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"Sensory Ordering" in Nurses' Clinical Decision-Making:

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Abstract

The objective of this article is to present a study about the constitutive role of sensory experiences in clinical decision-making. The methodology is based on a series of focus groups (narrative approach) with nurses in various hospital departments. Our study examines "sensory work" in clinical decision-making in order to reveal its specificity in the clinical work of nurses. Nurses shared stories – in focus groups - about the influence of senses in clinical decision-making. The analysis of clinical narratives helped to identify different interaction situations revealing the "sensory work" that underlines clinical decision-making. We put the emphasis on the spectrum of sensory activities and their interaction during a clinical decision-making. One specific contribution of our study is to makes visible the "sensory ordering" constituted through the interaction performed by nurses during a clinical assessment.

Keywords: Senses, Sensory ordering, Narrative, Clinical-Decision Making, Hospital, Nurses

Introduction

We make use of our senses on a daily basis. We smell the odour of a cake baking in the oven when it seems on the verge of burning; we touch a leather sofa to feel its quality; we listen to the sound of the river from afar indicating the way to follow. All these sensory experiences help us to make decisions, make sense of our surroundings or simply get a better appreciation for our environment. But what about the use of senses in a workplace environment and especially in healthcare settings where many patients need to be treated on a daily basis? In this paper, we will explore this crucial issue by highlighting how sensory experiences comprise an integral part of clinical decision-making (Sterne 2003; Maslen 2015;

Howes and Classen 2013). It is timely to address "the sensorium at work"[1] (Hockey and Allen-Collinson 2009) especially in healthcare settings and to highlight the irremediably embodied and sensory character of nurses' clinical decision-making. As Mol (2008:39) clearly indicates: "[l]ong before machines are put to use, clinicians diagnose with their senses. They notice posture, muscle tone and bruises; they hear sadness in a tone of voice or the signs of impaired breathing; they feel for the pulse, for lumps; and they may smell metabolic disturbances". Clinicians' senses are constantly engaged (Goodwin 2010), as they are indispensable to their judgments about health and illness. Through senses information is partially collected, and this sensing is a process of knowing (Heiberg Engel 2007; Gardner and Williams 2015).

At the time of a clinical exam, the clinician uses his body, his senses in order to ensue with his physical examination. Accordingly, Fristalon and Durand (2008:285) note that the activities of healthcare professionals integrate "actions in the situation from which to glean various indications related to their professional or extra-professional knowledge. […] It is in this way that the white pallor [of a patient's skin] constitutes a sign that makes him conceive, then refute the suspicion of a bleeding problem in addition to a potential cardiac problem". In other words, clinicians mobilize their senses in order to proceed to an interpretative activity that allows a search for signs that will either validate or invalidate their hypotheses or even their initial intuition. The work of Tanner (2006) reinforces this idea; for this researcher, appropriate clinical judgment certainly requires not only rational elements (comprehension of physiopathology and diagnostic aspects of the illness), but also sensory and emotional elements. Other researchers mention that clinical decision-making is multidimensional (Paley 2004; Coget and Keller 2010); that is to say, clinicians must mobilize not only their rational

[1] As mentioned by Lupton and Maslen (2017: 1560): "Many scholars in sensory studies now contend that the senses must be understood as always and inevitably working together as part of multisensory life-worlds".

knowledge, but must also be capable of producing "sensible knowledge"[2] (Strati 2007) and implementing it in their clinical reasoning processes. Sensible knowledge thus emerges from information perceived by the senses and constructed in and by experience. In other words, this knowledge comes from the particular relationship that the body, the senses have with the context of work where activities of clinicians occur. Thus, it is acknowledged that nurses in particular mobilize their senses in clinical decision-making (Benner 1984; Benner and Tanner 1987; Draper 2014; Donetto et al. 2017). However, these studies do not clearly explain how senses directly play an active role in clinical decision-making and how these senses are collectively communicated. We cannot reduce clinical decision-making to a rational and objective application of scientific knowledge and principles. It is a complex process involving multiple interacting and sensing dimensions (Higgs and Jones 2008; Lupton and Maslen 2017).

Even if some studies recognize that clinical decision-making integrates (or should integrate) a sensory dimension (Bleakey et al. 2003), this crucial dimension is not analyzed in detail. However, "research on sensory work in contemporary healthcare contexts is emerging in sociology of diagnosis and sciences and technology studies such as the dual use of senses and tests, and the delegation of sensory work" (Maslen 2016:173).

