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# Informed grounded theory: A symbiosis of philosophy, methodology, and art.

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## ABSTRACT

The methodological paper illustrates the **informed grounded theory (informed GT) methodology** by briefly demonstrating a case study about synchronous video communications and teacher presence in distance education. Unlike Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory*. Aldine. GT, the literature review is not delayed until the end but is ongoing and integrated throughout the research activity. After the research, the literature review could revisit the theory to make the findings transferable and sustainable. The power of informed GT as a methodology is that it is heterogeneous, combining inductive, deductive, and abductive reasoning in an iterative research process with an initial and ongoing literature review. This process created the theory of tele-proximity and an explanatory model storyline. The storyline can change and improve by integrating more data and literature in the future. Deduction started with the sensitising concept of proximity found in the literature, mapping the territory, identifying criticisms, and formulating research questions. Induction was used to construct the findings from informants' perceptions to create a theoretical frame with categories that expanded on the Community of inquiry model and its concept of teacher presence. Abductive reasoning was used when plausible reasons were generated from interdisciplinary literature on the value of social cues and embodied cognition in synchronous video communications. Finally, a grounded theory of tele-proximity was constructed with the concept of tele-teacher presence. In practice, this process was messy. The main challenge was staying grounded and moving between abductive, inductive, and deductive reasoning to avoid getting stuck in crude deductions, making wild guesses during abductive reasoning, or generating explanations that were not a good fit for the data.

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“In a society, it is the storytellers who have all the power.”

Anonymous

## 1. Introduction

In the research methodology literature, grounded theory (GT) is often mistakenly portrayed as a pure inductive, qualitative method in which researchers collect and analyse theory-free data without the

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influence of any previous theoretical knowledge by delaying a literature review until the very end of their study. Due to this simplified representation, GT has attracted criticism among social and educational researchers questioning the theoretical orthodoxy of the approach (Alvesson & Kärreman, 2011).

This methodological paper challenges the above stereotype by pointing out that integrating updated literature reviews could promote the transferable and sustainable development of any theory (Evans et al., 2021). In other words, the literature review can assist the transferability and sustainability of findings in two ways. Firstly, integrating other studies into the research project's inductive, deductive, and abductive phases. Secondly, when the theory is already constructed, in due course, the researcher could revisit the theory to improve and elaborate on it to address current educational praxis. This is the original claim of the methodology, which was initiated by Thornberg (2012) and Dunne (2011). Still, it was further highlighted in the theory of Tele-proximity (Themelis, 2013) as an expansion of the Community of Inquiry (Garrison et al., 2000) in videoconferencing for distance education. Teleproximity theory was then updated with findings that added further multidisciplinary perspectives from informants' interviews analysed in the three stages of GT (open, axial, and selective coding) (Strauss, 1987; Strauss & Corbin, 1998). Sime and Themelis (2020) study provided further explanations and multidisciplinary insight into the potential of videoconferencing in distance education. In 2022, the updated theory of tele-proximity was reviewed from a transmedia perspective addressing the trauma-informed pedagogy of the Covid 19 pandemic (Themeli, 2022). Therefore, informed GT is a never-ending circular movement that adjusts theories to current educational praxis. The paper illustrates this movement in detail within the spectrum of constructivist GT tradition (Charmaz, 2001, 2014) by presenting a case study as an example.

The case study (Sime & Themelis, 2020) also illustrates how the resultant theory can be formulated as a story (Birks et al., 2009). Tele-teacher presence as a story explains to educators how to use videoconferencing in different contexts according to their requirements and preferences. Tele-teacher presence extends the concept of teacher presence in the Community of Inquiry model (Garrison et al., 2000).

### **1.1 The heterogeneity of informed GT**

The GT methodology could serve many different research purposes in all disciplines (Dunne, 2011). All branches share commonalities such as theoretical sensitivity, constant comparison, theoretical saturation, codes and memos, but the heterogeneity lies in the range of philosophical stances (epistemology, ontology and axiology), the rationale (deduction, induction, abduction logics) of the methods and the treatment of literature review.

