Towards Mapping of Information Technology-Induced Alterations in Online Physicians' Professional Identities

A Conceptual Framework and Empirical Illustrations from Sweden

Michal Dolezel[1] and Åsa Cajander[2]

[1]Prague University of Economics and Business, Department of Information Technologies, Czech Republic
michal.dolezel@vse.cz

[2]Uppsala University, Department of Information Technology, Sweden

Abstract

Digital Patient Contact Technologies (DPCT), including telemedicine solutions and digital tools for text-based communication between patients and physicians, play a significant role in today's healthcare. Professional identity defines norms, principles, and logic that guide one's professional actions. Presently, little research is available regarding professional identity changes in the context of DPCT implementations. This work theoretically and empirically illustrates the nature of the possible DPCT' impact on physicians' professional identities. To this end, a conceptual framework was constructed, and the interviews with eight physicians operating an asynchronous healthcare-advice chat service (1177 Vårdguiden) in Uppsala, Sweden, were examined.

Keywords

Telemedicine; eHealth; doctor-patient relationship; professional identity

1 INTRODUCTION

Due to the new capabilities of information technology (IT), one can witness a significant change in how healthcare services are delivered today [1]. The technological means for enabling digital contact with patients have been of foremost interest to practitioners and researchers in recent years [2], [3]. The pivotal role of these solutions was further strengthened by the COVID-19 pandemic crisis [4].

Examples of digital contact technologies include full-fledged telemedicine solutions transmitting audio, video, and biomedical data [2], [5]; controlled use of public video calling platforms (such as Skype, Facetime, or Zoom) [6]; specialized mHealth applications [5]; asynchronous advice-giving using specialized web services and discussion fora [7]. More recently, synchronous online chat services employing embodied conversational agents [8] have been introduced as an additional communication tool to enable digital contact between a patient and healthcare professionals, typically in the context of healthcare guidance [3], [9]. In this paper, we introduce the term Digital Patient Contact Technology (DPCT) by putting all such technologies under one conceptual umbrella. Being technologically agnostic, the concept of DPCT is to label an *aggregate of information and communication technology components enabling the delivery of health-related care over distance (distance healthcare)*.

Naturally, implementing DPCT may bring positives for some stakeholders and perceived negatives for others. This may result in prospective DPCT users' resistance [10]. Speculatively, a number of aspects of the existing medical work will get significantly impacted, given the role that DPCT is to play in medicine in the near future [1], [11]. Overall, it becomes clear that "[t]raditional concepts in medical ethics, confidentiality, empathy, empowerment/power, efficiency and mutual responsibilities are reframed in the context of digital consulting" [4] or DPCT. One common point of criticism is the negative impact of DPCT on the patient-physician relationship [12], [13]. Another essential factor to consider is the possible change in job content and work routines [4], responsibilities and decision-making strategies [3], and the identities of healthcare professionals [14]. The latter aspect is the primary concern of the present work.

Identity research is broad and dispersed. Essential contributions to understanding professional identities in the medical domain have been made by researchers in the health sciences (e.g. [15]) as well as other fields (e.g. [16]). This paper builds upon the understanding of identity established within medical education [17]. In simple words, *identity* (and more specifically, professional identity) defines *who we are* (as professionals) (e.g.[18]), *what underlying norms, principles, and logic guide the courses of our* (professional) *actions* (e.g. [19]), and *what* (professional) *values we subscribe to* (e.g. [20]).

Presently, little research evidence is available specifically on the topic of relationships between patients and

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physicians and of professional identity changes *when facing DPCT implementations*. Importantly, many in the medical community seem to hold strong opinion about these issues [12], [21]. Also, while certain evidence is available for some classes of the DPCT (e.g. telemedicine solutions) or related areas [22], the area of text-based communication and advice-giving through chat or on-line forums remains largely uncovered.

This research, carried out within the social strand of medical informatics [23], [24], fills the theoretical and empirical knowledge gap. This paper aims to theoretically and empirically illustrate the nature of the possible DPCT' impact on the physicians' identities. To this end, a conceptual framework was constructed. In addition, qualitative data from a research project concerned with the influence of DPCT on the work routines of physicians [3] were analysed, providing some clues to direct further research in the domain of DPCT's impact on professional identity.