Accordingly, the main objective of this paper is to investigate the constitutive role of sensory experiences in nurses' clinical decision-making by understanding: How is the process of clinical decision-making influenced and shaped by the sensory experiences? "In the clinical setting, nurses are continually faced with demands to make decisions […] and the process is viewed as complex" (Bjørk and Hamilton 2011:1). Thus, we aim to produce a

[2] Following Strati (2007:62), sensible knowledge is "what is perceived through the senses, judged through the senses, and produced and reproduced through the senses. It generates dialectical relations with action". As such, the whole human body becomes part of clinical practices through which action and knowledge are mutually constituted.

better understanding of how nurses used their senses to make a decision as well as to make sense of their work collectively. Based on a series of focus groups (grounded in a narrative approach) with nurses in diverse hospital services (ICU, surgery, emergency, etc.), our study examines the "sensory work" of clinical decision-making (Maslen 2017). We will thus contribute to the literature on senses at work (Gherardi et al. 2013; Vannini, Waskul, and Gottschalk, 2013) by examining in detail the sensory dimension of nurses' clinical decision-making.

From "Sensory Work" to "Somatic Work": Making Visible the Various Forms of Sensing

In the context of hospitals, nurses develop a floating attention in order to have a constant preoccupation for some changes in their environment and to be able to act and decide quickly. Therefore, abnormal noise (in a patient's breathing), a change in a patient's skin colour, a patient who no longer responds to stimuli, are all sensory cues that will likely attract nurses' attention. It is a form of awareness that tracks sensory signs in the context of a clinical situation, allowing anticipating medical changes and preventing failures. In this article, we build on two complementary ideas to study the sensory dimension of nurses' clinical decision-making. On the one hand, we mobilize the concept of "sensory work" developed by Maslen (2016) for describing the process of "sensory assessments and the way they are communicated" (Lupton and Maslen, 2017:1558). On the other hand, we use the concept of "somatic work" developed by Vannini and collaborators (Waskul and Vannini 2008; Vannini et al. 2010; Vannini et al. 2013). "Somatic work" is an interactional process where people actively make sense of their physical and social environment. Both concepts have a shared premise stipulating that senses are socially constructed and thus propose to

study sensing as an active and interpretive process. In this way, sensing and sense-making are mutually emergent in active and reflexive interactions.

Accordingly, the senses are constantly engaged, taking in the "sensescape" (Classen and Howes 2006) of the human body, but also by integrating various forms of sensing as described by Maslen (2016). For example, the patients' body could be auscultated with a stethoscope (mediated sensing) to hear the breath of the patient. The breath could be noisy or wheezy and give some sensory cues to enact a hypothesis such as lung obstruction. Nurses' sensory work is therefore part of the clinical decision-making and includes mediated or unmediated sensing (clinical exam using techniques such as palpating or observing body movements).

Waskul and Vannini (2008:53) argue that "sensation (noun) is emergent in joint acts of sensing (verb). To sense, in other words, is to make sense, and sense making entails what we call 'somatic work'". For Vannini and collaborators any sensation is performative (Austin 1975; Searle 1968) and "sensory acts" are produced in various situations. These authors invite us to understand the performative dimension of our sensory experiences such as "sound acts" or "olfactory acts".

As mentioned by Vannini et al. (2013:129), "not all sensations act. When sensations act, and prompt further action or not, is contingent on the convergence of various factors, such as the material properties of the sensation themselves, the auspices in which they materialize, as well as the stocks of sensory knowledge available to the individual who experience them, find them meaningful, and respond to them". In sum, sensations have a performative potential when people assign them meaning and such potential is enacted through "somatic work". More specifically, "somatic work refers to a diverse range of reflexive, symbolic, iconic, and indexical sense-making experiences and practical activities" (Waskul and Vannini 2008: 54). The meaning of sensory acts resides in the very response

given to these acts. It is the perlocutionary effect of the sensory act that we must integrate in the analysis of nurses' sensory work. The concept of "somatic work" will thus contribute to understanding how nurses interpret, create and communicate somatic sensations that are pertinent for clinical assessment. In other words, nurses perform "somatic work" according to the many negotiated clinical rules that make sense for other nurses as well as physicians.

In our empirical case, "sensory work" and "somatic work" are useful concepts for explaining how nurse's clinical decision-making can integrate senses in the process of clinical and sensory assessment.

Methods and Procedures

Setting and Sampling

The participants of this research included nurses in clinical positions with a minimum of one year of experience and working for a Canadian hospital in an urban setting. Purposive sampling has been used to include nurses with different backgrounds and experiences: triage nurses, registered nurses, and clinical nurse educators in various services such as emergency, surgery, Intensive Care Unit, geriatric (table 1).

