and colleagues (2013) fear of isolation scale assessed subjects' general tendency to fear being ostracized. Participants rated five items on a 5-point scale from 1 =

strongly disagree to 5 = *strongly agree*. Higher means reflected a greater fear of isolation (Cronbach's α = .82).

Individualism and collectivism

Participants' individualistic and collectivistic scores were measured using the concept of horizontal and vertical individualism and collectivism (Triandis & Gelfand, 1998). The corresponding 16-item scale covers people's tendency to see themselves as (a) part of a collective with a hierarchy (vertical collectivism; 4 items, Cronbach's α = .64), (b) part of a collective where all members are seen as equal (horizontal collectivism; 4 items, Cronbach's α = .65), (c) an autonomous person who feels that people are unequal (vertical individualism; 4 items, Cronbach's α = .72), and (d) an autonomous person who feels that people are equal (horizontal individualism; 4 items, Cronbach's α = .61). All items were measured on a 5-point scale from 1 = *never or definitely no* to 5 = *always or definitely yes*. The results of *t*-tests for independent samples with country (Singapore vs. Germany) as independent variable revealed that while the German and Singaporean samples did not differ with regard to collectivism (neither vertical nor horizontal), the Singaporean sample scored higher in vertical (*M* = 3.19, *SD* = 0.68) and horizontal (*M* = 3.94, *SD* = 0.56) individualism than the German sample did (vertical: *M* = 2.80, *SD* = 0.75; horizontal: *M* = 3.73, *SD* = 0.61). These differences were statistically significant, vertical: $t(310)$ = 4.65, $p < .001$, Cohen's d = 0.54, horizontal: $t(310)$ = 2.96, p = .003, Cohen's d = 0.36. These findings should be kept in mind for the interpretation of the results.

Likelihood of responses

After stimulus exposure, as dependent variable, participants estimated their likelihood of contributing to the discussion and expressing their opinion by commenting on the presented post. This item was assessed on a 7-point scale from 1 = *not likely at all* to 7 = *very likely*.

Perceptions of the audience

Participants were instructed to think of the people who could see their comment within this discussion (in the event that they contributed to the discussion). In this regard, two items covered the perceived size of the audience ("The group of people who could see my comment within this discussion is huge;" Cronbach's α = .82) and two items referred to the relational diversity of the audience ("The group of people who could see my comment within this

discussion includes people with whom I have different relationships [e.g., some are close friends, some are strangers];" Cronbach's α = .74). Both constructs were rated on a 7-point scale from 1 = *strongly disagree* to 7 = *strongly agree*, such that higher means indicated the perception of a greater size and a greater diversity.

Expected sanctions for expressing one's opinion

To assess participants' expectations of sanctions for expressing their opinion in the given situation, 32 items developed for the second study of this dissertation were employed. Building on the instruction, "Please imagine you would have contributed to the discussion on Facebook. Would you expect negative consequences in case you have expressed your opinion in this context?" Participants expressed the extent to which they expected diverse sanctions such as "being ignored" or "getting attacked publicly" on a 7-point scale. The number of items was reduced to factors by computing an exploratory factor analysis. The resulting empirical eigenvalues were used in a subsequent parallel analysis (Horn, 1965) to determine an appropriate number of factors. The empirical eigenvalue from the first (18.50), second (2.69), and third (1.73) factors was higher than the eigenvalues proposed by the parallel analysis (1st factor: 1.75, 2nd factor: 1.65, 3rd factor: 1.60). However, the eigenvalue from the fourth factor suggested by the parallel analysis (1.54) was higher than the empirical eigenvalue from the fourth factor (1.17). Since the parallel analysis indicated a three-factor solution, a second exploratory factor analysis (principal axis analysis and promax rotation) considering a fixed number of three factors was calculated. In the pattern matrix, 19 items indicated a low main factor loading (< .5) and/or a high parallel loading (> .2). After removing these items, a third exploratory factor analysis (principal axis analysis and promax rotation) based on 13 items yielded three factors that explained 70.87% of the variance (see Table 13 for factor loadings): Factor 1 labeled *fear of being judged* comprised seven items referring to the fear of losing one's face or losing relationships because of one's outspokenness (Cronbach's α = .94). Factor 2 named *fear of being rejected* consisted of three items dealing with the expectation of others avoiding oneself (Cronbach's α = .89). Factor 3 as the *fear of being offended* included three items referring to the expectation of others arraigning one's statement (Cronbach's α = .87). The fear of being offended is used as a proxy for the variable fear of being attacked considered in the hypotheses. The higher the mean of these factors, the greater the subjects' expectations of being sanctioned.

Table 13

Factor loadings of the three variables representing the expected sanctions (Study 4)

I would fear …	1	2	3
Factor 1: Fear of being judged			
...losing potentially important relationships.	**.956**	.023	-.145
...experiencing negative consequences on a personal and/or professional level in the future.	**.915**	-.110	.031
...losing my face.	**.899**	.072	-.049
...building a bad reputation.	**.895**	-.079	.100
...being personally persecuted.	**.776**	.002	.094
...becoming the "loser" of the discussion.	**.589**	.097	.157
...not having enough arguments to present my point of view.	**.585**	.132	-.061
Factor 2: Fear of being rejected			
...being avoided by others.	.094	**.867**	-.006
...being ignored by others.	-.095	**.852**	.024
...getting excluded by others.	.095	**.747**	.051
Factor 3: Fear of being offended			
...a mass of people talking insistently to me.	.025	-.045	**.871**
...getting attacked publicly.	.096	.004	**.790**
...others showing no understanding for my opinion.	-.107	.113	**.776**

Note. Main factor loadings are in bold type.

7.4.5 Procedure

After following the URL to the web-based experiment (announced as an experiment on communication behavior on Facebook), subjects were randomly assigned to one of the four experimental conditions. The first part of the questionnaire included questions on participants' Facebook use, general media use, privacy attitudes, pre-existing opinion, opinion certainty, importance of the study's focal issue, the perceived opinion climate on this topic, political interest, fear of isolation, horizontal and vertical individualism and collectivism. After presentation of the stimulus, participants were asked to state the likelihood of them responding to the stimulus, their perception of the audience in the given scenario, expected sanctions, perceptions of the publicness and the opinion climate of the stimulus (serving as manipulation check), and sociodemographic characteristics. While the Singaporean sample was rewarded with course credit, participants from the German sample received the chance to

participate in a lottery for four gift cards from an online retail shop. On the last page of the online experiment, subjects were debriefed.

7.4.6 Data Analysis

Hypotheses 1–2 were tested with the software SPSS version 22.0. By employing hierarchical regression analyses, two models (one for the German and one for the Singaporean sample) with participants' likelihood of contributing to the presented discussion as dependent variable were calculated. In both models, the first four steps included those variables that were identified as significant predictors of people's willingness to express their opinion by previous research (see theoretical section); Steps 5 and 6 considered the main independent variables of the present work and their interaction terms. The following variables were entered in all three models: Step 1: Sex, age, political interest, and fear of isolation. Step 2: Informational, psychological and social privacy attitudes, discursive use of social networking sites. Step 3: Opinion certainty and issue importance. Step 4: Perceived opinion congruence with the national population, people on one's Facebook friends list, and personal network (all three variables were mean-centered according to Cohen et al., 2003). Step 5: Publicness of channel, opinion climate (since group sizes were not equal in the conditions, both variables were weighted effects-coded, see Cohen et al., 2003). Step 6: Interaction terms of the experimental factors: Publicness x opinion climate and interaction terms of publicness and the perceived opinion congruence with all three social groups (publicness x congruence with national population, publicness x congruence with people on Facebook friends list, and publicness x congruence with personal network). All interactions terms were calculated by multiplying the mean-centered and weighted effects-coded variables.

To test Hypotheses 3–6, two structural equation models (one for each country) were computed using AMOS 22.0 with maximum likelihood estimation. The goodness of model fit was determined based on established indices with cutoff criteria recommended by Byrne (2010) and Hu and Bentler (1999). Accordingly, models with a nonsignificant χ^2, a minimum discrepancy statistic (CMIN/df) below 2.0, a comparative fit index (CFI) above .95, a Tucker–Lewis index (TLI) above .95, a root mean square error of approximation (RMSEA) below .06, and a standardized root mean squared residual (SRMR) below .06 can be considered as good fitting models. The assessment of normality indicated that multivariate normality was violated for data of the German sample (Mardia's normalized estimate of multivariate kurtosis: c.r.$_{Germany}$ = 7.53), and the nonparametric bootstrapping technique (maximum likelihood with 5,000 bootstrap samples and 95% bias-corrected confidence intervals) was used for estimating

all parameters (cf. Byrne, 2010). The bootstrap procedure supported the significant relationships reported below. There was no deviation from multivariate normality in the Singaporean sample (c.r.$_{Singapore}$ = 4.54). The subjects' usual discursive use of social networking sites and social privacy attitudes were included as covariates in the models.

7.5 Results

H1 assumed that a greater publicness of a communication channel lowers people's likelihood to express their opinion. As can be seen in Table 14, the expected effect was found for the German sample, β = -.18, p = .002, while no significant relationship between channel publicness and likelihood of expressing one's opinion was found for the Singaporean sample. Therefore, *H1* was only supported for the German sample.

H2, which expected an interaction effect of publicness and opinion climate on people's likelihood to express their opinion, was not supported by any of the two models. However, for the German sample, a marginally significant interaction effect of the publicness level and the perceived opinion climate among one's Facebook friends was found, β = -.16, p = .066 (see Table 14). A simple slope analysis (see Figure 9) showed that when confronted with a low level of publicness on Facebook, people were more likely to express their opinion when they perceived a higher congruence with their Facebook friends than when perceiving a lower congruence, b = .02, SE_b = .01, t = 3.04, p = .003. This effect of perceived congruence with Facebook friends, however, was absent when subjects were confronted with a greater publicness, b = -.01, SE_b = .01, t = .70, p = .487. While *H2* was not supported in the sense it was meant (regarding the opinion climate among present commenters), for the German sample, the assumed pattern was found with respect to the opinion climate among the people in one's Facebook friends list.

Table 14

Hierarchical multiple regression analyses including main and interaction effects on the likelihood of opinion expression (Study 4)

	Likelihood of opinion expression									
	Singapore					*Germany*				
	b (SE_b)	β	t	p	ΔR^2	b (SE_b)	β	t	p	ΔR^2
Step 1					.033					.058
Sex (1 = male / 2 = female)	.15 (.39)	.04	.38	.703		.58 (.36)	.12	1.64	.104	
Age	.13 (.13)	.12	1.06	.291		.02 (.03)	.04	.54	.589	
Political interest	.23 (.18)	.12	1.30	.195		.45 (.16)	**.22**	2.88	.005	
Fear of isolation	.21 (.18)	.11	1.18	.240		.24 (.19)	.09	1.22	.224	
Step 2					.243					.227
Informational privacy attitude	.13 (.16)	.08	.83	.407		-.02 (.13)	-.01	-.12	.908	
Psychological privacy attitude	-.55 (.14)	**-.36**	-3.86	< .001		-.15 (.13)	-.08	-1.13	.261	
Social privacy attitude	-.14 (.12)	-.09	-1.13	.260		-.37 (.12)	**-.20**	-3.02	.003	
Discursive use of SNS	.62 (.18)	**.30**	3.44	.001		.91 (.16)	**.44**	5.86	< .001	
Step 3					.040					.064
Opinion certainty	.06 (.12)	.05	.55	.584		.34 (.12)	**.19**	2.82	.005	
Issue importance	.16 (.09)	.17	1.85	.067		.12 (.07)	.12	1.71	.090	
Step 4					.012					.008
Opinion congruence with nation	-.01 (.01)	-.07	-.87	.385		-.01 (.01)	-.07	-.93	.354	
Opinion congruence with Facebook friends	.00 (.01)	.02	.26	.798		.01 (.01)	.06	.69	.489	
Opinion congruence with personal network	-.01 (.01)	-.08	-.83	.409		-.01 (.01)	-.07	-.82	.416	
Step 5					.008					.077
Publicness	-.08 (.14)	-.05	-.53	.598		-.35 (.11)	**-.18**	-3.07	.002	
Opinion climate	.14 (.13)	.08	1.02	.308		-.43 (.12)	**-.22**	-3.67	< .001	
Step 6					.009					.013
Publicness x opinion climate	.12 (.14)	.07	.84	.404		.06 (.11)	.03	.51	.608	
Publicness x congruence nation	-.00 (.01)	-.05	-.56	.579		.00 (.01)	.00	.03	.976	
Publicness x congruence Facebook	.01 (.01)	.06	.56	.574		-.01 (.01)	-.16	-1.85	.066	
Publicness x congruence network	-.00 (.01)	-.04	-.35	.727		.01 (.01)	.12	1.39	.167	
Total R^2					.344					.447

Step 1	$F(4,123) = 1.06, p = .381$	$F(4,179) = 2.76, p = .029$
Step 2	$F(8,119) = 5.68, p < .001$	$F(8,175) = 8.73, p < .001$
Step 3	$F(10,117) = 5.40, p < .001$	$F(10,173) = 9.29, p < .001$
Step 4	$F(13,114) = 4.27, p < .001$	$F(13,170) = 7.27, p < .001$
Step 5	$F(15,112) = 3.77, p < .001$	$F(15,168) = 8.58, p < .001$
Step 6	$F(19,108) = 2.99, p < .001$	$F(19,164) = 6.97, p < .001$

Note. Values in bold indicate significant relationships.
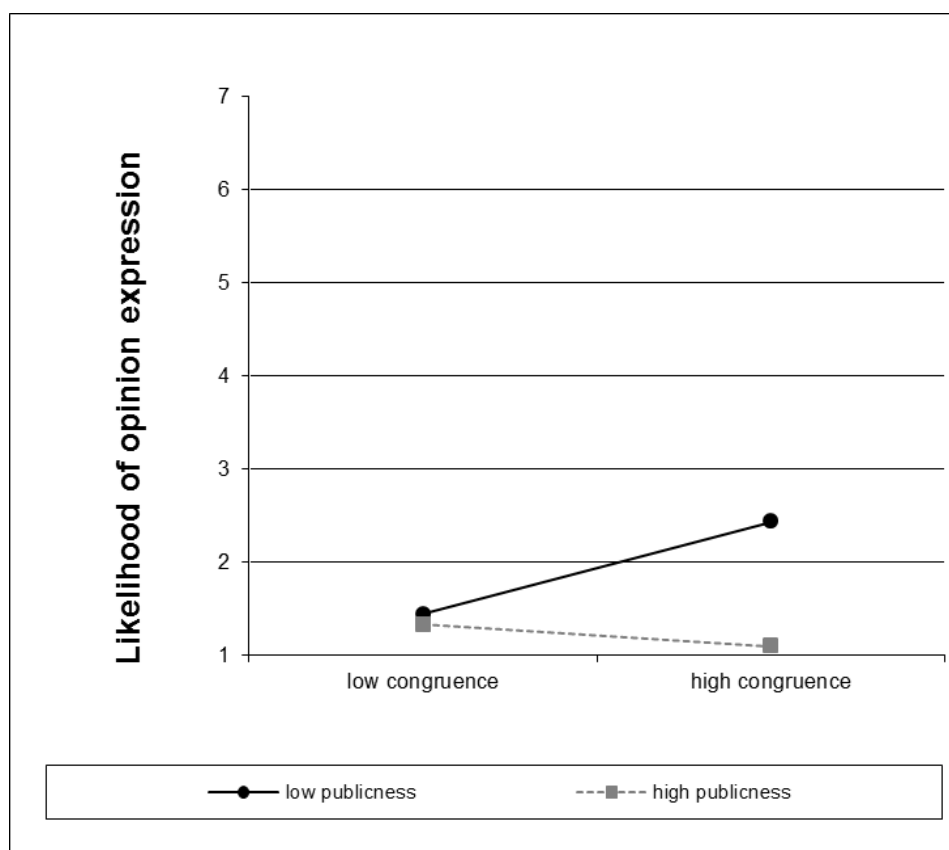
Figure 9. Simple slopes for the likelihood of opinion expression, including the interaction between the level of publicness and the perceived congruence with the opinion climate (German sample).

Besides findings related to the hypotheses, it should be noted that in the hierarchical regression analyses, further predictors were identified as crucial (see Table 14): While the experimentally manipulated opinion climate did not predict significantly subjects' outspokenness in Singapore, a significant relationship was found for the German sample, $\beta = -.22$, $p < .001$. However, the direction of this significant association contradicts the silence hypothesis: The relationship between opinion congruence with commenters and likelihood of expressing one's opinion was negative, indicating that the lower the congruence with the opinion promoted in the comments, the more likely people in the German sample were to express their opinion in this discussion. Moreover, in the German sample, subjects self-stated likelihood of expressing their opinion was predicted by their political interest, $\beta = .22$, $p = .005$, social privacy attitude, $\beta = -.20$, $p = .003$, discursive use of social networking sites, $\beta = .44$, $p < .001$, opinion certainty, $\beta = .19$, $p = .005$, and issue importance, $\beta = .12$, $p = .090$. In the Singaporean sample, subjects' psychological privacy attitude, $\beta = -.36$, $p < .001$, discursive use of social networking sites, $\beta = .30$, $p = .001$, and perceived issue importance, $\beta = .17$, $p = .067$, were important determinants of the likelihood of voicing one's opinion. Please note that issue importance was a marginally significant predictor in both samples.

Tables 15 and 16 display descriptive values and bivariate correlations regarding the relationships expected in *H3–H6*. To test *H3–H6*, the hypothesized relationships were included in two structural equation models. Since perceived size and diversity of the audience significantly correlated in both samples (see Tables 15 and 16), they were allowed to co-vary in both models. The same was true for the three forms of expected sanctions that highly correlated with each other (see Tables 15 and 16). Fit indices indicated that both models fitted the data well. For the Singaporean sample, indices were: χ^2 (36) = 37.06, p = .420, CMIN/df = 1.03, CFI = 1.00, TLI = 1.00, RMSEA = .02 (90% confidence interval from .00 to .07), SRMR = .05. For the German sample, indices were: χ^2 (36) = 49.44, p = .067, CMIN/df = 1.37, CFI = .98, TLI = .96, RMSEA = .045 (90% confidence interval from .00 to .07), SRMR = .05. Standardized path coefficients are shown in Figure 10.

H3 assumed that a greater publicness will be positively associated with perceiving a greater size and a greater diversity of the audience. While these relationships were significant in the German sample, size: b = .89, SE_b = .23, β = .32, p < .001, diversity: b = 1.03, SE_b = .24, β = .39, p < .001, none of these relationships were found in the Singaporean sample. *H3* was therefore supported only for the German sample.

As predicted in *H4*, perceiving a larger audience on Facebook was positively related to a greater fear of being offended by the audience in the German sample, b = .29, SE_b = .08, β = .22, p < .001. In the Singaporean sample, a marginally significant relationship was found, b = .24, SE_b = .13, β = .18, p = .062. Again, *H4* received only support for the German sample.

With *H5*, it was expected that perceiving a greater diversity of the audience would be related to a greater fear of being judged and rejected. In the German sample, there was a weak albeit significant relationship between diversity and the fear of being judged, b = .19, SE_b = .07, β = .17, p = .009, but no significant relationship between diversity and the fear of being rejected. In the Singaporean sample, a significant relationship between perceived diversity of the audience and the fear of being judged was found, b = .40, SE_b = .15, β = .27, p = .008; however, diversity and fear of being rejected were not significantly related. *H5* was supported for the fear of being judged in both samples.

