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Digital Health and the Embodying of Professionalism: Avatars as Health Professionals in Sweden

Abstract: This paper explores virtual health professionals (VHPs), digital health technology software, in Swedish health care. The aim is to analyze how health professionalism is (re)negotiated through avatar embodiments of VHPs and to explore the informants' notions of what a health professional is, behaves and looks like. The paper builds on ethnographic fieldwork with informants working directly or indirectly with questions of digital health technology and professionalism. Discourse theory is used to analyze the material. Subjectification, authenticity, and diversity were found to be crucial for informants to articulate health professionalism when discussing human avatars, professional attire, gendered and ethnified embodiments. The informants attempted to make the VHPs credibly professional but inauthentcally human. A discursive struggle over health professionalism between patient choice and diversity within health care was identified where the patient's choice of avatars—if based on prejudices—might threaten healthcare professionalism and healthcare professionals by (re)producing racism and sexism.

Keywords: Virtual health professionals, digital health technology, embodiment, gender, ethnicity, age, patient choice, diversity, discourse theory

New and emerging technologies signify a "process of cultural and social redefinition in which the foundations of how we understand the body, the human and the parameters of health are being radically transmuted" (Dolezal, 2016, p. 219). The increased use of digital health technologies in healthcare sectors offers multiple ways for health professionals to be present without physically being in the same room as the patient. This can be achieved digitally through cameras (e.g., Lindberg & Carlsson, 2018) and virtually through avatars, visual representations of a person or a software, such as virtual nurses (e.g., Abbott & Shaw, 2016), where the health professional is virtually embodied: the avatar becomes an embodiment of a health professional. Avatars are used to embody health professionals for several reasons: to perform certain duties usually carried out by human health professionals (Abbott & Shaw, 2016), to empower patients with health literacy (Bickmore, Pfeifer & Jack, 2009), and to build closer relationships between patients and health professionals (McStay, 2018). The use of digital health technologies in which health professionals work through avatars affects and changes health professionalism and health professions regarding identity, work tasks, working conditions etc. (e.g., Abbott & Shaw, 2016; Bickmore et al.,

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2009; Hirvonen, 2014). In the case of digitally embodying a health profession (avatar), I argue that the digitized embodiment of the virtual health professional (VHP)[1] affects the ways in which a health profession is understood (cf. Lupton, 2014), where the dichotomy between the real and the virtual is challenged (Hayles, 1999; Johansson, 2014). This is because technologies "play an active role in shifting the traditional social and cultural boundaries of our work-places" (Hansson & Bjarnason, 2018, p. 65). For example, some patients prefer to communicate with a virtual nurse rather than a human doctor (Bickmore et al., 2009), or express VHPs in terms of almost being (human) physicians (Lupton & Jutel, 2015).

Reports have shown how digitalization could result in health professionals gradually losing their jobs (e.g., Fölster, 2015). However, Swedish unions organizing health professionals are generally positive about digitalization and the use of digital technologies. They list advantages such as increased efficiency, improved quality of life, new innovative ways of working (The Swedish Association of Health Professionals et al., 2013), better working conditions (The Swedish Association of Health Professionals, 2016), less administrative work and more patient time (PWC, 2016), and increased status of health professions (Swedish Association of Physiotherapy, 2018). Swedish unions even express an urgency to intensify the digitalization of health care so as not to "fall behind", and to make the technology better suited to the needs of health professionals and patients (The Swedish Association of Health Professionals et al., 2013). One way for unions to affect and adapt digital health technologies in health care is through their participation in the national council working with "Vision eHealth 2025"—the Swedish government's vision to be the global leader in implementing eHealth and digitalization by 2025. The national council works with the Swedish government and the Swedish Association of Local Authorities and Regions (The Swedish Ministry of Health and Social Affairs & The Swedish Association of Local Authorities and Regions, 2017) and the four unions represented in this paper are members of this national council.

The Swedish Municipal Workers' Union (Kommunal) stresses how digital health technologies could benefit nursing assistants, the most common profession in Sweden and one that is female-dominated (92%) (Statistiska Centralbyrån, 2019), by improving working conditions through decreasing work-related back pain and increasing the status of the profession (Baudin & Fjaestad, 2017). In this paper, I focus on professionals working in or with health care and how they imagine the digitalization of health care will affect health professionalism.

I argue that the use of VHPs is part of a process of (re)negotiations and demarcations of health professionalism. Hence, the aim of this paper is to explore how health professionalism is (re)negotiated through notions of avatar embodiments of VHPs. How are VHPs made intelligible and professional? How do different categories of professionals[2] argue for or against virtual solutions and how do they express their opinions on how to embody these VHPs? How is health professionalism (re)negotiated through the implementation of new technology? How are notions of human-likeness and machine-likeness articulated with the embodiments of VHPs?

