



The Contemporary Impact of the Spiral of Silence: Update of the Theory in the Age of Platforms

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Abstract

This research proposal lays the groundwork for future research into the opportunities offered to minorities by the supposed democratisation of communication through digital platforms. Specifically, it aims to examine the ability of minorities to disseminate their messages, and under what characteristics or circumstances. As a theoretical framework for the study, one of the most influential communication theories of the 20th century will be considered to see if it is still valid in the new scenario of digital platforms in the 21st century. This is the theory known as the spiral of silence. In order to present the basis of the research proposal, a systematic exploration of the scientific production, or scoping review, on the impact of the theory of the spiral of silence in contemporary research was carried out. In this way, we were able to design the main parameters of a research project for a future doctoral thesis which main object of study will be the effectiveness of digital platforms for the dissemination of minority social messages.

Keywords: spiral of silence; digital platforms, climate of opinion; public opinion; social minorities; social networks.

INDEX

1.- Introduction and objectives	1
2.- Research design.....	2
2.1.- Sources	2
2.2.- Search equation	2
2.3.- Inclusion and exclusion criteria.....	3
2.4.- Data matrixes.....	3
3.- State of the art / literature review	5
3.1.- Evidence base	5
3.2.- Main trends identified in contemporary research on the spiral of silence	10
3.2.1.- <i>Role of traditional media</i>	10
3.2.2.- <i>Challenges of theory</i>	11
3.2.3.- <i>Applicable theories</i>	12
3.2.4.- <i>Democratisation and public opinion</i>	14
3.2.5.- <i>Theory in the digital age</i>	15
3.3.- Characteristics of the research.....	16
4.- Methodology	19
4.1.- Investigation Design.....	20
5.- Connection with the Department of Communication	21
6.- Timeline	25
7.- Brief conclusions.....	26
8.- Bibliography	28
9.- Annexes.....	33

TABLE INDEX

Table 1. Characterisation of the research analysed	5
Table 2. Research funding, individual involvement and declarations of ethics and conflicts of interest	16

FIGURES INDEX

Figure 1. Diagram of the possible validity of the spiral of silence theory on social networks.....	12
Figure 2. Dimensions of online public opinion	13

ANNEXES INDEX

Annexe A. Axes Matrix	33
Annexe B. Reference Matrix.....	48

1.- Introduction and objectives

The purpose of this thesis is the theory or theoretical construct known as the spiral of silence. The main objective is to design a future research to verify the possible validity of this theory applied to the current context of a communication strongly based on digital platforms and social networks.

At the same time, we want to explore the role of social minorities in shaping public opinion and their possible dependence on majority opinion. We want to identify the characteristics of public opinion in general when it comes to integrating and, where appropriate, thereby voice and space to the messages of minority groups in society. To this end, elements of the spiral of silence theory will be used to test its possible validity in contemporary societies.

We begin with the assumption that, despite the supposed democratisation of communication in recent decades, which as result of digitalisation and social networks, society continues to show problems of inclusion with regard to certain groups as well as an increase in economic inequality, at least in some sectors and countries, as theorised and confirmed by Piketty (2015). According to the classic theory of the spiral of silence (Noelle-Neumann, 2010), majority groups have such a capacity to impose their messages or their way of framing the analysis of reality that, at least on some occasions, they prevent the emergence of messages from minorities or groups that differ from the majority opinion. But this theory was developed in an era before the Internet and today's digital platforms, in which there seem to be reasons to support this theory as well as reasons to refute it.

The research project aims to analyse the impact and relevance of the spiral of silence theory in the 21st century from an academic perspective. It will also focus on exploring the possible scenarios in which minority currents might eventually succeed in spreading their messages on platforms.

We hope include all of these aspects in a digital environment, where social media and various platforms have presumably enabled the democratisation of opinions. We want to

understand under what circumstances this supposed digital democratisation can be improved and if necessary extend it to achieve more inclusive societies. And consequently determine whether the aforementioned theory of the spiral of silence can provide elements of analysis.

In this sense, the research aims to determine whether the spiral of silence has predictive possibilities in the new scenario we have outlined.

2.- Research design

In order to ensure the elaboration of this and other sections of this thesis, a scoping review was carried out, that is, a kind of literature or bibliographical review that applies systematic approaches to the exploration of a field of knowledge (Codina, 2023).

Specifically, this scoping review, which focused on the analysis of contemporary scientific production on the theory of the spiral of silence developed by Elisabeth Noelle-Neumann as part of a general theory of communication, served to provide the best possible basis for this PhD proposal. The aim, therefore, is to present a research proposal that could become the research programme of a future doctoral thesis.

An analysis of the scientific production has been carried out by means of a search in academic databases. From these searches, a number of criteria were applied in selecting the articles that form the evidence base. The process is explained below.

2.1.- Sources

To develop this future doctoral proposal, we have relied on research articles on the theory of the spiral of silence found in Scopus and Web of Science.

2.2.- Search equation

The search equation used was: "Spiral of Silence" OR "Spiral of Silence Theory".

2.3.- Inclusion and exclusion criteria

A total of forty articles published between 2011 and 2022 were selected, following the initial study by Alonso (2014). Only documents that focus on areas related to the social sciences, psychology and the humanities are considered, in order to obtain a narrower search range.

2.4.- Data matrixes

Following a review of the appropriateness of the 40 studies retrieved from the academic databases, an analysis scheme was designed to proceed with data extraction. In total, four data matrixes were designed following the model proposed by Miles et al. (2014):

- Reference Matrix. Composed of the columns ID, Author, Year and Source.
- Research Axis Matrix. Consists of the columns Methods, Main Problem, Main Results and Implications.
- Presence/Absence Matrix.
- Themes. In this particular case, focused on social networks and media.

As we have already indicated, this scoping review aims to explore the main contributions of contemporary research to the theory of the spiral of silence.

The following specific objectives will be outlined in this section and as they form an integral part of this thesis will be discussed in further detail the development of the research:

- Conduct research into the circulation of minority group messages on social media platforms and networks to determine the relative success of their messages.
- Undertake attitudinal studies of specific groups in their positioning on issues and their use of social media.
- Understand the role and performance of minorities in the processes of opinion formation on specific social issues.

We will therefore be able to advance the kinds of research questions that we think would be plausible, but always subject to variation that will ultimately be determined by the progress of the project.

- Is it possible to identify patterns that can be clearly identified in social minorities' social media message dissemination?
- Is it possible to identify which digital platforms are most influential in shaping overall opinion flows, and which provide a greater opportunity for minority groups to disseminate?

In short, it will explore whether and how the theory of the spiral of silence is still relevant in the formation of the currents of opinion represented by certain minorities in the age of social networks. This study will be seen, at least in part, as a continuation of the work carried out by Alonso (2014) *Análisis de la investigación contemporánea sobre la Espiral del silencio (1990-2010)* (*Analysis of Contemporary Research on the Spiral of Silence (1990-2010)*). The limitations are considered, as well as the author's proposals for future research.

It is important to note that for the research work of the dissertation, we were able to determine from the scoping review that some of the most successful methodologies are online surveys, platform-specific questionnaires and attitude tests.

For our part, in addition to considering such theories, and based on the knowledge gained in the Masters, we plan to conduct studies based on qualitative surveys using an open-ended questionnaire, as well as case study design and comparative analysis of social network cases. However, we will address this issue in more detail in the specific methodology section of the future study below.

3.- State of the art / literature review

3.1.- Evidence base

To compile section, a total of forty research studies related to the spiral of silence theory, published in research journals between 2011 and 2022, were systematically read and extracted.

Table 1

Characterisation of the research analysed

ID	Authors/year	Title	Source	Keywords
01	Schulz, A. et al., 2012	The spiral of silence and the internet: Selection of online content and the perception of the public opinion climate in computer-mediated communication environments	International Journal of Public Opinion Research 24(3), pp. 346-367	Spiral of Silence, Internet, Online Content, Public Opinion, Communication Environments (Attributed)
02	Matthes, J. et al., 2012	Exemplifying a dispositional approach to cross-cultural spiral of silence research: Fear of social isolation and the inclination to self-censor	International Journal of Public Opinion Research 24(3), pp. 287-305	Spiral of Silence, surveys, FSI, WTSC (Attributed)
03	Bodor, T., 2012	The issue of timing and opinion congruity in spiral of silence research: Why does research suggest limited empirical support for the theory?	International Journal of Public Opinion Research 24(3), pp. 269-286	Spiral of Silence, Empirical Support, Limitations (Attributed)
04	Hayes, A.F. et al., 2013	Stimulating the Quasistatistical Organ: Fear of Social Isolation Motivates the Quest for Knowledge of the Opinion Climate	Communication Research 40(4), pp. 439-462	Measurement, public opinion polls, spiral of silence
05	Gearhart, S. et al., 2014	Gay Bullying and Online Opinion Expression: Testing Spiral of Silence in the Social Media Environment	Social Science Computer Review 2014, Vol. 32(1) 18-36	Social network sites, social media, spiral of silence, willingness to self-censor, issue importance, perceived opinion climate, online opinion expression

06	Tsfati, Y. et al., 2014	Exposure to Ideological News and Perceived Opinion Climate: Testing the Media Effects Component of Spiral-of-Silence in a Fragmented Media Landscape	International Journal of Press/Politics 19(1), pp. 3-23	public opinion, media effects, partisan journalism
07	Porten-Cheé, P. et al., 2015	Spiral of silence online: How online communication affects opinion climate perception and opinion expression regarding the climate change debate	Studies in Communication Sciences 15(1), pp. 143-150	Spiral of silence, Selective exposure, Online communication, Online diary, Climate change
08	Fox, J. et al., 2015	Queer identity management and political self-expression on social networking sites: A co-cultural approach to the spiral of silence	Journal of Communication 65(1), pp. 79-100	Social Networking Sites, Social Media, Sexual Minorities, Sexual Identity, LGBT Issues, Co-Cultural Theory, Spiral of Silence, Political Expression, Identity Management.
09	Gearhart, S. et al., 2015	“Was It Something I Said?” “No, It Was Something You Posted!” A Study of the Spiral of Silence Theory in Social Media Contexts	Cyberpsychology, Behavior, and Social Networking 18(4), pp. 208-213	New media, technologies, spiral of silence, political contexts, theory, SNS (Attributed)
10	Matthes, J., 2015	Observing the "spiral" in the spiral of silence	International Journal of Public Opinion Research 27(2), pp. 155-176	Spiral of Silence, dynamic process, time, theories (Attributed)
11	Kwon, K., 2015	Unspeaking on Facebook? Testing network effects on self-censorship of political expressions in social network sites	Quality and Quantity 49(4), pp. 1417-1435	Self-censorship · Spiral of silence theory · Diversity exposure · Political expression · Social network sites · Informational influence
12	Askay, D.A., 2015	Silence in the crowd: The spiral of silence contributing to the positive bias of opinions in an online review system	New Media and Society 17(11), pp. 1811-1829	Collective intelligence, multichannel communication platform, non-anonymous communication, online reviews, positive bias, spiral of silence, voice
13	Lee, M.J. et al., 2016	Reading others' comments and public opinion poll results on social media: Social judgment and spiral of empowerment	Computers in Human Behavior 65, pp. 479-487	Attitude change Online comments Public opinion polls Social judgment theory Social media Spiral of silence Willingness to speak out

