The Patients Representations of Perceived Distance and Proximity to Telehealth: A Qualitative Study in France

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Table of Contents

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Abstract

Background: Many health technologies, like telehealth, have emerged in recent years, suggesting several social benefits like a greater patient autonomy, an improved communication with physicians and an easier access to care. However, previous research has revealed disparities in acceptance and use of digital health tools. Yet no study has investigated patients' representations of telehealth, despite their strong connection with attitudes.

Objective: To provide a conceptual framework of patient's social representations of perceived proximity and distance to telehealth.

Methods: The present study has a qualitative design, using in-depth, individual interviews. A total of fourteen interviews were conducted between May and June 2022. In an inductive approach, discourses were analyzed using thematic analysis.

Results: The two main opposed dimensions of "proximity" and "distance" emerged from interviews as a basic structure for understanding multiple social representations of telehealth. A semiotic square was built, providing a fruitful typology of four categories of contrasted representations of proximity with telehealth. Each category provides a coherent body of social representations explaining in what extent telehealth is perceived and accepted. Finally, due to the dynamic nature these representations, we highlighted two specific journeys of "proximity making process", through which patients' acceptance of telehealth may improve.

Conclusions: This study shows how crucial it is to consider social representations of proximity and distance to better understand the drivers of acceptation (vs rejection) of telehealth. If reducing temporal distance to consultation and enhancing the proximity of access to care may be seen as efficient, telehealth can also be considered of as a destroyer of the human relationship between patient and physician, decreasing the essential relational proximity between them. The patient-oriented value turns out to be key in the future development of digital health tools.

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Abstract

Background: In the last two decades new technologies have emerged in health. The COVID-19 pandemic further accelerated the adoption by both healthcare professionals and patients. These technologies create remote care practices that bring several benefits to the healthcare system: an easier access to care, an improved communication with physicians, and a greater continuity of care. However, disparities in the acceptance and the use of telehealth tools still exist among patients. These tools also disrupt conventional medical practices and prompt a new reassessment of the perceptions of distance and proximity as physical (i.e. time and space dimensions) and non-physical (i.e. behavioral dimensions) concepts. The reasons why and why not patients adopt telehealth tools in the setting of their care and therefore their perspectives on telehealth are unanswered questions yet.

Objective: We explored the barriers as well as the motivations for patients to adopt telehealth tools. We specifically focused on the social representations of telehealth to establish a comprehensive conceptual framework to get a better understanding on how telehealth is perceived by patients.

Methods: This study uses a qualitative design through in-depth individual interviews. Participants were recruited using a convenience sampling method with balanced consideration to gender, age, location (urban/rural) and socioeconomic backgrounds. After collecting the corresponding informed consent, interviews were transcribed and analyzed using the thematic analysis methodology.

Results: Fourteen interviews were conducted and reached data saturation. The two main opposed dimensions, perceived proximity and distance, emerged as an essential structure for understanding the social representations of telehealth. A logic of engagement *vs* hostility emerges as a main tension in adopting telehealth, almost ideological. Interestingly, practical issues emerged regarding the adoption of telehealth: a logic of integration was opposed to a logic of constraints. Altogether, those dimensions enabled us to conceptualize a semiotic square, providing four categories with a coherent

body of social representations. Due to the dynamic nature of these representations, we proposed two ‘paths’ through which adherence to telehealth may improve.

Discussion: Our semiotic square illustrating patient’s adherence to telehealth differentiate socially beneficial *vs* socially dangerous considerations and pragmatic from ideological postures. It shows how crucial it is to consider perceived distance/proximity to better understand barriers and motivations in adopting telehealth. These representations can also be considered as leverages that could be modified to encourage the step-by-step adhesion process.

Conclusion: Even if reducing perceived temporal distance to in-person meeting and enhancing perceived proximity of access to care may be seen as efficient ways to adopt telehealth tools, telehealth can also be perceived as a care practice that threatens patient-physician relationship. The patient-oriented perceived value turns out to be critical in the future development of and adherence to telehealth tools.

Keywords: telehealth; teleconsultation; social representations; perceived proximity; semiotic square.

Background

Telehealth, a subset of eHealth still ongoing

Many technologies have been developed in eHealth in recent years. Defined as the “use of information and communication technologies in support of health and health-related fields, including healthcare services, health monitoring, health literature, and health education, knowledge and research” (1), eHealth covers a wide range of practices. First, mobile applications and connected devices are referred to as mobile health (mHealth). Second, telehealth, ie. the practice of medicine using information and communication technologies, covers five practices: teleconsultation, tele-expertise, medical regulation, remote medical monitoring and remote medical assistance.

Recent research focusing on remote care have shown some confusion regarding the wording used to refer to health-related technologies (2). For instance, the terms “telemedicine” and “telehealth” are often used interchangeably (3). However, some researchers highlight a difference between these two concepts. Whereas telemedicine is limited to remote clinical services, telehealth is broader and refers to remote clinical services as well as remote non-clinical services, like administrative meetings (4). Thus, telehealth has been defined as “the use of electronic information and telecommunication technologies to support and promote long-distance clinical healthcare, patient and professional health-related education, public health and health administration” (5).

eHealth is expecting to lead to significant changes in the delivery of care and medical practices (6). Because of i) disparities in access to healthcare, ii) the ageing population and iii) budget constraints limiting public policies, the development of eHealth devices can be seen as a solution to the future challenges faced by the health system in many developed countries (7). Before the COVID-19 crisis, there were significant disparities in the use of eHealth tools between European countries (8). A global shift occurred during the pandemic: the use of many eHealth tools became necessary, democratizing their use in terms of communication, monitoring or care delivery, and the use of technology to

provide health services has accelerated (9,10). Telehealth may now concern everyone.