Research overview

This paper addresses health professionalism and how it is affected by the digitalization of health care. Several researchers have studied how the social and cultural norms affect professionalism, as well as how health professionals are expected to

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[1] The acronym VHP (VHPs in plural) refers to virtual health professional.

[2] Researchers in computing science and physiotherapy, health professionals working for unions organizing nurses, doctors, nursing assistants and physiotherapists, and nursing assistants trained in welfare technology.

adapt to societal changes (Hansson & Bjarnason, 2018; Lindberg & Carlsson, 2018; Schnell, 2017). Hansson & Bjarnason (2018) studied how technology affects the work identities of nurses leading to a shift in the traditional cultural boundaries of workplaces. One important societal change in Sweden is the increased digitalization of health care, promoted by the Swedish government (The Swedish Ministry of Health and Social Affairs & The Swedish Association of Local Authorities and Regions, 2016). The increased use of digital health technologies in Swedish health care has therefore transformed health care, implying new patient-health professional relationships and patient discourses (Oudshoorn, 2008), and health professionalism discourses (Hansson & Bjarnason, 2018).

Another crucial societal change that has affected health professionalism is the integration of new public management in healthcare sectors, in which the digitalization of health care can be understood as a shift to new public management (e.g., Lindberg & Carlsson, 2018; West & Lundgren, 2015). Examples of this shift are the marketization of health care (e.g., Dahl, 2011; Glynos, 2014), the focus on individual needs and preferences through personalization, freedom of choice (Mol, 2008; West & Lundgren, 2015), cost-effectiveness and quality (Dahl, 2011) —neoliberal values and expectations that affect professional identities (Evetts, 2009). These new public management tendencies in healthcare sectors are also found in Sweden (Högberg & Sundin, 2014).

Feminist researchers have criticized traditional sociology of professions for being too focused on the profession itself, thus failing to acknowledge the societal and cultural norms on gender and its effects, such as reproducing gender, male privilege and gender-segregated labour markets (Dahl, 2011; Davies, 1995; Evetts 2009, 2011; Henriksson, Wrede & Burau, 2006). Consequently, feminist researchers call for research into how discourses of professionalism produce and modify gender and gendered subjectivities (Dahl, 2011, p. 143; Hirvonen, 2014) such as patients, health professionals, and VHPs. I adopt this view by analyzing how digitalization affects health professionalism specifically by exploring how VHPs, through avatars, are gendered, ethnified and aged.

Researchers have discussed a process of disembodiment in care work, in which the use of digital health technologies disembodies health professionals (Calnan & Rowe, 2008; Kuhlmann, 2006), where health professionalism has traditionally been understood as embodied (Davies, 1995; Twigg, 2006) and performed by (human) bodies. I argue that health care is highly embodied and gendered, even when performed by digital health technologies (cf. Hirvonen, 2014) because technology is always embodied (Lundin & Åkesson, 1999). Lupton (2014) argues that a digitized embodiment is not merely a reflection of a physical body, but rather it affects the physical body or the way in which we understand the meaning of a physical body. I agree with Lupton that digitized embodiments affect how we understand physical bodies. This is also the case for the way we understand health professionalism. VHPs affect how health professionalism might be understood such as expectations on how health professionals should act, possible new arenas for health professionals and patients to interact, how health care is embodied, and also challenging notions of the (human) professional body.

Theoretical approaches

In this paper, I work with the theoretical concepts of professionalism and embodiment. To analyze how the informants negotiate notions of professionalism and embodiment of VHPs through avatars I turn to discourse theory: how the informants' meaning-makings produce certain understandings of professionalism and embodiment (Laclau & Mouffe, 1985).

I understand professionalism as discursively negotiated (e.g., Evetts, 2011), where professional work, professionals and professionalism are open concepts

whose meanings are produced through articulations. I define discourse as a system of meanings and practices that are fluctuating and contextual, shaped in relation to other discourses (Laclau & Mouffe, 1985). Hence, resulting in discursive struggles over the meaning(s) of professionalism. A dominating discourse of professionalism concerns how professionals are defined by, and expected to possess, specialized knowledge, a service ideal, and autonomy (Evetts, 2003; Freidson, 2001). Thus, professionalism works as demarcations between different professions, between professionals and non-professionals (Evetts, 2011), in which the demarcations of (non)professionalism are negotiated. However, professionalism is also affected by societal changes and demands (Hansson & Bjarnason, 2018; Lindberg & Carlsson, 2018; Schnell, 2017), such as new public management (Evetts, 2009) and the digitalization of health care (Hansson & Bjarnason, 2018; Lindberg & Carlsson, 2018). I view VHPs as examples of such processes of demarcation and negotiation of professionalism. Hence, VHPs can be positioned in relation to human health professionals in different ways such as professional health tools used by health professionals, potential colleagues and even rivals to health professionals (Abbott & Shaw, 2016; Bickmore et al., 2009)—aspects of the changing discourses of health professions. Hence, even though the VHPs perform certain professional work, they are not necessarily considered being a part of the corpus of health professional work.