14	Neubaum, G. et al., 2017	Monitoring the Opinion of the Crowd: Psychological Mechanisms Underlying Public Opinion Perceptions on Social Media	Media Psychology 20(3), pp. 502-531	Opinion of Crowd, Mechanisms, Public Opinion, Social Media (Attributed)
15	Hampton, K.N. et al., 2017	Social media and political discussion: when online presence silences offline conversation	Information Communication and Society 20(7), pp. 1090-1107	Discursive deliberation; opinion climate; reference group; social networks; spiral of silence (Attributed)
16	Chun, J.W. et al., 2017	When does individuals' willingness to speak out increase on social media? Perceived social support and perceived power/control	Computers in Human Behavior 74, pp. 120-129	Social media Willingness to speak out Spiral of silence Perceived social support Perceived sense of power/control Spiral of empowerment
17	Neubaum, G. et al., 2017	Opinion Climates in Social Media: Blending Mass and Interpersonal Communication	Human Communication Research 43(4), pp. 464-476	Opinion Climate, Social Media, Spiral of Silence Theory, Two-Step Flow of Communication Model, Mass Interpersonal Communication.
18	Gearhart, S. et al., 2018	Same Spiral, Different Day? Testing the Spiral of Silence Across Issue Types	Communication Research 45(1), pp. 34-54	Spiral of silence, issue contexts, social media, opinion congruency, fear of isolation, willingness to self-censor
19	Matthes, J. et al., 2018	The "Spiral of Silence" Revisited: A Meta-Analysis on the Relationship Between Perceptions of Opinion Support and Political Opinion Expression	Communication Research 45(1), pp. 3-33	Spiral of silence, public opinion expression, opinion climate, majority influence
20	Neubaum, G. et al., 2018	What Do We Fear? Expected Sanctions for Expressing Minority Opinions in Offline and Online Communication	Communication Research 45(2), pp. 139-164	Spiral of silence, expected sanctions, minority opinion, computer-mediated communication
21	Soffer, O. et al., 2018	Opinion expression via user comments on news websites: analysis through the perspective of the spiral of silence	Information Communication and Society 21(3), pp. 388-403	Participatory journalism; user comments; spiral of silence; Israel
22	Kartal, O.Y., 2018	Analysis of alienation in informal education: Media	International Journal of Higher Education	Alienation, facebook, informal learning, media skepticism,

		skepticism and spiral of silence in the network society	7(4), pp. 110-122	network society, spiral of silence
23	Fox, J. et al., 2018	Fear of Isolation and Perceived Affordances: The Spiral of Silence on Social Networking Sites Regarding Police Discrimination	Mass Communication and Society 21(5), pp. 533-554	The spiral of silence, computer-mediated communication, Facebook, social networking sites, political expression (Attributed)
24	Chen, H.-T., 2018	Spiral of silence on social media and the moderating role of disagreement and publicness in the network: Analyzing expressive and withdrawal behaviors	New Media and Society 20(10), pp. 3917-3936	Political disagreement, political expression, publicness, self-censorship, social media, spiral of silence
25	Wu, T.-Y. et al., 2018	To comment or not to comment: Examining the influences of anonymity and social support on one's willingness to express in online news discussions	New Media and Society 20(12), pp. 4512-4532	Abortion, fear of isolation, online anonymity, online news comments, online social support, opinion expression, Spiral of Silence
26	Ross, B. et al., 2019	Are social bots a real threat? An agent-based model of the spiral of silence to analyse the impact of manipulative actors in social networks	European Journal of Information Systems 28(4), pp. 394-412	Spiral of silence; agent-based modelling; social bots; simulation; network analysis
27	Hakobyan, A., 2020	DIGITALIZATION OF COMMUNICATION AND THE SPIRAL OF SILENCE THEORY	Wisdom 14(1), pp. 19-30	Spiral of silence, digital communication, media, Internet, social media, information, public sphere.
28	Al-Sumait, F. et al., 2021	Cultural Influences on Opinion Expression in an Online and Offline Context	Asiascape: Digital Asia 8(3), pp. 240-263	Expression of opinion – gender desegregation – Kuwait – online and offline contexts – spiral of silence
29	Chia, S.C., 2021	Who Speaks and Why? An Examination of Outspokenness on Social Networking Sites and a Reflection on Assessing Public Opinion Online	International Journal of Public Opinion Research 32(3), pp. 421-441	Social Network, Public opinion, Online, public Sphere, Media Perception. (Attributed)
30	Leong, A.D. et al., 2021	Perceiving online public opinion: The impact of Facebook opinion cues, opinion climate congruency,	New Media and Society 23(9), pp. 2495-2515	Aggregated user representations, opinion climate congruency, source credibility, spiral of silence theory, user-generated

		and source credibility on speaking out		comments, willingness to speak out
31	Sakariassen, H. et al., 2021	Why so quiet? Exploring inhibition in digital public spaces	European Journal of Communication 36(5), pp. 494-510	Social network sites (SNS), participation, inhibition, the silent majority, public debate
32	Masullo, G.M. et al., 2021	Does online incivility cancel out the spiral of silence? A moderated mediation model of willingness to speak out	New Media and Society 23(11), pp. 3391-3414	Incivility, news, online comments, spiral of silence
33	Peter, C., 2022	Media Coverage as Mirror or Molder? An Inference-Based Framework	Media and Communication 10(3), pp. 183-195	Hostile media; inference; media effects; persuasion; persuasive press inference; public opinion; reflection; spiral of silence
34	Masullo, G.M. et al., 2022	Extending the Spiral of Silence: Theorizing a Typology of Political Self-Silencing	Communication Studies 73(5-6), pp. 607-622	Spiral of silence; self-silencing; political talk; deliberative democracy; interviews; political communication
35	Cheong, H.J. et al., 2022	Spiral of Silence in an Algorithm-Driven Social Media Content Environment: Conceptual Framework and Research Propositions	KOME 10(1), pp. 32-46	Spiral of silence, algorithm-driven content, social media communication, CMC, opinion polarization, conceptual paper
36	Lemke, R., 2022	Linking Public Opinion Perception, Minority, and Stigma—An Integrated Model of Hiding Male Same-Sex Affection in Public	Journal of Homosexuality	Public display of affection; visibility; public opinion; minority stress model; stigma; dramaturgical approach; interaction order; minority traits; homosexuality; spiral of silence
37	Schmidt, R.E. et al., 2022	Beyond Marienthal: The Relationship Between Elisabeth Noelle-Neumann and Paul F. Lazarsfeld	International Journal of Communication 16, pp. 664-672	Empirical turn in Publizistikwissenschaft; history of communication research; media effects research; opinion leaders; public opinion; spiral of silence
38	Baltezarević, R.V. et al., 2022	THE MEANING OF SILENCE IN PERSONAL COMMUNICATION: SPIRAL OF SILENCE OR A STIMULANT OF CREATIVITY?	Creativity Studies 15(1), pp. 58-73	Communication, creativity, cultural context, isolation, nonverbal communication, silence, spiral of silence.
39	Sohn, D., 2022	Spiral of Silence in the Social Media Era: A Simulation Approach to the Interplay	Communication Research 49(1), pp. 139-166	Social media, social networks, public opinion formation, mass media

Between Social Networks and Mass Media				
40	Neubaum, G., 2022	“It’s Going to be Out There For a Long Time”: The Influence of Message Persistence on Users’ Political Opinion Expression in Social Media	Communication Research 49(3), pp. 426-450	Spiral of silence, political expression, social media, affordances, cost-benefit calculus

Source: Own work. *Note:* "Attributed" means that the article does not contain keywords in their original form and has been attributed by us.

3.2.- Main trends identified in contemporary research on the spiral of silence

As can be seen, authors such as Kartal (2018), Leong et al. (2021), Wu et al. (2018) and Gearhrt et al. (2014) specify the importance of the digital environment in the titles of their articles and in the development of their articles. Therefore, the decade from 2010 to 2020 is considered relevant when talking about digitisation and user presence in online environments. There is also diversity in the media in which the articles are published, but there is a preference for publications such as the International Journal of Public Opinion Research and New Media and Society. With regard to keywords, it should be noted that some articles, such as those presented in the International Journal of Public Opinion Research, did not have keywords, so they have been assigned considering the content developed.

3.2.1.- Role of traditional media

Changes in public opinion that start in an online environment can be transferred to the offline world as soon as traditional media start to pick them up. Thus, online communication on relevant topics can and does influence opinion formation, but it is directly dependent on the help of traditional media (Schulz & Roessler, 2012).

It is interesting to consider the dispositional approach mentioned by Matthes et al. (2012). This can be used to observe how an individual tends to behave on certain occasions. Factors such as the interpersonal environment, as well as causality and underlying mechanisms, should be considered when developing a future study focusing on the spiral of silence theory (Tsfati et al., 2014).

Psychological characteristics such as willingness to self-censor should be considered when discussing the theory proposed by Noelle-Neumann, as these are factors that directly influence the process of the phenomenon (Gearhart & Zhang, 2015). It also highlights the need for future research to recommend studies that focus on the presence of the spiral of silence in social media, considering psychological aspects, social profiles, etc.

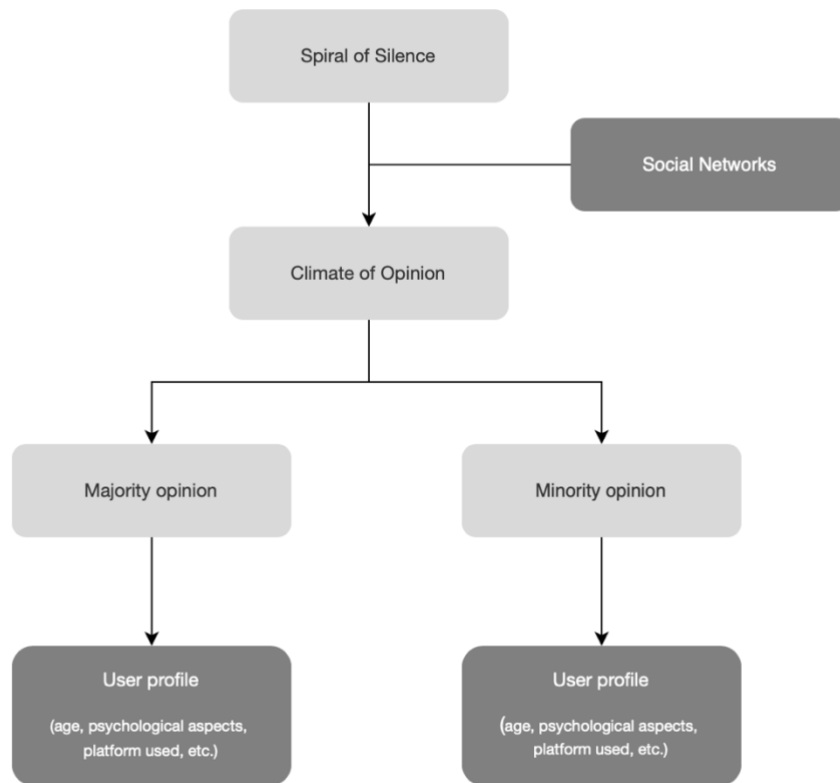
3.2.2.- Challenges of theory

The reading and review of the literature reveals possible shortcomings in the theory of the spiral of silence and questions a possible rethinking of the basis for conceptualising Noelle-Neumann's theoretical framework as a possible multi-level theory of public opinion. Furthermore, it highlights the lack of empirical results on the part of the theory and the lack of understanding of its moral character (Bodor, 2012).

