

Physicians' and patients' use of *body-oriented gestures* in primary care consultations

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Abstract

Research on healthcare communication has focused little on the semiotics of gesture in interaction. This paper presents an analysis of how patients and physicians use gestures in actual consultations, focusing specifically on *body-oriented gestures* (i.e., those in which a part of the body, either through indication or demonstration, plays an integral role in the speaker's meaning). Two publically-available training DVDs for general practice consultations provided 29 minutes of excerpts from actual patient-physician encounters between nine physicians and twelve patients. All gestures were located. Body-oriented gestures were analysed for their relationship to speech and function in the interactions. Results showed that 104/238 of patients' gestures and 30/178 of physicians' gestures were body-oriented. Gesture and speech conveyed complementary information suited to each modality. These gestures served a variety of functions (e.g., establishing mutual understanding, foreshadowing information that would be contributed later, providing cohesion between topics). Just as research on healthcare communication would benefit from further exploration of the semiotics of gesture use, these findings illustrate potential for basic research: healthcare interactions offer a practical arena for investigating how patients and physicians integrate gesture and speech as they discuss consequential topics such as symptom relief, diagnosis, decisions, and treatment plans.

1 Introduction and objectives

In conversation, co-speech hand gestures are “generally recognized as being linked to the activity of speaking and are often regarded as part of the speaker's total expression” (Kendon, 1980, p. 207). Speech and gesture “cooperate to express the speaker's meaning” (McNeill, 1992, p. 11) and have been characterized as *integrated messages* (Bavelas & Chovil, 2006). The study here assumes that interlocutors can use gestures as a communicative resource (Kendon, 1994) and extends the topic from *when* gestures communicate (see Hostetter, 2011) to *what is being accomplished* with gesture. Thus the overarching purpose here is to show how doctors and patients mobilize gestures with their speech while undertaking clinical activities. In clinical communication research, the semiotics of gesture use is understudied, despite abundant theory and methodological tools from basic research. Drawing on these tools, this paper presents a gesture analysis of actual videotaped primary care interactions.

Gesture studies using videotapes of actual clinical consultations have shown that patients use gestures around their body to demonstrate the position, scale, and character of their suffering, in order to provide the sense and significance of the illness and symptoms (Heath, 2002). Patients time their expressions ('cries') of pain within the frame of diagnostic activities, as a way to balance justifying the need to seek medical help with taking an analytic orientation to their own subjective experience (Heath, 1989). Physicians use gestures to convey unique content that can be absent from speech, but which could be ambiguous without being integrated with the accompanying speech (Gerwing & Dalby, 2014). These authors reported that physicians' gestures provided unambiguous indications of the

relevant body region (e.g., the liver), but their speech provided necessary information about why it was relevant (e.g., proposing that the patient agree to diagnostic tests). In an analysis of gestures about pain collected in non-clinical settings (i.e., interviews with participants), speakers conveyed information about the location and size of pain sensations in gesture and information about pain intensity, effects, duration, ease, and awareness in speech (Rowbotham et al., 2012).

The objective here was to analyze a particular subgroup of gestures that could be considered particularly salient in clinical consultations, namely those during which speakers “touch, focus on, draw or sculpt forms in front of a particular part of the speaker’s body” (Calbris, 2011, p. 78). While all gestures could, in a sense, be in front of a part of the speaker’s body, for this analysis, we considered gestures to be body-oriented if the hand(s) served a deictic function by directing attention to a particular part of the body (e.g., the knee, an area of skin) or if the speaker mobilized his or her body to demonstrate an action (e.g., stretching, miming using an inhaler or taking a pill). These latter gestures were akin to *character-viewpoint gestures* (McNeill, 1992), where, in this case, the speaker’s hands and body represent his or her own hands and body. *Body-oriented gestures* were formally operationalized as purposive movements of the hands and/or body that were synchronized with the timing and content of speech and in which the part of the body, either through indication or demonstration, was an integral part of the speaker’s meaning, as conveyed by both the gesture and concomitant speech.

The research questions were the following:

- (1) How prevalent were *body-oriented gestures*?
- (2) How did they relate to accompanying speech?
- (3) How did physicians and patients use them?