Benefits and barriers of Telehealth

The practices of telehealth present many benefits for patients, including i) a better access to healthcare services, in particular in isolated regions like rural areas, ii) an improved continuity of care, iii) an increased availability of health information (11), and iv) an empowerment of patients (12). As such, telehealth is supposed to increase efficiency and quality of care (10) and favors patient-centered care by enabling a better communication between patients and healthcare professionals (13).

Yet, researchers have point out that many barriers exist and limit health equity for all patients. Significant disparities remain regarding the access to, the adherence to and the use of telehealth tools (14,15). In particular, few is known on the role of digital health literacy (13,15), ie. “the ability to search for, find, understand and evaluate health information from electronic sources and to apply knowledge acquired to solve a health problem” (17). Among individuals in rural areas, low levels of education are associated with lower use of digital health tools (18). Some scholars argue that online interactions are impersonal and dangerous because of the lack of a physical examination (10) and that telehealth may threaten the quality of the relationship between physicians and patients (19).

Studies among healthcare professionals also showed reluctance to adopt these technologies because of a fear of ‘dehumanization’ by virtualizing patients and care (20). This feeling of dehumanization of care could explain a negative attitude towards telehealth (21).

Patients tend to attribute significant importance to healthcare professionals physical and emotional presence (22) and direct interactions with them (7). However, the digitalization of health is transforming these relationships (23): telehealth disrupts medical practices and reduces physical interactions between patients and physicians. But it leads to reconsidering notions of distance and proximity (23), including physical and non-physical dimensions, i.e. cognitive or relational aspects

that are perceived by individuals (24–26). Physical proximity and perceived proximity are not necessarily aligned. Indeed, individuals can feel themselves close to an element that is physically far but also to perceive it far when it is physically close (26). Perceived proximity has a cognitive dimension that refers to “a mental assessment of how distant someone else seems” and an affective component, since these representations are subject to emotions rather than rational (26,27). In health , Talbot, Charreire-Petit and Pokrovsky (28) have investigated the perceptions French physicians may have about telehealth, using the conceptual framework of proximity of Boschma, that includes five dimensions of proximity: cognitive, organizational, social, institutional and geographical (25). However, how patients react to these changes in care delivery and what are the representations of these practices remain unanswered questions. Therefore, exploring patient’s representations of telehealth is important to better understand psychological mechanisms underlying the adherence to telehealth. The theory of social representations is fruitful in overcoming this limitation.

The social representations theory

The theoretical background of social representations provides a framework for understanding how new concepts become common knowledge. Defined as a collective elaboration “of a social object by the community for the purpose of behaving and communicating” (29), social representations consist of a system of values, ideas and practices that enable individuals to orient themselves in their material and social world as well as to master it and that provide a code for social exchange (30). Therefore, social representations provide people with a common frame of communication that is built in everyday interactions. More precisely, a social representation corresponds to thoughts and feelings being expressed in verbal and overt behavior of actors which constitutes an object for a social group (31).

Although social representations are commonly shared, some may be more polemical, reflecting

oppositions between social groups in society (32). Also, social representations have a dynamic nature across and within social groups of people, and societal practices, communication, and the process of knowledge are strongly connected, particularly in health field that has been one of the leading research areas for this theory (33–35).

Interestingly, social representations constitute a structure explaining behaviors which result not only from an individual cognitive process but also from social and cultural representations, that are shared collectively (36,37). Social representations have been shown to be a significant indicator of attitudes (38,39). However, social representations of patients have never been studied in the context of telehealth specifically. A qualitative study is well suited to understand these representations. The objective of our qualitative research is to establish a comprehensive conceptual framework to gain a better understanding on how telehealth influences perceived proximity or distance for patients, therefore to better apprehend their barriers as well as their motivations to adopting telehealth tools.

Methods

Study design

A qualitative study was conducted with an interpretative approach to explore patients representations of telehealth and their perception of proximity towards it. We adopted an inductive constructivist perspective, assuming that people construct their life-worlds through their representations and interpretations of telehealth as a social fact to which they attribute specific terms and meanings.

Setting and sample

Qualitative in-depth individual interviews were set-up using a semi-structured thematic interview guide. Convenience sampling has been used to recruit participants. Variation sampling was sought (40) with consideration to gender, age, location (urban/rural) and socioeconomic backgrounds (Appendix 1). We used the saturation criterion for stopping recruitment. This criterion is the point at which gathering more data about a theoretical construct reveals no new properties, nor yields any further theoretical insights (41). This saturation point is usually reached with 9-17 interviews (42).

Data collection

After obtaining participants informed consent, patients were contacted and an appointment for an interview was set. Interviews lasted from 45 to 75 min and were performed directly inside the family home or conducted through the digital platform Microsoft Teams® because of the geographical distance between the researcher and the participant. The study took place in May 2022. A total of fourteen interviews were gathered: eight participants were female, six were male, and their mean age was 52 (range 23-83). Eleven interviews were run face to face, and four were online.

The interview guide explored various aspects of how health and telehealth are perceived, including defining what constitutes perceived good health, understanding respondents' relationship with their own health, examining how they seek health-related information, discussing challenges in accessing care as related to geographical, temporal, and perceived distances, and evaluating respondents

overall and specific relationship with technology within the context of healthcare. This comprehensive approach aimed to gain insights into how individuals perceive telehealth and their level of engagement to it.

During each interview, we wrote down our impressions that could possibly impact the interpretation of results. Interviews were digitally audio-recorded with permission and verbatims were transcribed.