It has not yet been empirically demonstrated that this theory is applicable to social networks, nor has it been determined how it might be applied. Some studies have found evidence of a spiral of silence in social networks, while others have found no such effect (Ross et al., 2019). However, as noted in the article by Al-Sumait et al. (2021), in this case the theory is responsive to empirical methods. However, certain recurring limitations have been noted: the sample used may not be representative of the general population; there may be bias in the responses given by the participants; and the specific context in which the study was conducted may not be applicable in a similar or opposite context. It highlights the limitations present in all studies due to the large dimensions of the theory, which is largely due to the causal order outlined by Ansolabehere and Schaffner in 2014 and Iyengar and Hahn in 2009 (Fox et al., 2018).

Figure 1

Diagram of the possible validity of the spiral of silence theory on social networks



Source: Own elaboration

After careful consideration of the data related to the empirical response of the theory of the spiral of silence, it has been determined that the areas and circumstances in which the theory responds to empirical parameters should be taken into account. It should be added that, thanks to surveys, the knowledge of the existence of the concept of climate of opinion within online platforms (Hakobyan, 2020) and the use of social networks, new parameters can be measured empirically, such as a part of the climate of opinion based on age, subject, platform, etc. It is therefore necessary to consider in which areas and under which circumstances the theory responds to empirical parameters.

3.2.3.- Applicable theories

As has been shown, the spiral of silence has some limitations according to the research reviewed. However, these can be addressed by combining several theories to address its

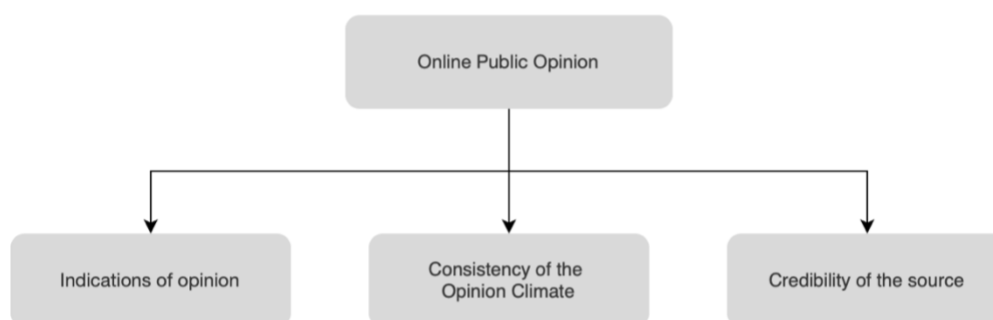
shortcomings. This would be the case of the social judgement theory and the spiral of silence theory, according to authors such as Lee and Chun (2016). In the same vein, another option that might be interesting to consider is Yeric and Todd's typology of problems (cited by Gearhart & Zhang, 2018), which was developed in 1989 to test and relate the spiral of silence theory. Yeric and Todd's typology deals with three types of problems: enduring problems, emerging problems, and transient problems (Gearhart & Zhang, 2018). According to Neubaum and Krämer (2018), including the concept of opinion avoidance strategies raised by Hayes in 2007 would add more dimensions to the study.

Other studies highlight the importance of specific platforms in creating an opinion climate, considering the limits of expression. Aggregated user representations (AUR) are more limited on platforms such as Twitter or Instagram, which is important to consider when conducting research, as Leong and Ho (2021) note in their work on Facebook.

Another relevant factor is the presence of bots on social platforms, something that is very present and fundamental to consider. They are seen as a potential threat to democratisation and freedom of expression on networks, especially if they are used to contribute to the polarisation of public opinion. Currently, regulation needs to be considered in order to carry out a proper study of public opinion, as they have been shown to contribute to the conditioning of opinions (Ross et al., 2019).

Figure 2

Dimensions of online public opinion



Source: Own elaboration

3.2.4.- Democratisation and public opinion

Regarding the democratisation of public opinion in social networks, Leong and Ho (2021) talk about the importance of considering different parameters that shape public opinion, such as opinion cues, congruence and opinion climate, as well as the importance of the credibility of the source of information. These three parameters determine people's willingness to express their opinions through online platforms.

The way in which opinion signals on online platforms can have a real impact on people's willingness to express their opinions freely in online environments is analyzed. This could be important in promoting the diversity of opinions online and creating a more democratic and diverse opinion environment (Leong & Ho, 2021).

Inhibition as a phenomenon within social networks needs to be considered and taken into account when conducting the study. Inhibition occurs in a similar way in online environments as it does in offline situations, suggesting that inhibition is presented as a conscious action. It should be understood that its implications cannot be addressed from a purely theoretical perspective, but should be considered when conducting the study.

In particular, it is worth mentioning how this type of sentiment can be analysed on other social platforms with fewer resources for expression, such as Twitter or Instagram (Sakariassen & Meijer, 2021).

If we consider the data from the study by Masullo et al. (2021), social network users can express their opinion even if it goes against the climate of opinion, which is a step forward in terms of the spiral of silence theory. However, it should be noted that when the climate of opinion is violent or angry, users are more likely to remain silent.

This is something that needs to be considered when conducting the study, in addition to considering other types of emotions and how they favour or do not favour the democratisation of opinions within a climate of opinion (Masullo et al., 2021).

It is important to consider the influence of algorithms when presenting issues to different users. Algorithms that are presented according to the content consumed can silence

certain topics of interest, or only show very specific topics. This prevents the plural and equal participation of all users (Cheong et al., 2022).

It might be interesting to look at silence as part of a socio-cultural process linked to a communicative process that serves to reduce tensions within a conflict. If so, do minorities who are more exposed to conflict use silence to reduce the climate of tension and even anger? Are they responsible for maintaining a safe environment through their silence? And if that is the case, would minorities directly or indirectly assume such a role within a community or environment that places a greater psychological and social burden on them? An attempt will be made to answer this question by conducting this study (Baltezarević et al., 2022).

The limitations of the spiral of silence theory need to be understood. Therefore, a local observation of a specific problem must be carried out with a specific sample. A global representation could only be given if the opinion of the media or the users becomes homogeneous or the users have very direct connections (Sohn, 2022).

3.2.5.- Theory in the digital age

Social media offer a new perspective on the durability of messages and certain social and political statements. The persistence of the message on social media can affect the expression of political opinions of social minorities and whether the spiral of silence is perpetuated or affected in this context.

On the other hand, social media can be used as a space of expression and empowerment for social minorities, allowing them to have a voice and actively participate in political discussion, despite the persistence of the message. In this way, social networks can even challenge the spiral of silence by promoting the expression of diverse and representative political opinions, including those of social minorities. This dichotomy will be taken into account in the forthcoming study (Neubaum, 2022).

3.3.- Characteristics of the research

Another axis that has been determined in relation to the body of documents used is that of certain characteristics of the research analysed, such as funding and so on and so forth, in order to determine the appearance of certain patterns.

In order to determine the funding granted to the authors and the participation of users within the study, **Table 2** was developed. By doing so, it is possible to observe the involvement of public or private bodies in studies with these characteristics, and specify the various statements that a study with similar characteristics to the one that this proposal seeks to carry out should contain.

Table 2

Research funding, individual involvement and declarations of ethics and conflicts of interest

ID	Funding	Subjects	Declaration of Ethics	Declaration of a Conflict of Interest
01	Allensbach Foundation for the Study of Public Opinion.	-	ND	ND
02	Supported by The Allensbach Foundation for Public Opinion Research.	+	ND	ND
03	-	+	ND	ND
04	-	+	ND	NCI
05	-	+	ND	NCI
06	Supported by Data collection for Study 1 was funded by the Chaim Hertzog Institute, Tel Aviv University. Data collection for the NAES was funded by the Annenberg Public Policy Center at the University of Pennsylvania).	Indirectly in the studies used in the literature review.	ND	ND
07	+	+	ND	ND
08	-	+	Ethical consent signed by study participants.	ND
09	ND	Indirectly in the studies used in the literature review.	ND	ND

10	Supported by a grant from the Swiss National Science Foundation as a part of the National Center of Competence in Research (NCCR) “Challenges to Democracy in the 21st Century.”	+	ND	ND
11	ND	+	ND	NCI
12	-	+	ND	ND
13	ND	+	ND	ND
14	ND	+	ND	ND
15	ND	+	ND	NCI
16	ND	+	ND	ND
17	ND	-	ND	ND
18	-	+	ND	NCI
19	-	Indirectly in the studies used in the literature review.	ND	NCI
20	-	+	ND	NCI
21	Supported by the Israel Science Foundation [Grant Number 898/14].	+	ND	NCI
22	ND	+	ND	ND
23	ND	+	ND	ND
24	Research Grants Council of the Hong Kong Special Administrative Region, China (CUHK 24613415), and the C-Centre of the School of Journalism and Communication, CUHK (SS16576).	Indirectly in the studies used in the literature review.	ND	ND
25	-	+	ND	ND
26	Forschungsgemeinschaft (DFG) under Grant No. GRK 2167, Research Training Group “User-Centred Social Media,” and by the Digital Society research programme.	Indirectly in the studies used in the literature review.	ND	ND
27	ND	-	ND	ND
28	ND	+	+	ND
29	This study was supported by a grant from the City University of Hong Kong (project no. 9618010).	+	ND	ND
30	Was supported by the Wee Kim Wee School of Communication and Information, Nanyang Technological University (M4082243.060).	+	ND	NCI
31	Norwegian Research Council (Grant 247617).	Indirectly in the studies used in the	ND	ND

		literature review.		
32	The study was supported by a grant from Qualtrics software company.	+	ND	ND
33	ND	Indirectly in the studies used in the literature review.	ND	ND
34	Supported by the John S. and James L. Knight Foundation.	-	ND	NCI
35	ND	-	ND	ND
36	-	Indirectly in the studies used in the literature review.	ND	NCI
37	ND	-	ND	ND
38	ND	+	ND	ND
39	Ministry of Science, ICT and Future Planning & National Research Foundation of Korea.	+	ND	NCI
40	Digital Society & Ministry of Culture and Science of the German State of North Rhine-Westphalia.	+	ND	NCI

Source: Own elaboration

No declaration: ND

No conflict of interest: NCI

With regard to funding, many of the selected studies do not have a specific section on funding. However, in the cases where it is explicitly mentioned, we observed an equality between the research that was funded and the research that was not. Those that were funded had some kind of relationship with research centres, centres specialising in social sciences, journalism, etc., or government institutions.

There is a lack of ethical statements in most of the articles reviewed, which needs to be taken into account. Especially since in many cases, in order to carry out the study, subjects were subjected to surveys and/or other types of research procedures. It should also be noted that some of the documents used do not present any kind of conflict of interest.

In recent years, there has been a growing interest in online participation as opposed to more passive or virtually non-participating individuals. Research is being done on how

the climate of opinion may or may not be conducive to this and what factors may influence it.