2 Methods

Source materials were two publically available training videos (Roberts, Moss, and Stenhouse, 2003; Roberts, Attwell, and Stenhouse, 2006) containing excerpts from real primary care consultations filmed in the UK (9 physicians and 12 patients). The excerpts illustrated a variety of clinical situations. The consultations were all carried out in English. The participants represented a variety of language backgrounds (including both L1 and L2 English speakers as well as English variants), ages, and gender.

All 12 excerpts were analyzed, providing approximately 29 minutes of material. Gestures and speech were annotated using ELAN (Wittenburg, Brugman, Russel, et al., 2006). The purpose of the analysis was ultimately to locate and analyse body-oriented gestures. To accomplish this, analysis proceeded through four levels, gradually filtering the total number of gestures to those that were of particular interest. The four levels of analysis were the following: (1) All gestures were located. (2) Gestures with a semantic function were distinguished from those with a beat or interactive function. (3) Semantic gestures with concrete referents were distinguished from those with abstract referents. (4) Semantic gestures with concrete referents were examined further to identify those that were oriented towards the body. The following sections provide brief operational definitions that guided these decisions.

2.1 All gestures were located: Gestures vs. adaptors

Gestures were defined as observable hand or arm movements that (1) had a rhythm matching the rhythm of speech and (2) had a gesture stroke with a purposive, clear direction or trajectory. They were distinguished from instrumental hand actions (e.g., typing on a keyboard, opening a file folder) and from self-oriented adaptors (e.g., scratching the arm). Thus similar hand movements could be classified as gesture or adaptor based on the timing the accompanying speech. For example, one patient said, “I’ve had this years and years and years ago but it wasn’t as bad- I just got a little rash”.

Timed with the speech “this years and years and years,” he made scratching motions around his fingers. This movement would be considered a gesture because the onset of his gesture stroke was timed precisely with the word “this”, the scratching motion was clear and almost stylistic, and the scratching movements matched the quick rhythm of his speech. In contrast, earlier in the consultation, the same patient made small, vague, fiddling motions with his fingers; these motions began while the doctor asked a question about whether he had started using any new washing powders, and they continued through the entirety of the patient’s next utterance (“no not no- no- nothing like that, as I said it didn't happen- it was about seven o'clock I woke up very uncomfortable”). This fiddling motion began gradually, with no precise onset, and the movements were not timed with the patient’s speech. Therefore, it was considered an adaptor, not a gesture. All gestures and concomitant speech were annotated. Each of these gesture-speech composites was analyzed for its immediate function (semantic/beat/interactive).

2.2 Gesture function: Semantic vs. Beat vs. Interactive

Semantic gestures functioned to convey topical content to the conversation, (Gerwing & Dalby, 2014) either through representation (e.g., rotating the shoulders to demonstrate shoulder stretches) or deixis (e.g., pointing to a shoulder to show the location of pain). The finger scratching motions in the gesture example above (while the patient said “I’ve had this for years and years and years”) served a semantic function, depicting what the patient meant by “this”, namely, an itchy skin condition.

Beat gestures functioned as discourse markers; these non-representational, small up and down movements served merely to emphasize the words with which they were timed (McNeill, 1992). For example, a patient explained that the pain in her hip continued when she went for walks, and the doctor checked his understanding by saying, “it’s worse when you walk”. During the words “worse” and “walk”, he made two up and down movements with his left hand. These were considered beat gestures because they were non-representational and were timed precisely with two key words in the doctor’s utterance.

Interactive gestures served a social function. Like beat gestures, they were non-representational; however, their form differed from beat gestures: the speaker would rotate his or her hand, so that the palm was displayed, and move the gesture towards the addressee. Furthermore, rather than fitting the context of speech at the level of content, these gestures served to manage interactive aspects of the conversation (e.g., Bavelas, Chovil, Lawrie, and Wade, 1992). For example, in one of the consultations, a doctor explained to the patient that her smoking was elevating her blood pressure. He said, “and I’m not just saying that”. The patient replied, “yeah, yeah, it’s just the truth” while nodding, holding her right palm up, and moving it towards the doctor. This gesture was interactive: firstly, because its form matched the form identified in Bavelas, et al. (1992), secondly, because it served to credit the doctor’s assertion that he was contributing more than just his opinion about smoking. Once again, note that gestures with a similar form could serve different functions, depending on the context that speech supplied. For example, if the patient in the immediately previous example had accompanied her palm up movement with the speech, “the rash started here”, the gesture would be considered semantic, because it was contributing the location of where her rash began.