By embodiment I refer to the materialization of bodies in line with Judith Butler's (1990) notion of how bodies are embodied through the material and the discursive. In the case of the VHPs' avatars this concerns both how their appearance (material) and their behaviour (discursive) are understood by others. Avatars embody the VHPs with digital bodies. Human health professionals and VHPs—through avatars—are different embodiments of health professionals rather than being a question of being real or fake. Johansson (2014) argues for "a thorough investigation of how bodies are produced and negotiated in specific hybrid environments" (Johansson, 2014, p. 16), where hybridity refers to how online and offline dimensions are intertwined rather than separated. I understand Swedish health care, with its ongoing digitalization, as such a hybrid environment of digital media, online and offline embodiments (cf. Hansson & Bjarnason, 2018).

Health professionalism involves embodiment in several ways: an embodied identity that becomes part of a person's identity (Monrouxe & Rees, 2017), an embodied practice (Hirvonen, 2014; Mol, 2008) where certain skills are embodied (cf. Bergman Blix, 2015), and a gendered practice (Hirvonen, 2014; Twigg, 2006). All of these aspects concern the embodying of health professionalism. The embodiment of VHPs touches upon these aspects of embodiment. Hence, the embodiment of VHPs not only concerns the use of avatars, but also the question of embodying professionalism: how the VHPs should behave and look professional. In other words, the embodiment of VHPs concern both how (virtual) bodies are designed and how they embody values and characteristics that are articulated with health professionalism performing professionalism in certain embodied ways. The (re)negotiations of health professionals in this paper relate to the way in which health professionalism should be embodied and what meanings the embodiments are given.

Method and material

This paper builds on interviews with and observations of researchers and user study participants in two interdisciplinary Swedish research projects called "Like-a-peer" and "Walk Safely", developing digital health technologies. Both project names were anonymized by me. I also made interviews with health professionals and representatives of four Swedish unions and professional associations for nurses, doctors, nursing assistants and physiotherapists: The Swedish Association of Health Professionals (Vårdförbundet,) The Swedish Medical Association (Sveriges Läkarförbund), The Swedish Municipal Workers' Union (Kommunal) and The Swedish Association

of Physiotherapy (Fysioterapeuterna). The informants were chosen to enable exploring various perspectives from different categories of professionals who are directly or indirectly engaged in health care. They all worked in or with health care regarding questions of digital health technology and professionalism, but from different perspectives: developing digital health technologies, working with digital health technologies in their everyday work life, or organizing health professionals. The paper's ethnographic design, both interview transcripts, and notes from observations, is well suited to the paper's aim of exploring how health professionals is (re)negotiated through different ideas of how VHPs should be embodied (cf. Hammersley & Atkinson, 2007).

This paper builds on nine interviews: four interviews with representatives of the four unions, two interviews with researchers involved in Like-a-peer and Walk Safely, two interviews with nursing assistants trained in welfare technology, and one interview with two user study participants from Like-a-peer. The informants from Like-a-peer and Walk Safely were contacted through the research supervisor of the research groups or directly when meeting them during my fieldwork. I contacted the head office of each union and asked for a representative of the union interested in talking to me about the digitalization of health professions. All informants received information about the study and gave their consent. The interviews comprised open-ended questions concerning experiences of digital health technology, professional roles, possibilities, challenges and the ethical dilemmas of digital health technologies for patients and health professionals, ideas about professionalism, health and body, and aspects of gender, ethnicity, and age. The open-ended questions also allowed the informants to discuss more freely and elaborate on the themes and questions. The interviews lasted 35-75 minutes and took place at the informant's workplace or over the phone. The interviews, eight performed in Swedish and one in English, were digitally recorded and transcribed verbatim in Swedish and English, with minor edits for readability. All Swedish quotations were translated into English by me. In order to ensure anonymity, personal names and project names were changed, no towns or names of current workplaces were mentioned, with the exception of the four unions. My study was approved by the Regional Ethics Review Board.