Even the originators of GT do not share the same perspectives. To begin with, GT was devised by Glaser and Strauss in 1967 to solve research problems in sociology and generate middle-range theories based on analysis of qualitative fieldwork and informants' stories, experiences, emotions, beliefs, and attitudes as an alternative (another option of study) to the domination of quantitative data at that period. Glaser and Strauss (1967) developed their approach when quantitative research based on grand theories dominated sociology and qualitative research had become increasingly marginalised. More like a manifesto than a practical textbook on GT (cf., Bryant, 2017), they put up arguments and justifications for their innovative, qualitative, open-ended and theory-generating approach as a vital alternative and complement to a hypothetical-deductive quantitative approach since the latter was incapable to "discover" new theories. Even though Glaser and Strauss presented GT as an inductive method (and Glaser still does), Strauss and Corbin (1994) argued, later on, that induction had been "overplayed". As Bryant (2017) concludes, "the agenda for Glaser and Strauss at the time was to draw a sharp distinction between what they described as the *deductive* approach prevalent at the time and their approach, which necessarily involved gathering data before the articulation of hypotheses, theoretical pronouncements, and so on" (p. 94). Induction plays a part but is not enough to describe the inference process of GT, which we will discuss later on.

Since then, different variants of GT have evolved, and this heterogeneity makes the methodology richer. As repeatedly noted in the GT literature (Clarke, 2019; Kennedy & Thornberg, 2018; Morse & Niehaus, 2009), the most widespread and significant are the Glaserian GT (Glaser, 1978, 1998, 2005),

Straussian GT (Corbin & Strauss, 2008, 2015; Strauss, 1987; Strauss & Corbin, 1998), constructivist GT (Charmaz, 1995, 2014), and situational analysis (Clarke, 2005; Clarke et al., 2018).

More differences are detected in epistemology and ontology in the several perspectives of GT methodology. Initially, there was a lack of epistemological and ontological announcements and positionings in the GT literature. Although the Glaserian GT has been interpreted as positivistic due to its language as well as views on induction, data and the researcher, the later Glaser (2005, 2013) takes an anti-philosophical or anti-foundational stance as he dismisses ontology and epistemology as “preconception” and “forcing”. Glaser argues that “the quest for an ontology and epistemology for justifying GT is unnecessary” (Glaser, 2005, p. 145). This can, however, be considered as naïve empiricism. Straussian GT, in turn, has often been regarded as either postpositivism or pragmatism. In the later editions of GT, Corbin clearly states that their version of GT is philosophically influenced by pragmatism (Corbin & Strauss, 2008, 2015). Following his own background in pragmatist philosophy, Chicago School sociology and symbolic interactionism, Strauss (1987) wrote about “American Pragmatists (especially Dewey and Peirce) whose thinking pervades the grounded theory approach” (p. 110). Unfortunately, he did not elaborate on how this philosophical tradition has guided the development, concepts, methods, and procedures of Straussian GT. Constructivist GT, in turn, is explicitly rooted in pragmatism, symbolic interactionism, and relativist epistemology (Charmaz, 2014), as does situated analysis, but Clarke (2005) also added postmodernism and poststructuralism as integrated parts of the philosophical underpinning of situated analysis (Clarke et al., 2018).

Finally, the literature review plays a key role but raises strong criticism and thorny philosophical debates among grounded theorists and beyond. Glaser and Strauss (1967) wanted to defy the dominance of quantitative approaches to humanities and social sciences and established a step-by-step process while avoiding literature review until the end of the research to hinder data contamination and researcher bias. However, other grounded theorists have criticised this position and instead argue for familiarity with the literature to enhance theoretical sensitivity and for gathering and analysing data with an open mind rather than an empty head (e.g., Bryant, 2017; Charmaz, 2014; Clarke et al., 2018; Thornberg, 2012), including the later Strauss as he and Corbin argue that the literature indeed can and should guide the grounded theorist from the very beginning of an inquiry (Corbin & Strauss, 2015; Strauss & Corbin, 1998). According to Charmaz (1995, 2014), grounded theorists are bringing their perspectives into the research process, starting with sensitising concepts (not to be confused with hypotheses and “forcing” deduction), co-constructing data in interaction with informants, and constructing (not “discovering”) grounded theories by closely examining data, using GT methods and procedures and combining induction (in which they are never *tabula rasa*) with abduction (Thornberg & Charmaz, 2012, 2014). Therefore, Bryant and Charmaz (2007) underline researchers’ need to fully understand the field to “situate their work within the body of related literature” (p. 123). In agreement with Charmaz, informed GT (Thornberg, 2012; Thornberg & Dunne, 2019) is based on the data-driven perspective of the originators but also emphasises the constant examination of current theories and previous research in the literature to evaluate, compare or further explain findings. Informed GT rejects the view that the researchers’ minds could be an ‘empty sheet’ (*tabula rasa*) while engaged in naive pure induction (Kennedy & Thornberg, 2018; Thornberg, 2012; Thornberg & Dunne, 2019).