4.- Methodology

In this section, we will focus on aspects that may have implications for the design of the future research project. Firstly, we will consider the contributions, findings and limitations considered by Alonso (2014), as well as those of other authors that we have identified as particularly relevant thanks to the scoping review.

As can be seen in the axis matrix (see **Annex I**), authors such as Gearhart & Zhang, (2014), Hayes et al. (2013) and Porten-Cheé & Eilders (2015), among others, use line surveys as the methodological backbone of their project. Lee et al. (2016) conducted a methodology divided into two parts: the first focused on a pre-attitude test, the second on a public opinion survey (a video was used to support the procedure). Authors such as Hampton et al. (2017) opted for random telephone surveys on a specific political issue.

The proposal by Al-Sumait et al. (2021) uses a mixed methodology, combining a qualitative part based on online surveys and a quantitative part focusing on in-depth interviews. Masullo et al. (2021), Leong et al. (2021), and Askay (2015) conducted only qualitative analyses for the development of their study. On the other hand, authors such as Masullo et al. (2022), Cheong et al. (2022) and Lemke (2022) conduct a literature review as the core methodology of their study.

After considering the results of the academic literature review, and the limitations that a possible purely quantitative study may present (Ross et al., 2019), it is anticipated that the methodology to be used will most likely be qualitative. This will also consider the limitations identified by Fox et al. (2018) and Chen (2018) regarding the concept of social group and causal order, respectively.

As part of the data collection process, where the opinions of majority collectives will be of great interest, the possibility of conducting online and face-to-face surveys with a sample that we estimate to be around 300 participants (200 online and 100 face-to-face)

is foreseen. The subjects of the study, as we understand it, should be white cisheterosexuals between the ages of 18 and 35 who conform to hegemonic standards. Our initial idea is to create four groups: men aged 18 to 26; women aged 18 to 26; men aged 27 to 35; and women aged 27 to 35.

To begin with the methodology, an update of this scoping review will be carried out in case new evidence emerges that needs to be taken into account, bearing in mind that at least one year will have passed by the time the doctoral research begins. This will involve a search of existing content on the topics to be researched. This process will give us a broader overview of the state of the art and will reinforce our guide when it comes to materialising the methodology.

4.1.- Investigation Design

In this section, we present an overview of the research design components of the future work, which will be carried out in a future PhD thesis. Specifically, we envisage conducting online and face-to-face surveys with a sample of around 300 participants (200 online and 100 face-to-face). The subjects of the study will be white cisheterosexual men and women between the ages of 18 and 35 who meet hegemonic standards, so four groups will be created: men between the ages of 18 and 26; women between the ages of 18 and 26; men between the ages of 27 and 35; and women between the ages of 27 and 35. We will look at how minority voices or messages can circulate through the platforms, the characteristics of their reception, and their impact on the platform being used.

To ensure the usefulness of the survey design, we will also focus on collecting data on demographic characteristics, but also on respondents' perceptions such as fear of isolation, values, involvement in social issues, attitudes towards minorities and support from reference groups regarding different social minorities.

In order to measure the attitudes of the participants, we plan to consider different dimensions, each of which is linked to specific indicators. This will make it possible to categorise the different attitudes identified.

We will try to explore how different social activists (racialised minorities, animal rights groups, LGBTQ+ rights groups, among others) produce and disseminate their messages through platforms such as Facebook, Twitter and Instagram. Participants will be asked to indicate their level of empathy for each cause in a specific section of the survey.

In the temporal design of our future research, we have envisaged that participants may receive, as a stimulus, different posts or comments from three social networks (Facebook, Twitter and Instagram) from different profiles dealing with issues related to the struggle of social minorities. In such a scenario, the prediction will consist of asking participants to indicate which type of post or message is more powerful or persuasive and why. Comments will be invited to briefly analyse the reasons.

Similarly, we plan to design an experiment in which the same message about a social movement is presented on three different social platforms (Facebook, Twitter and Instagram). The participants will have to choose, considering their impact, which one is more powerful and which one expresses the message better. The message that these images portray will also be analysed as a fundamental part of understanding the message.

After the interview, questions will be asked to check the degree of conviction, the previous and final support, the fear of isolation due to the majority opinion and finally their attitude towards minority groups by reassessing their level of empathy after the test.

The final step is to interpret the data obtained through a coding system. The codes of interest prior to the research will be classified and then the data obtained will be used. Finally, primary and final data will be acquired and certain observations will be made to determine whether the results obtained continue the line of research carried out by Alonso (2014).

5.- Connection with the Department of Communication

The project is directly linked to three research groups within the Communication Department of Pompeu Fabra University. These are the Digital Documentation and Interactive Communication Research Group (DIGIDOC), the Critical Communication

Research Group (CRITICC) and the MEDIUM Group. Their relationship is explained below outline:

DIGIDOC

The PhD proposal is directly related to the Digital Documentation and Interactive Communication (DIGIDOC) research group, specifically groups that deal with issues related to income inequality and communication. This research group is concerned with inequality in society and how the media reflect this in the information age. In addition, the group is responsible for organising various conferences and seminars on inequality in the media, legislation, communication through digital social networks, among others.

In short, it seeks to share and disseminate experiences and realities both in academia and in the field of communication in general, with a focus on the digitalisation of the media. For all these reasons, I believe that my proposal, whose central theme is the current impact of the era of platforms on the democratisation of communication, is perfectly suited to the characteristics and needs of the Department. Its development within the Department could make a positive contribution to increasing the data needed to understand inequality in the age of digitalisation from the ground up.

For these reasons, this research group fits perfectly with the requirements of the proposal and would also overcome the structural problems that the project could encounter in its development.

Lluís Codina and Javier Díaz Noci would be able to contribute their expertise in online research and inequality and digital media, which would allow the proposal to develop in the right direction and bring innovative results to the study.

CRITICC

The multidisciplinary character required by the project fits perfectly with the group's main lines of research:

- Communication and influential groups (think tanks, lobbies and other groups)

- Communication, gender and sexualities
- Intercultural communication
- Critical History of Strategic Communication
- Critical animal studies and environmental ethics
- Interpersonal communication, ethnomethodology and discourse analysis

In addition, the group aims to analyse power relations as a transversal phenomenon of communicative practices, a key concept in the development of this proposal on which it is based. On the other hand, it will make it possible to touch upon the importance of groups that might be of interest as an example of strategic management for the maintenance and acquisition of power, which is an important aspect that must be considered and that is not considered in the theory of the spiral of silence.

For these reasons, this research group is the one that best meets the requirements of the proposal and could also solve the structural problems that the project might encounter in its development.

We believe that Dr Núria Almirón, with her knowledge of the media and groups that might be of interest, resulting in an interesting approach to the study that would guarantee its correct evolution and development.

MEDIUM

The proposal focusing on participatory culture and social discourses would fit the characteristics of the MEDIUM group. Some of the points discussed concerning the evolution of media ecosystems demonstrate the need to study how the arrival of new media and digital platforms directly and indirectly affects the media environment and the use of digital media. All of this has an impact on the final creation and distribution of content.

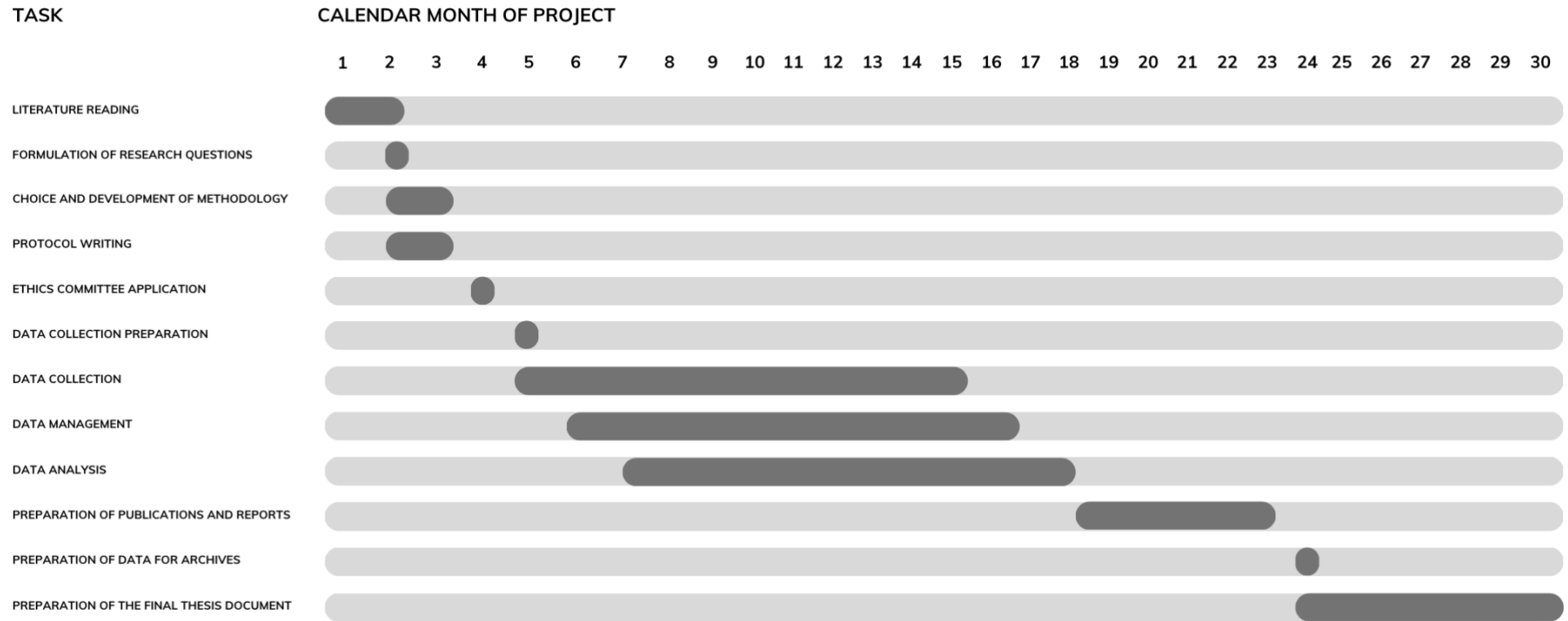
The methodology used by the group is qualitative and includes social and narrative semiotics, narratology and discourse analysis, the latter being essential in the development of the doctoral proposal. This is directly related to the present proposal,

since the group, like the department, seeks to use qualitative methodology, thus facilitating its development and obtaining results from the outset.

In short, its involvement in media culture and participatory methodologies makes this research group a perfect environment for the correct execution of the proposal.

Dr Lorena Gómez Puertas could supervise the project thanks to her academic involvement in the construction of citizenship from media discourses, which would give the project an appropriate focus from the beginning to the end of its project.

6.- Timeline



Source: Own elaboration

In terms of timeline, the project will begin with a literature review lasting approximately two months. This will be followed by the formulation of the key research questions for the development of the proposal. It should be noted that a total of 30 months is planned for the research, in order to allow room for external and other review processes after the research has been completed.

Subsequently, during the third and fourth months, the methodology to be followed will be determined and the protocol required and demanded by the proposal will be established. Once this has been established, the work will be submitted to the ethics committee in order to consider the ethics of research in the field of communication. In addition, during the fifth month, we will begin to prepare for data collection.