Between the autumn of 2014 and the spring of 2018, observations of researchers—mainly from computing science, occupational therapy, and physiotherapy—and user study participants in Like-a-peer and Walk Safely were carried out, in which I followed researchers involved in the projects. During the observations, I was invited by the research supervisor to observe and participate in project meetings, seminars, public events at which the researchers presented their research, informal meetings (coffee breaks, lunches) at which their research was discussed, as well as a user study conducted for Like-a-peer. Approximately 20 observations, comprising 50 hours, were performed. During my observations, I focused on how the relationships between the patient and the digital health technologies were discussed, notions of health, embodiments of digital health technology and ideas of professionalism, in which the latter theme is the focus of this paper. Notes of the discussions and presentations that took place were taken during or directly after each observation. I also took photos of avatars involved in the project and for the user study I used a digital recorder and transcribed verbatim in Swedish. The observations gave a deeper understanding of the projects, the researchers' work, and their digital health technologies and it also helped to develop my interview questions and themes (cf. Hammerley & Atkinson, 2007).

The avatars in the projects Like-a-peer and Walk Safely are all utilized to maintain or increase the health of the patients. The relationship between the VHPs, human health professionals, and patients are mainly threefold: the software of Like-a-peer and Walk Safely has been modelled by knowledge, expertise, and experiences of health professionals, health professionals can be "present" in the patients' homes via the VHPs, and the health professionals can access data about the patient via the VHPs' interactions with the patients. The avatars adopted in the software to digitally

embody health professionals are all inanimate images of human-like characters: the avatars cannot move or speak, and they communicate with the patient via text-based messages on a screen (computers, cell phones, tablets). These avatars have different genders, ages, and ethnicities, and are all human-like, except for a white poodle avatar in the Walk Safely software. For the Like-a-peer software the avatars had not been decided during this study: starting out with animal avatars and cartoons characters and moving on to more human-like avatars.

The material was analyzed with discourse theory (Laclau & Mouffe, 1985). The analysis was carried out in three stages. Firstly, on an individual level by reading through the transcripts of each interview and observations, identifying central themes, arguments and topics of each informant concerning notions of professionalism and embodiments. Secondly, I compared the findings of each informant with the other informants in order to aggregate the themes and find similarities, differences, and variations in the informants' notions of professionalism and embodiment. Thirdly, from my interpretations of the informants' notions I identified articulations of professionalism and embodiments, and how these articulations reproduce, challenge and change discourses (see Winther Jørgensen & Phillips, 2002) concerning health care, professionalism, and embodiment.

Negotiating virtual health professionals

In this section, I discuss how the informants articulate notions of subjectification, authenticity, and diversity with health professionalism. Specifically how these notions of health professionalism are dicussed in terms of how the VHPs should be embodied. According to the informants, by embodying the VHPs through avatars, the VHPs might seem more human-like and professional-like, while at the same time the informants try to balance this human-likeness and professional-likeness in order not to make them seem too human or too professional.

Professionalism through subjectification: a sense of talking to someone

How is health professionalism linked to subjectification: how are the VHPs negotiated as subjects, "almost-subjects", or non-subjects? The embodiments of VHPs created a sense of interacting with someone rather than something. Three key aspects of the subjectification processes of VHPs were notions of how communication and relations between the avatars and the patient should be designed, and how emotions should be expressed.

Communication was raised as a key feature of the interaction between patients and VHPs. The VHPs must be able to communicate with the patient, where the VHP's avatar was an important communication factor. However, the communication skills of the VHP were also connected to subjecthood: to communicate more like someone than something. This was expressed in my interview with Lisa and Sara, two user study participants for the Like-a-peer project, in which they had a text-based interaction with a VHP:

Author: You also mentioned avatars. […]
Lisa: Well, then it would be more like… if it's on the computer, an avatar, who is asking these questions. Then it becomes more like you're talking to a person, so it becomes a bit more like talking to someone instead of a [computer] screen, it becomes more like […]
Sara: Personal. [---]
Lisa: [...] It would feel more real, like talking to someone. I think [laughing]. What do you [Sara] think?

> Sara: Yes, it feels more like you're talking to someone who… actually exists […] and understands.
>
> (Interview, July 7, 2015)

Lisa and Sara's thoughts about the avatar making the interaction more like communicating with someone rather than something point at a process of subjectification in which the subjectivity of the VHP is embodied through the avatar. Without the avatar, the VHP might seem less real, more like something than someone, and the patient might feel less inclined to interact with the VHP.