2 THEORETICAL BACKGROUND: SOCIAL AND PROFESSIONAL IDENTITY

People rely on their identities, serving as anchors in their work and private lives. As humans are social creatures, who need to cooperate to survive and thrive, an important part of their identity is rooted in the shared norms and values of their social groups.

> *This means that their self-view is not determined by personality characteristics or by their interpersonal relationships alone; how people see themselves is also determined by the groups to which they belong (that is, their social identity; [25]). [14]*

Social identity is a broad concept that has attracted the significant attention of scholars from several different fields. The long-existing interest has resulted in an extensive body of knowledge which includes psychology (e.g. [26]), sociology (e.g. [27]), and the organizational sciences (e.g. [16]). The seminal foundations for this work were laid out during 1970s by Tajfel [25], a social psychologist, who defined social identity as "the individual's knowledge that he belongs to a social group together with some emotional and value significance to him of this group membership."

More recently, social identity theories found their way into the health sciences domain, where they have been employed in medical education research [28], [29]. This orientation reflects the fact that social identities are formed and developed during one's professional education, and the extensiveness of medical education provides a significant space to do so [14].

Medical education research introduced the concept of professional identity as a specific instance of social identity [28]. Professional identity "describes how we perceive ourselves within our occupational context and how we communicate this to others" [18]. More intriguingly, professional identity can be viewed as a set of "professional values, actions, and aspirations" [14] one builds upon when conducting professional duties as a member of certain profession. However, it is important to remind that "[p]rofessional identity is not a stable entity; it is complex, personal, and shaped by contextual factors".

The pioneering study of Becker et al. [30] emphasized the process of forming professional norms and values during the medical education. Considering today's world of medical specialization, however, it is important to note that different specializations may incline to distinct sets of values. This fact was exemplified in the study of Intensive Care Unit organizational arrangements, which rendered the differences in values and beliefs between intensivists and surgeons [31]. Some medical specializations, such as surgery, attribute a great importance in identity formation processes to the factors such as perfectionism and technical skills [32]. By contrast, an important identity aspect of the healthcare provided by general practitioners (called also family physicians in some countries [33]) is "seeing the patient as a whole" [16] or being a "holistic physician" [33].

While providing important cues, the literature reviewed so far allow for a broad interpretation of what constitutes an essence of social/professional identity in the field of medicine and how to conceptualize its key dimensions. A more tangible conceptualization is needed with respect to the purpose of the present work. Introducing a pragmatic analytic framework, Hendrikx [34] argued that physicians' professional identity can thought of in terms of three key components: excellence (e.g. providing state-of-art medical care), ethics (e.g. doing no harm to patients) and engagement (i.e. commitment to patients and the profession).

Stemming from a theory-focused research, another three dimensions have been popular with social psychology scholars interested in social identity work. Originating in the 1980s, these include: awareness of group membership; group interdependence; and emotional aspects of belonging to the group [35]. More recently, Cameron [36] argued for extending the three key components derived from the original work of Tajfel [25] to characterize the essence of professional identity better. Proposing and validating a new three-factor's model [36], Cameron posits identity dimensions of similar conceptual significance:

- *Cognitive centrality* is the "subjective importance of the group to self-definition", manifesting in the "frequency with which the group comes to mind" [36]. Put differently, cognitive centrality be used to quantify how intense is one's awareness of group identity.
- *In-group affect* captures an emotional component of the group identity, providing a conceptual tool to analyse subjective feelings about one's membership in the given group. These can be both positive and negative [37].
- *In-group ties* is a dimension used to describe a sense of connectedness or belonging with the group [36]. It may therefore concern both verbal and non-verbal communication acts between the members, but also perceptions "that one 'fits in,' 'has strong ties,' or 'shares a common bond' with the group and its members" [37].