Ethical considerations

At the beginning of each interview, potential participants were given comprehensive information about the context, the objectives and the methods of the present study. The interviewees were informed that they may withdraw from this study at any time. After allowing enough time for any questions or clarification they may require, all the participants gave their informed consent. The study design was reviewed and approved by the Research Ethics Committee of Paris Dauphine – PSL University (20231128/01). Additionally, following national legislation, data were pseudonymized during the transcription process in a way that no participant could be directly identified: a number has been assigned to each participant with no record of any direct identifying data. Participants received no compensation for participating in this research.

Data analysis

First, we made a vertical analysis and read per individuals the transcripts to get an impression of the whole data. Second, transcribed data were analyzed using a horizontal thematic analysis to develop a narrative of the findings through a categorical approach with a qualitative software (NVivo Version12). We followed the grounded theory approach to code verbatims (43): each transcript respectively was coded inductively by manually marking central key words that could represent a code. Then, the codes were grouped under themes that emerged through the analysis process. Finally, we performed categorization by collapsing codes that conveyed similar meanings. Appendix 2 presents an example of our analysis process.

After the first step of the analysis of social representations, recording all the dimensions that

ermerged from participants, we used the semiotic square method to map semantic categories highlighting opposing and complementary concepts (44). This structure enables the understanding of the tension among symbolic meanings and the elements by which meaning is being expressed (45). The semiotic square has been often applied in consumer research (46) and specifically to explore the consumers relationship to technology ideology (47).

Results

First, a specific definition of telehealth emerged from a patient perspective. If researchers define telehealth broadly, the interviews analysis revealed that telehealth is associated with teleconsultation for a large majority of patients and rarely with other practices. It concerns mainly remote care and questions the quality of interactions with the physician.

Second, the content analysis revealed four main types of social representations of telehealth: the expected opposition between engagement and hostility and a more subtle distinction between integration and constraint.

1. Representations of proximity: the logic of engagement

Our analysis of interviews revealed a first category of very positive social representations related to telehealth that led to a logic of engagement and adherence to this practice. This commitment is based on the idea of optimization of health services. The strong proximity with its practice is explained by a feeling of comfort, a perception of convenience. Telehealth is considered as an easy, practical tool. Participant 4 (P4) mentioned: *"I found it practical and comfortable."*

Perceived practicality and convenience underline the actual benefits of adopting telehealth. Indeed, this practice enables a reduction of the perceived temporal distance to the consultation, leading to representations of efficiency and effectiveness (P13) on one hand, and allowing a reinforcement of access to care, which creates a feeling of personal usefulness (P8), on the other hand. Participant 13 (P13) mentioned: "*Now that everything is overbooked in their appointments, (…), we are at about 15 days / 3 weeks for getting any new appointment, both by phone or by Doctolib, in video, it is a little faster"* And participant 8 (P8) *"It is so quick, it makes everyday life easier!"*.

From this perspective, the main issue behind social representations of proximity is related to an improvement of the functional proximity to telehealth.

2. Representations of distance: the logic of hostility

At the opposite of the first category, a second category of social representations follows a logic of hostility towards the telehealth. It reveals a strong rejection to its development. While adherence follows a view of functional proximity, rejection is explained by a lack of perceived relational proximity caused by telehealth. These representations of perceived distance reveal a profound fear of the dehumanization of medicine. Telehealth is seen as a dehumanizing practice that is destructive of human interaction by virtualizing both patients and care, as Kaplan mentioned (20). This is confirmed by Participant 6 (P6) who stated: *"It kills the human contact, which is really important to me. I definitely prefer having the secretary over the phone to tell me there is an appointment in three weeks."*

The major component of this category is the perceived deterioration of the relationship with the physician. A great importance is given to the human dimension in care. However, interviews reveal these representations are based on a feeling of detachment from the caregiver caused by telehealth. This emphasizes the impersonal nature of the relationship. Participant 2 (P2) stated: *"We dematerialize everything. It brings detachment from the caregiver."*

From this perspective, the development of a relationship with perceived proximity and trust seems incompatible with a distant and remote care. The virtual nature of this link is intrinsically considered as the opposite of a human interaction. Participant 1 (P1) quoted: *"I do not like it. I like to see the person right in front of me."*

Here, social representations of telehealth found an increase of perceived distance between the patient and the physician. The perception of actual proximity to the physician tends to disappear with telehealth, which reinforces emotional and affective distances (48). These representations finally highlight the fact that telehealth can not replace an in-person consultation. For instance, participant 5 (P5) stated: *"I would not make [a remote physician] my referring physician. There need to be a close relationship with him. I must be able to give him my trust. I am not sure that I will always have the*

*same doctor when using teleconsultation."*Altogether, these depictions of distance nurture the perception that telehealth has a detrimental or potentially harmful impact on society, as it undermines the interpersonal nature of care.

Besides these two opposite categories of representations, proximity *versus* distance, more nuanced types of social representations also emerged within the verbatims. We labelled them 'non-distance' and 'non-proximity' representations.

3. Representations of non-distance: the logic of integration

A third category of social representations reflects a 'non-distance' to telehealth as these representations are related neither to total adherence nor to rejection but rather follow a logic of integration: patients highlighted an actual possibility to choose to use (or not) telehealth tools. Representations do not reflect a full engagement to this practice, rather a non-rejection of telehealth.

First, these representations of non-distance highlight the functional aspects of this practice. In this context, developing a relational proximity with the physician was not judged as necessary. For instance, participant 4 (P4) stated: *"I felt more like I was with a teleoperator than a physician. It felt like there was a script behind it, but why not, that is not necessarily a bad thing."* This situation is not seen as a problem, the efficient and non-relational aspect of the consultation is valued here. Thus, this representation shows a greater emphasis on the functional proximity rather than on the relational proximity (24).