2.3 Abstract vs. Concrete referents

Each semantic gesture was analyzed for whether it depicted a concrete or abstract referent (Gerwing & Dalby, 2014). This decision depended on the relationship between the form of the gesture and what was being conveyed in speech. For a gesture to have a *concrete referent*, its form or manner would have to represent or point to an object, person, location, or action. The above examples of semantic gestures had concrete referents: The rotating shoulders gesture referred to an advisable action; pointing to shoulders referred to a region of the body; scratching the fingers referred to the location of a skin condition and its quality. *Abstract referents* were metaphorical depictions of abstractions, concepts, or ideas. For example, one patient, explaining her feelings of sadness to the doctor, said, “it’s like, back in your mind, all your life, do you know, like a film”. During “like a film”, she slowly rotat-

ed her hands in outward circles, as though depicting the motions of a film reel. This gesture illustrated the image of a turning film reel, showing the experiences of her life in her mind. This gesture was thus not depicting an actual film (in which case the gesture would be considered as having a concrete referent); it illustrated a metaphorical film and therefore had an abstract referent.

2.4 Body-oriented gestures

Finally, concrete semantic gestures were further examined to identify those that were oriented towards the body. Note that the above analytical process filtered all gestures such that body-oriented gestures were defined as purposive movements of the hands and/or body that were synchronized with the timing and content of speech and that made a region of the body an integral part of the speaker's meaning. Body-oriented gestures could include pointing towards the speaker's own body (e.g., a patient could indicate where she experienced pain) or the addressee's (e.g., a physician could point to an area on the patient's body to ask whether it was the locus of pain). Demonstrations of actions included postural portrayals of feelings (e.g., sitting up straight suddenly to portray shock). For a concrete semantic gesture to be body-oriented, the speaker's body had to be representing a body: For example, if the speaker pumped his arms to mimic walking, the gesture would be body-oriented. However, if the speaker demonstrated walking by "stepping" with his fingers across the table, it would not be body-oriented. Body-oriented gestures were selected for detailed qualitative analysis to explore their functions in the consultations.

3 Results

In the 29 minutes of material, there were 416 gestures. Patients gestured at a rate of 11.42 gestures per 100 words; physicians at 6.37 gestures per 100 words. Table 1 provides a differentiation among the types of gestures patients and physicians used, reported as raw frequencies.

Table 1. Number and functions of patients' and physicians' gestures.

	Patient	Physician
Semantic concrete- body oriented	104	30
Semantic concrete- not body oriented	22	17
Semantic abstract	49	69
Beat	33	50
Interactive	30	12
TOTAL	238	178

3.1 Patients' body-oriented gestures

For patients, 104 of their 238 gestures were body-oriented. In these, gestured information complemented but was rarely redundant with information conveyed in the speech. Gestures indicated the relevant body part (e.g., the chest), demonstrated body positions, indicated direction within the body (e.g., the radiation of pain), or depicted objects or scenarios around the patient (e.g., drawing a doorway, using the hand as a telephone). Speech conveyed the sensation (e.g., pain, lack of pain, tenderness, itchiness), intensity, temporal aspects (e.g., whether the patient experienced a symptom in the past or present, repetitiveness, duration of symptoms), the depth of the relevant region (e.g., skin, muscles, bones), and the circumstances around injuries or illnesses. Of the 104 body-oriented gestures, 66 were direct references to a particular body part (as opposed to a demonstration of an action). Of these direct references, in 49 (0.74), the patient did not specify the body part in the speech. Sometimes the name of the body region was missing from speech entirely, with speech instead indicating deictically that the gesture would be providing information (e.g., to describe where he had a rash, one patient said "it's not just here, it's here, here¹ ..." while pointing to his armpits, thighs, and groin). Some-

¹ In this and other examples, underlining indicates the timing of the gesture with speech.

times, patients mentioned a general body region in their speech, but narrowed the focus by specifying the precise location in gesture (e.g., one patient said she had “pain on her leg”, while pointing to her left knee and thigh).