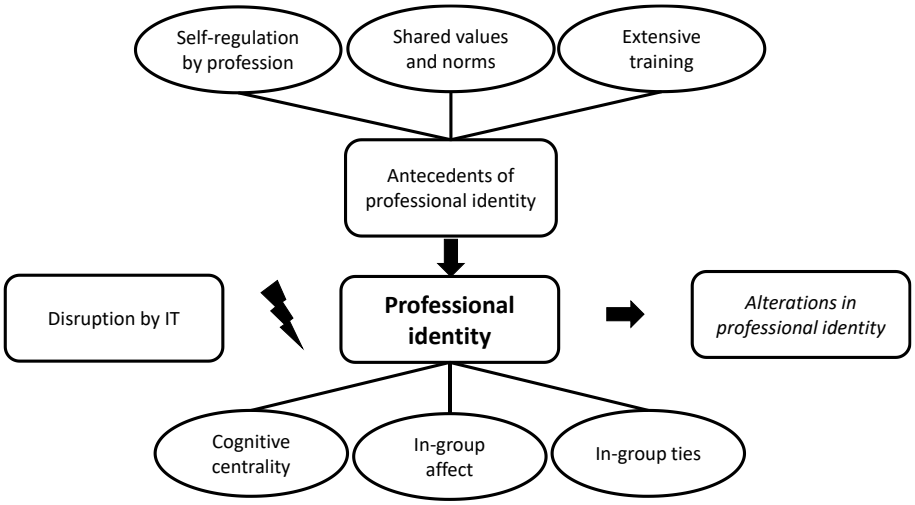

Figure 1. The sensitising framework: Disruption of professional identity caused by information technology (synthetised from [14] and [36]).

In this preliminary work on DPCT's influence on physicians' professional identity, we constructed a conceptual framework to shed better light on these problems. As our point of departure for framework construction, we took the theory development work of Molleman and Rink [14] elaborated within the domain of social science applied to health. The work was specifically focused on professional identity alterations in physicians. In addition, we employed Cameron's three factor model of social identification [36] from the domain of social psychology, due to being a competent conceptual tool suitable for qualitative identity transition work related to medical professionals [37]. It is also compatible with Tajfel's ideas, well-established in medical education research [38].

Blending both these sources of theoretical notions, we present our resulting theoretical framework in Figure 1. The framework has two principal parts. The top part illustrate the major antecedents of professional identity, in-line with the line of thought put forward by Molleman and Rink [14]. The bottom part decomposes professional identity into three principal dimensions adopted from Cameron [36] and described above.

One additional point remains to be clarified. The concept of professional identity is different from that of *professionalism* [38]. In short, the latter describes a set of desired or exemplified behaviours, which can be directly observed. Inversely, professional identity is much less pronounced, hidden from direct observations. "Professional identity is how an individual conceives of him- or herself as a doctor …" [38]. In that sense, some authors relate it to the concept of professional culture, from which it stems [39]. Importantly, significant role in identity formation processes, notably in the medical domain, is ascribed to role modelling [40], i.e. following and internalizing another individuals' modi-operandi in a given area. In that sense, it appears quite problematic to think of professional identity as of a homogenous cultural entity, as individual role models and mentors are of great significance in one's professional identity formation when becoming doctor [37].

3 METHOD

The present paper presents an illustrative theory-driven analysis, serving as a sensitising framework for our subsequent research in the area of DPCT. "Unlike a rigorous theoretical framework that is established in advance, … [the] sensitising concepts are elastic and open to revision because of their general, empirically not contentful nature (e.g. 'culture', 'institutions', 'structure', 'roles')" [41].

The data used in this paper were collected within a research initiative mapping the impact of a DPCT in the context of primary care. The goal of the research was defined broadly: to understand the changes in the work regimes of healthcare professionals caused by DPCT [3].

3.1 Context

In Sweden, the healthcare system is decentralized, so that many nuances exist across the 21 counties [42]. Stated broadly, primary care is provided by general practice physicians working in primary care centres [43]. Patients have access to a first contact service, and a triage service titled "1177 Vårdguiden". As explained on the service website of the Uppsala region,

> *"1177 is manned by licensed nurses who will respond to calls to give advice, consult on the need for potential further care and give guidance to the appropriate healthcare clinic when needed" [44].*

Starting in 2019, a pilot project implementing asynchronous chat service was carried out in Region Uppsala, as described in detail in [3].