Table. 1 Characteristics of the participants

[Insert Table 1]

Narrative Approach, Data Collected and Analysis

In his essay *Actual Minds, Possible worlds* (1986) social science scholar Jérôme Bruner contrasts two epistemologies and ways of looking at the world (paradigms). He suggests that science has generally favoured a logico-scientific approach (deductive, rational) to the detriment of an approach that would put more emphasis on narratives and stories. Such an approach sees the production of knowledge as a temporally organized manifestation where sequences of events/information make sense from their positioning and mutual relations

(Clandinin 2007). Ricoeur (1984) translated this narrative-sequencing occurrence with the term "emplotment", a phenomenon that allows us to organize the flow of experiments in sequences from within a time-space continuum (Tsoukas and Hatch 2001:997). Accordingly, narratives (and storytelling) play a crucial role in organizing as "individuals use them to determine, justify and guide their lives" (Rantakari and Vaara 2016:273).

More specifically, a narrative approach focuses on "how people collectively or individually create, report, or make sense of the evolving aspects of a situation" (Cooren 2015:39). It emphasizes the constitutive nature of stories in our existence, that is, the many ways the very act of storytelling does not only mirror our reality but creates it as well (Spector-Mersel 2010). Through narrative storytelling, we can therefore gain a sense of continuity and identity, a process that allows the emergence of what is called *stories told*, referring to the "descriptions and interpretations that persons create regarding their lived experience" (Barge 2004 in Cooren 2015:42).

These stories told happen to enact social reality on many levels: personal (self-narratives), collective (narratives of groups, organizations, nations), cultural ("honourable" key plots) and universal (e.g., cognitive processes) (Spector-Mersel 2010). In fact, storytelling act has a meaning-making function "because of the ways stories can intertwine biological and cultural values with a temporal dynamics - simply put, a sequence of action performed by (or events affecting) an experiencing consciousness" (Caracciolo 2012:368).

Mobilizing a narrative approach allows to focus our attention on storytelling and to show how medical practice is also an interpretative practice (Bansler et al. 2016). As Hunter (1996:310) suggests: "narrative is thus the principal medium of reasoning in medicine; it is not only the form taken by the expert's stock of clinical experience, it represents the process of clinical reasoning itself".

Narratives and storytelling have been used both as a framework and a methodological apparatus in organizational studies (Czarniawska 2004). Yet, despite the thriving literature (see Vaara, Sonenshein, and Boje 2016 for a recent review), affects, senses and bodies evoked through collective storytelling and the way they play a constitutive role in organizing have not been explored in detail. Exceptionally, Cunliffe and Coupland (2012) propose to foresee the process of sense-making as an embodied narrative. They suggest that we make our own experiences more appreciable with embodied interpretations of others and through interactions with them. With this research, we thus intend to fill this gap by showing how nurses' senses are directly contributing to clinical decision-making and how it is enacted through collective storytelling.

Our narrative approach is based on a series of focus groups that lasted approximately 1 hour each[3] (figure 1). We will specifically present an analysis of stories told by nurses, emphasizing the importance of sensory experiences in decision-making and the constitutive role of storytelling in sharing of sensory experiences as well as the construction of clinical judgment.

Figure 1. Overview of the data collection process

[Insert Figure 1]

The first series of focus groups (Focus Groups #1) focused on lived experiences of nursing situations where senses were engaged in clinical decision-making. We used a narrative approach to reveal the nurses' experience and to understand how they interpreted and made sense of their experience. During focus groups, the nurses shared stories about the influence and weight of senses and the crucial role they seem to play in clinical decision-making (Kelly and Howie 2007). By encouraging nurses to collectively tell their stories, we

[3] We had to adapt the size and duration of focus groups in order to facilitate the recruitment of nurses working at the hospital. The focus groups were therefore held on the nurses' lunch hour, given their very busy work schedules.

allowed them to make sense of their sensations, thoughts and emotions. In our study, stories were used to help nurses find meaning in their sensory experiences taken from clinical context (Devik, Enmarker, and Hellzen 2013). As written by Hunter and Hunter (2006), the sharing of stories provides a powerful tool for collective reflection on the "inside" aspects of practices.

The analysis of "clinical stories" contributed to the identification of different interaction situations that revealed the "sensory work" involved in clinical decision-making. These various stories allow highlighting situations where senses were central in decision-making, permitting nurses to produce a shared common understanding about it. For nurses, the telling of and listening to stories provided a means through which the process of sense-making was possible as well as a vehicle for reflexive thinking.

The focus groups #1 started with a presentation of individual stories (recorded individually before the focus group) followed by the researcher asking some questions such as: Why did you choose this story? Why is this story representative of your sensory experience? What does this story reveal about the role of senses in clinical decision-making? How your senses made a difference in your clinical decision? etc. The participants were encouraged to share illustrative examples of their decision-making process where they use their senses (touching, hearing, seeing, smelling). The nurses began telling their stories and progressively shared opinions, impressions, and similar experiences, therefore creating an ongoing conversation about their common sensory experiences.