Table 15

Bivariate correlations and descriptive statistics of variables considered in H3–H6 (Singaporean sample)

	M (SD)	1.	2.	3.	4.	5.	6.
1. Level of publicness (low = 1 / high = 2)		-					
2. Size of the audience	4.81 (1.31)	.135	-				
3. Diversity of the audience	5.18 (1.10)	.134	.536**	-			
4. Fear of being judged	4.06 (1.49)	-.005	.173	.166	-		
5. Fear of being rejected	3.54 (1.56)	.035	.084	.113	.721**	-	
6. Fear of being offended	4.16 (1.61)	-.080	.128	.096	.837**	.585**	-
7. Likelihood of opinion expression	2.28 (1.55)	-.035	-.079	.018	-.041	.037	-.013

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

Table 16

Bivariate correlations and descriptive statistics of variables considered in H3–H6 (German sample)

	M (SD)	1.	2.	3.	4.	5.	6.
1. Level of publicness (low = 1 / high = 2)		-					
2. Size of the audience	4.81 (1.70)	.323**	-				
3. Diversity of the audience	4.73 (1.77)	.374**	.416**	-			
4. Fear of being judged	2.34 (1.45)	.087	.047	.100	-		
5. Fear of being rejected	2.91 (1.69)	.000	.034	-.090	.510**	-	
6. Fear of being offended	3.93 (1.86)	.015	.218**	.021	.513**	.597**	-
7. Likelihood of opinion expression	2.45 (1.92)	-.188*	-.013	-.032	-.055	.004	.073

*p < .05; **p < .01; ***p < .001
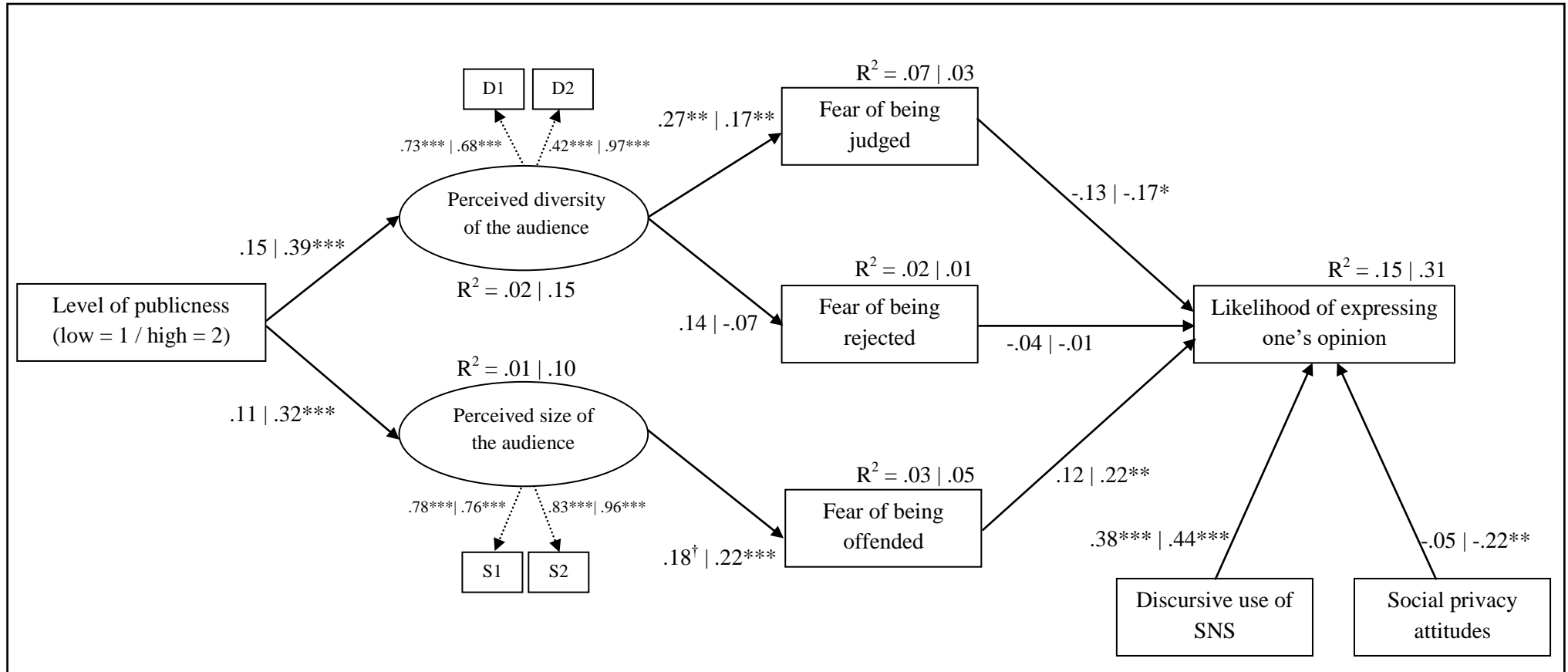
Figure 10. Structural equation models including standardized regression coefficients and squared multiple correlations (R^2). Numbers on the left side of the vertical line are estimates for the Singaporean sample / numbers on the right side of the vertical line are estimates for the German sample.

†$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$

H6 predicted that the fears of being attacked, judged, and rejected would lower people's likelihood to express their opinion on Facebook. In the German sample, the fear of being offended predicted people's likelihood of opinion expression. However, contrary to expectations, this relationship was positive, $b = .22$, $SE_b = .08$, $\beta = .22$, $p = .008$, indicating that the greater the fear, the higher the likelihood of opinion expression. By contrast, the fear of being judged determined the opinion expression likelihood as expected: A greater fear of being judged lowered people's likelihood of expressing their opinion, $b = -.22$, $SE_b = .10$, $\beta = -.17$, $p = .028$. The fear of being rejected was not significantly related to opinion expression, neither in the German nor in the Singaporean sample. In the latter, the fears of being offended and judged were not significant predictors of the likelihood of opinion expression either. Thus, *H6* was only supported for the fear of being judged in the German sample.

The bootstrapping procedure was also used to determine the indirect effects of the level of publicness and the perceived size and diversity of the audience on subjects' likelihood to express their opinion. In the German sample, the indirect effects of the publicness level, $\beta = .00$, $SE = .01$, $p = .651$, and the perceived diversity of the audience, $\beta = -.03$, $SE = .02$, $p = .093$, were not significant, while a weak indirect effect of the perceived size of the audience emerged as significant, $\beta = .05$, $SE = .02$, $p = .004$. In the Singaporean sample, the three indirect effects were not significant (publicness: $\beta = .00$, $SE = .03$, $p = .347$; diversity: $\beta = -.04$, $SE = .08$, $p = .296$; size: $\beta = .02$, $SE = .05$, $p = .265$).

RQ1 asked for cross-cultural differences regarding the publicness effect between Singapore and Germany. As shown by the regression models, publicness was a significant factor in the German but not in the Singaporean sample. Similarly, the predicted effects of publicness on the perception of the audience and subsequent fears were only found among subjects recruited in Germany but not among participants recruited in Singapore. To further illuminate the differences identified between Germany and Singapore, additional analyses were calculated. Generally, it should be considered that subjects' willingness to express their opinion did not vary significantly between both samples (see Table 17 for further values). While congruence of one's opinion with the perceived opinion climate among one's Facebook and personal network differed significantly between the Singaporean and the German sample (in the sense that Germans perceived a higher congruence than Singaporeans), none of the perceived opinion climates were significantly related to people's outspokenness on Facebook (see Table 17).

Table 17

Means and standard deviations of the likelihood of opinion expression and the opinion congruence with different groups separated by origin of the sample

| | Singapore | Germany | | | | |
	M (SD)	M (SD)	t	df	p	Cohen's d
Likelihood of opinion expression	2.28 (1.55)	2.45 (1.92)	-0.84	302.80	.404	-0.09
Opinion congruence with nation	35.85 (20.33)	36.63 (14.99)	-0.37	219.47	.714	-0.04
Opinion congruence with Facebook friends	41.03 (18.74)	51.55 (21.30)	-4.61	293.41	< .001	-0.52
Opinion congruence with personal network	42.75 (20.31)	60.17 (24.04)	-6.91	298.44	< .001	-0.78

7.6 Discussion

The purpose of the fourth study was (a) to cross-culturally test whether publicness (as a central characteristic of contemporary social media technologies) intervenes in the spiral of silence process and, if so, (b) to explain the publicness effect by focusing on situational manifestations of the fear of isolation.

The expected publicness effect was found in the German but not in the Singaporean sample: In a highly public Facebook channel that is accessible for all Internet users, German participants were less willing to express their opinion than in a closed group where messages are only visible to the group's members. This finding is consistent with initial social media research showing that when in front of a larger public, people are less willing to disclose personal information (Bateman et al., 2011; Brandtzæg et al., 2010; Jang et al., 2014). The current results also show that the publicness of a communication channel can override the silence mechanism that is proposed by the spiral of silence theory: In a closed Facebook group whose visibility and accessibility are restricted to its members, the greater the congruence German participants perceived between their own opinion and the opinion climate among Facebook users, the more likely they were to express their opinion. This is in line with Noelle-Neumann's (1993) prediction that perceived congruence with the opinion climate increases people's likelihood to voice their viewpoint. However, this mechanism was not observed when German participants were confronted with a highly public Facebook channel: Here, the perceived opinion climate did not have any effect on people's likelihood to speak out their opinion. While Noelle-Neumann (1994) claimed that the publicness of conversation

may influence or even undo the silence mechanism, this is the first empirical work providing preliminary evidence for the validness of a publicness effect on people's opinion expression behavior in a Western culture. Indeed, it seems that when the publicness increases, the prevailing opinion climate loses its influence.

Results for the German sample additionally revealed a main effect of the experimentally manipulated opinion climate contrary to the silence hypothesis: When faced with four comments which advocated an attitude toward adoption rights for homosexuals opposing the subjects' opinion, German participants were more inclined to pronounce their opinion than when facing a congruent opinion climate. This finding contradicts previous research that yielded support for the silence mechanism in online environments (Ho & McLeod, 2008; Kim et al., 2014; Miyata et al., 2015; Nekmat & Gonzenbach, 2013; Yun & Park, 2011). An explanation for this pattern may be offered by the findings related to Hypothesis 2: For German participants, it seems to be more important what *all* people in their Facebook network think about a controversial topic than the "micro" opinion climate among four unknown commenters (as they were shown in the stimulus material). Subjects might have perceived a certain opinion support on a macro-level, so that they were willing to speak out their opinion even in the face of four hostile commenters. Again, it should be noted that the macro-level opinion climate among all users in the subjects' Facebook network was influential under conditions of a low publicness level (see Figure 9).

The present findings also offer the first explanations for the publicness effect in a German sample: As expected, for social media users, a higher level of publicness means a larger and more diverse audience. Initial works already approached the concept of socially mediated publicness (see Bateman et al., 2011; Baym & boyd, 2012); however, a conceptual definition and empirical evidence of what a highly public platform means to users have not been presented before. The current research fills this gap and additionally shows why large and diverse online networks may increase users' concerns (Binder et al., 2009; Vitak & Ellison, 2013). Perceiving a greater size of the audience was associated with expectations of being potentially offended when subjects envisioned expressing their opinion in front of this audience. In line with previous works, users might perceive a larger audience as less controllable and predictable (Moll et al., 2013) because they might estimate that a larger audience increases the likelihood of encountering people who disagree with their opinion and thereupon show offensive behavior toward them (see also results of the second study). A greater diversity of the audience, that is, an audience consisting of people who have different relationships with the subject (e.g., close friends, co-workers, or strangers), was related to a

greater fear of being judged. This finding fits well with assumptions from self-presentation research: Goffman (1959) proposed that when people simultaneously encounter audiences from different contexts, it becomes difficult for them to equally fulfill every role they have in each and every one of these social circles (see Hogan, 2010). By expressing their opinion on a controversial topic on a highly public channel, users may envision the "risk" of not sustaining all of these constructed impressions, resulting in others judging them for not being consistent in their presentation. The fears of being offended and judged were proposed to be rooted in people's fear of isolation, which manifests in specific fears according to the situational circumstances (see Chapter 6.1) – in this case the size and the composition of the audience. Consistently with Noelle-Neumann's (1993) prediction that fear of isolation is the reason for people holding back their opinion in controversial debates, the current results revealed that the more intensely people fear being judged, the less likely were they to voice their opinion in public. The "lowest common denominator" (cf. Hogan, 2010) in front of a diverse audience seems to be keeping silent and not contributing to a controversial discussion at all. Surprisingly, the fear of being offended was positively related to people's likelihood of expressing their stance. This indicates that users accept the negative consequence of being offended when they aim to express their opinion in front of a large audience. Generally, it should be acknowledged that neither in the German nor in the Singaporean sample, was the indirect effect of the publicness level on people's willingness to express their opinion significant. This suggests that further or different mediators may explain the publicness effect to a greater extent.

The fact that the publicness effect was not found in the Singaporean sample may be explained partly by the data at hand and partly by the societal context. Results revealed that participants' self-reported likelihood to voice their opinion was determined by different privacy attitudes across both countries. In Germany, outspokenness was negatively predicted by social privacy attitudes, meaning that participants were less willing to express their opinion when they generally found it important to determine to whom their personal information is visible. This relationship pointing to the importance of audiences for German participants corroborates the observed effect of the publicness level in this sample. In Singapore, likelihood of opinion expression was negatively predicted by psychological privacy attitudes, meaning that subjects were more prone to hold back their viewpoint when they generally thought that it was essential to consider what kind of information they disclose. This pattern demonstrates not only the explanatory value of people's privacy attitudes when analyzing opinion expression behavior in contemporary social media technologies, but also the different

privacy priorities across both nations. As outlined in Chapter 7.3, Reporters Without Borders (2015) found a restricted freedom of speech in Singapore, meaning that media institutions, journalists, and Internet users engage in self-censorship in order to comply with the state's principles to maintain social harmony (see also Rosenthal & Detenber, 2014). When embedding the present findings in this context, one could speculate that on Facebook, subjects engaged in self-censorship in order to adhere to these norms in disregard of the prevailing opinion climate and the size or composition of the audience. In this context, it is noteworthy that for participants of the Singaporean sample, perceived publicness between the public channel and the closed group on Facebook did not vary as much as it did in the German sample. Hence, the Singaporean sample appeared to not differ that much regarding whether one's opinion is expressed in a closed group or in a public channel; Facebook as a mainstream communication channel seems to be generally seen as highly public and not as a protected space for opinion expression. Considering the political context as an explanation for the present results appears to be more suitable than attributing these patterns to differences in individualism and collectivism. As was shown by the corresponding measures, the Singaporean sample surprisingly scored higher in vertical and horizontal individualism than did the German sample. Therefore, it does not seem plausible to assume that subjects recruited in Singapore consistently held back their opinions owing to their collectivistic orientation (which was also supported by additional cross-cultural analyses). These results suggest that structural factors such as institutionalized freedom of speech could affect the way people perceive discursive spaces on (mainstream) social media platforms and the way they use it for political expression.

Limitations

For this study, the following limitations should be kept in mind. First, in the stimulus material, only one controversial topic was used. The issue of adoption rights for same-sex couples was selected to ensure a "cross-national comparability" (see Scheufele & Moy, 2000), as this topic is discussed controversially in both countries. While subjects' perceived controversy of the topic did not differ between both samples, in Germany, where LGBT rights are further developed, the risk of publicly expressing an opinion on this topic might be somewhat lower. However, results from regression analyses showed that none of the perceived opinion climates directly influenced participants' outspokenness in both countries. Despite the legislative and societal differences between Singapore and Germany, subjects' willingness to express their opinion does not seem to be primarily contingent on the

prevailing opinion climate. Nevertheless, it should be studied whether the observed effects also apply to further topics.

Second, while both variables – perceived size and composition of the audience – were controlled through measurements, the experimental design did not isolate both factors from each other. This was done in order to maximize ecological validity, as highly public channels on Facebook blend the size and diversity of the audience. Given that each of these variables seem to be connected to different expectations of sanctions, it appears fruitful to further identify the unique effects of these variables by systematically varying them. In this regard, an important question will be: Who do people envision as audience when they are confronted with an abstract and invisible mass of people? Which is the salient group in a user's mind when he/she is about to express his/her opinion on a controversial topic? Finding answers to these questions will help to further disentangle the influence of the audience in social media communication.

In sum, the fourth study has implications for the spiral of silence theory and for scholarship in the field of social media. One of the gaps in previous spiral of silence research has been the lack of specification of situational variables that intervene in the silence process. With the present findings, the publicness of a conversational situation has been proposed as an influence factor, which was also shown to be connected to situational manifestations of people's fear of isolation. Given that under conditions of high publicness on social networking sites, people (from Western countries at least) showed a reduced willingness to participate in societal debates, further research is needed in order to identify those who express themselves in these public discussions and explore the factors that drive their outspokenness. To this end, the fifth study of this dissertation aims to further examine the influence of the audience and how people deal with its diversity on SNS when it comes to controversial discussions.

8 Study 5: The Effect of the Audience on Opinion Expression on SNS

The fifth study seeks to further grasp the influence of the audience on people's willingness to participate in controversial discussions on SNS. While this thesis's research model (see Figure 2) proposed the audience as a factor that could have an impact on people's (political) outspokenness on social media, the fifth study will specify this claim by placing a

special focus on the individual's relationship to the audience. As outlined in the theoretical section (see Chapter 3), networked audiences in many social media environments have an unprecedented quality: On platforms such as Facebook, users encounter a juxtaposition of people from different personal contexts in their lives, comprising close friends, acquaintances, co-workers, and/or family members at the same time (Vitak, 2012). On the one hand, this particular one-to-many communication is perceived as beneficial since users are able to simultaneously reach many people from different subgroups when broadcasting personal information (e.g., about one's semester abroad) and seeking for help or support (e.g., when looking for how to configure a software; see Vitak & Ellison, 2013). On the other hand, this wide spectrum of various connections present in one's online network challenges users' capacity of judgment: For instance, on Facebook, it is not always easy to determine or to envision to whom a personal status update or a comment will be visible (Baym & boyd, 2012). Even if users are able to thoroughly envision the ultimate audience of a message, the interpersonal diversity within common online networks on Facebook raises concerns about the suitability of a personal message for this broad audience. As shown by the fourth study, given a relationally diverse audience on a highly public channel on Facebook (including not only familiar people but also strangers), German participants appeared to be concerned about how one's expression of opinion on a controversial topic might be perceived by others, eliciting the fear of being judged by the audience. This fear, in turn, reduced people's willingness to voice their opinion in a discussion on a politically and civically relevant topic. This finding corroborates previous results revealing users' concerns about the mass suitability of personal information on social media (Binder et al., 2009; Hogan, 2010; Kwon et al., 2015).

Although this line of research indicates the potential consequences of a relationally heterogeneous audience for people's communication behavior, it has been left open *which* of the different audiences collapsing on social media lead users to censor themselves because of fears of being judged and socially rejected. Previous spiral of silence research has rarely elaborated on whether and how the relationship to the audience could influence people's outspokenness given friendly versus hostile opinion climates (see Chapter 2.3.4); preceding studies of this dissertation, however, are indicative that the relational context of a situation may affect the social fears and concerns people perceive when it comes to expressing their opinion in the context of a controversial topic (see especially Studies 2 and 3). Following this idea, the fifth study is intended to isolate different levels of relational closeness to audiences on the social networking site Facebook and specify – theoretically and empirically – to what

extent relational closeness to an audience could serve as a boundary condition of the silencing process. More specifically, this study synthesizes arguments of the spiral of silence theory with claims from interpersonal and intergroup research and argues as follows: While people may perceive a greater fear of isolation with respect to a relationally closer audience compared with a relationally distant one, relational closeness goes hand in hand with an increased perceived predictability of the corresponding audience's cognitions (in this case: the opinion climate in this group) and behaviors (in this case: potential responses from this group to opinion deviants). Drawing on the latter argument, it is proposed that facing a relationally closer audience (in comparison with a confrontation with a relationally more distant audience) lowers people's expectations of sanctions from this particular group, increasing people's willingness to express their opinion in front of this audience, even when divergences of opinion are present. The subsequent chapters are devoted to these propositions in more depth and apply these mechanisms to the context of social networking sites.

8.1 Theoretical Premises on Relational Closeness to Audiences

One line of research that has incorporated the relational context into the silencing process has focused on the role of reference groups (Glynn & Park, 1997; Moy et al., 2001; Oshagan, 1996; Salmon & Kline, 1985; see Chapter 2.3.2.1). The rationale has been that for people, norms or opinions of some social groups in their environment are more important than the norms or opinions of others. Consequently, the most salient opinion climate for individuals may be that of their reference group (Salmon & Kline, 1985). As discussed in Chapter 2.3.2.1, some studies empirically showed that the opinion climate among one's reference group (e.g., family members or close friends) is a stronger predictor of people's outspokenness than the opinion climate among a more generalized group such as the national population (Moy et al., 2001; Oshagan, 1996). Moy and colleagues (2001) explained this pattern by drawing on the fear of isolation: "The possibility of isolation from a primary group would seem to be a more meaningful concern than isolation from society as a whole" (p. 9). This argument was supported by a current diary study on the determinants and effects of social ostracism (Nezlek et al., 2012). While people get ostracized more frequently by strangers or acquaintances than by close friends or relatives on an everyday basis, being excluded by people who are relationally closer is experienced as more negative than the exclusion by relationally distant others. On this basis, it seems plausible to assume that the individual's fear of isolation varies in accordance with the personal relevance of the social group. Specifically, the fear of isolation may be greater with regard to reference groups and

people to whom subjects maintain a close relationship than with respect to people who are relationally more distant. This social psychological premise is also expected to be valid in the context of social networking sites where people encounter audiences to whom they are related differently:

Hypothesis 1 (H1): The closer the relationship to a particular audience on SNS, the greater people's general fear of being isolated from this group.

Following this assumption, one could assume that given that the fear of isolation regarding a group of close friends is greater (than the fear of isolation from strangers), people would be more reluctant to express a deviant opinion in front of the former than the latter group in order to prevent the dissolution of these strong relationships. However, results of this dissertation's second study showed that people feel more comfortable expressing a deviant opinion when faced with people who are relationally closer than when faced with strangers. The qualitative data also offered a preliminary explanation for this pattern: People perceived the behavior of close friends as more predictable than the behavior of strangers (see Chapter 6.3.3.2). Research in the context of uncertainty reduction theory (Berger & Calabrese, 1975) and anxiety/uncertainty management theory (Gudykunst, 1995) has shown that people perceive a greater attributional confidence (as a synonym for predictive certainty or predictability) toward close friends compared with strangers (Gudykunst & Nishida, 2001; Gudykunst & Shapiro, 1996) and the more frequent people interact with each other, the higher the attributional confidence they develop toward each other (Clatterbuck, 1979). Consequently, in close relationships people perceive a greater ability to predict each other's beliefs, attitudes, and behaviors than in distant relationships. Before making assumptions of how this predictability plays a role in the silencing process, the second premise regarding the relational closeness to an audience on social networking sites is hypothesized:

Hypothesis 2 (H2): The closer the relationship to a particular audience on SNS, the more predictable people estimate this group to be.