3.2 Data collection

We carried out eight semi-structured interviews with the

physicians. The interviews took place at 1177's premises, i.e. in offices or a meeting room. These interviews, each of ca. 1-hour duration, were conducted by the second author in Swedish, audio-recorder and transcribed verbatim by a professional transcription service. Four participants were males and four females. Their age range was 26-49 years. Two specialists and six residents participated in the interviews. The interview guide contained broad questions such as "What do you think are the advantages of working with the chat/on the telephone?", which primarily targeted the professional work routines or the material world rather than subjective feelings about one's professional identity per se. The interview guide is available as an online appendix of the original study [3].

3.3 Data analysis

Following the principles of deductive qualitative analysis informed by Cameron's three-factor model of social identification, the first author examined the qualitative data. As the main aim of this exercise was to explore the feasibility of applying the mentioned theoretical framework in the context of DPCT initiatives, a pragmatic analytical approach was used. After employing constant comparison while iterating between the theory and data, corresponding vignettes were chosen for the present empirical illustration. The fit between the selected data and the theoretical framework was then discussed with the second author, who had designed the original study, until a consensus regarding interpretation of the data in light of the theory was reached.

4 RESULTS: ILLUSTRATIVE VIGNETTES

When presenting the results, we follow the logic of the Cameron's three-factor model of social identification. In that sense, we consider the professional identity of online doctors being an altered form of professional identity of medical generalists working in a front-line setting with patients face-to-face as this was the professional background of many of our participants, as illustrated below.

> *… I am a trained physician, who specialises in general practice at this health centre. (Physician 4)*

4.1 Cognitive Centrality: Awareness of Necessity Going Online

For some of our participants, the reasoning behind moving to the on-line word was associated with a perceived necessity. The concrete motives included both quality-of-care concerns (Vignette 1) and political decisions (Vignette 2).

> ***Vignette 1:*** *I think the big concern for healthcare is that we cannot have the healthcare system we have today in 30 years. … I mean society is different today than it was in the 90's. It will be different in 10 years, it will be different in 5 years. And then we have to change certain things. … And need to work more efficiently without being drained of quality. And then you cannot have the attitude … [of being] extremely sceptical. Eh... and I'm trying to be somewhere in between there I think, eh... in my attitude. (Physician 4)*

> ***Vignette 2:*** *I see more digital care will come due to strong political will, and then I think it is better to sit in the cab and steer the bus a little closer than seeing it drive straight into the wall. (Physician 5)*

4.2 In-group Affect: Feelings about Online Work

There was a significant emotional component contained in the analysed qualitative data. This fact is illustrated below by two vignettes, focusing on the physicians' concerns about practicing digital medicine. Illustratively, we thematise these vignettes as the *Fear of losing one's professional self* (Vignette 3) and the *Fear of losing the doctor's "sixth sense" (Vignette 4).*

> ***Vignette 3:*** *Uh ... but at the same time if you just sat and chatted, it would ... you don't feel quite as much like a doctor maybe. You know, have a stethoscope around your neck and listen to a heart. … Maybe just a little bit in the attributes. I'm a bit superficial so I think if you have white scrubs* ***then you are a doctor****. … And we do not do that here. Both the nurses and the doctors are civilian-dressed. (Physician 6)*

> ***Vignette 4:*** *… they could make incorrect assessments because they have not been able to perceive that difference, which could determine whether they decide to send a patient to the emergency room … That it's such small things that you can actually react to. How someone expresses themselves, how someone behaves in the room. Yes, and [you can do] this just with the physical examination. (Physician 4)*

4.3 In-group Ties: Diagnosing Online

The extent of the shift in the "sense of belonging" component of professional identity can be illustrated by the following vignette.

> ***Vignette 5:*** *… the online medical companies are saying that 60-70% of health centre cases could be dealt with via chat. Or not chat, but via video anyway. So that and that's probably what* ***divides us doctors*** *a little bit, how much you can actually assess [through DPCT]… (Physician 4)*

5 DISCUSSION

Our work provides some preliminary insights into the problem of professional identity alterations in reaction to DPCT introduction. We begin our discussion by highlighting the aspects of *cognitive centrality* of the identity-in-transition. Recognizing the fact that there is a need for change in the existing healthcare provision schemes, our participants internalized the notion that their work (and professional identity) will be different than it used to be. Arguably, they have accepted that this is a long-term effort, as one can speculate about the metaphorical language exemplified by Vignette 2. Still, our participants opted to actively participate in the change instead of passively standing aside. That said, the motives for participation in this particular DPCT initiative might have highly varied. For example, as our data indicate, a financial aspect might have played a role here too.