## 2. The philosophy of informed GT underlying the case study

This section discusses the philosophy of informed GT that underlies this case study of videoconferencing in distance education. Considering that informed GT is an extension of constructivist GT

(Thornberg, 2012), the underlying philosophy of this case study acknowledges that: “ontologically relativist and epistemologically subjectivist, constructivist grounded theory reshapes the interaction between researcher and participants in the research process and in doing so, brings to the fore the notion of the researcher as author” (Mills et al., 2006, p. 31). In this case study, philosophy, art, and methods harmoniously co-exist in the process of reconstructing the ‘subjective realities’ of the informants (Strauss & Corbin, 1998) concerning multidisciplinary explanations. These subjective realities frame a direction for educators to try in different settings without insisting that this is the only path to follow but help them make informed decisions on how and why to use videoconferencing in distance education. Informed GT is a theory formation methodology but, under the spectrum of epistemological relativism, rejects the concept of ‘best praxis’ because every educational environment is cultural, social, economically, and politically different.

Specific philosophical logic will always guide a research process, including the process of theory formation. Logic (from the Greek “logos”) is the study of reasoning and standards of valid inferences (Smith, 2020). As can be interpreted in other writings on GT (e.g., Charmaz, 2014; Clarke et al., 2018; Corbin & Strauss, 2015), informed (GT) is based on different types of reasoning that guide the research design and the analysis of the findings as a theory-building process (Thornberg, 2012; Thornberg & Dunne, 2019). In particular, induction, abduction and deduction make up the inference process (Kennedy & Thornberg, 2018). Kennedy and Thornberg (2018) and Kelle (2014) claim that the researcher’s rationale must address a conflicting challenge. Pre-existing knowledge offers empirical or theoretical insight, but socio-political life rapidly changes, which means that mindful interpretations may be hampered by preconceptions. Kennedy and Thornberg (2018) suggest that a theoretical framework could be deployed deductively as an analytical tool, but other kinds of reasoning are equally significant. Following a pragmatist philosophy, knowledge before and knowledge constructed in the GT study must be treated as fallible, provisional, hypothetical, contextual and in continual need of adjustment, correction, and reconstruction during (and after) the research process (Thornberg, 2012). For a critical discussion on overreliance on deduction in qualitative research, see Kennedy and Thornberg (2018). Therefore, sensitivity, an open mind and a critical stance through an iterative process between induction, abduction and deduction are needed throughout the whole research project.

## **2.1 Deduction and the research questions**

This case study began with a deductive approach and a literature review. Conducting a literature review and revealing unexplored areas, contradictions or ambiguities before doing a GT study can be a source of a research problem (Dunne, 2011). Reichertz (2014) claims that deduction begins with a specific theory, or rule, to examine how the raw data supports the rule or needs modification. In the deductive phase of the case study: 1) an initial literature review concluded that the Community of inquiry model (COI; see Garrison et al., 2000) was the most relevant theory in the field of distance education, and 2) identification of gaps and criticisms of COI led to the development of the research questions.

The COI model is relevant as it explains asynchronous communications in distance learning through the concepts of teacher, cognitive and social presence (Garrison et al., 2000). The COI framework can be used to analyse online discussion fora to identify these three presences. Teaching presence can be seen in the design and facilitation of online discussions to create learning outcomes (Garrison et al., 2000). Cognitive presence relates to the construction of meaning by learners during conversations in the online environment. Social presence is seen in the interpersonal communications between members of the Community (Garrison et al., 2000). This case study focuses on teaching presence.

There were three reasons for conducting the research. Firstly, several researchers call for more research on synchronous e-learning because practitioners, who use and design synchronous learning scenarios, need guidance on enhancing synchronous communications (Bower et al., 2012;

Hrastinski et al., 2010). Secondly, Bower et al. (2012) claim that the literature is uncharted and unorganised. Finally, the COI model needs to embrace synchronous video and asynchronous communications to update its framework and better inform educators (Jézégou, 2012). In short, while synchronous video communication is widespread, creative and critical attention is needed to its emergent new roles, forms, and possibilities, especially in a pandemic when social distancing hampers educational praxis.

Thinking deductively, the lack of research into videoconferencing in distance courses and the gaps in research on COI led to the formulation of the research questions – one of which is illustrated in this case study: how does synchronicity affect teaching presence in distance courses?

## **2.2 Induction, data categorisation and literature review**

In qualitative research, induction means that “patterns, concepts and theories emerge from data through the researchers’ interactions with the data without pre-supposing such outcomes a priori” (Kennedy & Thornberg, 2018, p. 51). When induction is used in interpretivist Straussian GT (Corbin & Strauss, 2015) and constructivist GT (Charmaz, 2014), data are always considered as *interpreted and constructed data*, and thus not independent and utterly free from researcher bias (Kennedy & Thornberg, 2018; Thornberg & Dunne, 2019). Induction is, therefore, always about interpretation.