The importance given to the functional aspects of telehealth is also revealed through the way specific health practices are elicited. For instance, telehealth is mainly seen as a backup or emergency solution, leading to an occasional use according to the situation. Participant 5 (P5) stated: *"It can be a first step to detect an emergency. For example, if you cannot get a doctor during the weekend, we*

have remote visits (...) So, to me, it is an emergency solution."

Because it is convenient, patients do not reject telehealth, especially when there is no need to be seen in-person, for example for a prescription renewal, like suggested by Participant 4 (P4): *"It depends on what you are looking for in the consultation. If it is for a medication renewal, yes, I would recommend it."*

Thus, these representations of non-distance do not refer to hostility nor engagement towards telehealth but rather to a tolerance. The practice is adopted but not entirely accepted. Indeed, the use of telehealth should remain occasional. Participant 11 (P11) said: *"If I were starting using a teleconsultation system, I would say to myself 'no more than three times in a row'. The fourth time, you still have to go, once every two years for a check-up, I would tend to say that."*

The tolerance comes also with some reluctances about the reliability of this practice. Telehealth is perceived as less reliable than a physical consultation because there is no physical contact, no auscultation, which seems to lead to mistrust, like suggested by participants 10 (P10) and 14 (P14). *"Auscultation is one of the first things you learn in medicine, like touching the patient. Try to get an auscultation from a machine, to put its hands on the belly" (P10),* and *"when I had my operation, I had a consultation with the anesthesiologist by teleconsultation. It was silly, he told me to pull my tongue out (...) No, for me this is ridiculous!" (P14)*

Overall, social representations related to a non-distance reveal a non-rejection of telehealth under conditions of efficiency and reliability. The choice of using telehealth tools is made under specific circumstances and leads to an occasional use, based on a great value put on simplicity and functional aspects.

4. Representations of non-proximity: the logic of constraint

Within the fourth category, social representations are related to a 'non-proximity', a label that reflects a logic of constraint. Whereas representations of proximity highlight engagement and active behavior toward telehealth, representations of non-proximity depict situations of the use of telehealth when

there is no other choice, like Participant 10 (P10) mentioned: *"Is telehealth a good thing? Like everyone else, I use it because I am left with no alternative option."* Patients comes to telehealth whenever they have no or few alternatives, considering telehealth as a last option, like during lockdown for example, as explained by Participant 3 (P3): *"If I had to use it, it would really be out of obligation, like during a lockdown, and because I do not have the possibility to move around."*

In this perspective, telehealth tools are not really accepted and should remain a second option as compared to physical in-person consultations, mainly because it requires digital literacy. Participant 7 (P7) explained: *"For the elderly, it is a problem! I have to schedule their appointments from my own mobile phone because they do not have access to the internet."*

Thus, like the representations of perceived distance, the representations of non-proximity are also mostly negative. However, they do not reflect a total rejection of the practice of telehealth but rather a non-adherence as they come to it when they have no other option.

Finally, our qualitative analysis allowed us to structure a semiotic square (Figure 1) with two main categories of social representations of telehealth, i.e. perceived proximity and perceived distance as well as subsequent tensions in the discourses. The negation of these two terms forms two other categories illustrating four distinctive classes of meanings highlighting nuanced representations of perceived proximity/distance to telehealth and the opposite and complementary relationships (49). The main components of the four categories are summarized in Figure 1. Interestingly, two additional analyses of the semiotic square improve our vision of social representations of telehealth, one based on a vertical reading, the other on a horizontal reading.

5. Telehealth: socially beneficial vs socially dangerous

Two structuring representations of telehealth emerged from a vertical reading of the relationships between the categories. On the left part of the semiotic square (Figure 1), the complementary

relationship, linking proximity and non-distance, refers to favourable representations as well as to discourses encouraging the development of telehealth. These tools are perceived as socially beneficial for all stakeholders, but there is room for improvement to generalise their use.

Within these favourable representations of telehealth, adherence and non-rejection are based on two main drivers. First, trust in the physician is crucial as he/she is considered of as a legitimate expert, like suggested by participant 4 (P4): *"I feel that doctors are experts (...), I trust them entirely because to me they seem to be experts."* Consequently, positive representations of telehealth seem to be linked to the perceived relational proximity with the healthcare professional. Second, these representations stem from familiarity with the tool. Being familiar with the term 'telehealth' and knowing what it means generates a feeling of closeness towards it. Participant 5 (P5) stated: *"I heard [about telehealth] because in my profession – I work with pharmacies - we talk about it."*

On the right part of the square is the complementary relationship combining perceived distance and non-proximity. This underlines representations of hostility and scepticism towards telehealth, which are considered socially harmful, or even dangerous for society. Rejection and non-adherence seem to be explained mainly by insufficient digital literacy, but also difficulties in accessing to the Internet and telehealth tools, as suggested by Participant 9 (P9): *"No, I do not use the Internet at all! (...) There are surely many things to do but I do not know how to do them..."*, revealing a substantial cognitive distance to telehealth and ultimately making care practices felt as more complex. The ancestral role of auscultation in medical consultation and the importance given to touching patients are noted, showing that the lack of perceived physical proximity between the patient and the physician tends to reinforce the psychological distance towards telehealth, and ultimately the rejection of its practice. Participant 4 (P4) said: *"The ability itself of performing an actual auscultation by touching people and listening to them using a stethoscope is being lost at the expanse of the care to improve the development of technology."*

6. Telehealth: ideological vs pragmatic postures

A horizontal reading highlights the similarity of the logics of engagement and hostility, both being based on ideological postures: pros and cons of the practice of telehealth depending on whether it seems to belong to the “good” *versus* “bad” for the society. More efficacies appear to the pros, less human relationship to the cons. Conversely, the logics of integration and constrain reflect pragmatic postures: how to deal with the tool, in what occasion. Sometimes, it appears to be accepted because it is convenient and adapted in specific situations, sometimes because there is no other choice. Interestingly, ideological postures tend to separate the opposite groups when the pragmatic views tend to rebuild a link between the non-distance and non-proximity groups. These nuanced, more balanced perceptions invite to think about practical implications, elaborating ‘paths’ of social representations to drive patients towards less rejection and more adherence to telehealth.