The perceived predictability of the audience may operate on at least two levels: on a cognitive and on a behavioral level (cf. Berger, 1979, who refers to cognitive and behavioral uncertainty). Predictability on the cognitive level refers to being certain about other people's beliefs and attitudes, while predictability on the behavioral level represents a person's

certainty about how other people will behave in response to him-/herself. This two-level conceptualization of predictability may contribute toward explaining how people deal with different audiences when it comes to estimating (a) the opinion climate among this audience (based on cognitive predictability) and (b) the behaviors of these people in response to one's opinion expression (based on behavioral predictability). The following chapters will elaborate on these two processes in greater detail.

8.2 The Perception of Opinion Climates among Different Audiences

When people were asked to estimate the climate of opinion on a controversial topic among a social group, they were found to make inferences based on their own opinion (Ross et al., 1977; Wojcieszak, 2008), information given through media or during interpersonal discussions offline and online (Dvir-Gvirsman, 2015b; Eveland & Hutchens, 2013; Wojcieszak & Price, 2009; cf. results of this work's first study), and/or background knowledge about the target group (Zhang & Reid, 2013). When it comes to inferring the opinion distribution among a group that is relationally closer to individuals, people appear to base their estimates especially on their own opinion: In line with the false consensus effect, Goel, Mason, and Watts (2010) found that people tend to overestimate the opinion agreement between their social network on Facebook and themselves. More specifically, Hampton et al. (2014) documented that people perceive a greater opinion agreement with relationally closer than with relationally distant others. The first study of this dissertation also revealed that participants' personal opinion was associated to a greater extent with the perceived opinion climate among their reference groups (e.g., family members and close friends) than with the perceived opinion climate among the national population or other Facebook users (see Table 3). To replicate this evidence, it is further expected that:

> *Hypothesis 3 (H3):* The closer the relationship to a particular audience on SNS, the greater the congruence between one's opinion and the perceived opinion climate among this group.

Given the abundance of public issues and information in mass media, the accuracy of public opinion perception suggested by the spiral of silence theory has been questioned, asking whether people may be able to attend and process the opinion distributions regarding every public issue (e.g., Salmon & Kline, 1985; Shamir, 2014). When a person is asked to estimate how a group of people may think about a public issue such as legalizing euthanasia,

this could be a situation of uncertainty, as he/she may not have factual knowledge about these people's opinions. Still, this uncertainty might vary according to the relationship of the target group. Assuming that relational closeness to someone goes hand in hand with an increased predictability of this person or group (Gudykunst & Nishida, 2001), one could argue – based on the cognitive view of perceived predictability – that people feel more certain in estimating the opinion climate on a controversial issue among a relationally close audience than among a relationally distant group. While spiral of silence research has primarily focused on the effects of the perceived opinion climates, people's subjective certainty of the estimated opinion climate as a potential influence factor has not been regarded before. However, certainty about the opinion climate appears to be an important variable when investigating the moderating role of the audience on people's outspokenness. According to the anxiety/uncertainty management theory, predictive certainty about one's interaction partners is positively associated with the perceived quality and effectiveness of communication (i.e., with fewer misunderstandings; Gudykunst, 1995; Gudykunst & Nishida, 2001). Thus, feeling secure about how others think could prompt people to feel prepared for a potential subsequent discussion. Applied to audiences in the context of social networking sites, it is hypothesized:

> *Hypothesis 4 (H4):* The closer the relationship to a particular audience on SNS, the higher the certainty about the estimated opinion climate among this group.

8.3 The Expectation of Sanctions among Different Audiences

According to the two-level view on perceived predictability, people tend to also make predictions about others on a behavioral level (Berger, 1979). When focusing on the process of public opinion expression, predictions on a behavioral level could lead to expectations on how this audience might react to oneself after being confronted with one's opinion. Following the idea that predictability is positively associated with relational closeness (Gudykunst & Nishida, 2001), it could be assumed that people feel more certain in predicting the behavior of a relationally closer than a distant audience. More specifically, a person might feel able to better predict how close friends may respond to him-/herself after expressing his/her personal opinion on a controversial issue than how strangers would act in response to his/her opinion disclosure. As was shown by the second study of this dissertation, the expectation of other people's responses to one's opinion expression act can be of positive, neutral, or negative nature. When expressing a viewpoint different to the prevailing opinion climate, the expected

responses are still predominantly negative, as people tend to expect social sanctions for being deviant. This is line with the spiral of silence framework (Noelle-Neumann, 1993), which suggests that the expectation of negative reactions keep people from expressing their real opinion. However, following the above rationale, it can be expected that a closer relationship to the audience is associated with the assumption that this audience may largely agree with one's opinion on a controversial issue. Thus, when confronted with a relationally close audience, people might generally be less likely to expect negative behavioral reactions, that is, social sanctions (after expressing their opinion) than when confronted with a relationally distant group:

Hypothesis 5 (H5): The closer the relationship to a particular audience on SNS, the lower the people's expectation of sanctions (after having expressed one's opinion).

While people may perceive a high level of opinion agreement between related others and themselves, they seem to still perceive disagreements on public issues to a certain extent: Studies by Kim (2011) as well as Rainie and Smith (2012) demonstrated that people tend to encounter political postings from SNS friends with which they personally disagree. According to the spiral of silence theory (Noelle-Neumann, 1993), fear of isolation is the reason why people reduce their outspokenness when faced with a hostile opinion climate. Along these lines, the present work has argued that a minority situation (i.e., wherein the individual has an opinion deviant from the majority) leads to the expectation of potential sanctions from the social environment (see Chapter 6.1). While, to a certain extent, anxiety and expectations of negative relational outcomes may be an integral part of every interpersonal and intergroup encounter (Gudykunst & Nishida, 2001), it has been argued that the expectation of negative outcomes of an interaction may be generally lower the more intimate the relationship between the interaction partners is (Gudykunst & Shapiro, 1996). This rationale is in line with results of the qualitative study of this dissertation (see Chapter 6.3.3), wherein participants stated that if opinion disagreements came up during a social gathering with friends, they expected others to accept or respect their personal deviant opinion. However, it is unclear whether this mechanism also applies when the interaction partners are not related others but the uninvolved audience, as is often the case on social networking sites. Here, close friends are able to read on their newsfeed one's comment in response to a public discussion (e.g., on a news channel) without them directly participating in the discussion. In this context, the results of the qualitative interviews (see Chapter 6.3.3) showed that people can feel uncomfortable

when knowing that uninvolved friends could read one's opinion expression act on the social networking site Facebook. However, Noelle-Neumann (1993) argued that there is a chance to rectify wrong impressions formed by related people, whereas a "stigma" formed by strangers (who one has never met and will never meet) is less rectifiable. Following this argumentation, it is hypothesized that people will have lower expectations of sanctions from relationally closer groups than from relationally distant groups – even when they perceive opinion incongruence:

> *Hypothesis 6 (H6):* The closer the relationship to a particular audience on SNS, the weaker the effect of the perceived opinion climate on people's expectation of sanctions (after having expressed one's opinion).

8.4 The Effect of the Audience on People's Opinion Expression on SNS

The argumentation hitherto suggests that individuals may generally perceive a greater fear of being isolated from relationally closer (e.g., close friends) than from relationally distant people (e.g., strangers). However, the increased predictive certainty about cognitions and behaviors of this relationally closer group is posited to put individuals in a state wherein they expect fewer social sanctions from this group (compared with a relationally distant group) after having expressed a deviant opinion. The psychological differentiation between audiences to whom individuals are related differently should clarify to what extent particular audience subgroups on social networking sites (e.g., close friends vs. acquaintances vs. strangers) influence people's willingness to voice their opinion on a controversial public issue online. While studies in the context of spiral of silence theory found people's outspokenness as being contingent on the opinion climate in reference groups (Moy et al., 2001; Oshagan, 1996), they did not systematically investigate the relational closeness to the audience in the particular setting of the study. In these studies, participants were asked whether they would express their opinion in a "social gathering where you don't know anyone" (Moy et al., p. 13), "participate in a demonstration," or "wear a pin or a button with a political message" (Oshagan, 1996, p. 342). Glynn and Park (1997) measured participants' outspokenness, coding whether participants expressed their opinion during the survey interview or not, and found that the perceived opinion climate among a more general public (i.e., people in town) had a greater effect on people's outspokenness than the perceived opinion distribution in a specified reference group. Given these findings, the authors concluded:

The simplest interpretation may be that people feel more comfortable expressing their opinion among their own reference group, so perceived opinion dominance has no effect on expression. Because they are less comfortable with a generalized group of people, they may be more likely to express their opinion when they perceive themselves to be congruent with the dominant group opinion. (Glynn & Park, 1997, p. 229)

This conclusion is in agreement with the present study's line of argumentation, proposing that when it comes to expressing one's opinion among relationally closer groups, people are not as sensitive to the opinion climate as when being among relationally distant groups. However, Glynn and Park (1997) did not test whether people's outspokenness varies in accordance with the relational closeness of the group as they exclusively measured people's opinion expression during the survey interview. Following the line of argumentation so far and testing Glynn and Park's (1997) interpretation, it is hypothesized that given a relationally closer audience on Facebook (e.g., close friends), people will be more outspoken than given a relationally distant group (e.g., strangers). Based on the findings of Glynn and Park (1997), it is also expected that relational closeness moderates the influence of the opinion climate on people's opinion expression in the sense that people's outspokenness will be less dependent on the opinion climate among a relationally closer group than among a relationally distant group on social networking sites:

Hypothesis 7 (H7): The closer the relationship to a particular audience on SNS, the more willing are people to express their opinion on a controversial topic.

Hypothesis 8 (H8): The closer the relationship to a particular audience on SNS, the weaker the effect of the perceived opinion climate on people's willingness to express their opinion.

Doing justice to claims that people's expressive behavior may be more complex than simply expressing or withholding one's opinion (Hayes, 2007; see Chapter 2.3.3.2), it is asked:

Research Question 1 (RQ1): To what extent do people apply different opinion expression or avoidance strategies in accordance with the particular audience?

8.5 Method

8.5.1 Design

The hypotheses of the fifth study were tested by conducting a laboratory experiment, manipulating the audience with which subjects are confronted on Facebook. The audience as the independent variable was manipulated on four levels, including three levels of relational closeness (i.e., strong ties vs. weak ties vs. strangers). A fourth condition was intended to represent the common situation on Facebook wherein all three audience types are present. Thus, the fourth condition "multiple audiences" comprised strong and weak ties as well as strangers at the same time. Before data collection, the local IRB approved the procedure of this study.

8.5.2 Sample

In total, 124 subjects participated in the present laboratory experiment. One participant had to be excluded owing to missing data, while another was not considered in the subsequent analyses because this person explicitly suspected that the cover story presented during the experiment was not true. Three subjects had to be excluded as they indicated that they had fewer than 15 friends on Facebook (which impeded a successful experimental manipulation; see below). Consequently, the final sample comprised 119 participants (87 females) with an age ranging from 18 to 29 years (age: $M = 20.24$, $SD = 2.16$). Since participants were recruited by advertisements on campus or in Facebook groups related to the University of Duisburg-Essen, 118 out of 119 participants were students, while one was an employee (all participants had at least a university-entrance qualification). As was mandatory for participation, all subjects were Facebook users and the majority (84%) stated that they used this platform on a daily basis, while 14.3% used Facebook once or more times a week. The number of people participants had in their Facebook friends list varied from 20 to 1,461 ($M = 330.07$, $SD = 212.60$).

8.5.3 Stimulus Material

Given that one of the methodological shortcomings of previous spiral of silence research has been the predominant use of hypothetical scenarios to test the silencing mechanism (see Chapter 2.3.3.2), this study intended to create a real communication situation

increasing the social pressure on subjects. During the experiment, subjects were presented with a cover story indicating that the purpose of the study was to investigate the effects of subjects' communication behavior on other people on Facebook. To do so, participants were asked to log into Facebook (using their private account), allowing the experimenter to conduct a fictitious network analysis in order to identify either (1) the 15 people in the subject's Facebook friends list with whom the subject share the most common contacts (condition: strong ties); (2) 15 people in the subject's Facebook friends list with whom the subject shares a moderate number of common contacts (condition: weak ties); (3) 15 people who are not in the subject's Facebook friends list and with whom he/she does not share any common contact (condition: strangers); or (4) five people in the subject's Facebook friends list with whom the subject shares the most common contacts, five people in the subject's Facebook friends list with whom the subject shares a moderate number of common contacts, and five people to whom the subject is not related and does not share any contact (condition: multiple audiences). The number of 15 people was kept constant throughout all conditions as the variation of the audience size has been found to affect people's expectation of sanctions (see Study 4). Participants were explained that this network analysis procedure calculates the relational closeness to these 15 people who therefore are supposed to be close friends (condition: strong ties), acquaintances (condition: weak ties), or unknown people who subjects may not know and never meet in the future (condition: strangers) or a mixture of all three groups (condition: multiple audiences). Furthermore, participants were instructed that in the course of the experiment they would see a message on Facebook that this group of 15 people would be able to see the next time they would log in to Facebook. These 15 people would also be able to view the participant's comment on this message in the event that the participants comment on the message. In order to make this cover story more believable, a synchronization test between subjects' Facebook accounts and survey software was simulated during the experiment. After participants logged in to Facebook, they were asked to test whether the web-based survey software had successfully synchronized with Facebook. If the synchronization was successful (which was true for all participants), subjects should be able to see who of their Facebook friends have "liked" the Facebook channel of the Tagesschau (a German TV news service). This simulated synchronization test was implemented within the survey software by using the so-called *Facepile* plugin, which was activated at the time this study was undertaken. In fact, no synchronization or network analysis was conducted during the experiment. Subsequently, subjects were presented with a screenshot showing a Facebook message in the form of a meme about the topic of legalizing euthanasia (a highly

controversial topic in Germany; see Chapter 5.5.3). This meme was posted by the fictitious channel "Foresight" asking: "Active euthanasia – yes or no?" (see Figure 11).

Figure 11. Meme on active euthanasia shown during the laboratory experiment

After showing this meme, participants were reminded that – depending on the experimental condition they were assigned to – the 15 people would be able to see this message, meaning that these people would be the audience of the subject's comment. This reminder was incorporated in order to ensure that the experimental manipulation of the audience was successful. A manipulation check was conducted using 11 items taken from the Unidimensional Relationship Closeness Scale (Dibble, Levine, & Park, 2012), asking participants to state how they would describe their relationship to these 15 people who will be identified by the network analysis. On a 7-point scale from 1 = *strongly disagree* to 7 = *strongly agree*, participants were asked to express their agreement with items such as, "My relationship with these people is close" or "These people and I have a strong connection" (internal consistency of the scale: Cronbach's α = .98). A one-way ANOVA yielded a significant effect of the experimental manipulation of the perceived relational closeness, *Welch's F*(3, 59.92) = 67.85, $p < .001$, ω^2 = .52 (*Welch's F* was considered because Levene's test was significant, indicating that the homogeneity of variance assumption was violated). Specifically, participants perceived the greatest relational closeness toward the audience in the strong ties condition (*M* = 4.00, *SD* = 1.28), followed by the multiple audiences conditions (*M* = 3.66, *SD* = 1.01), weak ties condition (*M* = 2.29, *SD* = 1.18), and strangers condition (*M* =

1.21, SD = 0.55). Post hoc pairwise comparisons (with Bonferroni correction) suggested that all conditions differed at $p \leq .001$, except the strong ties and multiple audiences conditions, which did not differ significantly from each other. While the perceived relational closeness was generally low (having a moderate level in the strong ties condition), the manipulation of the relational closeness to the audience was successful. Still, this pattern should be kept in mind for the interpretation of results.

8.5.4 Measures

Perceived opinion climate among audience and certainty about estimates

After presenting subjects with the particular audience, they were asked to estimate the opinion climate regarding legalizing euthanasia among these 15 people. For this purpose, participants had to state the percentage of people in this group who (a) supported, (b) neither supported nor opposed, or (c) opposed the legalization of euthanasia. Participants were reminded to add up their estimates to 100% (see Chapter 5.5.4). By using this measure and a dichotomous question about the subject's personal opinion on this study's focal topic, a variable was generated representing the percentage of people in the specific audience who had the same view on this topic as the participant (variable: congruence with perceived opinion climate among audience). After indicating their estimates about the opinion climate among the specific audience, participants were asked to state how certain they were about their estimates. Certainty about the estimated opinion climate was measured on a 6-point scale from 1 = *very uncertain* to 6 = *very certain.*

Likelihood of opinion expression

As the main dependent variable, participants were asked how likely they were to respond to this meme on Facebook and express their opinion on this topic by writing a comment. This question was measured on a 7-point scale from 1 = *very unlikely* to 7 = *very likely*. Again, participants were instructed, "Please note that this comment will be visible for [information about the audience depending on the experimental conditions]."

Actual opinion expression

In order to overcome the tradition of asking participants about their likelihood or willingness to participate in a discussion or express their opinion (see Chapter 2.3.3.2), this experimental setting gave participants the opportunity to factually express their opinion by means of a textual comment. The instruction expressed that this comment was on a voluntary

basis as is the case when people are confronted with controversial discussions on Facebook: "In the following, you have the opportunity to write a comment responding to this message on the legalization of euthanasia." Moreover, subjects were reminded to whom this comment would be visible. Participants' textual comments were content analyzed by drawing on opinion expression and avoidance techniques identified by Hayes (2007; see Chapter 2.3.3.2). In total, seven categories were coded in order to grasp the content of the comments: (1) Expression of opinion: Did the subject express his/her opinion? This category was coded as "absent" or "present." For instance, opinion expression was coded as "absent" when a neutral statement or only a neutral question was written in the comment. (2) Expression of ambiguity: Did the subject mention pro and con arguments? (coded as "absent" or "present"). (3) Expression of a conditional claim: Did the subject express a specific stance or claim that was contingent on a situational condition? (coded as "absent" or "present"). An opinion depending on a condition was coded as "present," for instance, when participants stated that they would support euthanasia but only given the situation that there is no cure for a fatally ill person who suffers from his/her illness. (4) Off-topic comment: Did the subject talk about a different topic within the topic? (5) Asking a question: Did the subject integrate a question in the comment? (coded based on the number of questions). (6) Number of arguments: Based on the argument repertoire measure proposed by Cappella et al. (2002), it was counted how many reasons and arguments were present in a comment to corroborate a particular opinion. (7) Number of words. A total of 37 participants out of 119 wrote a comment as a response to the message of euthanasia. All 37 comments were coded by a second rater. Intercoder reliability was determined based on Krippendorff's alpha (Hayes & Krippendorff, 2007) which ranged from .72 to 1.00. Since only two people posed a question within their comments and none of the participants wrote a comment off-topic, these two categories were excluded from the subsequent analyses.

Perceptions of the audience

Besides measuring the perceived relational closeness to the audience for the manipulation check, it was assessed to what extent participants estimate the audience as predictable. For this purpose, Clatterbuck's (1979) measure on attributional certainty was adapted to the present setting, asking eight questions such as, "How accurate are you at predicting how these people will behave?" or "How accurate are you at predicting the feelings of these people?" Participants were asked to rate their ability to predict this audience's behavior, feelings, and thoughts on a 7-point scale ranging from 1 = *absolutely uncertain* to 7

= *absolutely certain* (Cronbach's α = .90). Moreover, it was measured to what extent people fear of being isolated from this specific audience (one item: "how concerned were you if these people would exclude or avoid you in the future?" measured on a 7-point scale from 1 = *not concerned at all* to 7 = *very concerned*).

Expected sanctions

To measure people's expectation of sanctions for expressing their opinion in this particular situation, the 32 items which were used in Studies 4 and 5 of this dissertation were employed (measured on a 7-point scale). Again, these items were subjected to a factor and parallel analysis (cf. Horn, 1965). Among the empirical eigenvalues obtained by the first exploratory factor analysis (principal axis analysis with varimax rotation), the eigenvalue from the first factor (18.90) was higher than the first eigenvalue (2.13) suggested by the parallel analysis. The second empirical value was lower (1.86) than the proposed eigenvalue (1.95). Thus, the parallel analysis suggests a one-factor solution. Following this suggestion, the items were represented by one factor (Cronbach's α = .98).

Control variables

In terms of control variables, the subject's trait-like fear of isolation (five items; Hayes et al., 2013; Cronbach's α = .82), political interest (five items; Otto & Bacherle, 2011; Cronbach's α = .90), and the extent to which participants habitually use Facebook to express their opinion or participate in political discussions (three items; Cronbach's α = .81) were measured. With regard to the study's focal topic, participants were asked about their personal opinion (measured on dichotomous and continuous level), their opinion certainty (one item; see Matthes et al., 2010), and issue importance (see Chapter 7.4.4). Additionally, the congruence of subjects' personal opinion and the perceived opinion climate toward the legalization of euthanasia among the national population, people in the participants' Facebook friends list, and people in the participants' personal network was assessed (see Chapter 7.4.4).

8.5.5 Procedure

After arriving at the laboratory, participants were informed about the purpose of the study and the cover story. The web-based survey software that presented the questionnaire to participants randomly assigned them to one of the four experimental conditions (strong ties: n = 28; weak ties: n = 33; strangers: n = 29; multiple audiences: n = 29). After completing a

pre-questionnaire including the control variables and further personality traits (which are not subject of the present analysis), subjects were given detailed information about the network analysis and then asked to log in to Facebook. After conducting the synchronization test and being presented with the stimulus material, participants completed a post-questionnaire comprising dependent variables, items for the manipulation check, and sociodemographic characteristics. Before study completion, subjects were asked to indicate what they thought the study's purpose was and they had the opportunity to add general remarks on the study in a free text field. Subsequently, participants were debriefed and rewarded with course credit, if necessary.