Inductive reasoning in the case study refers to the data analysis, categorisation and conclusions. During interviews, the informants answered the interview questions, suggested many resources to back up their arguments, and guided the ongoing literature review. The categorisation of their perceptions about teacher presence provided insights, e.g., highlighting embodied cognition (Lakoff, 2012) to account for the need to see faces during talk online. This led to other theories that refer to facial signals (Pentland, 2010) and mirroring behaviour (Iacoboni, 2009). Lempert (2007) and Dunne (2011) argue for researcher familiarity with the literature in the field of study to promote dialogue in the field.

## **2.3 Abduction, formulating a theory based on explanations and potential predictions**

Aristotle’s abduction (apagoge) means in Greek ‘leading away’. In his seminal work on the logic of science, Charles Sanders Peirce describes how a researcher looks for plausible explanations through abduction as a third mode of reasoning in addition to deduction and induction. Abduction could be considered as a selective and creative process that examines which hypothesis, amongst a range of hypotheses, best fits and explains the data and then further investigates this hypothesis (Douven, 2017; Peirce, 1960, 1979).

Regarding constructivist GT, the concept of theoretical playfulness was embraced as an abductive dimension that enables creative thinking out of the box (Kennedy & Thornberg, 2018). Similarly, Charmaz (2014) argues that: “whimsy and wonder can lead you to see the novel in the mundane. Openness to the unexpected expands your view of studied life and subsequently of theoretical possibilities” (p. 245). This theoretical playfulness has also been adopted in informed GT as an approach to literature and its pre-existing theories (Thornberg, 2012) by integrating literature review into the theoretical coding and analysis of how categories constructed from data might relate to each other as hypotheses to be integrated into grounded theory categories.

One of the provisional hypotheses was that teacher presence (COI model) would change via videoconferencing. Using abductive reasoning, tele-teacher presence was developed as an extension of teacher presence based on the findings from the informants, which indicated the importance of audiovisual communications in proximity in distance education. Plausible reasons were generated from inter-disciplinary literature on the value of social cues and embodied communications, e.g., the theory of honest signals (Pentland, 2010). Thus, the theoretical framework of COI was extended

to Tele-COI (theory of tele-proximity) with explanations and foreseeable predictions based on data analysis and literature review.

The three types of reasoning went hand-in-hand with an ongoing literature review to justify the purpose and originality of the case study and by using COI as a loose theoretical framework (deductive phase), categorisation of informants' perspectives on teacher presence and conclusions (inductive phase) and the search for plausible explanations based on conclusions and the final literature review (abductive phase). It is of utmost importance to note that using these types of reasoning is not a linear process since the research process is much messier than with other approaches. The researcher must move back and forth between abduction, deduction and induction. For example, gaps and inconsistencies in the literature point to the need to engage in induction and abduction at the beginning of the research process. The researcher must move from abduction to deduction to further examine a provisional hypothesis. Abduction is prominent in informed GT (Thornberg, 2012) and is present in every phase, primarily when the researcher investigates and interacts with the literature. Thus, the iterative nature of the process is a significant feature of informed GT.

### **3. The methodology of informed GT in the case study**

This section discusses the methodology, or scientific rationale, of informed GT used in this case study of videoconferencing in distance education, focusing on: sampling and memoing, ongoing literature review, and data categorisation and analysis.

#### **3.1 Sampling and memoing (choosing the best actors for the plot)**

The demographics of the informants provided information that could further explain the findings. On average, the research informants had 8.2 years of experience in teaching distance courses and 5.6 years of experience in synchronous video communications. Despite the different locations, the nationalities of educators varied greatly. Indeed, six out of 18 were teaching away from their country of origin. The majority instructed mature postgraduate students from diverse cultural backgrounds, studying part-time or full time in various disciplines.

Memoing an informant's story was crucial because the experienced educators provided solid arguments for their choice of synchronous video communication (SVC), contextual factors, and online presences that steered the research findings and the literature review to theories such as embodied cognition (Lakoff, 2012). As characters in the story, the informants are as crucial as the plot; who the researcher chooses to interview and why their views are significant for the research is central to every study.