The use of avatars not only creates a sense of the patient communicating with a subject, it might also help the patient to know who and what the purpose of this someone is. Eric, a physician, and representative of The Swedish Medical Association, mentioned that the most important function for an avatar is that:

> In a way, it declares itself [laughing] to […] know that it's this persona or avatar you are communicating with. […] "Now I have an encouraging avatar and it will take me out for a run" and this other avatar who sits and reads and extracts information from a lot of textbooks.
>
> (Interview, January 11, 2018)

In this sense, the avatar not only embodied a subject in general but specific subjects using different avatars. Lisa, Sara, and Eric linked the use of avatars with a sense of communicating with someone: how avatars subjectify the VHPs in the communication with the users to a certain extent. In other words, the avatars embody the VHPs with a sense of subjectivity.

Closely connected to communication was the question of building relationships. Anna, a researcher in physiotherapy, told me that in the Walk Safely project the user can choose between five different avatars for the virtual physiotherapist, where the avatar was used to "create a sort of relationship. And then we thought: another way to create this relationship is to use an image" (interview, November 6, 2015). The avatar itself encouraged the patient to build a relationship with the VHP. Eric expressed a similar idea: "If you are going to have a relationship with something over an extended period, you need an avatar, to which you even give a name: 'Pelle thinks this' and then you build a relationship with Pelle as if it was actually a person with a will, perceptions, and goals" (interview, January 11, 2018).

Another strategy mentioned, of forming closer relationships between patients and VHPs, was emotions. The ability to express emotions was a way of interacting with patients and a way of evoking a sense of subjecthood in VHPs. During a user study for Like-a-peer, Marie, a researcher in computing science, introduced what she called a "set of digital friends" where she presented the seven dwarves from the Disney film Snow White and the Seven Dwarfs as possible avatars for the VHP. The idea was that the avatars embody different emotions, such as being happy etc., but adapted to the situation and the interaction:

> So whenever the […] responses aren't so happy, then the suitable avatar should be visible during the dialogue. Now, it's a bit monotonous with "text text text". So my next aim is to have these images according to the context so that it improves the user experience.
>
> (Observation of user study, July 7, 2015)

Marie used avatars to embody and express emotions that evoke feelings of subjecthood (user experience). In this way, the process of subjectification worked by articulating emotions with being a subject: the avatar embodies emotions, thus makes the VHP more like a subject and a health professional. This is similar to virtual nursing avatars designed to demonstrate emotion-like behaviours, such as appearing em-

pathic to the patient (Abbott & Shaw, 2016; Bickmore et al., 2009)—crucial characteristics of the growing field of emotional artificial intelligence (McStay, 2018). However, regardless of whether the health professionals are virtual or not, emotions and empathic behaviour are still key aspects of health professionalism (e.g., Evans & Thomas, 2009).

Professionalism through authenticity: credibly professional, inauthentically human

Closely connected to subjectification—using avatars to make the VHP embody a sense of professional subjecthood—were notions of what this someone should look like. Hence, in this section, I explore the informants' negotiations of whether or not human-like avatars and professional attire should be used to embody VHPs.

The informants discussed the use of human-like avatars as a way of making VHPs resemble certain health professions, thus making it easier for the user to identify the VHPs. A reason for using human avatars to embody VHPs, expressed by the informants, was that since health professionals are human, the avatars should look human in order to represent certain health professions. Laura[3], a researcher in physiotherapy and a member of The Swedish Association of Physiotherapists, gave me one example when I asked her if she thought it was important for a virtual physiotherapist to have a human avatar:

> Yes, because physiotherapists are humans [laughter]. If this [virtual physiotherapist] sends a reminder from your physiotherapist, it's probably good that it's a human and not a dog, or an alien or something. [---] For the sake of credibility.
>
> (Interview, March 23, 2018)

Laura linked the human avatar to a notion of credibility: the human avatar makes the virtual therapist more credible as a professional, while an alien or a dog is not credibly professional due to their non-human embodiments. However, Laura was also open to the possibility of the patient choosing non-human avatars, like a dog, as a virtual physiotherapist, if the patient "would rather be reminded [of the physical exercises] by a dog [avatar]" if this promotes the patient's "compliance" in following the exercise programmes set up by the human physiotherapist. I understand this to be two different and potentially conflicting notions of credible professionalism through the embodiment of the virtual physiotherapist. The former links human avatars with professional-like credibility in the sense of representing human physiotherapists, while the latter links non-human avatars with credible professional-likeness, focusing on the outcome of the patient's health (cf. Graber & Graber, 2011).

The human avatars also engendered concerns and some informants raised the question of (in)authenticity, due to linking being professional with being human. Following this line of thought, the VHP should not be embodied by a human avatar since it is neither authentically human nor an authentic health professional. Anna was one of the informants who argued for non-human avatars: "You shouldn't be able to think of it as a person ... it's not a real person" (Interview, November 6, 2015). In order to make the virtual physiotherapist seem less like a "real" person, Anna has introduced a white poodle avatar, which I understand to be a strategy to dehumanize the virtual physiotherapist, as well as a way of not making it look like an authentic physiotherapist.