8.6 Results

H1 expected that relational closeness to an audience on SNS would increase people's fear of being excluded from this particular group. This assumption was tested by means of ANOVA considering the audience (strong ties vs. weak ties vs. strangers vs. multiple audiences) as fixed factor and audience-specific fear of isolation as dependent variable. The audience effect was significant, $F(3,115) = 21.61$, $p < .001$, $\eta_p^2 = .36$ (see Table 18 for descriptive values). Post hoc pairwise comparisons (with Bonferroni correction) indicated that people's fear of isolation regarding strong ties was significantly greater than the isolation fear with respect to weak ties ($p < .001$) and strangers ($p < .001$). While the fear of being excluded by strong ties did not differ significantly from the fear of being excluded by multiple audiences (in these two conditions people's fear was the greatest), audience-specific fear of isolation concerning multiple audiences was significantly greater than for weak ties ($p = .001$) and strangers ($p < .001$). The conditions weak ties versus strangers differed marginally significantly from each other ($p = .053$). Consequently, *H1* is considered as supported.

With *H2*, it was assumed that people's self-perceived ability to predict the audience's thoughts and actions would increase with the relational closeness to the audience. Again, an ANOVA yielded a significant effect of the audience on people's perceived audience predictability, $F(3,115) = 9.67$, $p < .001$, $\eta_p^2 = .20$. Table 18 displays the corresponding descriptive values. As suggested by post hoc pairwise comparisons (with Bonferroni correction), subjects stated the greatest audience predictability for strong ties, being significantly greater than for weak ties ($p = .006$) and strangers ($p < .001$) but not significantly greater than for multiple audiences. The latter was significantly greater than the predictability of strangers ($p = .004$). Audience predictability did not differ significantly between weak ties

and multiple audiences and between weak ties and strangers. Thus, *H2* received partial support.

H3 assumed that the relational closeness to the audience on SNS would increase the perceived opinion congruence with this group. An ANOVA with the audience as fixed factor was computed in order to assess the main effect of the audience on the perceived opinion congruence. As can be seen in Table 18, the audience did not have a significant effect on the perceived opinion congruence, $F(3,115) = .41$, $p = .745$, $\eta_p^2 = .01$. *H3* was not supported.

H4 predicted that people's certainty about the estimated opinion climate increases with the relational closeness to the audience on SNS. While the descriptive values (see Table 18) indicated the highest certainty in the strong ties condition, followed by the certainty in the multiple audiences, strangers, and weak ties conditions, the main effect of the audience was not significant, $F(3,115) = 1.61$, $p = .192$, $\eta_p^2 = .04$. *H4* received no empirical support.

To test *H5*, which hypothesized that relational closeness to the audience on SNS would decrease people's expectations of sanctions, an ANOVA with the audience as fixed factor and expected sanctions as dependent variable was run. The audience had a weak, albeit significant, effect on the extent to which participants expected sanctions from the audience (in the event of expressing their opinion on the controversial issue), $F(3,115) = 3.20$, $p = .026$, $\eta_p^2 = .08$. Specifically, post hoc pairwise comparisons (with Bonferroni correction) showed that participants were more likely to expect sanctions from strangers than from weak ties ($p = .031$). The extent to which subjects expected sanctions from the audience did not differ significantly among the other conditions. Thus, *H5* was only supported for the comparison between weak ties and strangers.

Table 18
Means and standard deviations for the effects of different audience types on the dependent variables

	Experimental Condition			
	Strong ties	*Weak ties*	*Strangers*	*Multiple audiences*
Audience-specific fear of isolation	4.86 (1.80)_a	3.12 (1.62)_b	2.07 (1.13)_b	4.72 (1.58)_a
Audience predictability	4.00 (1.04)_a	3.11 (1.02)_{b,c}	2.59 (1.19)_c	3.53 (.91)_{a,b}
Congruence with perceived opinion climate	37.75 (21.54)_a	39.91 (18.48)_a	36.28 (15.84)_a	34.76 (20.02)_a
Certainty about perceived opinion climate	2.75 (1.08)_a	2.18 (1.21)_a	2.45 (0.91)_a	2.66 (1.17)_a
Expected sanctions	2.53 (1.33)_{a,b}	2.32 (1.14)_a	3.21 (1.18)_b	2.92 (1.25)_{a,b}
Likelihood of opinion expression	1.71 (1.01)_a	1.85 (1.44)_a	2.17 (1.39)_a	2.21 (1.57)_a

Note. Different subscripts in a row indicate significant differences with p < .05 using Bonferroni-corrected post hoc comparisons.

H6 assumed that relational closeness to an audience on SNS would weaken the effect of opinion congruence on people's expectation of sanctions. This hypothesis was tested by computing a hierarchical regression analysis. In the first step of the regression model, sex, age, and subjects' trait-like fear of isolation were entered as control variables. The second step included perceived opinion congruence with the national population, with people on one's Facebook friends list, and with one's personal network (since opinion climates on a macro-level were found to be influential; cf. Study 4). In the third step, the mean-centered congruence between subjects' opinion and the perceived opinion climate among the specific audience was entered. In the fourth step, the effect of the different audiences was compared by employing dummy variables that allowed for pairwise comparisons among the experimental conditions. Here, the audience condition comprising strangers (representing the lowest relational closeness; cf. manipulation check) was compared with the strong ties condition (Dummy 1: strangers vs. strong ties), the weak ties condition (Dummy 2: strangers vs. weak ties), and the multiple audiences condition (Dummy 3: strangers vs. multiple audiences). In the final step, three product terms were entered, considering the multiplication of each dummy variable with the opinion congruence with the specific audience. All values revealed by the regression analysis are displayed in Table 19. In terms of main effects, the regression analysis revealed a significant positive relationship between subjects' trait-like fear of isolation and expected sanctions as well as main effects of the audience in the sense that people were more likely to expect sanctions from strangers than from strong ties and from weak ties. Against expectations, there was no significant interaction effect of the perceived opinion congruence and the different audiences. An additional hierarchical regression analysis following the same procedure as the previous one but replacing the dummy variables by the perceived relational closeness to the audience (measure used for manipulation check; see Chapter 8.5.3) and replacing the production term accordingly supported the absence of a significant interaction effect (see Table 19). Consequently, *H6* was not supported by the data.

Table 19

Hierarchical multiple regression analyses including main and interaction effects on expected sanctions

		Expected sanctions				
	$b\ (SE_b)$	β	t	p	ΔR^2	
Step 1					.077	$F(3,115) = 3.19, p = .026$
Sex (1 = female / 2 = male)	-.45 (.27)	-.16	-1.66	.099		
Age	-.04 (.06)	-.07	-.76	.448		
Fear of isolation	.32 (.15)	**.19**	2.07	.041		
Step 2					.044	$F(6,112) = 2.58, p = .022$
Opinion congruence with nation	-.00 (.01)	-.03	-.25	.803		
Opinion congruence with Facebook friends	-.00 (.01)	-.05	-.45	.651		
Opinion congruence with personal network	-.01 (.01)	-.17	-1.55	.123		
Step 3					.007	$F(7,111) = 2.34, p = .029$
Opinion congruence with audience	.01 (.01)	.14	.97	.333		
Step 4					.104	$F(10,108) = 3.27, p = .001$
Dummy1: Strangers vs. Strong ties	-.85 (.32)	**-.29**	-2.67	.009		
Dummy2: Strangers vs. Weak ties	-1.09 (.31)	**-.39**	-3.53	.001		
Dummy3: Strangers vs. Multiple audiences	-.39 (.31)	-.13	-1.26	.212		
Step 5					.021	$F(13,105) = 2.74, p = .002$
Dummy1 x Opinion congruence audience	.01 (.02)	.06	.48	.632		
Dummy2 x Opinion congruence audience	.01 (.02)	.07	.56	.579		
Dummy3 x Opinion congruence audience	-.01 (.02)	-.09	-.78	.436		
Total R^2					.254	
Alternative model:						
Step 4					.017	$F(8,110) = 2.34, p = .023$
Relational closeness	-.11 (.08)	-.14	-1.48	.143		
Step 5					.002	$F(9,109) = 2.10, p = .036$
Relational closeness x Opinion congruence audience	.00 (.00)	.05	.50	.621		
Total R^2					.148	

Note. Values in bold indicate significant relationships.

H7 predicted that people would be more inclined to express their opinion in front of a relationally close audience than in front of a relationally distant one. An ANOVA with the audience as fixed factor and people's likelihood of expressing their opinion yielded no significant effect, $F(3,115) = .90, p = .442, \eta_p^2 = .02$ (see Table 18 for descriptive values). *H7* received no empirical support.

In order to test whether relational closeness weakens the effect of congruence with the opinion climate on people's outspokenness (as expected in *H8*), a further hierarchical regression analyses was computed. Again, the first four steps of this analysis included control variables that were found to significantly predict people's outspokenness (see theoretical section and previous studies of this dissertation), while Steps 5, 6, and 7 considered the variables to explore the interaction effects. Predictors were entered in the following order: Step 1: sex, age, political interest, and fear of isolation. Step 2: Discursive use of social networking sites. Step 3: Opinion certainty and issue importance. Step 4: Perceived opinion congruence with the national population, people in one's Facebook friends list, and personal

network. Step 5: Perceived opinion congruence with specific audience (mean-centered). Step 6: All three dummy variables comparing the experimental conditions (see above). Step 7: Interaction terms of the perceived opinion congruence and all three dummy variables. As can be seen in Table 20, this regression analysis showed that participants were more likely to express their opinion when the particular issue was important to them. However, this analysis did not reveal any further main or interaction effects on subjects' willingness to voice their opinion. Again, an alternative hierarchical regression analysis was computed. In this case, the variables in Steps 6 and 7 were replaced by perceived relational closeness (as used for the manipulation check) and the corresponding interaction term with perceived opinion congruence with the specific audience. Neither the main nor the interaction effect was significant (see Table 20). Consequently, *H8* was not supported.

Table 20
Hierarchical multiple regression analyses including main and interaction effects on the likelihood of opinion expression (Study 5)

	$b\ (SE_b)$	β	t	p	ΔR^2	
				Likelihood of opinion expression		
Step 1					.040	$F(4,114) = 1.17, p = .326$
Sex (1 = female / 2 = male)	-.31 (.32)	-.10	-.98	.330		
Age	.08 (.06)	.12	1.23	.222		
Political interest	.06 (.16)	.04	.40	.690		
Fear of isolation	.30 (.17)	.16	1.71	.091		
Step 2					.016	$F(5,113) = 1.33, p = .258$
Discursive use of SNS	.26 (.19)	.14	1.38	.171		
Step 3					.075	$F(7,111) = 2.38, p = .026$
Opinion certainty	-17 (.11)	-.17	-1.57	.119		
Issue importance	.28 (.09)	**.35**	3.10	.002		
Step 4					.013	$F(10,108) = 1.80, p = .068$
Opinion congruence with nation	-.01 (.01)	-.09	-.72	.473		
Opinion congruence with Facebook friends	-.00 (.01)	-.03	-.23	.820		
Opinion congruence with personal network	.01 (.01)	.14	1.17	.246		
Step 5					.012	$F(11,107) = 1.79, p = .065$
Opinion congruence with audience	.01 (.01)	.18	1.24	.218		
Step 6					.025	$F(14,104) = 1.64, p = .081$
Dummy1: Strangers vs. Strong ties	-59 (.37)	-.18	-1.59	.115		
Dummy2: Strangers vs. Weak ties	-.47 (.36)	-.15	-1.29	.201		
Dummy3: Strangers vs. Multiple audiences	-.16 (.36)	-.05	-.44	.659		
Step 7					.025	$F(17,101) = 1.54, p = .097$
Dummy1 x Opinion congruence audience	.03 (.02)	.20	1.57	.120		
Dummy2 x Opinion congruence audience	.02 (.02)	.12	.95	.343		
Dummy3 x Opinion congruence audience	.03 (.02)	.20	1.57	.120		
Total R^2					.205	
Alternative model:						
Step 6					.002	$F(12,106) = 1.65, p = .089$
Relational closeness	-.04 (.09)	-.05	-.50	.619		
Step 7					.011	$F(13,105) = 1.63, p = .089$
Relational closeness x Opinion congruence audience	.01 (.00)	.11	1.15	.251		
Total R^2					.168	

Note. Values in bold indicate significant relationships.

To address *RQ1*, which asked to what extent people make use of different techniques to become outspoken in accordance with the particular audience, participants' textual comments (which they wrote on a voluntary basis after they were told that this comment would be visible to the particular audience) were considered. First, a chi-square test determined whether the observed frequency of comments (coded as absent or present) varied across all four experimental conditions (see Table 21 for further values). The test revealed no significant differences among the conditions, χ^2 (3, $N = 119$) = 3.53, $p = .317$ (minimum expected count: 8.71), which additionally corroborates the rejection of *H7*. Additionally, it was tested whether the frequency of opinion expressions in each comment differed between the conditions. Again, a chi-square test indicated no significant effect of the audience on the frequency of opinion expressions, χ^2 (3, $N = 119$) = 2.14, $p = .544$ (minimum expected count: 7.29; see Table 21 for further values). When only considering those participants who wrote a comment ($n = 37$), a Fisher's exact test (given that 50% of the cells indicated expected frequencies lower than 5; see Field, 2009) additionally corroborated no significant differences in opinion expressions across the four conditions, value = 5.24, $p = .110$. For the variables expression of ambiguity and expression of conditional claims, again, more than 20% of the cells had expected frequencies lower than 5. Therefore, Fisher's exact tests were computed to test whether the frequency of these expression techniques varied between conditions (see Table 22 for further values). In both cases, there were no significant differences, ambiguity: value = 1.59, $p = .908$; conditional claims: value = 2.17, $p = .600$. As the number of words and arguments in each comment were assessed on a continuous level, the effects of the audience on both variables were tested by conducting ANOVAs. For the number of words, $F(3,33) = .32$, $p = .811$, $\eta_p^2 = .03$, and for the number of arguments, $F(3,33) = .27$, $p = .850$, $\eta_p^2 = .02$, no significant effects of the audience were found (see Table 23 for descriptive values).

Table 21

Contingency table for the frequency of comments and opinion expressions across all four experimental conditions (N = 119)

Experimental condition		Comment		Expressions of opinion		
		absent	present	absent	present	Total
Strong ties						
	Count	20	8	23	5	28
	Expected count	19.3	8.7	20.7	7.3	28.0
	% within condition	71.4%	28.6%	82.1%	17.9%	100%
	% within comment	24.4%	21.6%	26.1%	16.1%	23.5%
	% of Total	16.8%	6.7%	19.3%	4.2%	23.5%
	Std. Residual	.2	-.2	.5	-.8	
Weak ties						
	Count	25	8	25	8	33
	Expected count	22.7	10.3	24.4	8.6	33.0
	% within condition	75.8%	24.2%	75.8%	24.2%	100%
	% within comment	30.5%	21.6%	28.4%	25.8%	27.7%
	% of Total	21.0%	6.7%	21.0%	6.7%	27.7%
	Std. Residual	.5	-.7	.1	-.2	
Strangers						
	Count	16	13	19	10	29
	Expected count	20.0	9.0	21.4	7.6	29.0
	% within condition	55.2%	44.8%	65.5%	34.5%	100%
	% within comment	19.5%	35.1%	21.6%	32.3%	24.4%
	% of Total	13.4%	10.9%	16.0%	8.4%	24.4%
	Std. Residual	-.9	1.3	-.5	.9	
Multiple audiences						
	Count	21	8	21	8	29
	Expected count	20.0	9.0	21.4	7.6	29.0
	% within condition	72.4%	27.6%	72.4%	27.6%	100%
	% within comment	25.6%	21.6%	23.9%	25.8%	24.4%
	% of Total	17.6%	6.7%	17.6%	6.7%	24.4%
	Std. Residual	.2	-.3	-.1	.2	
Total						
	Count	82	37	88	31	119
	Expected count	82.0	37.0	88.0	31.0	119.0
	% within condition	68.9%	31.1%	73.9%	26.1%	100%
	% within comment	100%	100%	100%	100%	100%
	% of Total	68.9%	31.1%	73.9%	26.1%	100%

Table 22

Contingency table for the frequency of expressions of ambiguity and conditional claims across all four experimental conditions (n = 37)

Experimental condition		Expressing ambiguity		Expressing conditional claims		
		absent	present	absent	present	Total
Strong ties						
	Count	6	2	5	3	8
	Expected count	6.9	1.1	3.9	4.1	8.0
	% within condition	75.0%	25.0%	62.5%	37.5%	100%
	% within comment	18.8%	40.0%	27.8%	15.8%	21.6%
	% of Total	16.2%	5.4%	13.5%	8.1%	21.6%
	Std. Residual	-.3	.9	.6	-.5	
Weak ties						
	Count	7	1	5	3	8
	Expected count	6.9	1.1	3.9	4.1	8.0
	% within condition	87.5%	12.5%	62.5%	37.5%	100%
	% within comment	21.9%	20.0%	27.8%	15.8%	21.6%
	% of Total	18.9%	2.7%	13.5%	8.1%	21.6%
	Std. Residual	.0	-.1	.6	-.5	
Strangers						
	Count	12	1	5	8	13
	Expected count	11.2	1.8	6.3	6.7	13.0
	% within condition	92.3%	7.7%	38.5%	61.5%	100%
	% within comment	37.5%	20.0%	27.8%	42.1%	35.1%
	% of Total	32.4%	2.7%	13.5%	21.6%	35.1%
	Std. Residual	.2	-.6	-.5	.5	
Multiple audiences						
	Count	7	1	3	5	8
	Expected count	6.9	1.1	3.9	4.1	8.0
	% within condition	87.5%	12.5%	37.5%	62.5%	100%
	% within comment	21.9%	20.0%	16.7%	26.3%	21.6%
	% of Total	18.9%	2.7%	8.1%	13.5%	21.6%
	Std. Residual	.0	-.1	-.5	.4	
Total						
	Count	32	5	18	19	37
	Expected count	32.0	5.0	18.0	19.0	37.0
	% within condition	86.5%	13.5%	48.6%	51.4%	100%
	% within comment	100%	100%	100%	100%	100%
	% of Total	86.5%	13.5%	48.6%	51.4%	100%

Table 23

Means and standard deviations for the effects of different audience types on the number of words and arguments in participants' comments (n = 37)

| | Experimental Condition | | | |
	Strong ties	*Weak ties*	*Strangers*	*Multiple audiences*
Number of words	23.13 (16.69)	19.88 (14.54)	27.85 (20.21)	23.75 (21.08)
Number of arguments	0.75 (0.89)	0.88 (0.64)	1.08 (0.95)	0.88 (0.83)

Additional analyses

Given that most results did not support the assumptions that were derived from theory, additional analyses were conducted in order to further illuminate the processes operating when people are about to express their opinion in front of different audiences on social networking sites. A nonparametric correlation analysis (based on Spearman's rho; see Table 24) including the dependent variables of this study revealed significant relationships that were in line with theoretical predictions, as relational closeness was positively related to the audience-specific fear of isolation ($p < .001$; *H1*), audience predictability ($p < .001$; *H2*), and certainty about the opinion climate ($p = .024$; *H4*). Additionally, according to the bivariate correlations, relational closeness was not significantly related to the perceived opinion congruence (*H3*), expected sanctions (*H5*), and the willingness to express one's opinion (*H7*). This correlational analysis further revealed that participants' likelihood to express their opinion was positively related to the certainty about the opinion climate ($p = .017$) as well as expected sanctions ($p = .003$).

Table 24

Bivariate correlations and descriptive statistics of dependent variables (N = 119)

	M (SD)	1.	2.	3.	4.	5.	6.
1. Relational closeness	2.76 (1.51)	-					
2. Audience-specific fear of isolation	3.66 (1.92)	.839**	-				
3. Audience predictability	3.30 (1.15)	.622**	.587**	-			
4. Opinion congruence with audience	37.26 (18.90)	-.042	.002	.046	-		
5. Certainty about opinion climate	2.50 (1.11)	.207*	.240**	.286**	.315**	-	
6. Expected sanctions	2.73 (1.26)	-.054	.027	.020	-.120	.040	-
7. Likelihood of opinion expression	1.98 (1.37)	.027	.128	.095	.093	.218*	.274**

*$p < .05$; **$p < .01$

In the theoretical section, it was argued that people are more inclined to express their opinion in front of a relationally closer audience (compared with a relationally distant audience) on SNS owing to an increased perceived predictability of this audience on a cognitive and on a behavioral level. While the correlation analysis indicated that the claim that perceived predictability on a cognitive level (based on the certainty about the opinion climate) may receive empirical support in the present experiment, the absent significant correlations between relational closeness/perceived predictability, and expected sanctions suggest no explanatory value of the predictability on the behavioral level. To test the explanatory value of perceived predictability on a cognitive level, a mediation analysis using the INDIRECT macro (Preacher & Hayes, 2008) with 5,000 bootstrap resamples (percentile-based 95% confidence interval) was conducted. In this mediation model, relational closeness was entered as independent variable, certainty about the opinion climate as mediator, and likelihood of opinion expression as dependent variable. As assumed, perceived relational closeness was positively associated with certainty about the opinion climate, $b = .16$, $SE_b = .07$, $t = 2.41$, $p = .018$. Perceived certainty as the mediator was weakly (albeit significantly) associated with the likelihood of opinion expression, $b = .23$, $SE_b = .12$, $t = 1.99$, $p = .049$. Neither the total effect of relational closeness on likelihood of opinion expression, $b = .00$, $SE_b = .08$, $t = .04$, $p = .966$, nor the direct effect, $b = -.03$, $SE_b = .08$, $t = -.39$, $p = .699$, was significant (model summary: $R^2 = .02$, $F(2,116) = 1.97$, $p = .144$). The bootstrapping procedure additionally revealed a nonsignificant indirect effect, $b = .04$, $SE_b = .03$, 95% CI [-.0083, .0948].