#### **3.2 Ongoing literature review as an iterative process**

Within the loose frame of COI, the methodology is designed with the three types of logic or reasoning. The iterative and interpretive GT methodology (Thornberg & Charmaz, 2014) included deductive (literature review of the field, choosing sensitising concepts and general theoretical framework, identifying and formulating specific research questions), inductive (from specific queries/responses to categories and dig deeper into the other research findings), and abductive reasoning (looking for plausible explanations and formulating a theory). The first phase started with a literature review, identifying the role and originality of the investigation and relevant work in the field, such as the Community of Inquiry (COI) model (Garrison et al., 2000), which provides a loose frame and transactional distance theory (Moore, 1997) which offers sensitising concepts (cf. Charmaz, 2014). Having realised the need for better communication, studied the COI model extensively and identified the gaps and criticisms, it was evident that COI refers only to asynchronous delivery modes. It does not embrace either synchronous video communication or the significant role of emotions and body language. COI was used to form semi-structured interview questions. The deductive approach

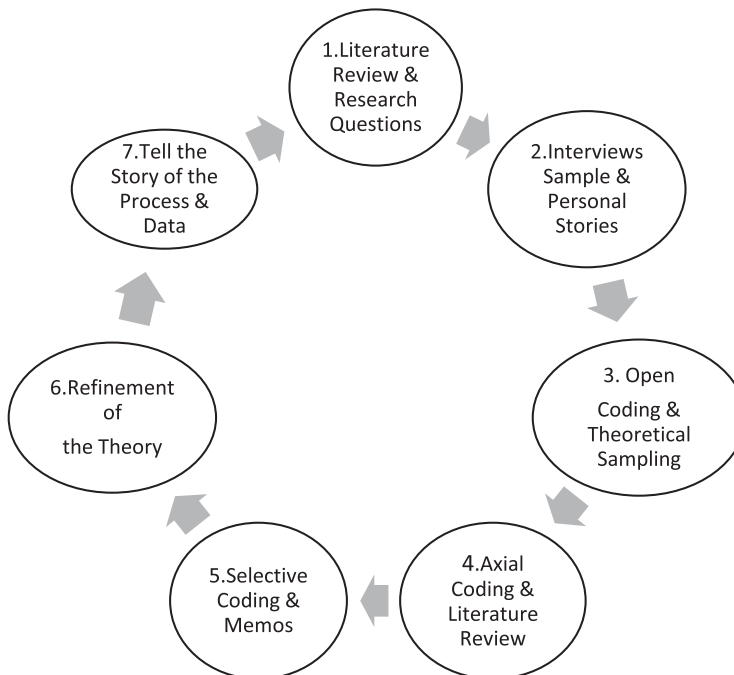
through literature review allowed the researchers to critically examine the theoretical framework of COI in an open-ended and data-sensitive way to find out the fit, relevance and usefulness of the categories of teacher, cognitive and social presence.

Thus, the interview questions were written loosely based on COI categories, and experienced educators were interviewed via video conference. In this case study, only teacher presence was considered. The COI was regarded as a model that would be investigated through theoretical agnosticism as a “provisional, disputable and modifiable conceptual proposal” (Thornberg, 2012, p. 10) in parallel with an ongoing literature review and memoing.

### 3.3 Data categorisation and analysis (open, axial, and selective coding and ongoing literature review)

This study illustrates the research process and shows how open, axial and selective coding is integrated with memoing and ongoing research literature to construct a core category (Strauss & Corbin, 1998) which is explained as a story (Birks & Mills, 2015; Chun Tie et al., 2019) and developed into a middle-range theory. GT methods such as constant comparison, memoing and theoretical sampling were used throughout the research process (for further reading of these methods, see Charmaz, 2014; Strauss & Corbin, 1998).

Figure 1 shows the circular and iterative process of informed GT, as it was adopted by Themelis in her case study and includes ongoing literature review, coding, memoing and hypothesising. The three phases of inference, deductive, inductive and abductive reasoning, are also represented in the figure. However, this process is portrayed in an idealised manner that does not reflect the messiness of the actual research process. The three phases are best understood in terms of a figure–background metaphor, meaning that in each phase, all three modes of inference are present, but one is prominent but still in interaction with the other two in the background.



**Figure 1** . The iterative process of informed grounded theory shows three phases of deduction, induction, and abduction.



Data collection, analysis and review of the literature is a step-by-step process that goes back and forth several times. In the first phase, the informants (who were academics) suggested several references and explained their views on recent research findings or remarked on their teaching approaches. So, in phase two, repeated key phrases led to further digging in the library to look for similar concepts. For instance, the word ‘face cues’ led to ‘honest signals’ (Pentland, 2010). Finally, in phase three, the focus was on theory building and why these findings may apply to a larger audience. In brief, this is why the tele-proximity model embraces ‘embodied cognition’ (Lakoff, 2012).