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[3] Laura did not hold a formal position at The Swedish Association of Physiotherapists. However, its head office encouraged me to contact her as someone who was knowledgeable about both eHealth and questions regarding the physiotherapy profession.

However, even if the informants often clearly argued for using or not using human-like avatars for the VHPs, most of them were concerned with negotiating how human-like the avatar should look. An example of this was Nina, a nursing assistant trained in welfare technology. She thought that technology should not try to look human: "It would feel very unpleasant, someone trying to resemble a human being while not being one" (Interview, February 1, 2018). However, later during my interview with Nina, when I asked her what she thought were the important qualities or characteristics of an avatar or robot used to embody a VHP, she mentioned human-like characteristics:

Nina: Friendly features [---] And the eyes are very important, I think. Because everything has eyes and a face. And then it's important that the eyes show something, so that they are not empty. Because there should be some life in the eyes. Because they are one of the most important parts of the body [...] And gestures, too […] Because we use the body in so many ways. [---].
Author: It sounds like it [the avatar of the VHP] should have some human qualities but not necessarily look like a human being.
Nina: No. [agreeing]. I think that might be good. Because if it's not a human […], then it shouldn't look human, but it could have [human] features.

(Interview, February 1, 2018)

Here Nina negotiated how human-like the VHP should look and behave: it should be credibly human-like without trying to be an authentic human, in order to be credibly professional-like. This related to the question of communication, emotions and building relationships: in order for the VHP to communicate with patients, express (human-like) emotions and build relationships, it needed a human-like embodiment, to a certain extent, without being too human-like.

The question of credibility and authenticity when embodying VHPs was also connected to professional attire—if and how VHPs should be professionally dressed. All informants have ideas of how certain attire symbolizes a profession, such as doctors or nursing assistants. Hence, wearing certain kinds of attire becomes a professional sign, making a VHP more intelligible and credible as a health professional (cf. Timmons & East, 2011). For example, Lisa and Sara mentioned that it might be important for the avatar to look like "someone in a nursing outfit" (interview, July 7, 2015) to make it more professional looking, and Laura believed that professional attire helps the VHP resemble "an authorized health professional" (Interview, March 23, 2018).

However, the informants differed in their arguments and negotiations about whether VHPs should wear professional attire or not. When I asked Nina if it is important for an avatar used for nurses to resemble a nurse, she said: "I don't think it should look like a nurse, because it's not a nurse" (Interview, February 1, 2018). Nina linked professional attire to authenticity: the avatar should not pretend to be something other than what it is by using professional attire and not dress up as a nurse. I understand this to be a strategy to both (re)negotiate the differences between humans and machines, and nurses and virtual nurses. For Nina, the humanization of the virtual nurse through professional attire seemed to become a threat to her demarcations between an authentic nurse (human) and an inauthentic nurse (avatar).

Anna raised an interesting issue about credibility and authenticity concerning professional attire for the avatars when she told me about a discussion she had had with the researchers in physiotherapy in her research group. Anna wanted to avoid professional attire that she thought reproduced stereotypical notions of physiotherapists, while the physiotherapists wanted to use attire they thought represented physiotherapists:

Anna: I have been more concerned that it will be stereotypical. Like the smart one always wears glasses. Yes, that makes me anxious. [---] While the

physiotherapists are saying: "But a physiotherapist doesn't look like that!" It's more about their profession.
Author: Yes.
Anna: It's not dressed like a doctor.
Author: No.
Anna: And it's not like wearing a pullover.

(Interview, November 6, 2015)

Anna negotiated professional intelligibility through attire; the physiotherapists want attire they consider will make the virtual physiotherapist easily and credibly recognized as a physiotherapist, while Anna linked this kind of attire to stereotypes—as overly intelligible. For Anna, the challenge lied in handling the balance between professional intelligibility, professional credibility, and professional stereotypes.

I understand authenticity to be negotiations regarding what is considered to be authentic, rather than a question of what is "really" genuine (Bendix, 1997). The informants were negotiating how authentically person-like and professional-like the VHPs should look. Some argued that the human-like embodiments and professional attire made the VHP look more credible as a health professional, while others argued that these human-like and professional-like embodiments tended to concern questions of (in)authenticity: they might risk making the VHP appear too authentic. Here the question of professionalism was negotiated through processes of demarcations between humans and non-humans, and professionals and non-professionals—to be sufficiently human-like and professional-like in order to pass as credible health professional.