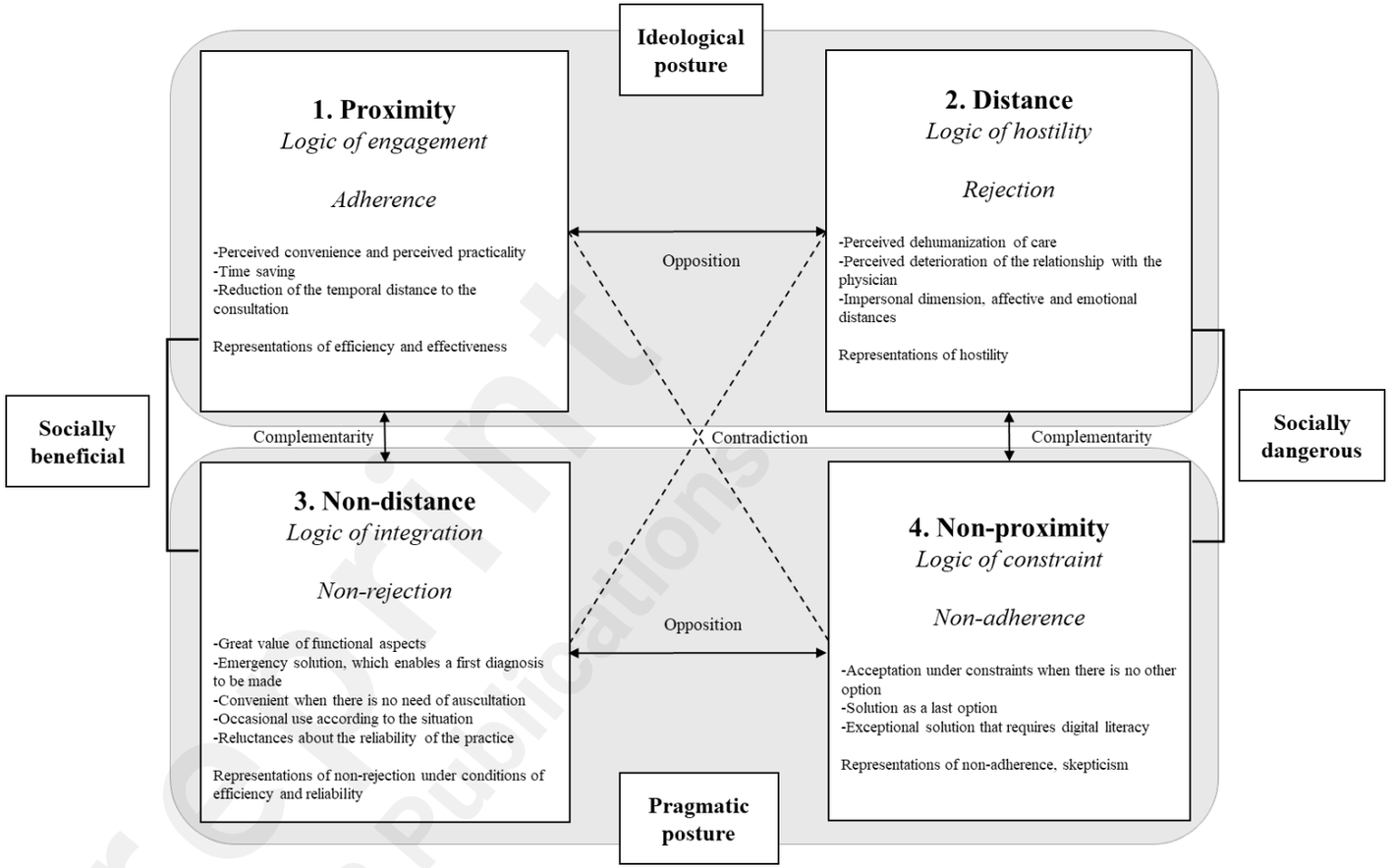

Figure 1: Overview of the four categories of social representations of telehealth (results issued from 14 qualitative interviews run with patients in May 2022. From participants interviews, a major horizontal dimension (proximity *versus* distance) was identified, then their opposites (vertical). The posture towards the perception of proximity/distance is more ideological while the dimensions of non-distance/non-proximity are more pragmatic. The self-identification to any of these squares also depends on the social impact, one can associate to telehealth. The corresponding logics are detailed in each box, as well as their main drivers.