During all phases, abduction includes creativity, memos are the *researcher’s talking heads*, and constant comparative analysis is a grounding assumption for data collection. For example, each informant’s personal experiences and profile were written down in the memos as a story plot to better understand their educational background and feedback to compare and resolve conflicting evidence. Memos included notes of an abductive nature that looked for explanations. Examples of analytical questions were: “What do the data suggest? Pronounce? Leave unsaid? From whose point of view?” (Charmaz, 2014, p. 116). Birks and Mills (2015) define theoretical sensitivity as “the ability to recognise and extract from the data elements that have relevance for the emerging theory” (p. 181). By engaging in continuous literature review guided by data-sensitive strategies such as theoretical sampling of literature (driven by the iterative process between data gathering and analysis), theoretical agnosticism, staying grounded and memoing (Thornberg, 2012), Themelis fostered theoretical sensitivity, which played a crucial role in constructing the core category for the formulation of the theory (Birks & Mills, 2015).

#### 4. The art of informed GT in the case study

This section discusses the art of interdisciplinary storytelling, inspired by Themelis’ reading of informed GT and used in the case study of videoconferencing in distance education, particularly theoretical sensitivity, selective coding, and abduction. Based on the sensitising concept of COI-online presences (section 3.1) and responding to the need for nearness/proximity, as the informants mentioned in several interviews, the COI theory was expanded to bridge the gap between students and educators, on and off-campus. Proximity was mentioned as a word by the interviewees and found in the technology-enhanced learning literature. To explain the proximity via teleoperations, or virtual proximity, the concept of tele-proximity was used (Kreijns et al., 2002). Tele-proximity as a sensitising concept provides a new lens for viewing videoconferencing in distance education using the concepts of tele-teacher, tele-cognitive and tele-social presence as part of tele-COI. Looking for an explanation in the data, literature and memos, Themelis realised the importance of seeing faces in human-to-human connection in building trust online and facilitating communication. Therefore, tele-proximity became the core concept as it fitted with the data and earned its way into the analysis. Following the abduction, a constant comparison between data, constructed codes and extant concepts from the literature resulted in identifying and choosing tele-proximity as a core process that best explained what was going on in the data.

Tele-proximity is defined as proximity (i.e., nearness/immediacy) brought to a group of people via telecommunication systems, computer networks, and so on (Kreijns et al., 2002, p. 14). Proximity can enhance the quality of social relationships (Festinger et al., 1950). The choice of speech during SVC can vary, e.g., in the level of intimacy, depending on the experience of personal proximity (Ferreday et al., 2006). Every form of SVC communication has two aspects: one concerns the relations between the message and the preceding messages, and the other is concerned with to whom it is addressed. “Presence and proximity in these environments become forms of tele-presence and tele-proximity that rely more heavily on interactional means to achieve identity formation” (Jones et al., 2008, p. 100). In other words, the tone of voice, the choice of words and the way a person talks in front of a camera could influence proximity and affect the projection of self within the Community. It is what the research informants called ‘a human touch’.

Inviting theoretical pluralism, explanations were sought that could address this pragmatic need. Thornberg (2012) considers the quest for theoretical pluralism as qualified relativism, rooted in pragmatism. “This perspective rejects the idea that ‘anything goes’ but assumes that all inquiries are influenced by philosophical assumptions which are socio-culturally bound, and stresses that the construction of knowledge is social, interactive, ongoing, flexible, and tentative” (p.253).

So, why is this phenomenon of proximity so crucial? The coding and analysis of the data co-constructed in the interviews with the informants guided a review of the literature that scanned existing theories. The ‘human touch’ and social signalling elements were found in theories such as ‘honest signals’ (Pentland, 2008, 2010), ‘mirroring people’ (Iacoboni, 2009) and ‘embodied cognition’ (Lakoff, 2012), thereby providing plausible explanations for the need for proximity in online contexts. Pentland (2010) explains that feelings, body language and emotions are contagious; as a result, they cannot be ignored in distance communications. Similarly, neuroscientist Iacoboni (2009) claims that mirror neurons in the brain allow people to understand others and be relevant to many aspects of social cognition. These mirror neurons help explain empathy and are crucial in communications, and they enable us to interpret other people’s facial expressions and emotions.

Also, Lakoff’s (2012) theory of embodied cognition emphasises the connection between the body and mind, that they are not separate. Lakoff (2012) argues that language is not different from the body and illustrates this through metaphors, backed by experimental psychology and linguistics evidence. For example, the metaphor of “achieving a purpose (desire) is reaching a destination. Leaning forward activates motion to a destination ... which in turn activates the target domain of desire and purpose” (Lakoff, 2012, p. 781). So, when someone leans forward, the thought is reflected in the body, and leaning forward is interpreted as moving towards a destination. This connection between mind and body is embedded in our speech and body language – both are important for complete communication.