The focus groups #1 were video recorded and transcribed verbatim. For the first series of focus groups, the transcribed data were analyzed using qualitative content analysis in order to identify specific interaction situations involving the senses. The nurses defined the "interaction situations" during the focus groups. The analysis helped us to identify these

situations enacted by the nurses. The definition of specific interaction situations involving senses emerged through a mutual interpretation of the shared stories.

For the second series of focus groups (Focus Groups #2), three personas[4] were developed (based on the previous analyses) and used to stimulate discussion and collective reflexivity (table 2).

Table 2. Personas created to stimulate the reflexive conversation

[Insert Table 2]

With these focus groups, we wanted to better understand the "sensory work" and "somatic work" engaged in the process of clinical decision-making. The focus groups started with a presentation of each persona by the researcher after which she asked the following questions: What do you think the nurse will do in this situation? What actions will she/he take? In your opinion, which senses will be involved? And how will they guide the nurse's clinical judgment?

Results

"Interaction Situations" Identified through the Stories Shared Collectively

During the focus groups #1, nurses presented many interaction situations in which their senses made a difference in their clinical decision-making. The interaction situations described below illustrate the multiplicity of clinical contexts in which the nurses' senses are mobilized to support clinical decision-making. These situations have been identified by nurses as being significant and representative of their working environment.

[4] The *Personas* are fictitious characters that represent, in our case, patients put in specific interaction situations. These *Personas* were created from the narrations shared by nurses during the first series of focus groups.

Situation 1: A gap between seeing/touching/smelling (nurse) and talking (patient)

During the focus group, nurses shared stories about the perception of specific odors that alerted them while caregivers or patients did not mention the smelling of odor (extract 1). In this particular excerpt we observe a "dialectic relation" of the senses in a complementary correspondence between the smell and the sight.

Extract 1: The performative dimension of "olfactory act"

"[...] the sight there, because certainly that's going to be the first sense, unless there's something going on with that madam, she had fecal incontinence, then when you're coming to the unit, you did not even draw the curtain but you know there's something going on. Besides that, the vision should be first, I think."

Another extract illustrates the process of co-construction of meaning (a cooperative process enacted during the focus group) in the narrative of the nurses:

Nurse 3: uh, even sometimes someone who smells very strong (...)

Nurse 2: unless there is necrosis, for sure it's really a necrotic wound, for sure. Even if (the person) has not washed for two weeks, we can smell it.

In describing these types of interaction situations, nurses underlined the importance of smelling odors, observing facial expressions, body movements and gestures, which represent as many sources of information. As stated by nurses, particular odors are sometimes recognized as indicants of a specific disease (diabetes) or infections (E. coli, wound infections). The nurses proceed to an interpretative work to make sense of smelling. This process accurately illustrates the concept of "somatic work" developed by Vannini and collaborators, that is, how nurses make sense of sensations and how they attribute meaning to them in the context of a clinical examination. "Somatic work" in this case is fashioned by clinical context and circumstances. The process of interpretation is marked by an evaluation

of the significance of specific odors (because some odors are related to a specific disease and the nurses seem to know that).

Nurses often expressed the importance of developing a visual sensitivity to recognize and to interpret some "body signs" (facial expression, bodily movement, etc.) communicated by patients. Often, nurses are in situations where the patient expresses one thing (she/he is fine) while they see another thing (she/he is not fine). There is a tension, a dissonance between what is said by the patient and what is seen by the nurse. This gap between seeing body signs and information gathered by talking with the patient are interaction situations frequently described by nurses (extract 2). Nurses say they are vigilant about this type of situation when interacting with the patient, because it invites them to use different communication strategies to obtain more information such as reformulation, active listening, questioning, etc.

Extract 2 illustrates how "seeing" contributes to go beyond the "evidence" of what can be called medical "common sense":

"*You are looking, you are looking at the patient's posture, you are looking at his facies, you are looking, you know, how he's responding. If you say, 'Hi, how are you doing?' Are you in pain? Some cardiac patients, those in cardio care, they say 'No.' But you see he is touching his chest or his belly, and that he's not fine. (Nurse 4)*"

The challenge for nurses is to develop an ability to see significant events or phenomena, but also to discuss, interpret what is seen, to understand why it is important to turn their attention to such an event rather than another. In other words, a sense-making process is required for nurses to sustain their clinical decision.

Situation 2: A gap between objective data (disembodied data) and feeling (embodied data)

The nurses described the dual use of the senses (embodied data) and mediated information about the patient such as pulses, saturation, etc. During focus groups, nurses described interaction situations in which there is a gap between the objective data collected by medical devices (EEG, pulses) and their sensory experiences (blue lips, noisy breath, etc.). Nurses sometimes were skeptical of the so-called "objective data" provided by the different technological tools used in their clinical practice. The sensory work, the sight or the touch, as we will see in the following excerpt, is mobilized to overcome their doubts and confirm a diagnosis.