Discussion

Main findings

Using qualitative methods, our findings suggest a new conceptual framework to apprehend telehealth from patients' perspective, based on four categories of social representations. First, perceived proximity is associated with social representations reflecting this idea that telehealth is intrinsically as an efficient, practical, and effective solution. This logic of engagement is in line with a strong belief in progress and technological tools to face the challenges of the healthcare system, the issue of access to care. On the opposite side, social representations are more related to a feeling of distance from telehealth, enforcing an unfavorable attitude and leading to a rejection of these tools. This logic of hostility is mainly anchored in a fear of dehumanization of society. Telehealth is blamed for compromising the quality of the relations, for accelerating the loose of the human contact between patients and physicians. This perceived distance from telehealth highlights a situation of exclusion, especially for patients who do not have access to digital technology or who do not have enough digital literacy. Aside these two categories, two more nuanced types of representations emerged. First, from a logic of integration, social representations reveal an appeal for telehealth but show worries and fears about its reliability. This practice can be conditionally accepted according to a situational approach. Second a logic of constraint reflects social representations based on skepticism but leading to acceptance when there are no alternatives.

From a theoretical point of view, our results based on a semiotic square brings new elements to the literature of perceived proximity. We have shown that telehealth leads to reconsidering proximity through several dimensions. While not diminishing the geographical or physical gap between the patient and the healthcare provider, technological tools, like a teleconsultation from home, can enhance the accessibility to healthcare. The relational

dimension of proximity, already identified by Boschma (25), seems to be also impacted by telehealth. Indeed, many social representations have shown that this perception of proximity with the caregiver is reduced by telehealth and revealed a fear of dehumanization in the relationship. In addition, we showed that perceived functional proximity to telehealth leads to increased adherence and a favorable attitude to its development, which should encourage policy makers to strengthen this aspect in communication strategies for telehealth. These findings also constitute a societal contribution. Also, this research has revealed two major oppositions embedded in the social representations. The first one consists in ‘good’, or socially beneficial, *versus* ‘bad’, or socially dangerous position. The second one highlights the posture, rather ‘ideological’ or ‘pragmatic’, leading to contributions for public policy aiming to foster the adherence to eHealth tools.

Building a semiotic square has also revealed the potential changes in people representations of telehealth, and thus the potential to contribute to changing attitudes towards these tools. They may be adapted to concerns and aspects that patients value in the practice of consultation. Our qualitative material brings insight on how these representations can be obstacles to the adoption of telehealth, as well as elements that can foster adherence. We propose to think about paths on which patients representations could evolve through. Mobilizing the social representations along these paths could first alleviate the perception of distance to the healthcare professional, and then enable the perceived proximity to telehealth. Our analysis emphasized some risks on how telehealth is implemented. If telehealth is developed without considering representations expressing reluctancy, individuals who are subjected to the use of telehealth may remain hostile to its development, may gradually feel a distance, and may finally totally reject this practice (coming from non-proximity to distance). To avoid such a vicious circle, two paths (Figure 2) may create an increased feeling of proximity to telehealth.

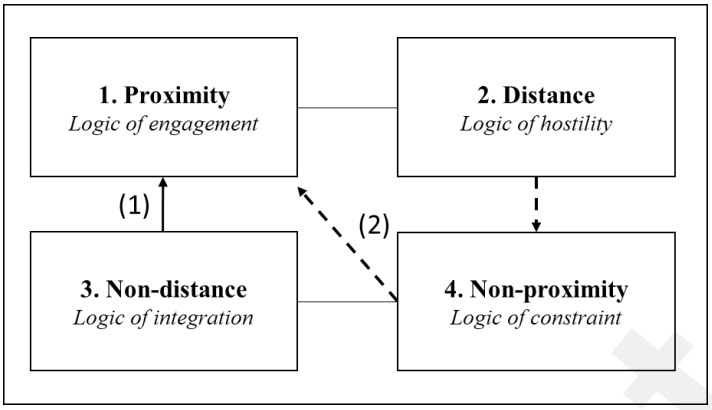

Figure 2. Illustration of two paths for creating proximity with telehealth valuing either functional or relational aspects. The first path (1) values the functional benefits of telehealth and goes from the perception of non-distance to a feeling of proximity. The second path (2) values the relational aspects of telehealth and goes from the perception of distance to a feeling of proximity, through the non-proximity steps.

The first path consists in transforming representations related to a perceived non-distance into a perceived proximity to telehealth. This pathway adopts a functional approach to consultation. The challenge is to dispel fears about the technological feasibility of using digital health tools to eliminate skepticism and reinforce favorable representations. It would then be necessary to reassure patients about the importance of any human contact during medical consultations. Highlighting the regular and immediate exchanges with physicians that telehealth allows would be perceived as helpful. Developing remote auscultation solutions and increasing communication on them by highlighting the accuracy and reliability of these technologies would help to alleviate these concerns and encourage adherence to these tools. Finally, reinforcing the benefits in terms of efficiency, time optimization, and practicality would contribute i) to reduce the perceived temporal distance of access to care, and ii) to increase the perceived functional proximity to telehealth.

The second path consists of i) transforming representations related to a perceived distance into a feeling of non-proximity, and subsequently ii) foster the perceived proximity to telehealth. This path is mainly aimed at individuals who attach great importance to the relational and human dimension of care. The first challenge would be to strengthen trust in the healthcare

system because representations and attitudes towards telehealth are intrinsically linked to the relationship patients develop with the healthcare system and physicians. It is also necessary to improve access to digital technology to reduce the cognitive distance and then to increase their perception of proximity. Finally, highlighting and communicating on the strengthening of relational and affective proximity, allowed by telehealth when facilitating contact between patients and physicians, could lead to favorable representations and attitudes. Therefore, conceiving a system of medical support with a healthcare professional in telehealth booths could be an effective solution.