The data collection will extend from the fifth to the fifteenth month, during this period all of the results obtained are expected to be compiled. From the sixth to the sixteenth month, the information collected will be managed, and from the seventh to the seventeenth month, it will be analysed, with the aim of producing significant and valuable results for the field of study, ensuring that the results have value for theory, but also social value.

From the eighteenth to the twenty-third month, publications and reports will be prepared with the aim of disseminating the project, in order to later prepare the data from the archives, which will take place in the twenty-fourth month.

Finally, from the twenty-fourth to the thirtieth month, the proposal will be examined by the thesis committee and, if it is approved, as is hoped, it will be considered an official thesis.

7.- Brief conclusions

As part of this proposal, we have presented a general overview of contemporary research on the theory of the spiral of silence and we have seen that some of its main themes are: the online presence of the spiral of silence, the importance of the climate of opinion in new social media and its impact, the digitisation of opinion, among other topics relevant to this study. We were also able to verify that the methods most used by researchers who

have worked on this subject are online surveys, questionnaires on specific platforms and attitude tests.

For our part, we have presented the outline of a possible research for a doctoral thesis that aims, among other things, to analyse the validity and analytical and predictive possibilities of this theory in the context of digital platforms. We are very interested in the possibility of contributing with our future research to the understanding of the mechanisms or processes by which social networks can make a more effective contribution to more inclusive societies, as well as to the identification of the main theoretical problems, in order to help identify and eventually denounce them and help eliminate them as much as possible.

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9.- Annexes

Annexe A

Axes Matrix

ID	Reference	Methods	Main problem	Main results	Implications
01	Schulz, A. et al., 2012	Literature review. Use of different theories and reference to recognised authors (in particular Freedman, Kenamer, Mutz).	Feasibility of the spiral of silence theory in online environments. High probability that individuals select information with a subjective-pluralistic pattern.	<p>Traditional media and direct communication between individuals are still very important in the process of forming public opinion.</p> <p>Although the Internet plays an important role among young people, it has not yet replaced more traditional communication.</p> <p>Moreover, the more media are involved in the opinion-forming process, the more difficult it is to predict the resulting climate of opinion. Therefore, the Internet is unlikely to have a global impact on the opinion-forming process at the macro level.</p>	It seeks to understand the situation of the spiral of silence in online platforms or social networks. It also explores to some extent how this has repercussions in offline environments, which is a relevant part of the research proposal.
02	Matthes, J. et al., 2012	25-question survey of 250 participants per participating country (data collection by Survey Sampling International (SSI)).	Individuals who show a greater fear of social isolation are more likely to self-censor if they find themselves in a hostile climate of opinion.	Despite cultural differences, trait correlations provide information about cultural differences and a means of empirically testing cross-cultural validity (FSI and WTSC). Ultimately, if some individuals fear social isolation, this translates into self-censorship in a variety of potentially hostile opinion climates. Importantly, no correlation was found between FSI and WTSC in China.	The use of surveys as a form of empirical study helps to extend and address possible initial flaws in the spiral of silence. It is interesting to observe, at the minority level, the cultural difference in terms of self-censorship.
03	Bodor, T., 2012	Use of polls focused on the 2004 US political situation (Bush vs. Kerry).	From its inception, the spiral of silence theory has had clear shortcomings in terms of the empirical	A study by Bodor (2012) suggests that conducting an empirical test at the wrong time can lead to an inconsistent result. He	It highlights the shortcomings of the spiral of silence theory and questions a possible rethinking of the basis for conceptualising

			support for its findings (in short, it has a weak empirical base).	also suggests that a reconceptualisation of the theory could provide it with new approaches and possibilities for the future. The usefulness of the theory over the last four decades is not denied, but it has not been able to fully understand the dynamic-moral nature of public opinion and has not yet been tested as a macroscopic framework.	Noelle-Neuman's theoretical framework as a possible multi-level theory of public opinion.
04	Hayes, A.F. et al., 2013	Public opinion surveys. International online surveys conducted in 2006. The survey was conducted and organised by Survey Sampling International (SSI).	This article examines whether fear of social isolation (FSI) acts as a motivator for individuals to seek and find information about the climate of opinion, as suggested by the spiral of silence theory.	The results of the surveys conducted by the authors confirm that there is a correlation between the Spiral of Silence theory and the results obtained on FSI.	It is shown that empirical surveys are able to provide data that confirm the correlation between the claims of the spiral of silence theory regarding fear of social isolation and, therefore, public opinion.
05	Gearhart, S. et al., 2014	A literature review and an online survey were conducted based on different scenarios and assumptions.	Lack of empirical measurement at that time of public opinion through social networks. In this particular case, the focus was on testing the tolerance of users on SNSs towards the LGBTQ+ community in 2011.	The results show the shortcomings of the underlying theory and the methodology itself. It insists on the use of experimental approaches in future research of a similar nature. The authors suggest that this study is a first approach and only addresses a controversial issue towards a specific minority: homophobic harassment, not the community as a whole.	The main link between this article and the project is the inclusion of minorities in a study. As well as the suggestion to include scenarios or situations in future surveys and/or projects. It is also interesting to observe the opinion of users via the internet towards a specific minority.
06	Tsfati, Y. et al., 2014	Use of two different datasets collected in very different contexts (Israeli withdrawal from Gaza in 2005 and US presidential election context 2004).	The perceived problem is the authors' lack of knowledge about whether the public is constrained by their political leanings and how this is fed back to them by news of the same political persuasion.	"The post-broadcast media landscape and the way in which many audience members have adjusted their exposure habits to this changing landscape through the use of ideologically congruent media have largely invalidated Noelle-Neumann's central assumptions" (Tsfati, Y. et al. 2014). The study has demonstrated the shortcomings that the theory developed by Noelle-Neumann shows today in a much more convulsive and dispersed political and media climate. Furthermore, it clearly	It is very important that this study clearly shows the current limitations of the theory. It is clearly and accurately shown that it should be taken into account in future related projects. It considers the interpersonal environment, as well as the causality and underlying mechanisms proposed by Tsfati (2014).

				assumes that there is still a long way to go to fully understand the communicative effects on people at the individual and social level.	
07	Porten-Cheé, P. et al., 2015	Surveys of closed-ended questions focused after 7 days of exposure in different media such as television, newspapers and magazines. Online surveys to monitor changes in opinion.	The advent of the Internet radically changed communication. This, coupled with the fact that changes in media content are linked to changes in media exposure, results in multiple content choices. This is why the study focuses on demonstrating a causal relationship between content exposure and the expression of public opinion.	Exposure to the selected media did not affect the final outcome of the initially perceived climate of opinion. This contradicted one of the hypotheses proposed in the study. As a result, those individuals who perceived themselves as a minority were more likely to express their opinions.	It is directly linked to the project as it speaks clearly and directly about majority and minority opinions and their impact at the societal level. This is all encompassed within a normative concept of public opinion (this being the basis of Noelle-Neumann's theory). In addition, it recommends the use of online diaries to connect data and media usage reports.
08	Fox, J. et al., 2015	Open methodology of semi-structured interviews conducted by LGBTQ+ people.	Although social media has expanded freedoms for many, many LGBTQ+ people are not able to be open in the digital realm. The study focuses on the identity management and political expression of LGBTQ+ people.	The results showed how the social network Facebook, in one way or another, rewards its users for showing their identity and making themselves known, something that for some of the participants is not entirely possible. This is related to the spiral of silence, as they did not want to express themselves for fear of social isolation, unlike those subjects who had already expressed their identity and expression.	A three-part analysis to address different identity issues is very interesting and directly applicable to the present proposal. It is noteworthy to mention that those who still wanted to preserve their orientation or identity showed attitudes close to the Spiral of Silence, while those who had already exposed themselves gave indications of what would be a spiral of silence.
09	Gearhart, S. et al., 2015	Interpretation and use of data drawn from surveys conducted by the Pew Research Center's Internet and American Life Project in its 2012 paper <i>Search, Social Networks, and Politics</i> .	Through the use of previously collected data, it seeks to fill the gaps found in the spiral of silence theory by investigating climates of opinion, social media use and political activities.	The feasibility of the theory proposed by Noelle-Neumann on online platforms was tested. As a result, some results of the theory hold, while others need to be modified to fit the context. Overall, the results show that theory is still present in online environments due to their social and quasi-public nature.	The concepts selected to form the Theoretical Framework/State of the Question should be taken into account. On the other hand, observing how the spiral of silence theory responds to empirical procedures is very interesting. Psychological attributes that are mentioned as a tip for future related research (such as self-censorship) may be a relevant factor in the development of the proposal.
10	Matthes, J., 2015	Use of unemployment surveys composed of a panel in three	The passage of time and the evolution of communication, technology and	The final objective of this review focused on testing the dynamic process underlying the	As a suggestion or result, when carrying out similar studies, they suggest designing

		"waves" via an Internet-accessible panel. It was conducted by the polling company GfK in Italy.	society leave some old theories outdated. The article tries to demonstrate the same applied to the spiral of silence theory.	theory proposed by Noelle-Neumann with LGM (Latent Growth Modelling). Thanks to the tests carried out, the dynamic processes predicted by the theory are confirmed.	studies or tests with variable times. This is something to be considered since, according to Bodor's statement: "a spiral of silence can only be detected if and when it actually occurs" (2012).
11	Kwon, K., 2015	Online questionnaire conducted with university students who are members of the Facebook platform.	Speculate on the extent to which there is a correspondence between online and offline media. In addition, informational influence and normative influence will be explored as part of the opinion-forming process.	The study confirmed that SNSs (Social Network Sites) produce normative pressures subject to a standard that resembles the relationships and conversations that users may have offline. This also relates directly to their political and social views.	It speaks directly to the correlation of users' social and conversational norms both on and off social networks.
12	Askay, D.A., 2015	Qualitative analysis. Discussion Forums centred on the travel website TravelersAlmanac1 were used to carry out the study.	Having identified a positive bias in the online opinions provided by users, this study will address this from the perspective of opinion expression.	The study confirmed that the very design of the selected website in particular, and therefore of most of the websites, contributes to the choice of positive responses or ratings, which reduces the general willingness of the public to provide neutral or negative ratings. It is important to note how social loafing (Resnick et al., 2000) or self-selection (Hu et al., 2007) contribute to such outcomes.	The fact of observing through a discussion forum the predisposition of individuals to leave ratings is very interesting, as it is necessary to take into account the design of the platforms themselves and even the censorship that may be present on these platforms. In conclusion, we can observe how the spiral of silence theory is amplified by positive bias influences. However, the user, perceiving mostly positive opinions, may be more likely to repress his or her willingness to express a contrary and/or different opinion, something to be considered.
13	Lee, M.J. et al, 2016	The methodology consisted of two parts. On the one hand, a pre-attitude test, and on the other hand, a public opinion survey. A YouTube video was used to make it, in which they talked	The research seeks to discover the relationship between online comments and opinion related to people's attitudes towards an institution or corporation.	The results correspond to the hypotheses formulated. That is, individuals with a positive attitude towards the company reacted positively to positive comments and were surprised by negative ones. The same situation occurs in the opposite case.	It is interesting to note how two theories are combined in this study (social judgement theory and spiral of silence theory). This gives the possibility to include new theories to address possible gaps that may arise.