Extract 3:

Nurse 3: This is about a patient. I can't remember why he was admitted, but he was waiting to have heart surgery upstairs. These patients usually take anticlotting medications. I was working in the evening (my shift) ends at 11:30 am, I think around 5 or 6 am I went to give him his anticlotting, 'Lovenom,' that's the injection we give. Later he rang saying that he had this tingling in this arm, then in his leg, etc. I asked myself, 'What is this?' I take his vital signs, they were fine, good saturation, all the data in the monitor looked OK, but I knew something was not normal, based on what he just told me.

[*later during the conversation*]

Nurse 7: A patient arrives with chest pain. Yes, that's it, with chest pain or some other reason. When you take the pulse of a patient, you get it with a saturometer, so the saturometer is kind of mechanical. It's a value that varies because sometimes it's well-adjusted, sometimes not. By getting the radial through the touch, we can determine whether the pulse is regular or not. If the pulse is not regular, I'll ask the patient if he had irregular pulse, if he had arrhythmia, if he takes medications for arrhythmia.

The technologies allow to create a distance with the patient's body. However, these situations seem to encourage nurses to investigate further, to better understand this gap between objective data and their senses. Nurses need to rely on the dual yet complimentary use of the senses and objective data generated by medical devices or technologies. As mentioned by Maslen (2016), this becomes particularly important in new healthcare environments such as telemedicine or telehealth. Accordingly, sensing is a social practice involving bodies and technologies; a process "whereby a somatic perception undergoes a reflexive interpretation" (Waskul and Vannini 2008:58).

Situation 3: A "critical look" to limit mistakes

Nurses also described the limitations of sensory experiences that can be potentially misleading, hence the importance of developing a more "critical look" (extract 4). This critical look will result in additional investigations (e.g. providing objective data, ordering tests) or by mobilizing their knowledge. Nurses recommended coupling their sensory experiences with their objective and rational knowledge to develop a "critical look" to limit mistakes or wrong interpretations (extract 4).

Extract 4:

Nurse 1: Often, for patients who are hot we take their temperature, they don't have fever, but I have hands way too cold…

Nurse 2: Everybody (the patients) feels hot.

Nurse 1: That's why I touch them.

Nurse 2: Because sometimes people are hot, but they don't have fever. So, we wonder, we look, we touch the patient […] For sure, legs with venous insufficiency are going to be red, hot, we are tempted to say 'infection' (raise her arms); it is venous insufficiency, simply exacerbated. Huh… but at that point, what my senses are telling me seems discordant, it looks clinically like an infection, but it's not an infection.

Situation 4: The risk of sensory stigma

Nurses shared common stories in which they emphasize the weight of considering an apparent disturbing sensory experience in their clinical judgment. They pointed out the importance of not being influenced by their own prejudices that could lead them to underestimate a disturbing, unpleasant smell (extract 5).

Extract 5: A patient (homeless people) presented with an infected wound in the emergency room and the nurses tell and share the following story:

Then the resident who had done the physical examination, then she noted that everything was fine. So, she did not even, like, it smelled there… At the fourth one, there, we looked at each other […] So, she lacked experience… "Why does he smell like that? Maybe it's been a few days he has not washed? No, it can't be that: it's not a scent of someone who reeks of sweat or who isn't clean, but it's like, it's more than that." She said, "Sir, do you have any wounds?" He said no. Hey, that was it, the examination was over. […] Because the nurse, right away, she called us, when she removed the sock. (Nurse 14)

During the focus group, nurses evoked some sensory biases that have implications for how they interact with the patient and how they make a clinical decision. The nurses admitted to judging some people negatively based on olfactory impressions and, for example, an unpleasant odor can result in an olfactory stigma. The nurses described some situations with homeless people at the Emergency and described the risk to develop sensory stigma that influences their judgment in the wrong way.

Making Visible the "Sensory Ordering" of Clinical Exam

The analysis of the focus groups #2 reveals the sensory work accomplished by nurses in specific interaction situations (represented by the 3 Personas). The presentation of the 3 Personas contributed to highlight the process of assessment of patients via the senses, but also

illustrate how a form of "sensory ordering" was performed by the nurses in specific situations.

Clinical decision-making in nursing is rooted in the ability to develop a sensibility to integrate sensory experiences in the clinical judgment. In focus groups, nurses described the decisions they took as a response to sensory cues that made sense progressively during their clinical activity. Understanding the various sensory acts performed by nurses is crucial to grasp the progressive constitution of a specific "sensory ordering".

In order to better describe what we call a "sensory ordering", that is, the many ways senses appear to give order or lead to a specific alignment in regards to decision-making, we will examine the sensory work and the somatic work produced by nurses with the persona Mr. Roger (Extract 6).