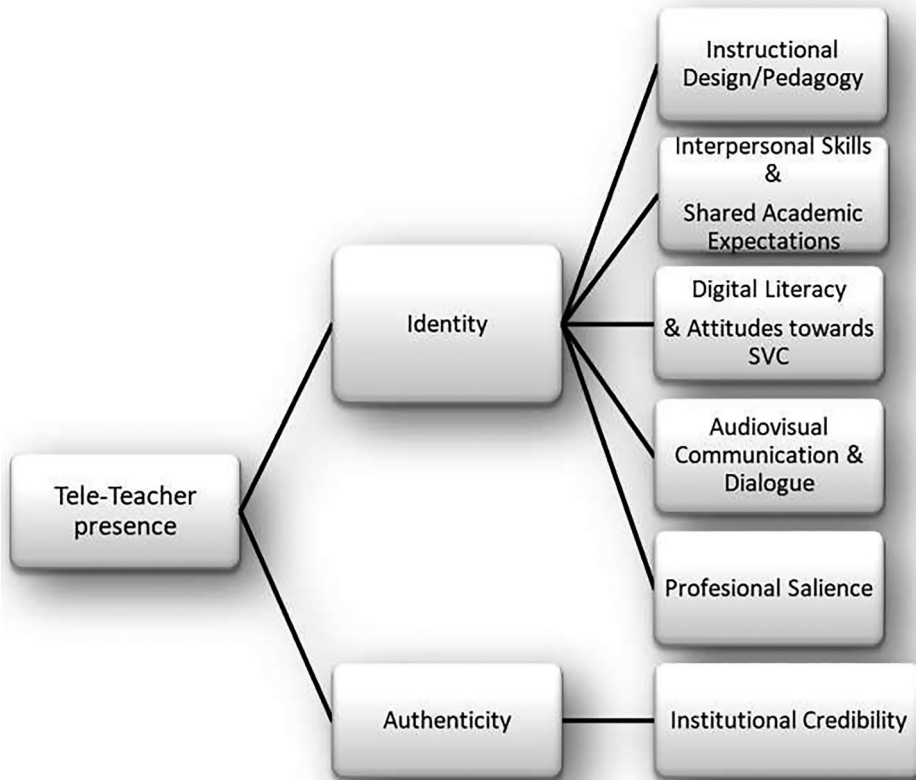
Overall, selective coding as part of abduction in phase three further analysed and explained the data creatively through theoretical playfulness and theoretical pluralism (interdisciplinary perspectives), critically comparing various theories and theoretical concepts from the literature. Ongoing literature review from a multidisciplinary perspective was crucial in this specific case study because it offered some theoretical explanations for the findings and helped develop an understanding of the parameters of the contemporary discourse in the field (Dunne, 2011).

#### **4.1 The story of tele-teacher presence**

In defining tele-proximity, the sensitising concept of teacher presence was redefined to better adapt to the Tele-COI (see Figure 2). As a continuation of theoretical sensitivity, a final literature review of concepts in distance education abductively led to re-evaluating the role of the researcher as a hub of critical knowledge and looking deeper for resources related to tele-proximity. For example, Baxter (2012) on teacher identity, Christakis and Fowler (2009) on emotional contagion in social networks, and Bitti and Carotti (2011) on cultural differences in face-to-face communications. Even after data saturation, leads were found in the literature following the theoretical sensitivity of the core category.

In this abductive phase, explanations and new connections helped construct the story’s plot. Telepresence within tele-proximity theory addresses the need to bridge the physical and psychological distance in e-learning courses. The original definition of teacher presence focused on instructional management, building understanding, and direct instruction (Garrison et al., 2000) without considering how people connect with one another. In this study, informants mentioned the work of Lakoff (2012), Pentland (2010) and Iacoboni (2009). This led to the literature review, the redefinition of tele-teacher presence, and the explanatory story’s construction.

Through the lens of embodied cognition (Lakoff, 2012), tele-teacher presence was redefined as an expression of an embodied identity, where ‘honest signals’ (Pentland, 2010) mirror thinking processes, behaviours, emotions, and aesthetics (Iacoboni, 2009). Synchronous video communications



**Figure 2** . The definition of tele-teacher presence within tele-proximity theory.

were used by educators to build a presence through making genuine connections with students as well as creating a sense of ‘place’ for online students and educators.

Educators’ identity, including digital literacy and audiovisual communications, were also important (Themelis, 2013). How tele-educators (using synchronous video communications) portrayed themselves on camera (identity), demonstrated their thinking, democratic or leadership behaviours, influenced the atmosphere of the online Community (contextual aesthetics).

Educators’ professional salience (or feeling of doing a decent job) was also important. They need to be happy and satisfied in their online performance because feelings are easily transmitted through synchronous media and are highly contagious in social networks (Christakis & Fowler, 2009).