8.7 Discussion

The present experiment was intended to disentangle the diversity of audiences on social networking sites and identify to what extent relational closeness to an audience moderates the silencing mechanism. While the spiral of silence theory assumes an effect of (perceived) opinion climates on people's outspokenness, the theory has left open whether this mechanism works equally for every audience one could get confronted with (Hayes et al., 2001). Especially with the advent of social networking technologies such as Facebook, where people regularly encounter relationally heterogeneous audiences, it seems worthwhile to explore how interpersonal factors can influence the process predicted by theory (Metzger, 2009).

In line with the first theoretical premise of this study and previous empirical results (Nezlek et al., 2012), the current findings showed that people would be more concerned if a

relationally closer audience isolated and rejected them than if a relationally distant audience did so. When considering that fear of isolation functions as an explanation for people withholding their minority opinion (Noelle-Neumann, 1993), this finding may suggest that – given a hostile opinion climate – people would be more reluctant to express their opinion when confronted with an audience consisting of relationally closer others than when faced with relationally distant others. However, as will be discussed later, the results did not support this suggestion. An alternative explanation for why outspokenness may vary in accordance with the relationship to the audience was offered based on the second theoretical premise (cf. Hypothesis 2). As expected in the second hypothesis, the present results revealed that people perceive relationally closer others as more predictable than relationally distant others. This finding supports claims from interpersonal and intergroup communication research (Clatterbuck, 1979; Gudykunst & Nishida, 2001; Gudykunst & Shapiro, 1996) and indicates a psychological process operating when people deal with audiences to whom they are related differently. The increased predictability was proposed as the reason why people who face a relationally closer audience may feel more certain about the estimated opinion climate among the audience, expect lower sanctions for expressing a deviant opinion, and are, ultimately, more inclined to express their opinion (in disregard of the opinion climate).

Although perceived predictability indeed varied in accordance with the relational closeness of the audience, the subsequent predictions – based on the theoretical premise regarding the predictability of the audience – mostly received no empirical support. Against expectations, a closer relationship to the audience on Facebook did not lead participants to assume a greater opinion agreement with this group and to feel certain about estimates of the opinion distribution. The relationship to the audience, however, had little impact on the expectation of sanctions: Participants were more likely to generally expect sanctions from an audience consisting of strangers than from an audience consisting of weak ties. While this pattern could consequently suggest that people are more reluctant to voice their opinion on a controversial topic in front of strangers than in front of relationally closer others, the relationship to the audience did not exert any effect on subjects' likelihood to express their opinion. In the following, explanations for the absent effects within the present study will be offered.

The absent effect of relational closeness to the audience on people's hypothetical and actual outspokenness on Facebook could first be explained by previous findings of this dissertation. As shown in the qualitative interviews, people seem to feel more comfortable expressing a deviant opinion in front of close friends than in front of strangers, but only

provided that they directly interact with these people. Interviewees stated that they do not like the idea of close friends reading their opinion expression when these friends are not involved in the discussion (as is often the case on social networking sites such as Facebook; see Chapter 6.3.3). The present experiment, however, created particularly this scenario: According to the study's instructions, subjects' close friends, acquaintances, and strangers were supposed to be (at least) initially uninvolved observers of the discussion. In this situation, the audience was visually absent and there was no warranty of receiving direct feedback on one's opinion expression. These conditions could have led participants to the perception that it might not be possible to retroactively "rectify" any wrong impressions the audience might have formed of them (Noelle-Neumann, 1993). This interpretation gains additional corroboration by considering the third study's results, which showed that people are less likely to express their opinion on Facebook than at a social gathering because they perceived a sense of losing control over the audience's reactions on the particular Facebook platform. Consequently, a relationally closer audience on Facebook might be inherently perceived as more predictable than a relationally distant audience; however, the absent warranty of receiving direct feedback in the particular situation seems to lower people's certainty about positive relational outcomes.

Given the results of the manipulation check, the second explanation could be that while relational closeness significantly varied between the experimental conditions, the variance was not as great as intended. Descriptive values revealed that in the strong ties condition, which was supposed to prompt participants with their closest friends on Facebook, perceived relational closeness – on average – reached the mean ($M = 4.00$) of the 7-point scale. This indicates that participants described the relationship to the audience as moderately close, suggesting that participants did not consider their technically calculated strong ties as their closest friends or that they did not really know who their strong ties were. This is in line with anecdotal reports from this study's participants. In their final remarks on the study, some participants (10 out of 50 who typed in remarks) stated that they were uncertain who the ultimate audience was. One participant explicitly indicated that the 15 strongest ties in her Facebook friends list are not necessarily her closest friends. This would explain why previous findings showing that people perceive a greater opinion agreement with relationally closer than relationally distant others (cf. Hampton et al., 2014; see results of the first study) were not replicated by the present study. Here, perceived opinion congruence with the audience did not vary in accordance with the relationship to the audience. Likewise, the experimental manipulation did not affect participants' certainty about their perception of the opinion

climate. Nevertheless, participants' *perceptions* of relational closeness to the audience were positively related to their certainty about the opinion climate, supporting *H4* (see Table 24). Despite these clues indicating the weaknesses of the experimental manipulation, it should be noted that subjects' *perceptions* of relational closeness remained unrelated to the main dependent variable, that is, participants' outspokenness (as shown by regression and correlation coefficients; see Tables 20 and 24).

The fact that some subjects were not sure who their audience was points to another potential explanation for the absent effects. While the experimental instruction primed participants with a particular audience, the meme which served as a stimulus was evidently posted on a Facebook channel whose publicness was unknown to participants. If subjects envisioned that their comment would be visible not only to the specified audience of 15 people but also to all other Facebook users, the present findings could be explained by a publicness effect (cf. Study 4). Assuming that the ultimate audience would be much larger and diverse than explained in the experimental instruction, participants might have found themselves in a highly public situation that – as shown by the fourth study – leads to a greater self-censorship compared with less public environments such as closed discussion groups. The sense of being in a public spot might be even reinforced if subjects envisioned that messages on Facebook are recorded and archived (cf. the variable *persistence of one's contribution* in Study 2; boyd, 2010). Hence, their written, public commitment to a certain point of view (independently of the situational audience) could be retrievable later on, inevitably amplifying the size and the diversity of the audience (e.g., including future ties or employers) who could impose sanctions on the individual for being deviant.

The present data do not allow conclusions to be made about which of these explanations apply most appropriately to the findings at hand. In terms of explaining people's likelihood of opinion expression, the current results do not reveal a silencing mechanism as proposed by Noelle-Neumann (1993). People's hypothetical outspokenness was not related to perceived congruence with the opinion climate, neither on a macro (referring to the national population) nor on a micro-level (referring to all Facebook friends, one's personal network, or the audience specified in the experimental manipulation). Instead, findings indicate people's certainty about the opinion climate among the audience as a significant correlate of outspokenness. This suggests that individuals do not necessarily need to perceive themselves in a majority to speak out, but they need to know how the opinion distribution generally looks. As proposed by the anxiety/uncertainty management theory (Gudykunst, 1995; Gudykunst & Nishida, 2001), certainty about the interaction partners' cognitions and

behaviors goes hand in hand with perceived effectiveness of communication, meaning that people feel they are able to communicate appropriately with each other. In the present setting, a higher certainty of the opinion distribution in the audience (as a higher predictability of the audience on a cognitive level) may have increased people's likelihood of opinion expression because they felt well prepared for an upcoming discourse (independently from the opinion distribution itself). It is remarkable that the predictability of the audience on a behavioral level, which was represented through the expectation of social sanctions, was *positively* related to people's outspokenness (see Table 24). In theoretical terms, a higher likelihood of social sanctions as punishments for being deviant should actually reduce subjects' willingness to voice their opinion (Noelle-Neumann, 1993). However, this study showed an inverse relationship. One explanation for the positive correlation – in the present experiment – could be that expected sanctions were measured after people stated their likelihood of opinion expression and potentially typed in a comment (which was believed to go online immediately). In the case that people were more willing to express their opinion and wrote a comment, they may have estimated encountering social sanctions as more likely than for those who did not become outspoken. Accordingly, in this nonhypothetical scenario and taking the order of measures in the questionnaire into account, expecting sanctions could be considered as a consequence rather than as an antecedent of people's opinion expression.

Given that on SNS such as Facebook, relationally heterogeneous audiences are rarely presented in isolation on channels, it seems worthwhile to ask whom users envision when they are confronted with a relationally diverse audience. In the experimental condition "multiple audiences," which approximated the real-world situation on Facebook the most, participants estimated the relational closeness to the audience on a similar level as the audience exclusively consisting of strong ties. In terms of relational closeness (see manipulation check) and the audience-specific fear of isolation, the strong ties and multiple audiences conditions did not differ significantly, indicating that when people are confronted with a relationally heterogeneous audience (as is regularly the case on social networking sites), the strong ties in this group may be the most salient audience they envision.

Limitations

The aforementioned explanations for the absent effects of different audiences on people's outspokenness already outlined a pivotal limitation of the present experiment: The limited success of the experimental manipulation. As this study apparently did not succeed in

isolating the groups of close friends, acquaintances, and strangers as specific audiences, further research is needed to corroborate the patterns presented by the current study.

While the present experiment aspired to disentangle the diversity of relationships within the broad audience on social networking sites, it should be questioned whether this study succeeded in doing so. Diversity may not only comprise different levels of relational closeness to people but also different social backgrounds, which can imply a set of different shared norms and values. A person could share different norms and values across different circles of friends or acquaintances. In other words, there might have been diversity *within* each experimental condition that could have reduced people's willingness to express their opinion. Therefore, scholarly attention should be paid not only to different tie strengths but also to audience-specific norms and values as well as the particular roles a person plays within different subgroups present in offline/online networks (cf. Hogan, 2010).

Another limitation of this study lies in the fact that only one controversial topic was employed in the experimental design. Thus, it cannot be ruled out that the observed patterns are partly attributable to the specific topic of legalizing euthanasia. While this topic is perceived as highly controversial among the examined population (see Chapter 5.5.3), which is a prerequisite for silencing processes, the "enduring" nature of this issue (Gearhart & Zhang, 2015b) could have reduced people's willingness to publicly pick up again a worn-out issue. In this context, it also seems advisable to extend the present analysis to further public issues.

The primary contribution of the fifth study may be summarized as follows: First, this experiment preliminarily indicates that on social networking sites, people's political outspokenness is not contingent on the relational closeness to the envisioned audience. Based on this finding, further research is needed to investigate whether this pattern also applies to other social situations in online as well as offline realms. The interpretation of the results suggests that it could make a difference whether relationally closer others are directly involved in the discussion (and have the chance to give direct feedback) or remain uninvolved observers. Second, as a general implication for the spiral of silence theory, this study also reveals that it may not (only) be the majority status that increases people's likelihood to voice their opinion but people's certainty about the prevailing opinion distribution among the particular audience. This finding could give rise to optimism showing that people are not mindlessly subjected to majority pressure but tend to contribute to discussions on the condition that they know what to expect from the others.

V GENERAL DISCUSSION

The general discussion intends to summarize and interpret the empirical results of this dissertation's studies in light of the theoretical framework and shortcomings in previous research (Chapter 9). Based on this overarching analysis, theoretical implications (Chapter 10) and limitations (Chapter 11) are derived. This chapter further gives an outlook for future research (Chapter 12), outlines practical implications (Chapter 13), and draws a final conclusion (Chapter 14).

9 Synopsis of Research Model and Empirical Results

The overarching objective of this thesis was to provide further understanding of the mechanisms leading to the formation of opinion climates on social networking platforms. To this end, this work aimed to systematically examine the psychological processes operating when people perceive opinion climates and express their own opinion during communication over SNS. The theoretical analysis of these processes was built upon a social psychological view of public opinion formation. Accordingly, the formation of public opinion was suggested to be subjected to social dynamics comprising reciprocal influence processes between the individual and society. These dynamics have been addressed by the spiral of silence theory (Noelle-Neumann, 1974, 1993), which offers a series of hypotheses predicting why and how individuals make inferences about opinion climates pertaining to public issues and under which circumstances individuals contribute to these opinion climates by publicly voicing their personal opinion on these issues. Initial studies already applied these predictions to the context of social media and provided the first evidence of the validity of the theory in these realms. However, this work identified several research demands within this field of study, based on which the specific objectives of this dissertation were derived: (1) The psychological process of public opinion perception through social networking services has not been fully covered by research. Previous studies have not clarified under which circumstances people allocate attention to opinion cues in participatory technologies and which of these cues ultimately exert the greatest impact on people's inferences about public opinion. In this context, perception biases such as people's tendency to project their opinion onto others and how this can be influenced by opinion cues on SNS are still understudied. (2) The role of people's fear of isolation as a central variable in spiral of silence theory has been largely

neglected by research in online contexts. However, this variable is supposed to have explanatory value for public opinion perception and expression in offline but also in online realms. (3) The silence mechanism referring to the relationship between perceptions of the opinion climate and subsequent opinion expression behavior has been researched in various online settings and yielded inconclusive findings. In order to explain discrepant results, it seems advisable to address environmental variables within particular social technologies that could amplify or weaken the association between perceived opinion climates and outspokenness. (4) To date, only a few works have systematically elaborated on whether observed mechanisms of public opinion perception and opinion expression in online contexts are unique to the nature of the particular technology or may be applicable to other social situations, including those in offline environments.

The present thesis aimed to remedy these shortcomings. For this purpose, a research model was developed conceptualizing the interaction between the individual user and the social networking platform based on the spiral of silence theory, its critique, and extensions (see Figure 2). This model incorporated two principal stages: (1) the process of monitoring climates of opinion and (2) the process of opinion expression. Along these two stages, the present results will be summarized and integrated into the existent state of knowledge.

9.1 Stage 1: Monitoring the Opinion Climate on Social Networking Sites

Fear of isolation increasing attention toward opinion cues

According to the spiral of silence theory (Noelle-Neumann, 1977), perceiving the opinion climate pertaining to a controversial public issue serves as a basis for the subsequent process of remaining silent versus speaking out. The theory suggests that human beings' fundamental fear of being isolated or rejected from others initiates the process of public opinion perception, as people wish to know which opinion, norm, or action is accepted by the majority of people within a group or society. Applying this claim to the context of SNS, this thesis's research model predicted that users' trait-like fear of isolation (i.e., people's general tendency to fear being excluded from social groups) would increase the attention people allocate to opinion cues available on social networking platforms. The first study of this dissertation investigated this hypothesis in the context of the social networking site Facebook. Here, opinion cues are given in the form of a main message (e.g., a status update or picture-based meme), aggregate user representations (e.g., the number of "likes"), and user-generated comments (cf. Walther & Jang, 2012). During the experiment, subjects were presented with a Facebook news feed containing several postings; one of those referred to this study's focal

topic including a main message, numeric information about how many people liked this opinionated message, and four user-generated comments. The main message and user comments stated a clear stance on the public issue. Results showed that the greater people's dispositional fear of isolation was, the more attention (based on a self-report measure) they devoted to user-generated comments and the better they recalled the stance expressed in those comments (based on a more objective recall question). Moreover, participants who perceived a greater dispositional fear of isolation expressed a greater likelihood of reading more user-generated comments on the particular topic. Although these relationships were rather weak, they revealed the superiority of user-generated comments (in comparison with a main message or the number of likes) in functioning as cues that – in users' perceptions – seem to provide information about how to avoid future social isolation. This superiority is corroborated by the fact that fear of isolation was not associated with the attention and recall accuracy regarding the main message and the number of likes. Additionally, in a direct comparison, participants stated that they generally devoted greater attention to user-generated comments than to the main message and the number of likes. Therefore, the link between users' fear of isolation and attention to opinion cues was only supported for user-generated comments.

Opinion cues shaping estimates of public opinion

The first stage of this thesis's research model focused not only on how users' attention to opinion cues is driven but – in a second step – on how these cues influence people's inferences about the prevailing opinion climate with respect to a public issue. In the time the spiral of silence was developed, people's interpersonal discussion with their social environment and their consumption of mass media coverage have been suggested to shape the way people estimate the opinion climate (Noelle-Neumann, 1983). Assuming that people would make use of every available information in their environment in order to infer what opinion climates look like, the present research model predicted that different message types within social networking platforms would also be utilized for public opinion perceptions. The influence of numeric information (in combination with a main message that expresses a stance on a public issue) was posited based on the bandwagon or consensus heuristic (Chaiken, 1987; Sundar et al., 2008) in the sense of perceiving these cues as collective representations of opinions. The impact of user-generated comments was theoretically derived from exemplification theory (Zillmann & Brosius, 2000), which argued that receiving exemplars of a rather abstract group facilitates people's information processing, resulting in a

mechanism of projecting the exemplified information to a whole group of people. To test these predicted effects, the first study experimentally manipulated the valence of the main message in combination with a high versus low number of likes and the valence of four user-generated comments. Perceptions of the opinion climate were measured on three levels: the perceived opinion climate among (1) the national population, (2) all Facebook users, and (3) people in participants' reference group (i.e., family and friends). Results of this experiment revealed a greater impact of user-generated comments than numeric information in shaping people's estimates of the opinion climate: Participants confronted with four user-generated comments advocating a negative stance on a controversial public issue (e.g., opposing the introduction of an adoption right for homosexual couples) estimated a more negative opinion climate among the national population and among Facebook users than participants confronted with two positive and two negative comments or unanimously four positive comments. This pattern, however, was not found for estimates of the opinion climate among the participants' reference group. The expected interaction effect of the main message and the number of likes was not found in the present data. However, the main message had an inverse effect on people's inferences about public opinion: Opposing memes led to estimates of a more supportive opinion climate among the national population and the participants' reference group (and vice versa), indicating that memes may be seen as cues representing non-mainstream viewpoints. Although the effects of user-generated comments on Facebook on people's inferences about public opinion supported the prediction of the present research model, effect sizes were rather small. Nevertheless, it should be considered that the extensive use of a social networking platform such as Facebook could entail a permanent exposure of opinionated comments on public issues, so that – over time – the effects of these opinion cues could become larger.

Opinion cues moderating social projection mechanism

Aside from opinion cues in one's environment, the literature suggests a further source from which people tend to derive the opinion climate: one's pre-existing opinion on the topic (Kennamer, 1990; Ross et al., 1977). Therefore, people tend to project their own opinion onto other people, sometimes overestimating the public support of one's point of view (Dvir-Gvirsman, 2015a). Accordingly, the current research model integrated people's personal opinion into the process of public opinion perception on SNS, predicting a direct effect of pre-existing opinion on perceived opinion climates, but also a conditional effect: The model also expected that opinion cues on SNS incongruent with people's opinion would weaken the

relationship between pre-existing opinion and the perceived opinion climate. Empirically, the first study showed significant relationships between people's opinion and the perceived opinion climate throughout all three groups that subjects were asked for (the strongest relationship was found with regard to the reference group). Still, only the relationship between subjects' pre-existing opinion and perceived opinion climate among all Facebook users was attenuated by user-generated comments incongruent with people's opinion, meaning that people projected their opinion onto other Facebook users less when they encountered comments that opposed their personal viewpoint. This interaction effect was not observed for the opinion climate among the national population and reference groups. Consequently, the relationships predicted by the research model were supported for the group of Facebook users by the first study.

Perceptions of public opinion influencing recipients' opinion

In the first stage of the model, a return path from perceptions of public opinion on people's subsequent personal opinion was proposed. This path drew on the idea of informational social influence (Deutsch & Gerard, 1955; Price & Allen, 1990) in the sense of taking other people's judgment as valid information and changing one's opinion accordingly. Thus, the model hypothesized an indirect effect of opinion cues available on SNS on recipients' post-exposure opinion through perceptions of the opinion climate. In order to identify changes in people's opinions and minimize demand characteristics, the first study assessed participants' pre-existing viewpoints side by side with filler items at least 5 days before the main experiment sessions, wherein post-exposure opinion was measured. While results showed there was no main effect of user-generated comments on Facebook on shifts in users' opinions, a weak (albeit significant) indirect effect of the valence of the comments on shifts in opinion through the perceived opinion climate among Facebook users was identified. Hence, people seem to slightly adapt their personal opinion in accordance with the opinion climate perceived among Facebook users. Again, the model's prediction received weak support for the opinion climate attributed to Facebook users.