Extract 6:

Nurse 1: She will auscult (the patient), and watch the respiratory data [...]

The first question to ask: do you have difficulty breathing? How are you feeling? Are you (feeling) different? Then we must take the vital signs again, the saturation even the one that is on the monitor, [...] X said to test, make sure that…

Nurse 3: The sight, the sight then the hearing, the touch, besides the auscultation, it is…uh there is no sound, unless ...

Nurse 4: Also, the color of the skin [...] and at 38 you really ask the questions directly to him there.

Nurse 3: Because in cardiac patients… the pain in a young man is not (that) bad, but really the throat or the left arm, but, you know, if he has pain in the lower back, it can be the heart. If he feels pain in the right hand, it can be cardiac. So as a cardiac, you really have to look.

Nurse 2: I will look under the blankets to see the legs. Do you usually have swelling legs? Do you usually have big legs? This swelling, is it normal?

In the extract 6, we observe how the ordering process is actually accomplished in a sequential form during a conversation among nurses. In this specific situation, nurses firstly used direct sensing (visual cues as the colour of the skin, swelling legs) and mediated sensing (listen to the lung). The nurses have the ability to perceive specific sounds that got their attention. After what, they proposed to ask questions to the patient but it seems a little bit complicated in this situation because the patient could be intubated. Nevertheless, we can witness that sensing via narratives is integrated in the process of assessment. By making the decision to call a respiratory therapist for an in-depth evaluation of the breath, the nurses considered sensing via body agency. In this process, the nurses try to collect some evidence to share with the physician, knowing that it represents a challenge in regards to sensible knowledge (Strati 2007) produced through "sensory acts". In other words, translating senses in a language that make sense for the physician or any other colleague is not an easy task.

The figure 2 illustrates the sensory work accomplished by nurses confronted to the interaction situation involving Mr. Roger (Persona 2). As mentioned previously, this situation makes visible the "sensory ordering" constituted through the interaction. With this, we wish to underline the sensory dimension of clinical decision and how the course of "sensory acts" (sound acts, visual acts, etc.) directly contributes to the emergence of a mutually meaningful constitution of evidence for both nurses and physicians. In other words, a "sensory ordering" is constituted through the various "sensory acts" to which nurses gradually attribute meaning in the context of the situation.

Figure 2 Making visible a "sensory ordering"

[Insert Figure 2]

By revealing a "sensory ordering", we also want to underline the spectrum of sensory activity and their interaction in the process of clinical decision-making. The senses of touch, sight, smell and hearing and the various forms of sensing (direct, mediated, via narratives,

body agency or medical devices) seem to play an equivalent role during sensory work. Our findings highlight the diverse ways in which nurses rely on their senses in clinical work, as well as the translations of their sensing to concrete evidence by relying on the dual uses of embodied (sensing) and disembodied data (produced by medical devices, tests).

Nurses' clinical decision-making is an embodied (e.g. direct sensing, body agency) and mediated action (e.g. sensing by narratives, mediated sensing) involving various "sensory acts" that help to grasp the working of a specific "sensory ordering" in this interactional situation. The constitution of a "sensory ordering" can support the process of knowing by engaging the nurses' senses in a constant matter.

As the figure 2 shows, sensory work is mainly a mediated phenomenon. Senses have to be expressed and materialized through something or someone in order to be salient in the decision-making process. As mentioned by Vannini et al. (2013), we need to follow the performative dimension of each sensory acts to understand the process of sense-making. For instance, if a patient is not feeling well because of possible digestive problems, this sensation must be expressed and voiced through words (as mentioned by Vannini, sensations have elocutionary power), a form of materialization that helps to further investigate the possible problem in question (perlocutionary). It's important to grasp the performative dimension of each sensory act to better understand how sensory ordering contributes to clinical decision-making. As we have seen in the focus groups, the ordering corresponds to an investigative logic that through a sequencing of the senses contributes to the emergence of meaning. The analyses of Mr. Rogers' case have enabled us to understand that sensory work contributes to producing and sharing knowledge about the situation with the physician. In order to accomplish this, the nurses are engaged in producing "evidence" that enables them to share their sensory experiences and clinical judgment with the physician. But sharing pertinent evidence is a form of translation, materialization of the sensible knowledge produced during

the process of assessment and the somatic work. This process is founded on a system of intermediary mediations such as language, written words and objective data generated by medical devices or laboratory.