Professionalism through diversity: the ambivalence of patients choosing the embodiment of (virtual) health professionals

In this section, I explore the choice of the virtual embodiment from two different perspectives of diversity. Firstly, I explore diversity from the perspective of offering a diverse variety of avatars for the VHPs, considering gender, ethnicity, and age. Secondly, I explore diversity in relation to patients' right to (not) choose the avatar of the VHP. I also present how a discursive struggle over health professionalism between a notion of freedom of choice and a notion of diversity might have implications for health professionalism since within Swedish health care it is not permitted to choose health professionals based on gender and ethnicity.

Several of the informants emphasized the importance of a diverse variety of avatars for VHPs. This made it possible to avoid reproducing stereotypes, in which the choice of avatars is a crucial part. For example, Stella, a representative of The Swedish Municipal Workers' Union, argued that it is important to not "programme prejudices [...] for example, not only make females [avatars] [...] or only make males [avatars] that are associated with technology" (Interview, February 9, 2018). Stella linked the embodiment of the avatars to gender norms and gender prejudices connected to health professionalism and technology. She wanted to break these norms by designing and offering avatars that challenge these norms and prejudices, but she also articulated health professionalism as being a gendered and embodied practice (cf. Hirvonen, 2014; Twigg, 2006).

Another reason for offering a variety of avatars is identification, specifically how patients might be more inclined to comply with the VHP if the avatar looks like the patient to some extent regarding, for example, gender, ethnicity, and age.

In that case, it's important that you might be able to choose which one [avatar] you want […]. If it's like, "yes, I identify with this [avatar]", if this is even possible. For us within physiotherapy, it's important to achieve patient compliance for the treatment.

(Laura, interview, March 23, 2018)

Here, Laura connected patient identification of the avatar with compliance: the patient needs to identify with the virtual physiotherapist in order to comply and follow through with the virtual physiotherapist's exercise programme.

Thus far, the possibility of patients choosing the VHP's avatar has been expressed in positive terms such as avoiding the reproduction of stereotypical ideas and promoting patient identification. However, some of the informants also expressed potential ethical problems with allowing the patient to choose the VHP's avatar: ethical dilemmas that might not only affect the VHPs but also the human health professionals. I found this to be a discursive struggle over health professionalism between a notion of freedom of choice and a notion of diversity. The freedom of choice notion was connected to ideas about person-centred health care, with an emphasis on patient choice that connects to neoliberal ideas about the individual (cf. Mol, 2008; West & Lundgren, 2015). The diversity notion, however, was connected to values about the healthcare sector as a place that promotes diversity and equality for both employees and patients.

For Carl, a nurse and representative of The Swedish Association of Health Professionals, the possibility for the patient to choose an avatar for the VHP was motivated by the patient's sense of safety: "To make you [the patient] feel safe with it [the VHP]" (Interview, February 7, 2018), in which the embodiment of the avatar evokes feelings of safety. I understand this as an expression of the freedom of choice notion articulated with the patients' safety, embodied through the avatar of the virtual nurse. However, Carl also discussed how these positive aspects of choosing the avatar based on the patient feeling safe might also result in a conflict with what I refer to as a notion of diversity in the healthcare sector:

> If we talk about racism and so on, you would usually say that patients should not be able to choose health professionals based on skin colour. But this makes it [the use of avatars] interesting... This aspect cannot be addressed if you want to let the patient create the avatar. Then you may want to affirm these prejudices because then it doesn't really matter. Or does it? [laughing] As long as this [the choice of avatar] leads to a sense of safety [for the patient].
>
> (Interview, February 7, 2018)

Firstly, Carl articulated a conflict between choice and diversity in which the patient's choice of avatar is motivated by feeling safe. However, this sense of feeling safe might boost, or be motivated by, racial prejudice. I understand this to be a potential conflict of interest between a patient's right to choose and the right of health professionals to be protected from patients' racism and racial prejudice (cf. Andersson, 2010). Secondly, Carl tried to handle this conflict by differentiating a virtual nurse from a human nurse: to choose an avatar based on the patient's preferences is not necessarily a threat towards values of diversity for the health professionals because the VHP is not a human health professional (cf. Graber & Graber, 2011).

Previously, I mentioned how a variety of avatar options for the VHP, based on gender and ethnicity, was motivated to avoid the reproduction of stereotypical embodiments. However, in the negotiation of choice – whether it is a question of patient safety or potential discrimination against health professionals – this might actually reproduce these stereotypical embodiments because of the risk of patients choosing their avatar based on discriminatory grounds. Or, as expressed by Stella: "We don't want a [health care] where individuality or diversity in health care, which is such a diversity-oriented sector, disappears"

(Interview, February 9, 2018)

Conclusion

In this paper, I explored how health professionalism was (re)negotiated through notions of embodiments of VHPs (avatars). I found notions of subjectification, authenticity, and diversity as central themes in the informants' negotiations of health professionalism.