3.2 Physicians’ body-oriented gestures

For physicians, 30 of their 178 gestures were body-oriented. These gestures anchored their questions or explanations. Physicians rarely named the body part or region when they gestured. Of the 30 body-oriented gestures, 24 were direct references to a particular body part (as opposed to a demonstration of an action), and in 21 (0.88) of these, the physician did not specify the name of the body part in the speech. For example, one physician pointed to an area on his chest while saying “pressing on these muscles here these bones”. Another, initiating the clinical examination, said “let me have a look at the skin” while pointing to the patient’s arm.

3.3 Examples of how patients and physicians used body-oriented gestures

Physicians and patients used body-oriented gestures *to display their understanding to each other*. For example, in response to a physician’s explanation of how to apply lotion after his baths, one patient nodded and made patting motions around his torso (where he had patches of dry skin). Earlier in the consultation, the physician had examined the patient’s skin, thus the location of the dry skin was already established. Rather than functioning to re-orient the physician’s attention to those areas of his chest, these patting gestures displayed the patient’s understanding of the physician’s instructions, contributing to accomplishing the clinical task of securing mutual understanding regarding his treatment plan. Physicians and patients used body-oriented gestures to sort out misunderstandings. One sequence is presented in Figure 1, which illustrates three gestures in a question-answer sequence about chest pain. First, the physician used his right hand to point to a location on his chest while asking for elaboration about the patient’s symptoms. His speech (“can you tell me about this pain, does anything make it worse?”) did not specify where the pain was, but his gesture did, displaying where he had understood the patient to be experiencing pain (see Figure 1A). The patient then corrected him by indicating on her own body where she saw him pointing (while saying “it’s not pain there”; Figure 1B) and then slightly lower, where she actually felt the pain (while saying “it’s uh- it’s inside me there”; Figure 1C). Thus she indicated the location of her symptom, foregrounded against the physician’s displayed understanding. Once they had established the location of her symptoms, she could answer his question regarding whether anything made the pain worse.

Figure 1. Physician and patient use body-oriented gestures to clarify the location of the patient’s pain.



Patients sometimes used body-oriented gestures *to foreshadow information before they articulated it clearly*. For example, some patients would touch the location of a symptom once or twice before beginning to speak about it. In one consultation, a patient described the circumstances of an injury she had experienced at work. At the beginning of her description, she performed a gesture in which she brought her hands together in front of her chest (see Figure 2, frames A and B). At first, she accompanied the gesture with the speech “the alarm, the alarm”, which did not make its referent clear. In the second gesture, she added “fire” and “the doors”. Finally, she added a more dramatic movement, start-

ing the gesture with her hands at either side of her (Figure 2C) and bringing them together quickly (Figure 2D), while saying “and close”. The speech and gesture here, together, demonstrated doors closing directly in front of her, something that was only foreshadowed in the two previous gestures. At that point, the physician (who had been watching intently) nodded and responded, “right, right”. The patient continued, pointing at the consequent injury on her ankle, which then became the focus of her and the physician’s gaze (see Figure 3).

Figure 2. The patient uses body-oriented gestures to foreshadow the circumstances of her injury.

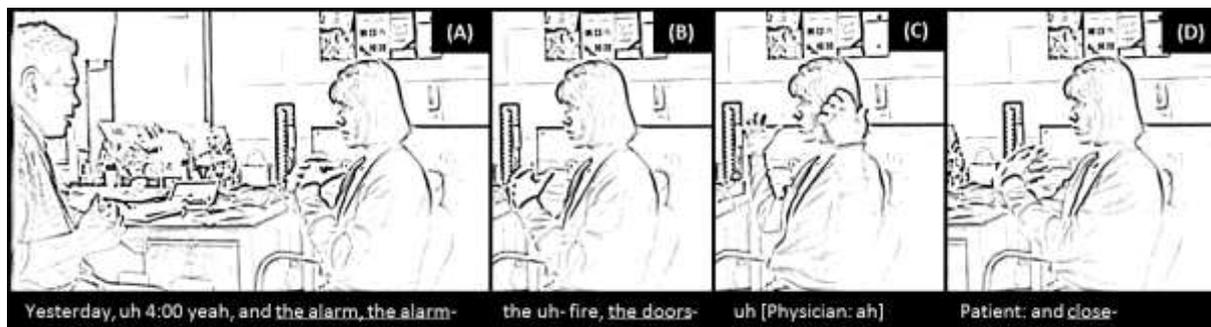


Figure 3. Patient exhibits her injured ankle to the physician, which they both look at.