One central question that emerges from our study is how sensory experiences are shared between nurses and physicians. We tend to agree with Strati (2000:13-14) who claims that: "The network of sensory perception faculties of both organizational actors and organization scholars produces knowledge that is not entirely verbal, nor entirely sayable. Other languages intervene, from visual to gestural, and other knowledge-creating processes, from intuitive to evocative". The process of materialization of sensing through words that makes senses for physicians is a challenge for the nurses because they need to connect their sensory experiences with the data produced by the medical devices or lab results. The nurses make an interpretation by connecting embodied and disembodied data to produce evidence in a language that will make sense for the physicians. This translation is a process of communication that contributes to the creation of a mutual and shared understanding. The quest for a shared understanding operates throughout the creation of evidence that participates in the progressive construction of a common knowledge. It is through the discursive construction of meaning that the many actors contribute with each their own knowledge, rendering sensory experiences visible and accessible to others. The communication between nurses and physicians is not only a simple matter of transmission of information from an active emitter (the nurse) to a receiver (the physician), but rather a collective construct of a mutual intelligibility.

Discussion

The main purpose of this paper was to examine sensory work enacted by nurses through their decision-making processes. Clinical decision-making in nursing activities is

rooted in the ability to develop a specific sensibility that allows integrating sensory experiences in the clinical judgment. All clinical reasoning and decision-making are based on a relation, a communication, and a close collaboration with the patient (Heritage and Maynard 2006). “In practice, nurses are always faced with sudden cases that need to be dealt with rapidly. In such situations, the expert nurse uses an intuitive approach to both their judgments and decisions and without an overt reasoning process” (Li and Fawcett 2014:447). Nurses must thus learn to evaluate the state of health of a patient by interpreting hints, symptoms, and non-verbal signs (Chapados, Audétat, and Laurin 2014). In focus groups, nurses described the decisions they made as a response to sensory cues that made sense progressively during their clinical activity. For the nurses, a disturbing smell must be considered in the clinical exam. Different clinical situations have different “smell scapes” (Classen, Howes, and Synnott 1994:97), i.e. various odours that change according to the disease presentation. Accordingly, our results reinforce the idea that sensory aspects of clinical decision-making are fully required to interpret the situation and to anticipate the unexpected. And, “knowing for nurses and doctors incorporates the activity of working with the practical and general understandings of their practice and institutional knowledge – including patient and treatment details – through their doings, sayings and beings. Knowing is not only cognitive, as nurses and doctors feel, see, hear and sense things about their patients, their colleagues and their work: knowing is also embodied and affective” (Manidis 2013:33). One specific contribution of our study is the emphasis on both the spectrum and ordering of sensory activities and their interaction rather than one single sense. Our study pointed out the non-hierarchical ranking of the senses. All senses (touch, sight, smell and hearing) play a complementary role during the clinical assessment; but it is important to follow the performative dimension of all “sensory acts” involved in the somatic work as well as the ordering they appear to create.

In nursing literature (Paley 2004), the sensory aspect of clinical decision-making has been described as "intuition" (Benner and Tanner 1997), "intuitive grasp" (Tanner 1984) or "intuitive knowing" (Agan 1987); but the notion of "intuition" is unmistakably related to the process of "sensory ordering" described above. In an article, Coget and Keller (2010) state that in their decision-making, clinicians must find a balance between, on the one hand, decisions based on intuition, and on the other, rationally derived decisions. According to Pelaccia (2014), the "intuitive system" mobilizes immediately accessible information (visual, in particular) and uses contextual data. Numerous studies assessing the role of intuition in nursing practice illustrate that it is related to the perception of some elements present in context. More so, it represents a capacity for nurses to see and observe certain elements that make sense in a direct interaction with a patient (Benner and Tanner 1987; Benner 2000). In these studies, the role of intuition in clinical decision-making is recognized as using sensory cues produced in situ. Accordingly, intuition is approached as a: "direct apprehension of a situation based upon a background of similar and dissimilar situations and embodied intelligence and skill" (Benner 1984:295). It thus refers to an embedded form of intelligence that originates from the sensory experiences of nurses (Benner and Tanner 1987). By describing the sensory ordering performed by nurses in specific clinical situations, our study shows how clinical judgment is progressively developed during interactions involving different forms of "sensory acts" and "sensing." What the literature calls "intuition" is in fact a complex process of "sensory ordering", which builds up on our ability to give meaning to sensory experiences. And as mentioned previously, somatic work is fundamental to the clinical work of nurses and is based on their ability to integrate both information produced by the senses and medical technologies.

More specifically, our study contributes to identifying the specificity of nurses' sensory work as an embodied and mediated activity. The senses are indispensable to nurses'

judgments of health and illness because information collected via the body, the senses allow them to make sense progressively thought a sensory ordering. This sensory ordering involves various forms of "sensing" (direct sensing, mediated sensing, sensing via medical devices) and "somatic work" that will play an interwoven role in clinical decision-making process. For that reason, the main contribution of our study resides in the revelation of this sensory ordering by underlining its importance on two levels. First, this sensory ordering plays a constitutive role in the emergence of sensible knowledge from which a clinical decision will be made. Secondly, this sensory ordering helps to support the production of evidence for the physician and thus to create a shared interpretation of the clinical situation.