Limitations and research avenues

The present study has some limitations. Firstly, our sample did not include patients with a broad range of diseases: very few of them had chronic diseases. Due to the sample size, we could not cover all medical specialties: for instance, ophthalmology, need for emergency surgery, etc. may bring specific representations of telehealth for patients. It could also be interesting to interview people from other rural areas known as ‘medical deserts’, ie. regions with inadequate access to healthcare. In addition, we interviewed patients who do not practice as healthcare professionals. To broaden our research findings, we could incorporate additional insights by examining the perceptions of telehealth among other groups, particularly caregivers.

Conclusion

The development of telehealth tools leads to new challenges in medical practices. Social representations this brings go beyond the perception of proximity/distance, are multi-faceted and include postures/attitudes. The social representations revealed by the semiotic square on perceived proximity to telehealth underscore the importance of designing healthcare strategies based on a patient-centric approach in the implementation of digital health tools.

Acknowledgments

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Data availability

The datasets generated and analysed during this study are available upon reasonable request from the corresponding author.

Authors' contributions

The present study was carried out by all authors working collaboratively. AL initiated the proposal. AL and FL conceived the study and collected data. AL and FL performed qualitative analysis. AL wrote the first draft of the manuscript. FL, VG and JPB participated in data interpretation and revised the manuscript. All authors approved the final version of the manuscript.

Conflicts of interest

AL, FL, and VG: None declared.

JPB is a physician and works at SKEZI, a company that develops digital tools in health.

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Appendix 1: Characteristics of patients

	Gender, age, location, socioeconomic backgrounds
P1	*F, 60, rural, +*
P2	*H, 45, urban, -*
P3	*H, 23, urban, ++*
P4	*F, 57, urban, ++*
P5	*H, 57, urban, ++*
P6	*H, 62, rural, --*
P7	*F, 54, rural, -*
P8	*F, 72, rural, -*
P9	*H, 83, rural, +*
P10	*F, 42, urban, -*
P11	*F, 23, urban, +*
P12	*H, 34, rural, -*
P13	*F, 59, rural, +*
P14	*F, 51, urban, ++*

Appendix 2: Example of the qualitative analysis process used in this research

Transcript	*Codes*	*Sub-theme*	*Theme*
"*I found it practical indeed, comfortable*." (P4)	Convenient	Increase of proximity of access to care	Perceived proximity
"*It is so quick, it makes everyday life*	Efficient	Functional	

easier!" (P8)		proximity	
"Now that everything is overbooked in their appointments, (…), we are at about 15 days / 3 weeks for getting any new appointment, both by phone or by Doctolib, in video, it is a little faster" (P13)	Time saving	Decrease of temporal distance from the consultation	

'(PX)' stands for the de-identified number assigned to the participant; Doctolib is digital solution used in France for booking appointments with healthcare professionals. From participants verbatims, we analized the transcripts assigning a code to meanful sentences. Therefore, these codes were grouped into sub-themes and, then, into broader themes.

Supplementary Files

Figures

Overview of the four categories of social representations of telehealth (results issued from 14 qualitative interviews run with patients in May 2022. From participants interviews, a major horizontal dimension (proximity versus distance) was identified, then their opposites (vertical). The posture towards the perception of proximity/distance is more ideological while the dimensions of non-distance/non-proximity are more pragmatic. The self-identification to any of these squares also depends on the social impact, one can associate to telehealth. The corresponding logics are detailed in each box, as well as their main drivers.