		about how their products are harmful to health.		It is noteworthy that users with negative attitudes towards the object of study were somewhat coerced when they observed positive comments, which was not the case for users with positive attitudes when they observed negative comments.	
14	Neubaum, G. et al., 2017	Two online sessions were conducted. Subjects were exposed to two posts on controversial topics in which users had to give their opinion based on the type of comments and the number of "likes".	There is a lack of specificity and research on the circumstances in which people consider the opinions of other users through social media. There is a need to explore how majority or dominant opinion climates affect users' opinions.	As a result, it highlights the importance of comments posted on a variety of controversial posts in altering, however slightly, the inferences of participants in a macro-level climate of opinion. It concludes that users use others' comments as opinion cues, shows that comments in one way or another mitigate one's own opinion within a climate of opinion, and demonstrates the importance of the spiral of silence theory in analysing the dynamics of public opinion in social media.	The relationship between this study and the current proposal is quite direct. On the one hand, it demonstrates the correlation shown by Lee and Jang (2010), who confirm that the opinions left by users in comments affect the prevailing climate of opinion. This demonstrates the influence of majority opinion and the disadvantage of minority opinion in digital social media.
15	Hampton, K.N. et al., 2017	A telephone survey was conducted with the help of the Pew Research Center on a current political issue. These interviews were conducted with random numbers in December 2013 in English and Spanish.	Need to explore the relationship between users' use and application of social media, attitude, general opinion and the difference between online and offline discussion.	The research found that the use of social media can have a major negative impact on the deliberation of many opinion processes, even outside the online sphere. In the political sphere, the presentation of a political issue can become associated with a colloquium where opinions are shared.	There is clear evidence of Spiral of Silence in the results. Furthermore, he talks about the inability of many people to have discussions in person, but they could have them online without a problem, which proves Hampton's (2014) assertions.
16	Chun, J.W. et al., 2017	Online web survey with 292 participants conducted in 2016. The Uber fake vomit scandal was selected as the subject of the study.	Changes in the way people share information and express their opinions following the advent of social media. It also aims to highlight the challenges now that opinions are more volatile and the complexity this adds to communication.	As a result, it was observed that the online relationship to the general opinion exponentially increased perceived social support. This improved the users' perceived sense of power/control. In terms of group dynamics, it was observed how the spiral of silence theory was adapted	It is interesting to understand that, in one way or another, when an original publication contains negative evaluations of a company or institution, users who are informed about this news are generally more likely to develop a negative attitude first. This is related to Wanta, Golan and

			<p>The main question of the study is What factors influence individuals' willingness to share and post their opinions about an organisation via social media when exposed to negative news about an organisation (Chun et al., 2017).</p>	<p>and extended in terms of the relationship between congruence of opinion and willingness to talk through perceived social support and sense of power/control.</p>	<p>Lee's (2004) assertion about the primary attitude of the opinion climate.</p> <p>There are observations about how the spiral of silence theory relates to online environments in terms of control/power relations. That is, there is an extension of the theory in a social and online environment.</p>
17	Neubaum, G. et al., 2017	Reading and review of related articles and theories.	<p>New forms of communication have given rise to new forms of communication between users. This can be more massive, resulting in a change in opinion climates.</p>	<p>Ultimately, the article argues that the integration of mass and interpersonal communication processes into online interactions and social media is not new. To do it properly, one must understand the use and scope of the technology, so as not to endanger society and its individuals.</p>	<p>It is relevant to look at the different types of opinion in today's online social environments: the juxtaposition of mass media and user-generated content, the ideological homogeneity and heterogeneity of online networks, the technical ease with which opinions can be expressed, the reach of messages and networked audiences (Neubaum, 2017).</p> <p>It is interesting to consider persuasion as a key concept within the proposal. Especially as Katz and Lazarsfeld (1955) link it to interpersonal communication and the media.</p>
18	Gearhart, S. et al., 2018	A national online survey on the use of Facebook was conducted on three controversial topics. The survey was conducted in February 2013. Respondents (a total of 1,871) were recruited by the company Toluna.	<p>The lack of evidence of the spiral of silence theory in various settings and contexts with a defined problematic.</p>	<p>The results and findings of this empirical study provide, according to the authors, the first empirical evidence of the influence exerted by the willingness to self-censor, as well as the different types of opinion congruence between topics.</p> <p>It also suggests that thematic differences matter when it comes to observing congruencies of opinion.</p>	<p>The study adopted Yeric and Todd's (1989) typology of problems recommended by Salmon and Glynn (2009) to test the spiral of silence theory.</p> <p>Yeric and Todd's typologies address three types of problems: enduring problems, emerging issues and transitory problems. Theory that can be very relevant to the proposal.</p>

19	Matthes, J. et al., 2018	Bibliographic search where data was collected from two different databases: Communication and Mass Media Complete, and PsychINFO	The aim is to analyse the relationship between perceptions of the climate of opinion and its impact on public expression. In addition, we seek to analyse the impact of relevant moderators from a theoretical point of view.	The results showed that there is no change in the silencing effect in online environments, i.e. it did not disappear or weaken. Therefore, online environments can also create isolation of users whose views are opposed to the majority view. It can be argued, then, that online environments do not offer a consonant majority opinion, but rather provide many subjective majority climates that depend on some selective exposure (Schulz & Roessler, 2012). As far as politics is concerned, the relationship between the climate of opinion and the expression of opinion is stronger than first thought.	Directly linked to the results obtained: "It can be argued then, that online environments do not offer a consonant majority opinion, but rather provide many subjective majority climates that depend on some selective exposure (Schulz & Roessler, 2012)". In addition, the digital environment offers new mechanics that monitor and establish the opinion environment (likes, comments, etc.). Finally, the difference between expressing opinions online and in person drastically changes the climate of opinion.
20	Neubaum, G. et al., 2018	Experimental design among diverse individuals through a direct manipulation of the social nature of the debate. There were four social situations in which the communication channel and the relevance of the audience were involved.	The problem arises from the new and diverse social situations that have arisen after the advent of the Internet and the relationship of these changes with the fear of isolation, this being a key concept of the Spiral of Silence.	In offline communication individuals are able to express both pro and con arguments on a particular issue than in online communication. As Neubaum (2018) states: "These mechanisms indicate that both the fear of isolation and people's communicative behaviour need to be considered in their different forms depending on the specific situation". Furthermore, he also notes: "This finding supports Noelle-Neumann's (1993) idea that expressing minority opinions in front of acquaintances can be risky; however, one might reshape the impression people had	An important concept is that of opinion avoidance strategies put forward by Hayes (2007). In addition, there is a theory that there is a kind of "engagement compulsion" that is higher face-to-face than online when seeking to continue a conversation or debate (see McDevitt et al., 2003). Do users' expectations of sanctions depend on the size or composition of the audience on social networks? What strategies do individuals use to express deviant opinions in front of such an audience? The answers to these questions will not only provide further insight into the role of social

				formed in the next conversations. This mechanism does not seem to apply in front of a relevant audience on Facebook, where people are more reluctant to express a minority opinion".	networks in public deliberation, but also advance the predictions made by the spiral of silence theory four decades ago Neubaum et al. (2018).
21	Soffer, O. et al., 2018	Online survey conducted in Israel in 2015.	Review the spiral of silence theory for online platforms.	The theory is also true in online contexts and with regard to commentary. A mixed evidence of effect on isolation can be observed, where the lower the fear of isolation, the higher the willingness to express the opinion and the actual expression.	The findings suggest that the postulates of the spiral of silence are robust in the context of the user commentary sphere, especially with regard to the importance of public opinion self-esteem and its effect on willingness to speak up (Soffer et al., 2018). The significant and relatively high levels of perceived support for one's own opinion by the majority and the significant results for the fear of isolation variant in two of the three themes indicate that the main components used to test the spiral of silence are relevant to the digital user commentary (Soffer et al., 2018).
22	Kartal, O.Y., 2018	Quantitative research and modelled as a type of correctional exercise. It was conducted with university students between 18 and 31 years of age.	The alienation of society through social environments (social media) is investigated. A possible relationship between the spiral of silence and media scepticism is also investigated (social networks are taken as a type of informal education).	Influence towards the minority by others was observed, which shows that they shape their opinion on the basis of the majority opinion. High levels of scepticism towards other people's publications were observed, while a low level of scepticism towards own publications was observed. Social networks are seen as an educational opportunity, and for it to work, alienation within them must be avoided.	It highlights how alignment or silence also occurs in social networks, which prevents a free and diverse education in terms of opinions. This carries over into the area of how the climate of opinion matters and is given in online platforms, something to be taken into account in the development of the proposal. To see education as a prelude to what society will eventually become. This new approach to education, in which technology

					plays a major role, can help to promote diversity and equality of opinion from the very basis of education.
23	Fox, J. et al., 2018	Online survey on news and attitudes. Users were recruited through Qualtrics.	Check whether through a channel other than face-to-face (such as Facebook) there are individuals who self-censor their opinions.	The results indicated that the presence and prolongation of online SoS can be better understood by assessing individual perceptions of the possibilities of the online environment.	This again highlights the impossibility of addressing the full scope of the theory, as advised by several scholars (Hayes & Matthes, 2014). Focusing on a social group and a specific area is essential for the proper conduct of the study.
24	Chen, H.-T., 2018	Data were used from a two-wave panel study in Hong Kong conducted by Survey Sampling International (SSI), a web survey panel company. Both waves of the survey were administered online.	It seeks to extend the theory by including the expression of supportive and dissenting opinions and by examining withdrawal behaviours in social networks. It also investigates the moderating roles of disagreement and publicity as two possibilities in social networks that influence the process of the spiral of silence.	Political disagreement and publicity may drive the indirect effect of FSI in limiting the expression of dissenting opinions and increasing withdrawal behaviours through WTSC. This finding implies that, although social networks provide a great opportunity for exposure to political disagreement, it does not mean that all people benefit from the opportunity (Chen, 2018). It is also observed that people are afraid of being socially isolated, they will be sensitive to the climate of opinion. Thus, the more frequent the disagreements people encounter, the stronger the climate of incongruent opinion they perceive and the stronger their willingness to self-censor their opinion.	The results offer evidence that extends the current literature on the spiral of silence in social networks, which, until now, has been largely based on a cross-sectional survey or sampling of students to a non-majority number. Thus, demonstrating a different Eastern context and political system. It demonstrates the limitations of studies focusing on the spiral of silence, highlighting the causal order enunciated by Ansolabehere and Schaffner (2014) and Iyengar and Hahn (2009).
25	Wu, T.-Y. et al., 2018	A quantitative methodology is used to investigate how anonymity and social support influence people's willingness to participate in online news discussions.	It seeks to detect and address how anonymity and social support influence online participation. The ultimate aim of the study is to help platforms shape more inclusive spaces for all their users.	The results show that anonymity and social support are essential factors to consider when creating and shaping online platforms and environments that encourage participation among their users in arguing and debating various news stories.	It is interesting to consider the concept of a group, since, according to Rössler and Schulz (2014), every group has social norms, and its individuals are expected to comply with them.