Figure 2 shows the redefinition of tele-teacher presence as a combination of the educational institution’s authenticity and the teacher’s identity. Identity consists of professional salience, audiovisual communications; interpersonal skills; digital literacy and attitudes towards SV; and pedagogy. It could explain to educators what they need to consider when designing synchronous sessions. For further information on tele-proximity theory, see Sime and Themelis (2020).

The three phases of deductive (initial literature review, using sensitising concepts and adopting a loose theoretical framework from the literature), inductive (carefully reading data, open coding and data categorisation) and abductive (examining possible associations between the constructed categories and creating interdisciplinary explanations) reasoning led to the formation of tele-proximity theory and the explanatory story of the role of educators using teleoperations for distance

education. The story helps explain the Tele-proximity theory's implications for teacher professional development. Specifically, that online instructors should learn about the impact of tele-teacher presence on learning communities, including the facets of identity construction and development "so that learning affects not only how lecturers teach online but contribute positively to feelings of self-salience, personal efficacy and confidence concomitantly leading to high levels of academic and professional autonomy, motivation and job satisfaction" (Baxter, 2012, para. 8).

## 5. Conclusions and limitations

### 5.1 Conclusions

The importance of the informed GT methodology in the current case study lies in the symbiosis of the philosophy, the methods and the art of storytelling which explains informants' views and connects their perspectives, experiences and actions with theories in the literature. The case study investigated the impact of videoconferencing on distance education. In the case study, experienced educators from different fields worldwide shared their views on synchronous video communication. The variety of international perspectives and the flexibility of the methods (ongoing literature review and data categorisation) led to a telos (a direction of a path), resulting in the concept of tele-proximity and a redefined role for educators when using videoconferencing in distance education. The ongoing literature review provided some plausible explanations for the need for face-to-face communication and some guidelines that could impact learning and teaching. Data categorisation is integrated with a literature review to produce a theory and a narrative explanation. The theory is considered a work in progress and needs refinement (Kennedy & Thornberg, 2018) or modification (Glaser, 1978, 1998). The story's ending is left open for the audience; educators can choose whether or not to apply this knowledge within their teaching practice.

An essential and innovative contribution of informed GT is the addition to GT research of a critical yet creative and still data-sensitive interpretation dimension that takes advantage of reviewing the literature before and during the study and years after the theory construction. Researchers can regularly check and compare what other theorists have found (theoretical codes/sensitivity) as they create an explanatory storyline (Birks & Mills, 2015). Over time, informed GT has promoted the development of tele-proximity theory through two versions, as mentioned above (Sime & Themelis, 2020; Themelis, 2013) and the revisited effort via the lens of transmedia ecology and trauma-informed pedagogy (Themeli, 2022). This shows that theories could be refined using informed GT to address new areas or strengthen existing theories, thereby enhancing the potential for transfer and sustainability.

Informed GT also provides a flexible, iterative and circular approach to research that includes deductive, inductive and abductive reasoning phases. Figure 1 illustrates how Themelis adopted this process into a Straussian GT methodology but cannot, of course, convey the messiness of its use in her case study. Consequently, the researcher needs to "stay grounded" (Thornberg, 2012) during the whole research process. This is why it is crucial to adopt abductive reasoning and iteratively move back and forth between abduction, induction and deduction while using data-sensitising strategies (Thornberg, 2012).

### 5.2 Limitations

There are several challenges for the researcher when using informed GT methodology. There is a risk with integrating an initial and then ongoing literature review in a GT study. There is a temptation to shift from an open-minded, non-committed theoretical agnosticism to an uncritical adoption of a theoretical or conceptual framework with poor relevance to the studied phenomenon, the field and its participants. There is also a danger of over-interpreting data to fit the theory and then getting stuck in a crude deduction. Another hazard is that abductive reasoning may lead to wild

guesses while the researcher is following leads in the literature that move away from the data. Therefore, when:

searching for a plausible hypothesis for a particular empirical case, researchers have to strive for constraining and guiding their search by requiring that the hypothesis explain, or at least be consistent with, most other clues, constraints, and information that are available concerning the empirical case. (Kennedy & Thornberg, 2018, p. 53)

The heterogeneity of informed GT provides excellent flexibility, but it is not without risk. The iterative process with its interplay of inductive, deductive, and abductive reasoning alongside ongoing literature review (Dunne, 2011; Thornberg & Dunne, 2019), is crucial for protecting researchers from these risks while enabling them to maintain a creative and critical approach to research (Kennedy & Thornberg, 2018; Paavola, 2004). After all, a good theory is never forgotten, much like a good story.

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