While most predictions in Stage 1 of this thesis's model received empirical support by the first study, it should be acknowledged that the observed effects were rather weak and largely pertained to the perceived opinion climate of a specific group, that is, all Facebook users. Figure 12 displays the empirical findings specified in this thesis's research model.
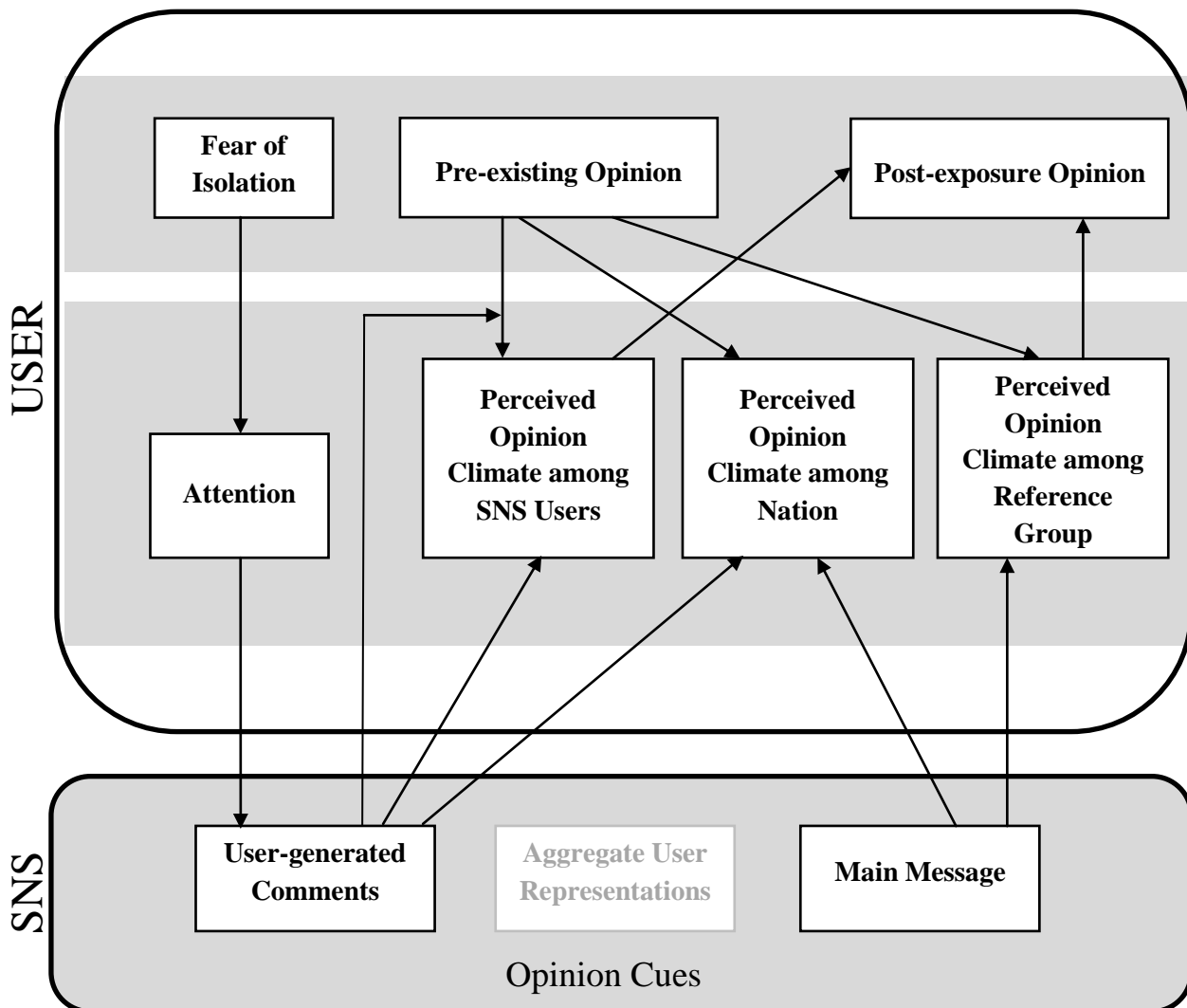
Figure 12. The process of monitoring opinion climates through social networking sites (Stage 1 of the research model) specified based on this thesis's empirical findings. Gray rectangles indicate factors which were examined in the present work but did not yield any significant relationship.

Filling gaps from previous research

The first empirical part of the present work intended to map the process of monitoring opinion climates on SNS with a special focus on the interaction between media-based and psychological factors. By doing so, gaps identified in previous research have been addressed. In the following, this work's contributions will be outlined.

First, this thesis investigated a rarely tested prediction of the spiral of silence theory in the context of social media: The positive relationship between people's fear of isolation and attention to environmental cues reflecting the opinion climate pertaining to a public topic. The corresponding evidence in the spiral of silence realm was scant and based on surveys, revealing a significant correlation between fear of isolation and self-reported attention to

public opinion polls (Hayes et al., 2013). In this context, the current work is the first to present evidence capturing the actual "monitoring process" in a real-life scenario and employing subjective but also more objective dependent measures (i.e., recall accuracy) to test this hypothesis. While prior works already focused on the process of public opinion perception on participatory technologies (Kim et al., 2014; Lee, 2012; Porten-Cheé & Eilders, 2015), the antecedent of this process, that is, people's motivation to learn more about others' opinions, has not been explored yet. Based on the current findings, the preliminary conclusion is that people's fundamental fear of social exclusion stimulates their attention toward opinion cues, in this case user-generated comments. In other words, users may use the content in user-generated comments as a means of knowing how to ensure future social acceptance and avoid isolation. It is remarkable that the user-generated comments presented in this experiment were written by unknown others (and not by recipients' friends or other people from their Facebook network) who may not directly threaten recipients' social inclusion. However, as has been already discussed, the opinions expressed in those comments seem to be extrapolated to larger groups such as other Facebook users and partially to the national population who – in users' perceptions – may be able to punish them if they violate prevailing norms.

Second, this work has provided a fine-grained analysis on whether and how content on social networking sites, more specifically on the platform Facebook, influences the process of public opinion perception. At first glance, the present results replicated the patterns reported by Lee (2012) and Lee and Jang (2010), who found that user-generated comments on online news sites generally exert impact on people's perceptions of the opinion climate. Still, this thesis's findings extend this knowledge by revealing that these effects are also present in a social networking setting, which – in users' perceptions – may not be principally labeled as a venue for political discourses (Vraga et al., 2015). Moreover, Lee (2012) and Lee and Jang (2010) investigated the effects of opinion cues in an isolated form, meaning that different opinion cues (e.g., numeric information and textual comments) were not presented side by side in the stimulus. However, platforms such as Facebook or YouTube provide an abundance of different message types such as number of likes/dislikes, user comments, or number of shares/views that could cancel each other's influence potential out, provided that they are showcased in juxtaposition. To maximize ecological validity and identify potential interaction effects, the first study of this work presented participants with a stimulus which simultaneously contained a main message (either supporting or opposing an issue), number of likes (either high or low), and user-generated comments (either supporting, opposing, or supporting and opposing an issue). Given that no interaction effects were found and the main

effects of user-generated comments on public opinion perceptions remained despite the abundance of message types (with concurring valences), the influence potential of comments was corroborated.

Third, this investigation differentiated between three target groups when asking participants for inferences about the opinion climate. Measures of public opinion perceptions commonly target on how "the general public" may judge a controversial issue; still, previous works have suggested that there might co-exist several opinion climates within society, being also mirrored in individuals' perceptions (Glynn & Park, 1997; Moy et al., 2001; Zhang & Reid, 2013). Indeed, the present work found users differentiating between groups: User-generated comments on the social networking site Facebook influenced the estimated opinion climate among Facebook users and – in a weaker form – that of the national population but not the inferred opinion climate among reference groups. This result, on the one hand, limits the effectiveness of opinion cues, indicating that individuals do not project the opinion expressed in comments to all social groups (including one's personal network); on the other hand, it has implications when it comes to asking which of those groups exerts the greatest impact on people's subsequent opinion and actions. In this respect, it was found that the opinion climates among Facebook users and among one's reference group are associated with changes in people's opinions (in the direction of the perceived opinion climate). This suggests that inferences about the opinion climates and their effects may stem from communication processes with different groups through potentially different channels. While the opinion distribution among Facebook users can commonly only be perceived by being exposed to the platform and reading other users' comments, the opinion of people in one's reference group can also be surveyed by interpersonal communication in face-to-face settings (Huckfeldt et al., 1995; Wojcieszak & Price, 2009). Consequently, the differentiation between these social groups not only clarifies the pattern of users' perceptual generalizations induced by opinion cues (generated by allegedly unknown people on Facebook) but also allows us to estimate the relative weight of social networking platforms in shaping perceptions of opinion climates.

Fourth, this work situated people's personal opinion more systematically in the process of public opinion perception through social networking services. While a line of studies demonstrated that exposure to online discussions can influence people's tendency to project their opinion onto others (Wojcieszak & Price, 2009; Wojcieszak & Rojas, 2011), another strand of research found that users' opinions on public issues can also be influenced when being exposed to user-generated content (in the direction of the stance expressed in the content; Diehl et al., 2015; Winter et al., 2015). On a more general level, these findings

ascribe two roles to people's personal opinion when using SNS: one as moderating variable (i.e., influencing the relationship between content received on the particular platform and inferences about public opinion) and one as dependent variable (i.e., being influenced by content received on the SNS). Accordingly, the present work integrated this knowledge into one model and conceptualized a reciprocal relationship between people's personal opinion and perceptions of public opinion. As discussed in Chapter 5.7, this reciprocal relationship received empirical support for the perceived opinion climate among Facebook users: There was an interaction effect between the valence of user-generated comments and users' personal opinion on perceptions of the opinion climate among Facebook users. Additionally, there was an mediation effect of people's estimated opinion climate for the group of Facebook users explaining the relationship between the valence of user-generated comments on people's opinion after being exposed to these comments. Thus, the present work contributed to a theoretical and empirical systematization of the role of users' opinions in the process of monitoring opinion climates.

9.2 Stage 2: Expressing One's Opinion on Social Networking Sites

The silence mechanism on SNS

The link between Stage 1 and Stage 2 of this thesis's research model is represented by the relationship between the perceived opinion climate and people's willingness to express their opinion on SNS. Following the silence hypothesis (Noelle-Neumann, 1993), the model predicted that people would be more outspoken on SNS the more they perceived the opinion climate to be congruent with their opinion on a controversial issue. Empirically, the quantitative studies of this dissertation considered perceptions of the opinion climate on a macro- and on a micro-level. On a macro-level, subjects were asked to estimate the opinion distribution among the national population and among all Facebook users, while on a micro-level, subjects were asked to describe the opinion climate among their reference group (i.e., family and friends) and – if applicable – among the audience present in the experimental setting. Results regarding the silence mechanism on both levels were not consistent across the present studies. Whereas Study 1 identified that perceiving congruence between one's viewpoint and the opinion climate among the national population, Facebook users, and one's reference group was positively (albeit weakly) related to people's willingness to participate in a topical discussion on the social networking site Facebook, Studied 4 and 5 did not reveal significant relationships between perceived opinion climates and willingness to express opinion. These discrepant findings may be attributable to different wordings in the dependent

measure: While Study 1 asked subjects whether they would be willing to participate in the discussion (without requiring an expression of their opinion), Studies 4 and 5 asked explicitly whether they would enter the discussion on Facebook and express their opinion. Thus, the opinion climate may be associated with people "speaking up" (in the sense of participating in a discussion without necessarily voicing one's opinion) but not "speaking out" (in terms of clearly expressing one's opinion; cf. McDevitt et al., 2003). Another explanation, which will be discussed below in greater detail, may be that the silence mechanism is conditional on situational circumstances that were experimentally manipulated throughout the studies.

On a micro-level, results from Study 1 yielded a weak, albeit significant, relationship between the opinion climate among one's reference groups and willingness to enter a discussion on Facebook. Studies 4 and 5 did not support this relationship. Moreover, neither Study 1 nor Study 4 was able to support the silence hypothesis based on an experimentally manipulated opinion climate. Study 4 even revealed an inverse effect among the German sample, that is, subjects faced with incongruent comments were more likely to express their opinion than those confronted with comments congruent with their opinion. This result suggests that incongruent micro-opinion climates among four unknown commenters may encourage users to speak out. The silence mechanism may only become operative under condition that these four comments are projected to a whole group of people, for instance, all Facebook users (see results from Study 1).

Taken together, the silence hypothesis received limited empirical support across the studies. If there were significant relationships between the estimated opinion climate and outspokenness, they were rather weak or conditional (see below). In the following, explanations for this pattern will be offered.

Identifying influential environmental factors on social networking platforms

In the research model, environmental factors on social networking platforms were proposed to exert an (indirect) impact on users' willingness to express their opinion. Although previous studies focused on factors such as anonymity or the particular audience influencing the silence mechanism (Luarn & Hsieh, 2014; Nekmat & Gozenbach, 2013; Yun & Park, 2011), a systematic analysis of influential environmental factors was outstanding. In order to identify these factors in contrast to other social situations, including those environments investigated in previous spiral of silence research, the second study employed qualitative interviews with social media users with the aim of building subsequent hypotheses on situational characteristics derived from users' subjective view. In this context, participants

were asked to reflect upon why they would express a deviant opinion in some situations but not in others. Analyses from users' statements were organized along four broad categories characterizing the nature of discussion situations: interaction partners, audience, communication environment, and the nature of discussion. One factor mentioned by most participants with respect to the social networking platform Facebook was the size of the audience and the related sense of being in a public spot. This factor of publicness seems to lower people's readiness for opinion expression, especially in combination with other variables such as subjects' identifiability (in the sense of one's real identity being revealed to the audience) and the persistence of one's messages (in the sense of messages being recorded and archived on SNS). Accordingly, subjects appeared to feel accountable when expressing their opinion in the public spot of Facebook as this disclosure could be traced back to their identity for an inestimable time. Likewise, it was stated that the relationship to the people present in a situation (either online or offline) influences subjects' outspokenness. Here, the distinction can be made between people present as interactions partners or as an (uninvolved) audience. Generally, subjects indicated that they would feel comfortable expressing a minority opinion in front of friends, as they would not expect extensive negative reactions from them (in comparison with strangers). However, people do not like the idea of friends viewing one's opinion expression (as an uninvolved audience) without having the opportunity to directly talk to them about this topic (as can be the case on many social networking platforms). Aside from the factor of who may be part of the situation, subjects characterized discussions on social media, including Facebook and YouTube, as often having an uncivil nature, which also reduces their motivation to participate in a discussion.

In sum, the explorative approach yielded a series of environmental factors on social media that may be influential during politically and civically relevant discussions: publicness, relationship to the audience/interactants, identifiability, communication persistence, and the tone of discussion. While this approach offered a collection of situational factors, it still did not provide systematic evidence on the influence of these characteristics. This was provided by subsequent studies (see below).

Discovering situational manifestations of people's fear of isolation

Aside from placing a special focus on environmental factors that influence people's (political) outspokenness in communication over SNS, the research model also strived for a situational specification of people's fear of isolation. Following the rationale that fear of isolation serves as an explanation for why people withhold their opinions in hostile opinion

climates (Noelle-Neumann, 1977), this work argued that fear of isolation not only functions as a constant trait but also varies in accordance with situational factors. Further, it was proposed that people's situational fear of isolation varies in magnitude (higher vs. lower) but is also multidimensional, meaning that people may envision different situational sanctions by other people, which could lead to social isolation. The second study of this dissertation intended to disentangle this multidimensionality on a qualitative level. Confronted with different social situations, including discussions in social media platforms, subjects were asked to refer to other people's reactions after subjects expressed a viewpoint deviant from the majority view. While participants also mentioned positive and neutral reactions such as compliance or acceptance of deviant opinion, most expected reactions were negative in nature. A total of seven expected sanctions were derived from interviewees' statements, comprising the expectation of being personally attacked, judged, persecuted, shown up, as well as encountering indignation, lack of comprehension, and verbal and nonverbal rejection, for example, others turning away from oneself. This multidimensionality of expected sanctions (as situational manifestations of people's fear of isolation) was tested more systematically in Study 3, which employed an experimental approach. Analyses in Study 3 suggested a three-factor construct of expected sanctions covering the fear of being personally attacked, fear of being judged, and fear of being rejected. Study 4, which researched the effect of publicness on Facebook on people's outspokenness, replicated the three-factor pattern in a similar form. Analysis in Study 5, however, suggested one overarching dimension for the expectation of sanctions. The absent multidimensionality in Study 5 might be due to the weak experimental manipulation that apparently was not able to create situational variance, leading to a unidimensionality of expected sanctions.

While this and the previous section did not present tests of directional relationships in this thesis's research model, the corresponding studies served to illuminate the diversity of environmental factors and situational manifestations of the fear of isolation. These results built the basis for studies to test the explanatory value of environmental factors and expected sanctions in Stage 2 of the research model.

Environmental factors influencing the silence mechanism

Before testing the main hypothesis in Stage 2, that is, environmental variables in social networking services influencing the silence mechanism on these platforms, Study 3 first investigated people's willingness to express a minority as a function of environmental variables considering both online and offline communication. This direct comparison of both

communication channels was conducted in order to explain previous discrepant findings on the question of whether people are more outspoken offline or online (Hampton et al., 2014; Ho & McLeod, 2008; McDevitt et al., 2003; Wang et al., 2004) by showing that these discrepancies are due to environmental differences *within* computer-mediated and face-to-face communication that were not considered before. Results of Study 3 first showed that people's willingness to express a minority opinion was higher offline than it was online. People's reduced outspokenness online could be explained by their fear of being personally attacked (e.g., by being insulted), which was greater in online rather than in offline realms. Despite this main effect of the communication channel, a closer look at the four situations presented to participants revealed differences *within* each channel. The second factor which differed between situations was the relevance of the audience: While a discussion during a bus ride with unknown others or in an anonymous online forum comprised an audience which was not particularly related to the subject, a discussion at a social gathering (explicitly including strong and weak ties) or on Facebook provided an audience that (as shown by the manipulation check) seemed relevant to participants. Considering this factor, an interaction effect of the communication channel and audience relevance emerged. Given a less relevant audience, the effect of the communication channel on people's outspokenness was not as great as when a relevant audience was presented. Consequently, the greatest difference regarding people's willingness to express a minority opinion was found between the social gathering and Facebook condition, whereas outspokenness was lower on Facebook than at the social gathering. This result demonstrated that environmental factors (in this case: the particular audience) within each channel (CMC vs. face-to-face) can be responsible for the variance in people's readiness to speak out. Generally, this study also showed that across all situations, people's outspokenness was the lowest on Facebook.

Drawing on these findings, Studies 4 and 5 set out to test whether environmental factors within the social networking platform Facebook could set boundaries to the silence mechanism (as suggested in the research model). More specifically, Study 4 focused on the factor of publicness on SNS in terms of the extent to which a message is accessible by and visible to other people. Potential effects of publicness on people's communication behavior have been discussed incidentally in the spiral of silence realm. Building upon Noelle-Neumann's (1994) claim that a silencing process is most likely under conditions of a moderate publicness, predictions in Study 4 stated that a greater publicness on social networking sites (as given on a public channel on Facebook, which is accessible for all Internet users) would reduce people's willingness to express their opinion than a limited

publicness (as given in a closed Facebook group, which is only accessible for members). For the German sample, results supported this hypothesis and also supported the assumption that publicness moderates the silencing mechanism: Under conditions of a limited publicness in a closed Facebook group, people's willingness to voice their opinion increased with the perceived congruence with the opinion climate among Facebook users; under conditions of a greater publicness, people's outspokenness was not related to perceived opinion climate. Additional findings of Study 4 largely supported the mechanisms predicted by this thesis's research model: A greater publicness on SNS increased the perceived size and relational diversity of the audience, leading users to expect a greater fear of being judged and being attacked. While the fear of being attacked, in turn, increased people's outspokenness (indicating that people accept potential sanctions for becoming outspoken), the fear of being judged reduced people's likelihood to express their opinion on SNS. The publicness effect and the explanatory mechanisms, however, were not found for the Singaporean sample, which indicates that the perception of publicness on SNS may differ across national and cultural boundaries.

As shown by Study 4, publicness on SNS is inevitably associated with users' envisioning of the audience of their opinion expression act; still, this study did not reveal which particular audience among the many collapsing on SNS influences the silencing mechanism. Study 5 addressed this question and specified the audience as an environmental factor on SNS by focusing on subjects' relationship to the audience. Relying on claims from interpersonal and intergroup research (Clatterbuck, 1979; Gudykunst & Nishida, 2001), it was assumed that relational closeness to the audience on SNS goes hand in hand with a higher predictability of the audience and higher certainty about positive relational outcomes. This argumentation allowed specifying the predictions made in this thesis's research model: A relationally closer audience (e.g., close friends) was suggested to lower the expectations of sanctions, even in the face of a less congruent opinion climate. Analogously, it was expected that in the face of a relationally closer audience on SNS, people would be more likely to express their opinion also when expecting a rather incongruent opinion climate than would be people who are confronted with a relationally distant group (e.g., strangers). Empirical results did not support most of these hypotheses. Although people were less likely to expect sanctions from weak ties than from strangers, relational closeness exerted neither direct nor indirect effects on people's outspokenness on SNS. These findings were explained, aside from pointing to methodological issues (see Chapter 8.7), under consideration that people do not

feel comfortable expressing their opinion on controversial issues in front of friends without being able to see their reactions (see results from Study 2).

The research model's prediction that environmental factors on social networking platforms such as publicness or the particular audience could be boundary conditions of the silencing mechanism received only partial support. While the publicness effect was found only among German participants, the influence of the relationship to the audience was not corroborated by the data.