					Take into account recommendations for future studies such as the influence of isolation, anonymity on platforms and the climate of opinion to express thoughts and opinions.
26	Ross, B. et al., 2019	A similar model was used that emulated a similar dynamic in which bots interacted with other users. The spiral of silence theory is considered in its elaboration.	The authors found that bots in networks can increase the polarisation of their users, resulting in clusters of people whose opinions are similar and a distancing from each other.	The influence of bots within a social networking environment and the difficulty of representing a similar model.	Being aware of bots on social platforms is crucial nowadays. By reading this article, they will be seen as a potential threat to democratisation and freedom of expression on networks, especially if they are used to contribute to the polarisation of public opinion. This should be better regulated. It should also be noted that this study shows that no empirical measurements can be made that the theory applies to social networks.
27	Hakobyan, A., 2020	Theoretical study based on a literature review.	The incorporation of the Internet as a public sphere and an environment in which a climate of opinion can exist. In short, how digital technologies influence the presence of the spiral of silence and the changes it undergoes.	The digitalisation of communication has expanded the spiral of silence theory and gives it new challenges and opportunities to face from now on. On the other hand, it has created new forms of climate of opinion, as well as forms of pressure towards minorities.	It is important to understand the role of digitalisation on communication theories. As is the case, the spiral of silence faces new challenges as it takes place on social media and online platforms.
28	Al-Sumait, F. et al., 2021	Mixed methodology. Online surveys and qualitative surveys to understand the cultural context of the countries in which the study was conducted (China and USA).	Exploration of how culture influences individuals to express their opinions both online and offline.	It is noted that cultural differences influence people's willingness to express their opinions online and offline, and that cultural identity and belonging to a cultural group are also key factors to take into account. There is a clear difference in the expression of opinion between Chinese and American subjects.	It demonstrates the importance of cultural differences, and how these can influence the willingness of social minorities to express their views, both online and offline. Cultural identity and belonging may be important factors in the predisposition of individuals to express their opinions. If social minorities feel identified with their cultural group, and feel that their opinion is in line with that of the group, they are likely

				While Chinese participants were less likely to express their opinions online than in person, US participants were more likely to express their opinions online than in person.	to express their opinions more freely and directly.
29	Chia, S.C., 2021	Quantitative online survey using a sample of 1200 participants.	<p>It tries to determine whether it is possible to measure public opinion in a valid and reliable way.</p> <p>It examines the willingness to talk on social media and how this may affect measures of online public opinion.</p>	<p>Subjects who felt more secure in their political convictions and trusted the media more were more likely to talk about politics on social networks.</p> <p>On the other hand, it was found that individuals who identified with a particular political orientation and who were more ideologically polarised were more likely to talk and discuss politics in online environments.</p>	Consideration will be given to the suggestion that future research should further explore how psychological and social factors influence people's willingness to discuss sensitive topics online. It will also consider how the negative effects of ideological polarisation online can be mitigated.
30	Leong, A.D. et al., 2021	Quantitative online survey of university students.	It investigates and questions how opinion on social media, along with the perception of public opinion, can affect people's willingness to express their opinion online.	<p>Users of online networks and platforms are more likely to express their opinion online when they perceive that public opinion is in favour of their opinion and when they perceive the source of the opinion to be credible.</p> <p>Signals were also detected showing that Facebook can have a disinhibitory effect on opinion expression, suggesting that opinion signals on social networks can influence social conformity and people's willingness to speak in public.</p>	The importance of the source is highlighted, giving credibility and being an important factor in speaking and moderating the climate of opinion. This result is consistent with Bodor's (2012) argument that subjects may have a limited ability to estimate the degree of dissonance between one's own position and the perceived wider climate of opinion, making it difficult to influence reporting behaviour. It highlights the importance of conducting a study with similar characteristics on other online platforms such as Instagram or Twitter, as aggregated user representations (AUR) are more limited in these environments, which would provide different results.
31	Sakariassen, H. et al., 2021	Literature review and utilisation of data collected through surveys in 2017.	It seeks to explore and delve into online user non-participation as a phenomenon.	Inhibition was found to be a common phenomenon in digital public spaces, and can be influenced by a variety of factors,	It highlights the importance of the concept of inhibition or non-participation as a fundamental factor to take into account

			<p>including the power structures and group dynamics involved. This inhibition is also affected by the perception of the power structure in the public space. Participants felt less inhibited when they perceived the space to be more equitable.</p> <p>It was found that group dynamics can also have an impact on inhibition in digital public spaces. Participants tended to feel more inhibited when they were in an unfamiliar group, and less inhibited when they were in a more familiar or supportive group. Ultimately, the results suggest that inhibition in digital public spaces is a complex phenomenon that is influenced by a variety of interrelated factors.</p>	<p>when studying the spiral of silence theory. The fact that a user does not express his or her opinion is very relevant, as it shows passivity towards the issue in question. Users may even choose to abstain from activities to promote a cause deemed socially undesirable, which may stem from collective or individual political choices (Casemajor et al., 2015).</p> <p>Morozov (2011) puts the overt nature of social network participation into perspective by presenting it as 'lactivism': a form of self-staging, which does not translate into offline participation or political change.</p> <p>A low sense of internal political efficacy can then translate into inhibition based on a lack of self-confidence that erodes the motivation to speak out. The political efficacy of social networks resembles external political efficacy (Campbell et al., 1954).</p>	
32	Masullo, G.M. et al., 2021	Quantitative online survey with a sample of US adults. Statistical techniques such as mediation and moderation analysis were used.	We examine whether uncivil speech that elicits negative emotional responses can cancel out the effects established by the spiral of silence. In short, the aim is to test whether subjects speak even when they have a minority point of view, whether the tone of the message is sufficiently aversive to provoke a negative reaction.	The relationship between online incivility and willingness to express online opinion was found to be strongest for those individuals who have a high perception of public opinion set against their opinion. The relationship between perception of public opinion and willingness to express opinion online is moderated by online incivility, i.e. the relationship is stronger for those who experience low online platform incivility.	Contrary to what the spiral of silence theory may state, people in an online environment express their opinion even if the climate of opinion is against them. However, if verbal violence or anger prevails in the climate of opinion, users prefer to remain silent.
					This is necessary in order to understand how a subject belonging to a minority may or may not give his or her opinion based on

					the type of climate of opinion that exists on a particular issue.
33	Peter, C., 2022	Content analysis through a review of media patterns and trends	It seeks to observe how media coverage of certain issues (in this case climate change and renewable energy) influences public perception.	One of the most striking results is that media coverage depends directly on the place where it takes place (USA, Germany and China), coinciding with the main values and concerns of the country or region in which it takes place.	If minority voices are not heard or represented in media coverage, this can have an impact on people's willingness to act in support of these minorities or in relation to the issues these minorities represent.
34	Masullo, G.M. et al., 2022	Literature review.	It seeks to address the issue of political self-silencing, which refers to the tendency of people not to express their political opinions due to fear of disapproval or social isolation.	A typology is offered based on a review of the literature on the topic in question. The proposed typology is based on three dimensions: motivation, type of silencing and level of political engagement. No results are presented as such.	The typology of political self-silencing proposed in the article can be useful to understand how social minorities can experience different forms of political self-silencing and how this can affect their political participation and influence on public opinion.
35	Cheong, H.J. et al., 2022	Critical review of the literature.	It investigates a possible influence of social media algorithms on the formation of opinions and the expression of opinions, and how this may affect the spiral of silence.	No results are presented as such as it is a review. However, the hypotheses it proposes can be applied to future research with similar characteristics to those addressed in the article.	It is essential to take into account the influence of algorithms when presenting topics to different users. Algorithms, presented according to the content consumed, may mute certain topics of interest, or even only show a very specific topic. This prevents plural and equal participation of all users. This selective exchange and exposure to one's preferred information among like-minded people may overemphasise biased information while minimising or even rejecting counterarguments (Chan & Fu, 2017).
36	Lemke, R., 2022	Systematic literature review.	It addresses the concealment of affectivity between gay men in public spaces.	Negative attitudes towards homosexuality in the public may lead to the internalisation of	The article relates to the theory of the spiral of silence, as it shows how fear of social exclusion can influence the behaviour of

			The authors explore how public perceptions and the stigma attached to homosexuality may influence affectivity-concealing behaviour among gay men.	stigma by gay men, which may make them uncomfortable showing affection in public. Concealment of affectivity among gay men can have negative consequences for their mental health and well-being, underlining the importance of addressing the stigma associated with homosexuality and promoting acceptance and inclusion of the LGBTQ+ community.	social minorities and how public perceptions can perpetuate silence around the expression of social minorities.
37	Schmidt, R.E. et al., 2022	Review of contributions by sociologists Noelle-Neumann and Lazarsfeld	Seeks to examine and contrast the relationship between two authors and their influence on psychology.	The importance of the work of both sociologists is highlighted, which led to a reciprocal influence.	Lazarsfeld's role must be taken into account when establishing sociological theories that are present today.
38	Baltezarević, R.V. et al. 2022	Questionnaire composed of two parts. The first is attitude-based, the second focuses on the demographic profile of respondents.	Depending on the cultural context, silence can be perceived as positive/desirable or negative/unwanted. This ambiguity often leads to misunderstandings with other participants in the communication process.	The results of the research showed that there was a link between respondents' attitudes that people with opposing views to those of the group keep quiet for fear of social isolation, leading to the conclusion that silence or 'self-censorship' is used when people fear being ostracised. The results showed that creativity is associated with keeping quiet because of opposing views and with reducing tension. Both associations show a strong relationship.	It may be interesting to look at the phenomenon of silence as a socio-cultural phenomenon within certain cultures. It can be seen as a method of conflict avoidance and reducing tension in certain situations. "Tension when confronted with something that scares them, startles them, and perhaps even truly startles them" (Zimmermann & Morgan, 2016).
39	Sohn, D. 2022	Agent-based modelling (ABM) approach.	How the interaction between interpersonal networks and traditional media influences the way individuals follow the climate of opinion, which plays a fundamental role in the dynamics of public opinion.	The simulation results show that the spiral of silence in a networked environment can be observed locally, but is unlikely to occur on a global scale: unless mass media opinion becomes extremely homogeneous, individuals are hyper-connected, or both, the local opinion gap between the majority and the minority rarely escalates into the global silence of the minority.	It is implied that the spiral of silence cannot be observed globally, a local observation of a given phenomenon is necessary to be able to carry out the study correctly. A global representation could only be given if media or user opinion becomes homogeneous or users have very direct connections.