Conclusion

The study presented in this paper extends our ways of understanding clinical decision-making by integrating the sensory dimension. Our findings support the idea developed by Maslen (2016, 2017) about the "sensory work" and illustrate how nurses are responsive to contexts and situations, taking into account their sensory experiences to make an embodied clinical decision. And as mentioned by Goodwin (2014), clinical decision-making remains a practical and embodied action. We need to recognize the constitutive role played by the sensory experiences in clinical decision-making and our results (e.g. the illustration of the sensory ordering) could contribute to developing training situations (e.g. scenario for simulation) involving the senses. One challenge for nurses is to develop an ability to identify significant sensory cues, but also to discuss, interpret what is seen and to better understand why it is crucial to give attention to such a sensory experience rather than another. Another apparent challenge for nurses is the translation of various forms of sensing into concrete evidence that would make sense for physicians. We found that nurses must develop better capacity to translate their sensing into appealing evidence for physicians. It is a complex

process of communication that needs a more in-depth investigation in order to support the learning and training processes.

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Table 1. Characteristics of the participants

Focus groups	Participants	Profiles
Focus Groups #1 (4 groups) Narratives	N=15	5 Clinical Nurse Educators, 10 Registered Nurses (Surgery, Orthopedic, Emergency, ICU, Stomotherapy, Geriatric)
Focus Groups #2 (3 groups) Personas	N=9	4 Clinical Nurse Educators, 5 Registered Nurses (Emergency, Surgery, Stomotherapy, ICU, Geriatric)

Table 2. Personas created to stimulate the reflexive conversation

Mrs. Flora, 78 years of age, fell at home.	**Mr. Roger, 38 years old. Hospitalized Intensive Care Unit**
Her husband phoned 911 because she had a pain in her right leg and couldn't get up again. Her husband also noticed that his wife had trouble talking and breathing after the fall. She arrives in the ER, accompanied by two paramedics and her husband. Quickly, you notice that the old lady is pale and breathes hastily.	Mr. Roger, 38 years old, has been hospitalized in intensive care for a few days, after losing consciousness at work. He came to the hospital unconscious. Exams are underway to identify his problem, which could be cardiac. You have had the opportunity to take care of him several times but when entering his room, while all the devices do not indicate any particular problem (saturation is good, heart rate is correct, there is no fever, etc.), something's

	bothering you. It appears that the colour of his skin has changed and that his breathing is loud.

Figure 1. Overview of the data collection process

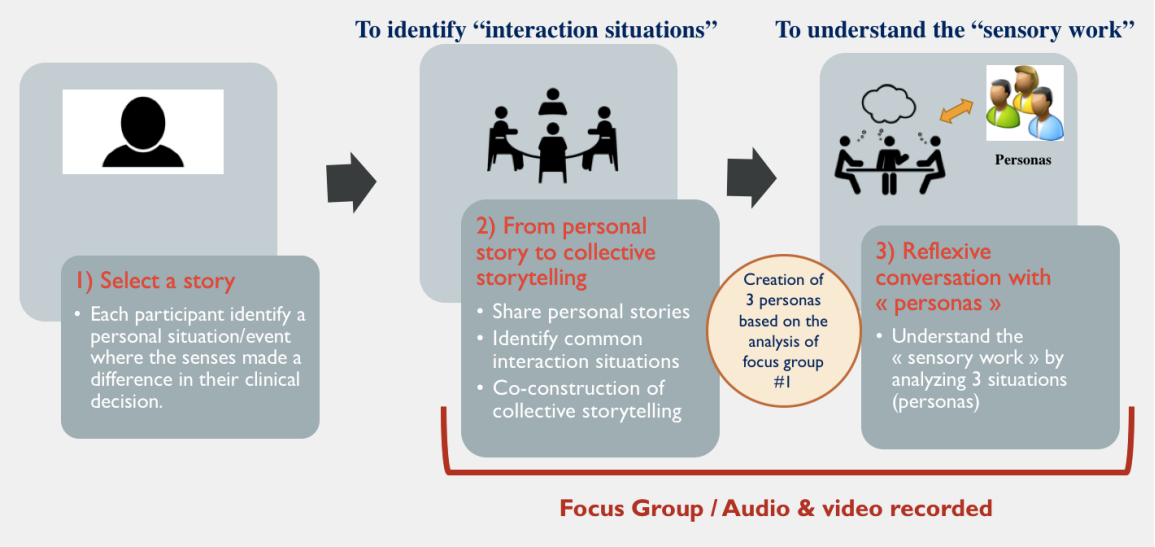

Figure 2. “Sensory ordering” in practice