The influence of individual characteristics

Drawing on works that pointed to the relevance of individual differences in personality as factors influencing people's outspokenness (Lasorsa, 1991; Matthes et al., 2012), the present research model integrated dispositional variables into Stage 2. According to the model's prediction, individual characteristics such as political interest or issue importance directly affect people's willingness to voice their opinion on social networking platforms. This prediction was tested in Studies 4 and 5, which considered individual characteristics as control variables in multivariate analyses. Supporting preceding results (Baldassare & Katz, 1996; Lasorsa, 1991; Matthes et al., 2010), Study 4 showed the more German participants were generally interested in politics and the more certain they felt about their opinion, the greater was their willingness to express their opinion. Still, these relationships were not found for the Singaporean sample of Study 4, as they were not significant in Study 5. The importance people ascribed to the studies' focal topics was weakly to moderately associated with their outspokenness across Studies 4 and 5.

Participants' origin in terms of whether they were recruited in Germany or Singapore also did not exert any impact on participants' general willingness to express their opinion (cf. study 4). Neither sex nor age significantly predicted subjects' outspokenness in Studies 4 and 5.

Taken together, the interindividual variables that were identified as influential by previous spiral of silence research were not consistently found to exert impact on people's communication behavior in controversial discussions on social networking sites. It could be assumed that in online contexts other individual characteristics become more relevant than the ones identified in offline environments. As shown by Study 4, users' privacy attitudes significantly predicted to what extent they were willing to express their opinion on Facebook. Thus, differential uses and evaluations of online platforms may override the direct influence of variables such as political interest. Which interindividual variables exert impact may be

contingent on characteristics of the particular online platform. The prevailing publicness of communication on Facebook, therefore, seems to activate personal privacy preferences when communicating on this platform. Accordingly, further analyses of people's outspokenness on SNS should rely on individual variables under consideration of the specific platform and its unique characteristics.

Strategies for opinion expression and avoidance strategies

Recent claims in spiral of silence research stated that people's communication behavior in front of a hostile opinion climate may manifest in more complex ways than the dichotomy of either expressing one's opinion or lapsing into silence (Hayes, 2007; McDevitt et al., 2003). The research model accordingly incorporated further expressive behaviors in Stage 2 such as expressing ambiguity, asking a question, or pretending to agree. These strategies were considered empirically in Studies 2, 3, and 5. Studies 2 and 3 showed that individuals tend to apply strategies such as expressing ambivalence or indifference less in online than in offline communication. This may be due to the reduced "involvement obligation" in computer-mediated compared with face-to-face communication (cf. McDevitt et al., 2003). Therefore, when observing a controversial discussion in online environments, people may be less likely to conceal or to publicly mitigate their opinion, as they do not perceive the necessity or any social pressure to enter the discussion at all. In face-to-face communication, by contrast, people are more likely to be subjected to the etiquette of listening and responding to a discussion (McDevitt et al., 2003). Study 5 explored these strategies exclusively on the social networking site Facebook and did not find any variance in the extent to which they are used – depending on the relationship to the audience.

Given these results, it should be scrutinized whether these strategies should still be incorporated in the model in the previous fashion or whether they should be connected to further factors such as people's motivations to enter a discussion.

Empirical analyses related to Stage 2 of this thesis's research model comprised exploratory approaches as well as systematic tests of directional relationships. While the exploratory techniques provided insights into environmental factors and situational manifestations of people's fear of isolation as influence factors of people's outspokenness on SNS, experimental techniques offered partial empirical support for the hypothesized relationships in the second stage of the model. The empirically observed relationships related to Stage 2 are illustrated in Figure 13.
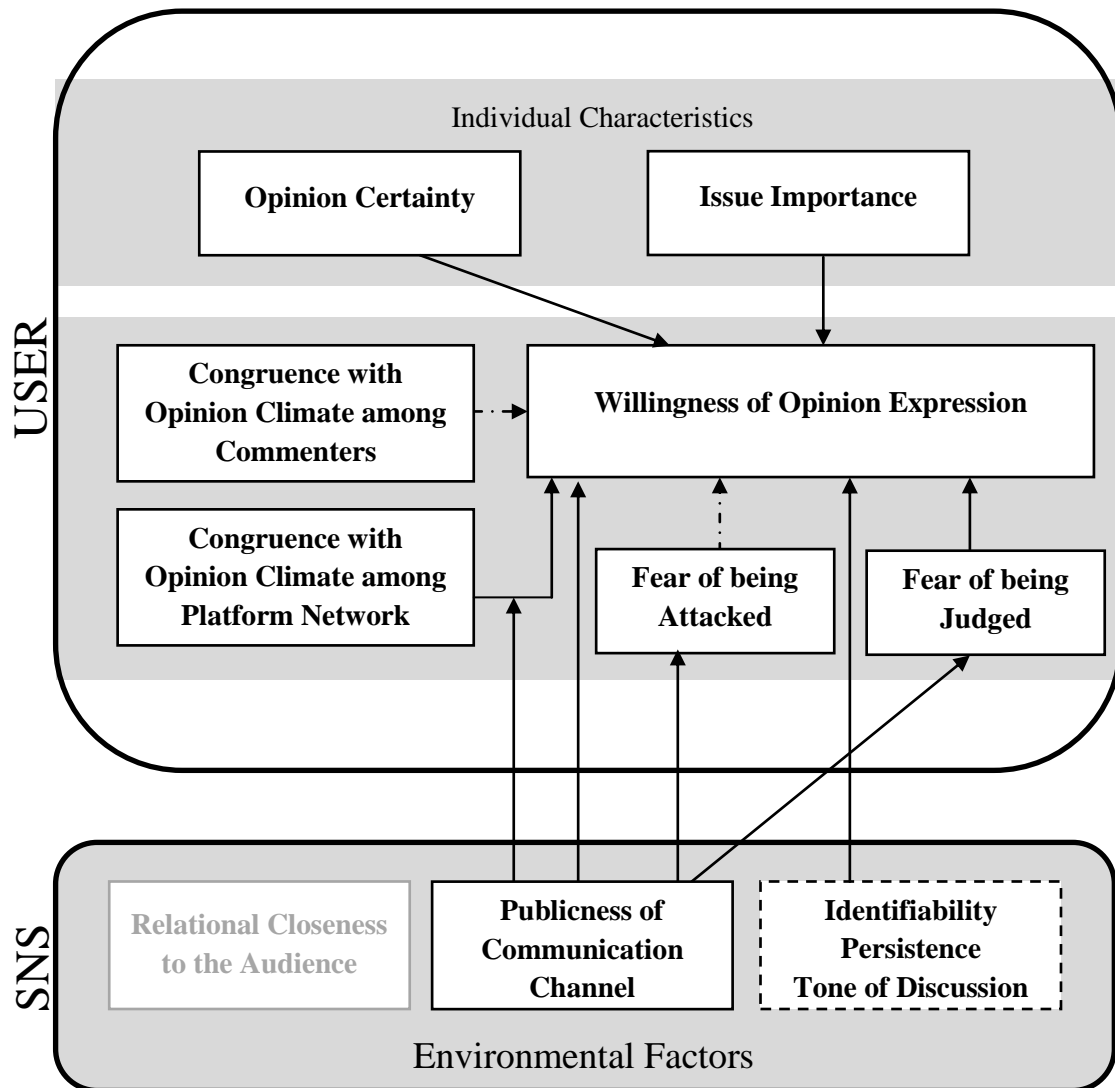
Figure 13. The process of expressing one's opinion on social networking sites (Stage 2 of the research model) specified based on this thesis's empirical findings. Continuous arrows indicate significant relationships in the expected direction, while discontinuous arrows represent significant relationships in a direction opposite to expectations. Gray rectangles indicate factors that were examined in the present work but did not yield any significant relationship. Rectangles with a discontinuous line represent factors whose influence was suggested by the qualitative approach but was not tested quantitatively. Please note that the publicness effect was found in the German but not in the Singaporean sample.

Filling gaps from previous research

   The second empirical part of this thesis approached the process of expressing one's opinion on SNS by analyzing how platform-specific factors and situational manifestations of the fear of isolation explain the variance in people's willingness to voice their opinion online. This section will elaborate on how this analysis contributes to the current state of knowledge.

   First, the current work offers an approach to resolving inconclusive findings regarding the silence mechanism in online contexts. Previous studies testing the silence hypothesis on

the Internet provided results indicating weak to absent relationships between the (perceived) opinion climate and people's willingness to speak out (e.g., Ho & McLeod, 2008; Kwon et al., 2015; McDevitt et al., 2003; Miyata et al., 2015; Porten-Cheé & Eilders, 2015; Yun & Park, 2011). The present work proposed that the unexplained variance may be attributable to the fact that different online platforms (e.g., virtual chat, Facebook, Twitter, online forum) served as settings across these studies and that these environments entail different characteristics which could reinforce or mitigate the silence mechanism. Empirically, the current studies investigated this claim specifically in the context of the social networking platform Facebook and showed that in a Western culture the publicness of communication within this online environment indeed mitigates the silence mechanism, as people's outspokenness was less contingent on the perceived opinion climate among their Facebook friends in a highly public channel than in a less public channel on Facebook. This finding, on the one hand, is in accordance with claims of the original theory which indicated that the silence mechanism will be best observable under conditions of a moderate public (Noelle-Neumann, 1994). On the other hand, the application of this theoretical argument to communication processes on a specific social media platform contributed to identifying a boundary of the theory's main assumption in this particular communication context. Although another attempt to seek out a further boundary condition of the silence hypothesis by focusing on the relationship to the audience on Facebook (Study 5) did not support the expected mechanisms, the results of Studies 2, 3, and 4 generally suggest that people seem to be sensitive to contextual factors – besides the opinion climate – when it comes to deciding whether to speak out or not. Hence, it seems advisable for future research to specify – theoretically and empirically – the characteristics of the communication channel of interest in order to better explain the predictors of people's expressive behavior.

Second, and closely related to the previous point, the present collection of studies drew attention to the relevance of the audience as an influence factor of people's opinion expression behavior. While previous research claimed that people may feel comfortable when voicing their viewpoint in a more familiar interpersonal environment (e.g., in front of family member or friends; Glynn & Park, 1997), a systematic exploration of the influence of the interpersonal environment has been outstanding. The current work addressed this gap and revealed an interplay between the interpersonal context and the communication channel. Supporting previous theoretical claims, Studies 2 and 3 showed that at a social gathering with strong and weak ties, people would be more inclined to speak out their minority opinion on a controversial topic than in front of unknown others (e.g., strangers during a bus ride break).

Nevertheless, while people perceived the audience on Facebook as personally important as the audience at a social gathering, their willingness to express their opinion on Facebook was remarkably lower than at a social gathering. Study 5 additionally showed that the relational closeness to the audience on Facebook does not affect people's outspokenness. At least two explanations could account for the observed patterns: (1) People's outspokenness is subject to a communication channel effect, meaning that people are less willing to express their opinion on Facebook (in disregard of the relationship to the audience) than at a social gathering because on Facebook the opinion expression message could be recorded, archived, and accessible for many others (cf. boyd, 2010), whereas a vocal opinion expression is commonly not virtually persistent. (2) Subjects do not generally like the idea of disclosing their opinion on a controversial topic when familiar others do not directly participate in the discussion and are "silent observers," so that subjects do not receive direct feedback on their opinion expression. This second explanation could apply equally to both offline and online realms. Although the present studies do not allow conclusions to be drawn on whether the influence of the audience is contingent on either (1) the communication channel or (2) the constellation of the communication situation or both conditions, the results at hand provided insights into the potential influence of the interpersonal context on people's public outspokenness.

Third, spiral of silence research in online contexts, as is the case for studies in offline realms, did not systematically integrate people's fear of isolation as an explanatory variable into the process of public opinion expression (Hayes et al., 2013; see Chapter 2.3.2.1). The present collection of studies intended to fill this gap by assuming a situational view on the fear of isolation and disentangling the diversity of social sanctions people expect in minority offline and online situations (Study 2). Subsequently, these situational manifestations of the fear of isolation were identified as relevant factors being significantly associated with people's readiness to speak out (Studies 3 and 4). In these studies, the explanatory value of the situational fear of isolation appeared to be greater than the predictive value of the trait-like fear of isolation, as the disposition was not significantly related to people's willingness to express their opinion throughout Studies 3, 4, and 5. This pattern underlines the necessity to focus on individuals' situational expectations of other people's behavior in order to explain their communication behavior. By employing this situation-specific approach, the present work advances the understanding of how people's fundamental fear of isolation drives their behavior and how this fear is contingent on environmental factors. This knowledge may serve as a fruitful basis for further theorizing and analyzing opinion expression processes in both online and offline communication.

Fourth, this thesis assessed the process of public opinion expression on social media in contrast to other social situations that were investigated in prior works. Previously, people's willingness to express their opinion on a controversial topic has been examined in many social situations such as a train ride (Noelle-Neumann, 1993), bus ride (Salmon & Neuwirth, 1990), social gathering (Moy et al., 2001; Mutz, 1989), wedding banquet (Willnat et al., 2002), online discussion groups (Price et al., 2006), or on Facebook (Kwon et al., 2015). Less research has been conducted to compare people's outspokenness across different situations and, by doing so, indicate which situations imply a greater potential for a spiraling process. Study 3 showed that people's general willingness to express a minority opinion on the social networking platform Facebook was the lowest when comparing this environment with a discussion during a bus ride, a social gathering, or in an online forum. In line with this, Study 2 showed that expressing a deviant opinion on Facebook is perceived as rather threatening when compared with other situations such as a social gathering, YouTube, or online forum discussion. Thus, across different situations of public deliberation, people's willingness to become outspoken on Facebook is rather low. To what extent social networking platforms imply a greater potential for a spiral of silence than other discussion venues will be discussed in the following.

10 Theoretical Implications

10.1 Implications for the Processes of Monitoring and Expressing Opinions on Social Networking Sites

As revealed in empirical analyses of the first stage of this thesis's model, assumptions pertaining to the spiral of silence theory seem tenable in the context of social networking technologies. The current findings generally suggest that people observe opinion cues provided by social networking environments to survey prevailing opinion climates on public issues. As demonstrated in the context of Facebook, user-generated comments as exemplified representations of opinions appear to be the most influential cues affecting people's inferences about public opinion. In line with the spiral of silence theory (Noelle-Neumann, 1993), people's attention to user-generated comments is, not exclusively but partly, driven by their fear of being socially isolated. People tend to project, albeit weakly, viewpoints expressed in a few available comments onto the national population and onto all other Facebook users. This cognitive generalization process from individual opinion cues to larger groups is limited by people's own opinions on the particular issue, as people's estimates about

opinion climates are still largely subject to the perceptual bias that other people may hold the same opinion as oneself (as proposed by the social projection hypothesis; Krueger, 1998). However, the exposure to user-generated comments that hold a stance opposing the viewer's opinion attenuates the tendency to project one's opinion onto other Facebook users. All in all, the strong influence of pre-existing opinions, the pattern that people do not project opinion cues available on social media onto their whole social environment, and the modest effect sizes identified in the corresponding empirical analyses indicate that communication over SNS makes up only a small share of the factors influencing people's perceptions of public opinion. It seems reasonable to assume that mass media stimuli such as news coverage and interpersonal communication – be it online or offline – with reference groups (cf. Noelle-Neumann, 1983) are still influential sources for inferring opinion climates.

Nonetheless, the efficacy of communication over SNS should be estimated under consideration of its ubiquity and popularity (see Chapter 3). Taking the permanent accessibility and frequent use of social networking sites into account, one could conclude that people are exposed to opinion expressions online over and over again. Can content on social networking sites, in the long run, exert a greater impact on people's public opinion perceptions than was observed after a one-time exposure in the present work? Noelle-Neumann (1973) claimed that – outside laboratory settings – three characteristics make mass media influential on people's perceptions and opinions: ubiquity (i.e., mass media's omnipresent accessibility), cumulation (i.e., repeated presentation of public issues), and consonance (i.e., homogeneous fashion of coverage). While the first two characteristics certainly apply to communication on SNS, the prerequisites for the third – consonance – differ between mass and social media insofar as the content people encounter in the latter is largely generated by users themselves and not (only) by journalists or media outlets. Therefore, social networking technologies may exert greater effects on people's opinion climate perceptions in the long run; nevertheless, in which direction content on SNS shapes people's inferences can be determined by users' own communication behavior. Since it has already been scrutinized whether mass media portray public issues in a homogeneous fashion (Salmon & Kline, 1985; Tsfati et al., 2014), it seems logical to ask how consonant the opinion landscape on social networking platforms really is. Addressing this question brings the second stage of this thesis's research model into play: the process of opinion expression. If individual political outspokenness on participatory technologies such as Facebook is subject to the social psychological dynamics proposed by the spiral of silence theory, one could predict that opinion landscapes on these platforms – in the long run – could become ideologically

homogeneous. Specifically, if people's readiness to express their opinion on SNS is lower when they perceive the opinion climate as predominantly opposing their stance, a spiral of silence could be forecasted in the sense of an alleged majority faction gaining more visibility while the alleged minority faction loses public ground (cf. Noelle-Neumann, 1993).

The current findings focusing on the process of public opinion expression on SNS, however, revealed a more complex pattern: While a general perception of public support for one's opinion among Facebook users increases the likelihood of contributing to a discussion on the social networking platform (without necessarily advocating a particular point of view; see Study 1), Study 4 showed that people encountering four user-generated comments that opposed their opinion were even more willing to express their opinion on Facebook than those confronted with congenial comments (see results of the German sample). Perceived opinion climates among larger groups such as the national population or one's Facebook network did not largely affect people's likelihood to explicitly express their opinion on Facebook (as shown in Studies 4 and 5). Only in a closed Facebook group were people more likely to become outspoken when they perceived a trend in support of their viewpoint among their Facebook network (cf. results for the German sample in Study 4). These patterns indicate that while the opinion landscape could be subject to a spiral of silence and become homogeneous in closed Facebook groups, a long-term silencing mechanism in terms of uncongenial opinion climates reducing people's outspokenness on public spaces on Facebook (e.g., news channels) cannot be expected based on the present data. If predominant opinion climates do not affect people's communication behavior on Facebook in the sense it was originally proposed in the spiral of silence theory, the question arises of which factors determine people's outspokenness and what the influence of these factors means for the formation of opinion landscapes in such virtual environments.

In terms of descriptive values, the present studies revealed that people's general willingness to speak out their opinion on Facebook is rather low, ranging between $M = 1.98$ ($SD = 1.37$) in Study 5 and $M = 2.94$ ($SD = 1.96$) in Study 3 on a 7-point scale based on which higher means represent a greater likelihood of opinion expression. This reduced outspokenness has been explained by several environmental and perceptual factors throughout this work: On the Internet people generally perceive a greater fear of being personally attacked after expressing their opinion (Study 3). Moreover, Study 4 showed for the German sample that the sense of being in a public spot on Facebook, that is, in front of a large and relationally diverse audience, lowers people's likelihood to express their opinion, partially because they fear being judged by the audience for their opinion and losing potentially

important relationships. On SNS, people do not feel able to see or to control the reactions of their personally relevant audience leading them to instead lapse into silence (Study 3). These mechanisms indicate that environmental characteristics of a social networking platform such as its publicness of communication stimulate another key variable proposed by the spiral of silence theory, that is, people's fear of social isolation (Noelle-Neumann, 1993). Thus, in disregard of how a majority of people may currently evaluate a public issue, people are generally prone to lapse into silence on social networking sites as they presume that someone from the large invisible audience could judge them because of expressing their opinion. At this point, it remains unclear whether this fear of judgment is due to an expected opinion disagreement or simply due to the mere opinion expression.

Since analyses on why people withhold their opinion on social networking platforms are not specifically informative when it comes to estimating how opinion landscapes form in these environments, it seems worthwhile to also ask which variables increase people's likelihood of opinion expression. In this respect, Studies 4 and 5 revealed that people's opinion certainty and/or issue importance augment their willingness to voice their point of view on social networking sites. These relationships point to the relevance of a concept that Noelle-Neumann (1977, 1993) labeled as the exception to the rule (i.e., those who are not subjected to the silencing mechanism): the so-called hard core individuals. They are people who voice their opinion in disregard of the opinion climate since they are fully committed to the specific issue and believe in the correctness of their opinion (see also Lasorsa, 1991; Matthes et al., 2010). In the context of social networking sites, it seems that people with a higher opinion certainty and commitment to the topic not only overlook the prevailing opinion climate but also environmental factors such as publicness and potential sanctions that may emerge from these situational conditions. What does the increased outspokenness of hard core individuals mean for the opinion landscape on SNS? The fact that people are more certain about their opinion and perceive a personal relevance to this topic does not necessarily mean that these individuals tend to hold (and could therefore express) more extreme opinions (see Matthes et al., 2010). In addition, the outspokenness of hard core individuals does not necessarily guarantee a certain level of opinion diversity in online realms. Since social psychological research identified that people's attitude certainty is associated with direct experience with the issue (Tormala & Rucker, 2007) and cognitive elaboration of attitude-relevant knowledge (Smith et al., 2008), one could cautiously assume that at least a part of the messages expressing an opinion on public channels of social networking platforms are based on a reflected analysis of the topic. However, it should be acknowledged that opinion

certainty may also be rooted in a perceived social consensus regarding the topic (Tormala & Rucker, 2007), indicating that the opinion climate could exert an indirect impact on people's outspokenness through perceived opinion certainty. Taken together, no clear conclusions about the consonance of the opinion landscape can be derived from the positive predictors of people's likelihood of opinion expression on SNS identified here; however, these predictors preliminarily indicate that some of those who speak out in these environments may also be those who have already cognitively elaborated on this topic. Nevertheless, it is unclear whether the previously gathered knowledge on the topic is also resembled in people's opinionated comments. Readers of such comments may not benefit from commenters' knowledge when facts or accounts of personal experiences are missing in the opinionated message or when the presentation of this knowledge is marked by an uncivil tone. Content analyses of participants' written comments in Study 5 suggest a general low number of arguments integrated in the messages. While the potential argument repertoire can certainly vary from issue to issue, the number and quality of arguments may offer further insights into how influential the opinion expressions on social networking sites can be on recipients (cf. Winter et al., 2015).