In Section 2, we highlighted the centrality of role modelling

for the processes of professional identity formation in medical education [37]. Based on that, we speculate that engaging the pilot project participants (or "early adopters" [45] of the altered professional identity) in expertise sharing activities will be of foremost importance for the future success of the DPCT initiative when implemented nation-wide. Opinion leaders acting as change agents play an essential role in adopting new technology in traditional, well-established communities [46].

We continue by discussing the importance of *in-group affect* components of professional identity. Notably, we point to the fact that professional identity is associated with values, norms and behaviours, and with material symbols, especially with the symbols serving to assert one's status [19]. These symbols may provoke emotional reactions. This particular notion was illustrated by the point brought in Vignette 3, referring to not feeling as a doctor due to not wearing a stethoscope and scrubs [47]. Previous research in the social science domain demonstrates that white coats and scrubs are examples of material artefacts that may shape one's sense of professional identity of being a physician [48].

Although it is impossible to draw any firm conclusions based on our illustrative data, we note that the wide spread of telemedicine and other DPCT has fundamentally changed some of the medical field's material artifacts and behavioural norms. Not all physicians practice medicine dressed up uniformly [48], which is a significant change introduced by DPCT. In general, patients make sense of the medical world by following well-known clues of medical status, prestige and expertise [49], being guided by a customary image of the archetypical physician [47], [50]. Perhaps as a result of this, telemedicine physicians are nowadays encouraged to "dress as they would when they see a patient in person, such as a white coat, business casual clothes, or scrubs" [51]. Naturally, this makes no pragmatic sense in the domain of asynchronous chat services not implementing any video communication, as was in our case.

Finally, the remaining aspect conceptualized by the theoretical framework is *in-group ties*, i.e., sense of belonging to the group of online physicians. Illustratively, Vignette 5 highlights a role of digital divide between online physicians and proponents of medicine practiced in the "traditional way". Evidence suggest that many concerns from the provider perspective persist even in highly-digitalized countries such as Sweden [52], where the present pilot DPCT initiative was carried out. The physicians' concerns include doubts about DPCT safety for patients and claims about "increased risk of misunderstandings" [52]. In addition, DPCT may be seen as "stressful time-thief[s]" and representing threats to the medical profession and physicians' own integrity [52].

Prior concluding, the limitations of this work need to be highlighted. First and foremost, this paper does not present a full-fledged empirical study. Instead, it offered a theory-building exercise supplemented with qualitative evidence of illustrative nature. Another limitation of the present paper is the early stage of development of our theoretical concepts in terms of possible professional identity collisions, overlaps and multiple membership. By this we mean that physicians can take part in multiple social groups, including various professional groups formed by work settings and specializations. For example, if a physician worked in a front-line setting in addition to his/her DPCT engagement, his/her identity could not be considered entirely "online".

Also, medical professionals coming from different specializations than general medicine might bring their unique professional identities, which may differ from each other quite significantly [14]. We plan to mitigate these limitations when designing our subsequent qualitative enquiry probing into the implementation of DPCT providing health guidance and consultations. Within the scope of that initiative, a similar chat service as implemented in this pilot project in the Uppsala Region is planned to be implemented Sweden-wide. That offers a possibility of executing a larger scale study exploring the professional identity component as one of its central concepts. We hope that our study will contribute to the global debate on prospects of general practice (family medicine) in today's, increasingly digitalized world [11]. Perhaps, DPCT can help with solving the present "identity crisis" dilemma perceived by some in the general practice discipline [33].

6 CONCLUSION

The seeds of qualitative evidence presented in this paper illustrate that DPCT might have a profound impact on the existing identity of healthcare professionals. The professional identity of physicians significantly influence how they carry out their daily work. Deciphering the underlying social and cognitive processes stemming from introducing innovative DPCT into healthcare organizations is pivotal in designing and carrying out more effective, people-friendly IT change efforts in various medical organizations.

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