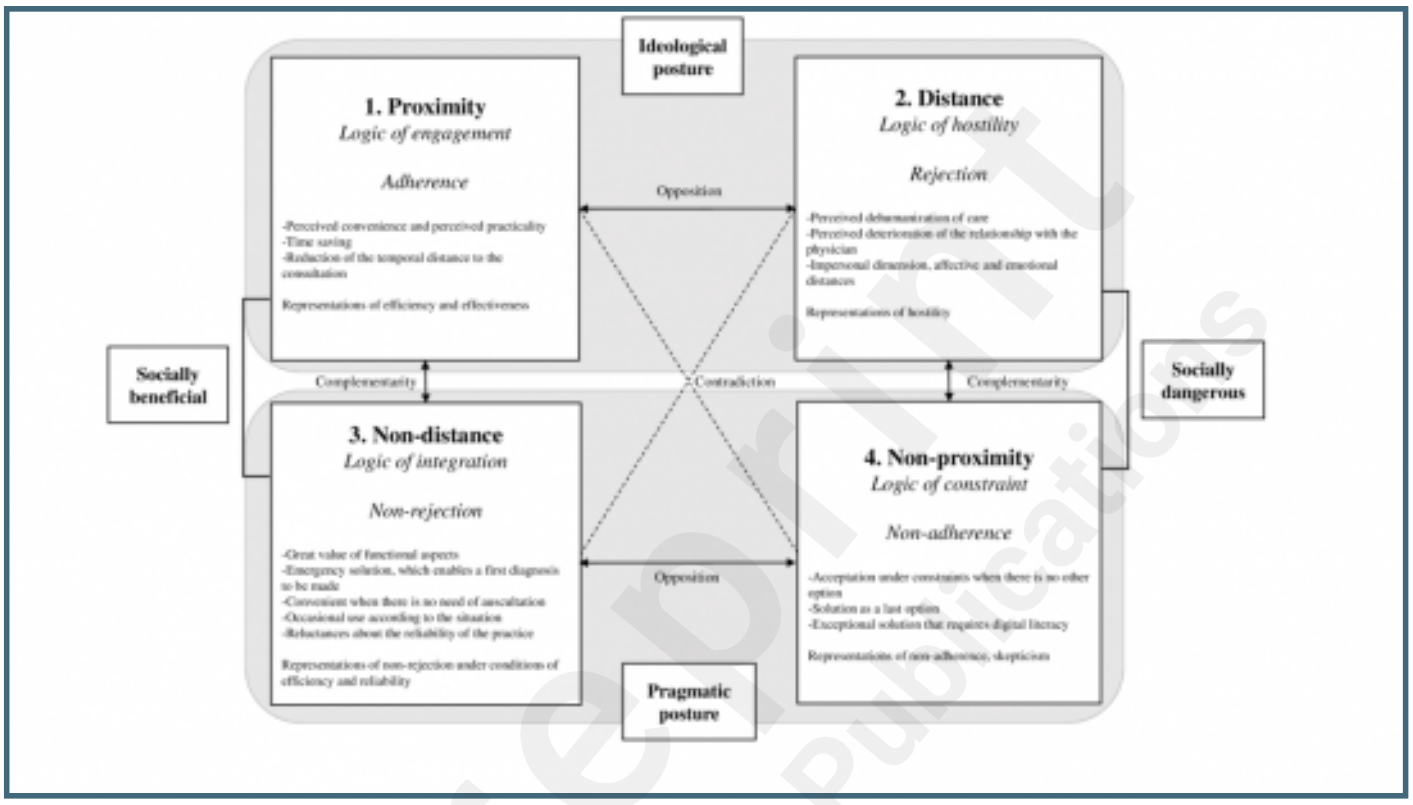
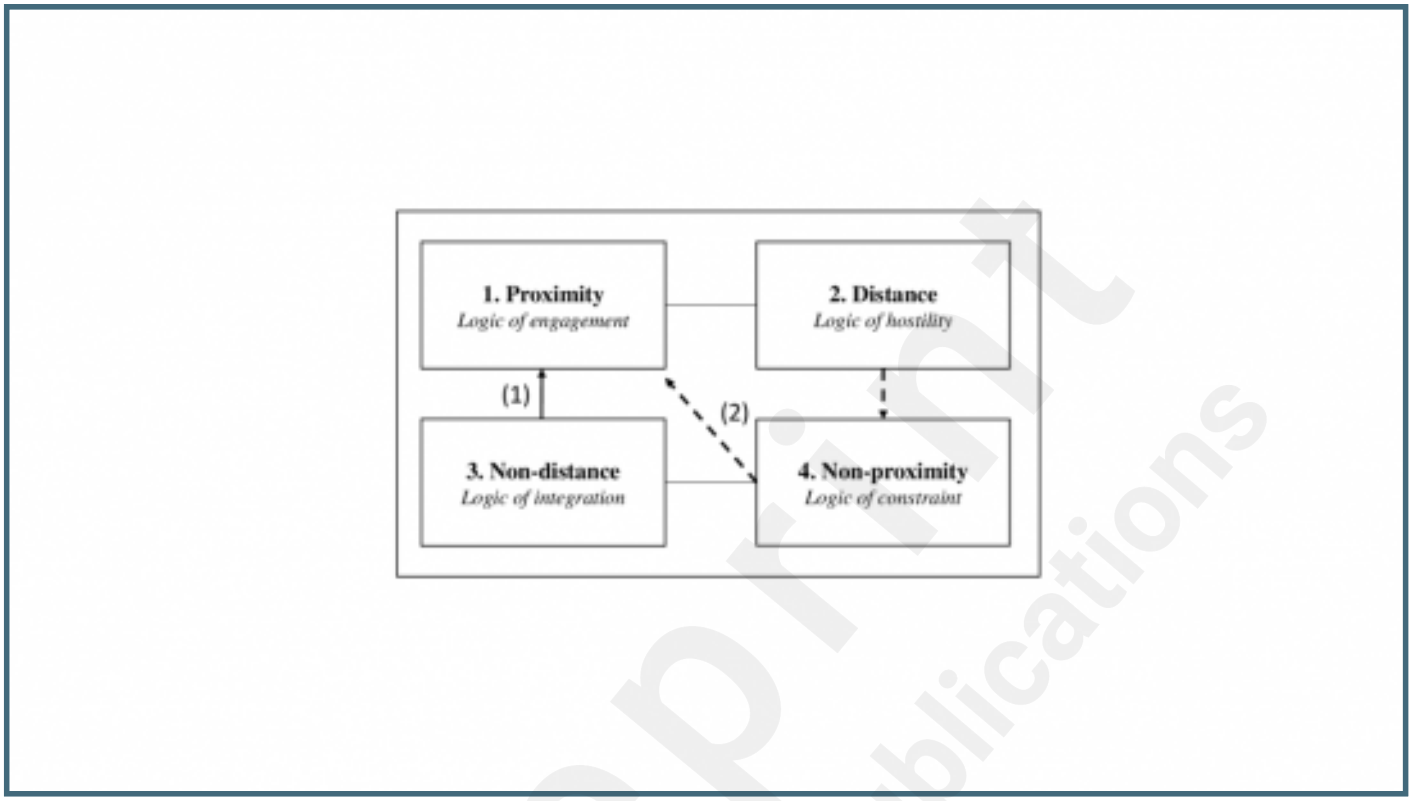


Illustration of two paths for creating proximity with telehealth valuing either functional or relational aspects. The first path (1) values the functional benefits of telehealth and goes from the perception of non-distance to a feeling of proximity. The second path (2) values the relational aspects of telehealth and goes from the perception of distance to a feeling of proximity, through the non-proximity steps.



Multimedia Appendixes

Characteristics of patients.
URL: http://asset.jmir.pub/assets/a79f013b236ca1e36fed2d93d6d07145.docx

Example of the qualitative analysis process used in this research.
URL: http://asset.jmir.pub/assets/907eb9e4116b3a56e7ec57995902d4b0.docx