After having discussed to what extent theoretical assumptions, principally derived from the spiral of silence theory, apply to the context of social networking sites, it seems logical to ask to what extent the observed mechanisms are unique to the particular online context or may also be valid in other situations, for instance, in offline realms. With respect to Stage 1 of the research model, the present empirical results largely supported the expected mechanisms, offering additional evidence for the universality of the psychological process of monitoring one's environment for opinion cues. What is remarkable here is that four user-generated comments written by unknown people (and not by journalists or reference groups) suffice to shape people's perceptions of public opinion. Still, while this technology makes these comments easily available to users, the influence of these four comments may not be unique to the platform, as it seems conceivable that four spoken comments by unknown others in face-to-face communication could have a similar impact on people's inferences about public opinion, too. Given the popularity of the SNS Facebook, these findings suggest that this platform may function like a further source – besides mass media and interpersonal face-to-face communication – conveying pictures of public opinion to its users.

Regarding Stage 2, that is, the process of opinion expression, a direct comparison of Facebook with other online and offline situations revealed the lowest likelihood of opinion expression on this platform (see Study 3). In-depth analyses presented characteristics of this

platform that may be responsible for this effect (see Study 2): Communication on Facebook (a) often takes place in front of a large invisible audience; (b) frequently occurs in front of strong, weak, and absent ties who do not necessarily need to be involved in the particular discussion; (c) is recorded, archived, and can be accessible for an inestimable time; and (d) can be traced back to one's identity – be it because people are registered with their real names or because they are embedded in a network that can associate people's messages with their identities. Each of these characteristics exists in many other social situations: People may encounter a large invisible audience (including strong, weak, and absent ties) when giving a TV interview. People's opinion expression act may be recorded and archived when published in a printed magazine or in an online forum. Furthermore, people may be identifiable when voicing their opinion in front of friends or co-workers during a social gathering. However, the combination of all these characteristics in one social situation may be uniquely present on social networking technologies such as Facebook. Do these characteristics limit the universality of theoretical mechanisms underlying public opinion expression? Although the present results suggest that a greater publicness on social networking sites (in the sense of larger and more diverse audience) indeed mitigates the influence of the perceived opinion climate on people's outspokenness on such platforms, these data do not allow a conclusion to be drawn on whether this attenuated silence mechanism is also contingent on other characteristics of the technology (e.g., communication persistence and one's identifiability) or may also be applicable to other discursive situations outside this technology. Hence, reasoning that the effects on people's outspokenness observed here are due to the investigated technology and not of universal nature should be tentative as long as the interplay between environmental factors characterizing the technology is not studied in a systematic form.

10.2 Implications for the Spiral of Silence Theory

The present research also has general implications for the spiral of silence theory and its predictions on a micro-level. Supporting criticism of the original theory (Kennamer, 1990; Price & Allen, 1990; Salmon & Kline, 1985), the current findings indicate that perceptions of public opinion are subjected to projection bias in the sense that individuals are generally prone to project their opinion onto others. While this bias does not entirely shape people's inferences about the opinion climate (especially not when people are directly confronted with uncongenial opinions; see Study 1), these results demand that this perceptual bias be integrated into the theoretical framework scrutinizing to what extent it can attenuate effects

caused by perceived opinion climates. Moreover, the first study also indicated that perceptions of the opinion climate may affect not only people's public behavior (i.e., participating in the discussion) but also their private opinions. This finding supports claims lamenting the negligence of the informational social influence within the spiral of silence theory (e.g., Price & Allen, 1990) and simultaneously questions the prevalence of the silence mechanism: If people tend to align their personal opinion to the perceived opinion climate, they will be less likely to encounter a hostile opinion climate that prevents them from speaking out. Following the dual-process model of social influence (Deutsch & Gerard, 1995), people are prone to estimate other people's opinions as valid when they find themselves in ambiguous situations wherein judgments are not easy to make. Based on this reflection, it seems worthwhile to also consider the complexity and/or ambiguity of a public issue as well as people's certainty about the correctness of their opinion in order to determine to what extent public opinion can affect both public behavior and private opinions. It may also be conceivable that people align their opinion to the opinion climate in order to avoid feelings of cowardice about not speaking out against a hostile trend of opinion. All these potential paths of influence require extending the spiral of silence theory with respect to informational social influence and analyzing its interplay with normative social influence.

Results from the current studies further indicate the explanatory value of analyzing people's outspokenness in light of the particular communication situation. An implicit assumption of a large body of previous spiral of silence research has been that the silence hypothesis applies equally to many different social situations. While this premise addresses the universality of this hypothesis, the modest effect sizes across the empirical literature suggest that further factors may intervene in this process (Glynn & Huge, 2014). In this regard, the collection of studies at hand draws attention to a series of situational circumstances that can either intensify or mitigate the silence mechanism and could be treated as boundary conditions by future research (see Table 6). Initial systematic analyses of these situational factors revealed that the silence mechanism is not observable under conditions of a greater publicness. Whether this boundary condition is unique to the technological context has to be further studied.

This situational view requires focusing not only on the independent or moderator variables such as the publicness of the situation but also on how explanatory variables such as people's fear of isolation vary in accordance with these situational circumstances. The present results suggest that people's fear of isolation can manifest in diverse expectations of how the social environment could punish them for being deviant and that these expectations can be

contingent on situational circumstances such as the size or the relationship to the audience. In sum, a refinement of micro-level predictions within the spiral of silence theory focusing on situational circumstances could contribute to explain greater variance in people's communication behavior and, therefore, indicate which social environments are more predisposed to spiraling processes than others.

11 Limitations

While limitations have already been discussed for each of the five empirical studies, this chapter further acknowledges overarching limitations of the present line of research.

One important limitation of the current studies pertains to their fixation with the social networking platform Facebook, as a major part of the empirical evidence at hand referred to this particular technology. This approach was selected because Facebook is worldwide the most popular social media technology (Alexa, 2016) and because using the same platform across different studies allows a certain comparability among these. Still, it is logical to ask to what extent the observed mechanisms are applicable to other social networking services such as Twitter, Instagram, Pinterest, LinkedIn, or Sina Weibo. Following the above line of reasoning that situational circumstances intervene in silencing processes, the question of generalizability should be treated with appropriate caution and launch a discussion about commonalities and differences between these platforms. Social networking services such as Twitter, Instagram, or Sina Weibo may be similar to Facebook with regard to the networked, albeit not always visible, audience including strong and weak ties and a dynamic stream of real-time messages generated by users (comprising proprietor content or comments; cf. Walther & Jang, 2012). These commonalities could lead to the conclusion that the patterns based on user-generated comments observed here (which are available on all of these platforms) and the size or composition of the audience are applicable to other social networking services. There are, however, differences between the platforms' features: On Facebook and Instagram, numeric user representations are expressed through the "like" button, while Twitter offers a "heart" button. Messages are restricted to 140 characters on Twitter and Sina Weibo, while Facebook and Instagram allow longer texts to be written. These technological differences could challenge the effects observed here, for instance, asking whether hearts on Twitter are interpreted differently from likes on Facebook when it comes to estimating the public agreement on a particular issue. Aside from technological differences, there are further non-negligible differences: The way people commonly use these platforms.

First, the fact that Facebook is the most popular of these SNS could lead to the conclusion that this platform implies the greatest publicness, questioning whether there might be a comparable publicness effect on Twitter or on Instagram. Second, there seem to be unwritten norms associated with every platform, which can also change over time. Study 2 showed that people estimate situations according to how appropriate it is to hold political discussions in this particular context. It seems conceivable that Facebook or Twitter, which are increasingly used for politically and civically relevant purposes (Gil de Zúñiga & Shahin, 2015; Vaccari et al., 2015), are perceived as more appropriate spaces to express one's opinion on a controversial public issue than the social networking service Instagram, which is commonly used to display one's creativity in the form of pictures and videos (Sheldon & Bryant, 2016). Consequently, the hard (i.e., technological) and soft (i.e., common use patterns) differences between the platforms could limit the applicability of the present findings to other social networking services. However, as this work is largely built upon overarching concepts such as the publicness of communication or the composition of the audience on a platform, the evidence provided by the present results is thought to survive technological trends, offering a fruitful ground for analyses of other or upcoming communication services.

A second general limitation lies in the micro-level view on the processes of monitoring and expressing opinions on social networking sites, which is a strength and a weakness of this work at the same time. On the one hand, this approach helped to illuminate how the individual is influenced by opinion cues and simultaneously under which circumstances the individual him/herself generates opinion cues that contribute to the formation of opinion climates. On the other hand, this work can only speculate as to how individual behavior could aggregate up to macro-social dynamics. With its focus on psychological mechanisms, this research could only assess a cutout of a dynamic process and was therefore not able to observe *spirals* of silence along a continuum of time. Further investigations are needed in order to assess how exposure to opinion cues on SNS influences people's perceptions over time and, in turn, how perceptions of the opinion climate in interaction with environmental factors affect people's outspokenness and, ultimately, the formation of opinion landscapes within these platforms.

This work's novel view on people's fear of isolation in terms of its situational manifestation has its limitations. In its current form, the conceptualization of expected sanctions is somewhat fuzzy as it covers a mixture of cognition (i.e., the expectation of being punished) and affect (i.e., the fear of being punished). Especially given the results of Study 5, which revealed that people's fears do not necessarily go hand in hand with what they

ultimately expect to happen, it seems reasonable to argue that people can fear a punishment for being deviant despite knowing this punishment is very unlikely to occur. Consequently, it should be objective of future research to draw clear lines between cognitive and affective dimensions of people's evaluations of potential future sanctions.

The major part of this work's studies is limited by the culture in which they were conducted. Four out of five studies are based on samples gathered in Germany, questioning the generalizability of the findings at hand. Especially since Study 4, which tested the predicted mechanisms cross-culturally in Germany and Singapore, revealed that different determinants exert impact on people's outspokenness in each country, it seems worthwhile to further examine how people use social networking services to survey and to contribute to opinion climates across national borders. Finding similarities and differences between cultures will help to evaluate the robustness of theoretical predictions. This becomes even more relevant when considering that platforms such as Facebook enable connections across nations and continents facilitating dynamics of a "world public opinion" regarding topics of universal interest (cf. Rusciano, 2014).

12 Future Directions

A variety of objectives for future research have already been derived from this work's limitations. This chapter will elaborate on further aspects that seem to be worth investigation by follow up studies.

The research model guiding the present line of research proposed that environmental factors pertaining to a technology could influence the second stage, that is, the process of people's opinion expression. Nonetheless, it also seems conceivable that environmental factors such as the publicness of a communication channel can also be influential in the first stage, that is, people's perceptions of the opinion climate. Do people allocate more attention to user-generated comments when they know that these messages have been or will be met with great public attention? Do highly public user-generated comments shape people's inferences about public opinion to a greater extent than comments written in less public environments? According to the idea of the third-person effect, namely, that people tend to assume that others are more influenced by media coverage with wide public attention than themselves, one could argue that people presume that also user comments generating wide attention will affect other people's opinions, aligning their perception of the opinion trend accordingly (cf. Gunther, 2014). In terms of contextual variables affecting the monitoring

process, the relationship to the originator of opinion cues may deserve further scholarly attention. Users of SNS not only encounter comments generated by strangers but also comments posted by personal ties. Drawing on the claim that for people the opinion climate among reference groups may be more important than the opinion distribution among unknown others (Salmon & Kline, 1985), it is possible that people's fear of isolation is a stronger predictor for the attention they allocate to opinion cues generated by strong ties than to those generated by strangers.

Another line of examination that may contribute to assessing the effects of monitoring processes through social networking technologies could focus on the effect of socially mediated opinion climates on people's face-to-face communication. While a large part of the present studies showed that perceived public support for one's opinion does not predict people's likelihood of opinion expression on SNS, it seems possible that people suppress their outspokenness in face-to-face communication with friends, acquaintances, or co-workers owing to the uncongenial opinion climate they encountered online (see, e.g., Hampton et al., 2014). Analyzing the transfer from social media to face-to-face communication appears a promising approach for estimating the role of participatory technologies in overarching silencing processes in society.

Moreover, future research could further disentangle the effects of particular characteristics of social networking technologies on people's outspokenness. As outlined previously, greater publicness represents only one factor among several others that jointly characterize communication through SNS. Factors such as the persistence of messages or one's identifiability (see Study 2) may also be responsible for the reduced willingness of people to voice their opinion on these platforms. A systematic exploration of whether these variables are influential on their own or only in combination will help to illuminate the "social networking effect" on the predominant silence in these realms observed in this study.

There are many ways to grasp the previously discussed dynamic nature of opinion trends within social networking services. One approach could take advantage of big data analyses. These techniques enable insights into behavioral data to be gathered from the field and allow for the observations of opinion landscapes over a longer period, offering cues for spiraling processes. Certainly, this approach faces a series of challenges in terms of representativeness and ethical concerns, which should not be waived (Gil de Zúñiga, 2015). An extensive line of research has already developed tools and employed techniques of opinion mining by relying on big data sets obtained from social media platforms (Ceron, Curini, & Iacus, 2015; Liu, 2015; Skoric et al., 2015); nevertheless, future analyses could be

rendered more meaningful by testing hypotheses directly derived from theories that specifically address the dynamics of opinion landscapes such as the spiral of silence theory. Data could be interpreted through the lens of social psychological processes such as the influence of majorities but also the diffusion of minority views. Given that the present findings suggest the people's outspokenness on SNS is not necessarily contingent on the perceived opinion climate but on the extent to which people believe in the correctness of their opinion and are fully committed to the issue, it seems likely that also members of minorities who consistently and confidently present their viewpoint are able to penetrate the public scene through social networking platforms (cf. Moscovici, 1976). In order to still cover the psychological processes underlying shifts in opinion climates, big data approaches could be complemented by longitudinal surveys assessing people's perceptions of opinion climates and their intention to voice their opinion in different online and offline realms. The combination of automated analyses of the opinion landscape that is available on social media platforms and the subjective perspective of users gathered through self-report inquiries could shed more light on the interplay between informational and normative social influence processes (i.e., effect of private opinions and public behaviors; cf. Deutsch & Gerard, 1955) driving the development of public opinion.

13 Practical Implications

When analyzing the practical relevance of this work for the field of media literacy or Internet policy and governance, the findings at hand can be interpreted in a positive as well as a negative light.

Regarding the process of monitoring opinion climates through social networking services, on the one hand, it seems normatively desirable that people pay attention to user-generated comments related to public discourses. Under the condition that people's news feeds also present comments generated by users outside one's personal network (e.g., when users subscribe to news channels), the tendency of monitoring voices from other citizens could theoretically increase the likelihood of being exposed to cross-cutting discourses (Bakshy et al., 2015) and incidentally acquiring political knowledge (cf. Bode, 2016). On the other hand, these potential benefits seem restrained not only by technological algorithms and people's selectivity of communication channels (Bakshy et al., 2015) but also by people jumping to generalizations (based on reading a few comments on a topic) and even aligning their opinions to these inferences. As the present results reveal that the latter risk is likely to

occur, there is a need to educate users to scrutinize the generalizability of individual user-generated comments to populations. This could be underpinned by informing users that only a minority of people write comments as responses to political discussions on social media (see, e.g., Rainie, Smith, et al., 2012). An educational approach addressing the reflectivity of users appears even more suitable as it is difficult to derive practical propositions for developers of social networking services: From a normative point of view, there exists no consensus about how media should ideally present opinion climates to users/recipients: "Should the ideal distribution of viewpoints in the media mirror the distribution of opinion among the public, or make all political views equally accessible even if it means under-representing some and over-representing others?" (Mutz & Silver, 2014, p. 87). Since answers to these questions remain elusive, practical implications for providers of technologies and regulatory agencies, for now, can only be based on general deliberative ideals (see Chapter 1.1), for instance, in terms of ensuring communication civility (e.g., by removing offensive comments that may keep readers from paying attention to more rational comments and participating in online discussions themselves; see Studies 2 and 3).

With respect to the process of expressing one's opinion, the present findings can also be interpreted in a positive and negative manner. Given that spirals of silence are thought to reduce opinion diversity in the long run and may, therefore, not be in line with democratic ideals (Mutz & Silver, 2014; Noelle-Neumann, 1993), a large part of the present findings – at first glance – give rise for optimism: At least on highly public channels of social networking platforms, people are not subjected to majority pressures in the sense that they adapt their opinion expression behavior to the (perceived) predominant opinion trend. An extrapolation of this pattern would suggest that on these channels, the opinion landscape will not become homogeneous based on the influence of an opinion majority. What might temper this optimistic view is that the absent silencing effect on public channels of Facebook does not necessarily guarantee a heterogeneous or representative opinion climate. It seems that on social networking sites, voices of the "hard core" are predominantly resembled in the opinion climate and those can be either homogeneous or heterogeneous. Along the lines of a participatory democracy, it seems desirable to ask how technologies or educators can increase users' motivation to participate in discourses on social networking services even though they may not feel certain about their opinion or be fully committed to the topic. What seems to prevent users from expressing their opinion is the fact that they feel uncomfortable disclosing their opinion in front of a large invisible audience. One way to address this concern would be to make the ultimate audiences of their opinion expression act technically more visible to

users by providing more information about them (e.g., how many people will be able to read the comment? How is the user related to these people?). Having more knowledge about the actual audience is thought to help predict how these people may respond to one's opinionated message and reduce their fear of being judged. As environmental factors seem to be responsible for people's general silence, it seems advisable to optimize these factors so that people feel comfortable to become outspoken. Still, making an audience more salient to users may not reduce the potential influence of communication persistence and one's identifiability, which were also found to reduce people's political expression on social networking platforms (see Study 2).

While communication on public channels on Facebook may not imply silencing effects, the silencing mechanism is still likely to occur in closed Facebook groups (as people's outspokenness is more sensitive to the opinion climate here). Closed groups, apparently, have a higher likelihood to turn into echo chambers in which expressed viewpoints become unidimensional (cf. Sunstein, 2008). Since echo chambers comprising like-minded people were proposed to be inherent to every democratic society (Dahlberg, 2007; O'Hara & Stevens, 2015), it may not be appropriate to conclude that these closed spaces are not suitable for political discourses. As long as people have access to more public channels on SNS, one could cautiously assume that they have a chance to see further viewpoints potentially diverging from the unidimensional climate in closed Facebook groups. From an educational point of view, it seems quite desirable to teach people to express their opinion even if it is conflictive with the opinion of their social environment. In this regard, Mutz (2006) calls attention to the high normative demands for a good citizenship:

> We want the democratic citizen to be enthusiastically politically active and strongly partisan, yet not to be surrounded by like-minded others. We want this citizen to be aware of all of the rationales for opposing sides of an issue, yet not to be paralyzed by all of this conflicting information and the cross-pressures it brings to bear. We want tight-knit, close networks of mutual trust, but we want them to be among people who frequently disagree. And we want frequent conversations involving political disagreement that have no repercussions for people's personal relationships. At the very least this is a difficult bill to fill. (pp. 125–126)

Instead of setting standards indicating the desirability of disagreements and heterogeneity, it may seem more fruitful to place a special weight on communication

rationality and the argumentative quality of discourses, which could increase people's political knowledge and lead to more informed judgments. Social networking technologies could foster the idea of a "marketplace of arguments" by rewarding users (be it through system-generated or others-generated cues) who corroborate their views with valid arguments.

14 Conclusion

The increasing political and civic use of social networking technologies requires advancing our understanding of *how* people make use of these platforms to exchange opinions and ideas on public affairs and which consequences this use can have on their opinions and actions. To this end, this research was built upon the spiral of silence theory and analyzed whether and how people use opinion cues on SNS to derive prevailing opinion climates as well as under which circumstances and why people do or do not voice their personal opinions pertaining to public issues on these platforms. The present empirical studies, largely employing experimental approaches, revealed a limited explanatory value of the spiral of silence theory: While people were found to infer overarching opinion climates from opinion cues in the form of user-generated comments on the social networking platform Facebook, their likelihood of opinion expression was largely not contingent on whether they found the opinion climate in agreement with their personal viewpoint or not. Results instead showed that (at least in a Western culture) environmental factors pertaining to the platform such as a greater publicness in terms of a large and relationally diverse audience attenuates the influence of the opinion climate on people's outspokenness. Generally, results suggest a rather low willingness of people to publicly voice their personal opinion on social networking platforms. A synthesis of the processes of monitoring and expressing opinions indicate an asymmetrical pattern of SNS use: Although people rely on opinion cues provided by social networking technologies to infer how others may evaluate a public issue, they are generally unlikely to contribute to the opinion climate themselves. These findings raised new questions that should be addressed before theoretical refinements are undertaken in the context of social media technologies. Nevertheless, this research contributes to an understanding of the discursive use of social networking platforms indicating the validity but also potential boundaries of an established theory in these new technological realms.

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