Subjectification involved negotiations of VHPs as (non)subjects where the informants expressed notions of the avatars subjectifying the VHPs. The embodiment of VHPs through avatars could create a sense of talking to someone rather than something and declaring who this someone was (e.g., virtual nurse). Closely linked to who this someone was the question of what this someone should look like, where the use of human avatars and professional attire for the VHP were discussed. Some of the informants considered the use of human-like avatars and professional attire to make the VHP more credible as a health professional, while others thought of these embodiments as inauthentic because VHPs are not authentic humans or health professionals and should therefore not be embodied accordingly. However, rather than totally condemning the use of human-like avatars or professional attire, I found the informants mainly negotiating how human-like and professional-like the VHPs should look. In other words, the informants were balancing credibility and (in)authenticity in order to find a way of making the VHPs sufficiently human-like and professional-like, to make them credibly professionally but inauthentically human.

The choice of embodiment for the VHPs was connected to two different notions of diversity: offering a variety of options of different avatars regarding ethnicity, gender, and age, and promoting and protecting values of diversity and equality in health care. The former notion was concerned with how a variety of avatar options could both avoid the reproduction of stereotypes of, for example, gender, and make it easier for patients to identify with the VHP. The latter notion was discussed in terms of how patients who are able to choose the avatar might feel safer with the VHP, but that it might also be a potential threat towards equality and diversity for health professionals. I found a discursive struggle over health professionalism between two notions: a notion of freedom of choice and a notion of diversity (e.g., Andersson, 2010). The former promoted the users choosing the avatar motivated by making the user feel safe and more inclined to participate in health-enhancing activities, while the latter was concerned with the risk of patients choosing what they feel safe with, possibly based on prejudices regarding gender and ethnicity (e.g., Graber & Graber, 2011).

Mol (2008) argues that the "logic of choice" is part of a global tendency of person-centred health care focused on patient choice (see also West & Lundgren, 2015). I found this logic of choice being similar to the notion of freedom of choice, in which the patient's choice of avatar was an important part of healthcare work. This logic is an example of how health care has been marketized (Glynos, 2014) through a focus on the needs and preferences of the individual through personalization and freedom of choice (Mol, 2008; West & Lundgren, 2015). However, if the patient's choice of avatar is based on prejudices and discrimination, this might actually result in racism towards health professionals, especially due to the hybridization of health care with offline embodiments (human health professionals) and online embodiments (avatars of the VHPs) and the blurring of lines between these embodiments (Hansson & Bjarnason, 2018; Johansson, 2014). This can also be understood as a neoliberal logic of how quality and the patient's freedom of choice have been articulated together as positive values of health care and are therefore hard to criticize (Dahl, 2011), resulting in a dilemma between freedom of choice for patients and diversity within health care for health professionals (Andersson, 2010). In other words, the patients that choose avatars might actually threaten health professionalism if diversity and equality are discursively subordinated patient choice, resulting in rearticulations of both health professionalism discourses and patient discourses (Hansson & Bjarnason, 2018).

I understand the notions of subjectification, authenticity and diversity to be processes of creating differences and similarities between humans and machines, though mainly balancing these processes in order to make VHP sufficiently professional-like. In other words, the embodiments of VHPs were articulated with human-likeness and machine-likeness. Thus, the embodiment of VHPs might challenge notions of what health professionalism could be (e.g., Hayles, 1999; Hansson & Bjarnason, 2018; Lindberg & Carlsson, 2018; Lupton, 2014): expectations on how health professionals should act, how health care is embodied, and challenging notions of the human body and the professional body.

The embodiment of VHPs illustrates how health professionalism is already embodied through notions of professional attire, norms on gender, ethnicity, age, (human) bodies carrying out care work etc. I understand health professionalism to be embodied and I agree with Hirvonen (2014) that health care is highly embodied and gendered, even though it is partially carried out by digital health technologies. Health professionals are very much embodied, even if they are virtually embodied (Hayles, 1999; Lundin & Åkesson, 1999), where the informants negotiated how VHPs should be embodied by avatars: if they should look human, wear professional attire and how the avatars were gendered, ethnified and aged – embodied aspects of health professionalism. Thus, it is important to study technologies and what norms they (re)produce (Lupton, 2014).

Future research might involve studying interactions between VHPs and patients, in order to explore the patients' meaning-makings of the avatars, articulations of health professionalism and patient roles, and possible conflicting interests.

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