Patients used body-oriented gestures *to put information that might be considered unpalatable into gesture* rather than speech. For example, two patients used a gesture that moved from the throat up to and out of the mouth to convey vomiting, although neither put that information in their speech. Figure 4 presents a frame-by-frame series showing this gesture; the patient’s accompanying speech was “and I was very bad, with terrible pain, with sickness you know”. Later, the physician asked, “When was the last time you actually were sick, when you, you vomited?” demonstrating that he had indeed understood her gesture, even though she had said nothing in her speech about vomiting.

Figure 4. Sequence of screen shots showing patient’s gesture conveying vomiting.



Patients used body-oriented gestures with speech *to contrast past and present emotions or attitudes*. For example, one patient described the terrible side effects of an antibiotic. While saying “after the fourth day, oh I dreaded it I took them all, but I dreaded it”, she drooped her body over the table (as if in dread) while smiling. Figure 5 shows this position. This latter, complex portrayal did more than locate symptoms; instead, the patient used her body and speech to provide an evocative demon-

stration of her response to her body’s reaction to the antibiotics, showing both despair in her posture (which her speech placed in the past with “took them all” and “dreaded it”) and normalcy and even good humour with her facial display.

Figure 5. Patient’s simultaneous portrayal of past dread and present amusement.



Physicians repeated body-oriented gestures *to connect topics during the consultation*. For example, one physician explained to the patient that the itching and pain in her ear was caused by irritation in her ear canal. The physician gestured towards her own left ear during the explanation, and described the patient’s ear canal as being “inflamed” and “red”. Less than a minute later, she examined the patient’s hand, which also had a rash on it. The physician leaned forward and used her left index finger to draw circles over the back of the patient’s hand while saying “maybe a little bit of skin irritation again sort of eczema” (see Figure 6A), thus introducing the topic of eczema. She then connected the eczema on the patient’s hand to the previously discussed irritation in the patient’s ear, saying “cause that’s I think that’s what’s in the ear is a little bit of eczema as well, really” while motioning to her own ear again (see Figure 6B). Her gesture to her own ear echoed her previous gesture; repeating this body-oriented gesture provided visible cohesion to her earlier explanation of the patient’s ear irritation, reinforcing that the symptoms might be connected by a systemic condition.

Figure 6. A physician provides cohesion between symptoms by repeating an earlier gesture.



Physicians also used gestures towards the patient’s body *to demonstrate their clinical activities*. The physician above, while examining the skin irritation on the back of the patient’s outstretched hand, used her thumb and index finger to frame the area. This gesture at that moment served no purpose except to demonstrate that she was examining that specific location.

4 Discussion

Physicians and patients integrated body-oriented gestures with their speech in sophisticated and systematic ways. By using gestures to inquire about and show locations of symptoms, physicians and patients referred unambiguously to relevant body regions without resorting to potentially ambiguous terminology. These gestures accomplished far more than simply conveying information about symptom location; both patients and physicians used them to perform complex clinical communication tasks. Further research can focus on how health care providers and patients integrate gesture and speech in a variety of clinical settings (e.g., ones involving language barriers, electronic medical records, emergent and non-emergent scenarios). Besides generating a new appreciation for the integral role visible action plays in clinical communication, such research could have implications for healthcare systems, as they explore new media for interaction (e.g., telehealth, telephone interpreters).

This study illustrates how researchers accustomed to investigating the gestures interlocutors produce in experimental, laboratory conditions need not feel restricted from studying them in everyday settings. As long as both interlocutors are captured on video, how they use co-speech gestures can be explored systematically and in detail. Healthcare interactions thus offer a practical arena for basic research on gesture use. Patients and health care providers discuss consequential, high-stakes topics such as symptom relief, diagnosis, prognosis, decisions, and treatment plans; systematicity in how they integrate gesture and speech during these discussions could shed light on the role gesture plays in dialogue more widely. Further research using the analytical framework described here is being conducted on interactions between specialists and patients in a Norwegian hospital and on triadic, interpreted primary care encounters filmed in the UK.

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