40	Neubaum, G. 2022	Empirical-experimental research, as well as surveys and analysis.	Politicisation of social media and persistence of messages.	<p>These findings provide preliminary indications of how future digital environments might encourage political participation. In relation to the spiral of silence theory, this research shows the relative impact of the communication situation and its external conditions compared to traditional variables such as perceived congruence with the climate of opinion.</p> <p>The persistence of messages significantly reduces people's willingness to express their political positions.</p>	<p>The persistence of political messages on social networks can influence the perception of popular or majority political opinions. This can lead to greater conformity with these views and a reluctance to express unpopular opinions, especially among social minorities who may feel marginalised or fear social repercussions.</p> <p>On the other hand, social media can be used as a space of expression and empowerment for social minorities, allowing them to have a voice and actively participate in the political debate, despite the persistence of the message.</p> <p>In this way, social networks can even challenge the spiral of silence by promoting the expression of diverse and representative political opinions, including those of social minorities.</p>
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Source: Own elaboration

Annexe B

Reference Matrix

ID	Reference	Social Networks	Democracy	Ethics	Countries
01	Schulz, A. et al., 2012	Web 2.0, Facebook & Internet	The democratisation of communication and possibilities is highlighted in the article. The choices of those who have more means and those who do not have access to all or part of these means are indexed.	The difference in the opinion-forming process between those individuals or groups with access to the Internet and those without. This is undoubtedly a clear differentiating bias to be taken into account.	Germany
02	Matthes, J. et al., 2012.	NC	NC	It highlights the cultural difference between countries, as well as the geographical limitations linked to the study (these might have slightly altered the results - internet surveys).	Austria, USA & Hong Kong
03	Bodor, T., 2012	NC (speaks of media as a general concept)	It is based on an opinion-based study of the US political climate in 2004. The study's methodology therefore focuses on the importance of public opinion in terms of democracy.	NC	USA
04	Hayes, A.F. et al., 2013	NC (speaks of media in general)	There is a degree of democratisation in polling, using diverse individuals from multiple countries to account for cultural difference in shaping opinion.	On an ethical level, the research assumes that the measurement may not be based solely on the FSI, as it could include other values outside the concept itself.	Austria & USA
05	Gearhart, S. et al., 2014	Facebook, Twitter, YouTube & LinkedIn	By using Internet-based surveys, the democratisation of the study is superior to others conducted at the time.	It gathers public opinion in the NHS on a minority and gives possible options for improving future research.	USA
06	Tsfati, Y. et al., 2014	NC (Talking about the media in general)	Discusses tradition and the "return of powerful media" as an idea of democratising opinion and returning to homogeneity.	It highlights the personal opinion linked to the political sphere in an increasingly heterogeneous traditional milieu.	Israel & the US
07	Porten-Che�, P. et al., 2015	Traditional media & Facebook	A mention is made of a possible debate linked to climate change and the situation of Germany as a European country. This is considered when providing the results.	Study participants are exposed to different traditional media as well as conducting online surveys. Demonstrating democratisation within communication.	Germany
08	Fox, J. et al., 2015	Facebook, Twitter & Tumblr	There is a certain democratisation in the selection of participants in the study, as it shows a wide range of identities to broaden the sample and the result. However, they recognise that the majority were urban and generally white.	On an ethical level, in the endnotes of the article they talk about the respect used when referring to participants, allowing participants to self-describe their gender identity or sexual orientation. In addition, the ethical consent that was signed before the surveys were carried out should be highlighted. Also noteworthy is the choice of the use of image rights.	USA

09	Gearhart, S. et al., 2015	Facebook & online platforms in general	With thanks to the Pew Research Center's Internet and American Life Project.	Traces of democratisation in the absence of competing financial interests.	USA
10	Matthes, J., 2015	NC (Only traditional media such as TV, newspaper, etc.)	One could speak of democratisation when it comes to establishing and comparing various multi-author theories on an equal footing.	An ethical correlation could be established between the relationship between the subject matter of the surveys - unemployment - and the opinion of the public who conducted the surveys and the fight against unemployment.	Austria
11	Kwon, K., 2015	Facebook	The research approaches the surveys with university students using the Facebook platform, so we could speak of a democratisation process within the selection of the sample.	In terms of ethics, the study itself seeks to demonstrate the censorship of some individuals in expressing their political stance online. There is therefore a direct ethical link to the purpose of the study.	US & South Korea
12	Askay, D.A., 2015	NC (Website)	NC	The research focuses on the discussion of how users' non-positive opinions were silenced by observing more positive opinions. It is therefore suggested that future academics consider users' privacy.	USA
13	Lee, M.J. et al., 2016	YouTube	NC	On an ethical level we can see how the research advises corporations to maintain their online reputation and learn how to manage a crisis.	USA
14	Neubaum, G. et al., 2017	Facebook	There is a clear influence on the opinion of users when it comes to contributing an opinion opposed to the dominant one; we could speak of a failure in the democratisation of opinion.	The experiment was approved by the local institutional review board.	Germany
15	Hampton, K.N. et al., 2017	Facebook & Twitter	The study argues that, to a greater or lesser extent, social networks can support and influence democratic deliberation.	Consideration was given to ensuring that participants were adults and knowledgeable about current policy. They advise including better monitoring of their offline participation for more accurate results.	USA
16	Chun, J.W. et al., 2017	Facebook, Twitter & Youtube	NC	Approved statement of consent from study participants. He considers this new type of empowerment within social networks to be very beneficial on a sociological level.	USA
17	Neubaum, G. et al., 2017	Facebook	NC	It proposes persuasion (trustworthiness) research as seemingly essential to understanding the ethical underpinnings of personal opinions online.	Germany
18	Gearhart, S. et al., 2018	Facebook	NC	On an ethical level, it shows an interest in future research examining the behavioural contexts of study subjects both	USA

				within and outside of SNSs. "Does spiral of silence behaviour in SNSs matter in the real world?" (Gearhart et al., 2018).	
19	Matthes, J. et al., 2018	Facebook	The research considered the problems of communication at the democratic level, taking as references family, friends, etc. and the bias between these and strangers within the climate of opinion and the expression of opinion.	As an ethical aspect, the need for an analysis of subjectivity is considered for future similar or continuing research, taking intrusiveness as a reference point.	Vienna & Austria
20	Neubaum, G. et al., 2018	Facebook	Key questions are provided to resolve and advance the predictions made by the spiral of silence theory. Furthermore, a focus on social minorities in future research is encouraged.	The selection of candidates was mostly students who were exposed to a fundamental human condition. And it seeks to demonstrate academic differences between subjects, as well as the punishment mechanism in the samples.	Germany
21	Soffer, O. et al., 2018	Facebook	NC	A study focusing on Israel and at a global level is proposed to examine possible differences.	Israel
22	Kartal, O.Y., 2018	Facebook	This may occur when considering the type of audience selected for the study: young university students between 18 and 31 years of age.	The validation of the research method by academics with expertise in media research and the fields of curriculum and instruction is discussed.	Turkey
23	Fox, J. et al., 2018	Facebook	The selected subjects use Facebook and social networks, so they are individuals who know how to use the platform and in some way understand its impact.	Study methods approved by The Ohio State University Institutional Review Board. Respondents gave their consent to participate.	USA
24	Chen, H.-T., 2018	Facebook	NC	The study considers polarised political ideologies in the context of Hong Kong and Western China.	Hong Kong
25	Wu, T.-Y. et al., 2018	Facebook	Although it does not show democratisation as such, it does take it into account when addressing issues such as anonymity and participation.	It states that the study was approved by the ethics committee of the institution where it was conducted and that participants gave their prior consent to participate in the study in news discussions.	USA
26	Ross, B. et al., 2019	Facebook, Twitter & YouTube	The study highlights the democratisation of opinion within an environment with actors charged with polarising opinion in a specific context.	In principle, such a study must have ethical and social implications. It must consider the influences and effects it may have at the societal level.	Germany
27	Hakobyan, A., 2020	NC	It addresses ethical issues such as: the need to protect freedom of expression; protecting privacy; and multiple ethical challenges in the field of communication.	The importance of the ethical implications for society and the spiral of silence on a digital level is highlighted. It suggests measures to ensure fair and equitable digitisation.	NC
28	Al-Sumait, F. et al., 2021	Facebook	The study itself speaks indirectly about the importance of democratisation based on the context of the subjects.	Study approved by the University of Pennsylvania Ethics Committee. All study participants gave informed consent before participating in surveys and interviews.	Kuwait & USA

29	Chia, S.C., 2021	Facebook, Twitter and Instagram among others.	NC (Citizen participation in social media and how it can influence public perception of political issues is mentioned and addressed).	There is no ethics section, but the privacy of the subjects who participated in the study was protected.	Hong Kong
30	Leong, A.D. et al., 2021	Facebook (others such as Instagram or Twitter).	There is a presence of democratisation in online public opinion by highlighting the importance of possible signals of online opinion and the credibility of the source in people's willingness to express their opinions online. In particular, the article suggests that online opinion signals can have a significant impact on people's willingness to express their opinion on online platforms. This may be useful to counteract the spiral of silence and encourage diversity of opinion online.	They highlight ethical concerns related to the use of data, the manipulation of public perception and the ethical responsibility of social media companies.	USA & Singapore
31	Sakariassen, H. et al., 2021	Facebook	The study theorises democratisation in digital public spaces by exploring inhibition in online public discussion.	It addresses ethical issues related to online public discussion, and how inhibition can affect the quality and diversity of discourse in digital public spaces. The most salient ethical aspect is the need to promote equitable and non-discriminatory group dynamics in digital public spaces.	Norway & Netherlands
32	Masullo, G.M. et al., 2021	Facebook & Twitter	A democratic approach is presented by considering the sample used, as well as the ultimate intention of trying to promote a fair and respectful online debate.	It discusses the consent provided by the study's participants. In addition, its final focus is on the importance of citizen participation in online platforms.	USA
33	Peter, C., 2022	NC	It emphasises the need for media coverage that is objective, balanced, transparent, accountable and promotes dialogue and citizen participation.	It stresses throughout the importance given to objective and balanced media coverage. It is suggested that the media should take into account their audience and, in this way, public dialogue.	Austria
34	Masullo, G.M. et al., 2022	Facebook	Its central theme highlights the importance of democratisation itself. It focuses on political self-silencing and how it can affect political participation and public dialogue in a democratic environment.	There is a clear ethical perspective, as the article seeks to understand and address an important social issue in a way that is fair and equitable for all individuals.	USA

			Furthermore, the article can be seen as an effort to promote democratisation by encouraging greater public participation and dialogue.		
35	Cheong, H.J. et al., 2022	Facebook, Twitter & Instagram	The importance of democratisation of information and political participation in social networks is noted. It points to the need for policies and practices that promote transparency and accountability in algorithmic decision-making to ensure equal participation.	Ethical concerns can be observed in addressing an important and sensitive issue related to freedom of expression and democratic participation in social networks. It highlights the need for greater transparency and accountability in algorithmic decision-making.	Japan & USA
36	Lemke, R., 2022	NC	The article focuses on a social minority, gay men in China, and on understanding how public perceptions affect their ability to express their affectivity in public. In addition, by publishing the article in an open access journal, the results of the study will be made available to anyone who is interested, thus democratising access to research and scientific knowledge.	Robust ethics in human research are presented, including approval by an ethics committee, informed consent of participants, privacy and confidentiality of data, and representativeness of the sample.	Germany
37	Schmidt, R.E. et al., 2022	NC	Democratisation is observed by establishing a relationship between the two authors by equating their work and influence.	NC	Switzerland & Germany
38	Baltezarević, R.V. et al. 2022	NC	Interpretation of silence as a type of expression that in many cultures and assumptions can be linked to creativity or a superior use of communication.	A free research report is sent to survey participants. The importance of considering the ethical impact of communication in our personal relationships is recognised.	Belgrade & Serbia
39	Sohn, D. 2022	Facebook	NC	It recognises the importance of considering ethics in online communication and advocates for greater awareness of the social and ethical impacts of the interaction between social networks and the media.	Seoul & South Korea
40	Neubaum, G. 2022	Facebook, Twitter, YouTube & Instagram	NC	The importance of considering ethics in online communication is mentioned, especially with regard to privacy and the protection of personal data.	Germany

Source: Own elaboration