

Turning signals into meaning – ‘Shared decision making’ meets communication theory

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Abstract

Shared decision making (SDM) is being increasingly challenged for promoting an innovative role model while adhering to an archaic approach to patient-clinician communication, both in clinical practice and the research field. Too often, SDM has been studied at the individual level, which ignores the interpersonal system between patients and physicians. We aimed to encourage debate by reflecting on the essentials of SDM in terms of epistemology. We operationalized the SDM core concept of information exchange in terms of social systems theory. An epistemological analysis of the term *information* refers to its inherent process character. Exchange of information thereby becomes synonymous with social sense construction, indicating that, rather than just being a vehicle, the act of communication itself is the information. We plead for the adoption of existing dyadic analytical methods such as those offered by the interpersonal paradigm. Implications of an updated concept of information for the use of SDM-evaluation methods, for SDM-goal setting, and for clinical practice of SDM are described.

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Introduction

Clinical decision making is the use of diverse strategies to generate and evaluate potential solutions to health related problems.¹ In this process, physicians should apply the current scientific knowledge to the clinical context.² As a particular epistemological view defines how science is applied and knowledge is communicated, this requirement seems both challenging and important for the quality of clinical practice. The paradigm of evidence-based medicine (EBM) successfully exemplifies the adoption of the contemporary general epistemology in nat-

ural science.³ Rather than representing a radical new scientific position, it fits into broad epistemological debates in the philosophy of science, falsificationism and holism. Regarding philosophy, EBM is characterized by the specific definition of the relationship between evidence and knowledge leading to a normative concept as to how to use evidence when making medical decisions.⁴ The challenge here is to apply this concept to specific clinical decisions ensuring that they are made consistent with patients' values and preferences. The resolution of this issue requires consideration of actual communication and decision-making theory.⁴ In par-

ticular, the application of current science includes accommodation to changes in the social norms of the health system concerning role preferences of the parties involved and to the quality and structure of the knowledge that medical decision making is based on. In this regard, the shared decision-making model (SDM) is intended to replace the traditional style of asymmetrical one-way communication between physician and patient that has been handed down for centuries by medical tradition.⁵ SDM is supposed to represent a concept suiting the communicative challenges of the actual structure and quality of knowledge, by involving the patient as an additional source of information which is relevant to the decision. However, the concept will not meet today's challenges by referring to an archaic model of communication based on a traditional conception of knowledge and knowledge acquirement. To give an example with regard to the medical decision-making context, a traditional concept of knowledge is reflected in the information monopoly of the medical experts. We still witness SDM advocates simplifying its core process as an exchange of specialist information from the physician for value information from the patient. This explanation ignores the fact that the patient's medical knowledge (be it fed by experiences with a certain drug type or by a web-based self-help group) and the physician's values (e.g. about responsible palliative care of a child) are essential sources for a fruitful mutual process of information exchange. People may argue that patients' medical knowledge sometimes is not accurate or is biased by convictions on, for instance, their beliefs regarding the reliability of scientific knowledge. However, in principle, the same applies to information the physician feeds into the process. By contrast with the traditional view, scientific knowledge is now no longer seen as certain or stable, nor as being accessible only to experts. By allocating specialist information to the physician and value-information to the patient the above-mentioned simplification implicitly refers to an outdated concept of knowledge. We argue that the quality of the SDM process and its evalua-

tion are sensitive to the underpinning concepts of knowledge applied by participants and evaluators. In other words, what makes paternalism a paternalistic (communication) concept might be the assumption of an experts' monopoly of the relevant knowledge.

This article aims at encouraging debate on shared decision making by reflecting its essentials in terms of epistemology representing the sum of beliefs on the process of cognition, which is vital to the definition of 'knowledge'. We will start from the core definition of SDM and continue by commenting on the content of risk information. After presenting our epistemological examination, present evaluation methods and goal setting in SDM are criticized. Finally, some idea is provided as to what it would mean to base the concept on an up-to-date communication model.

Although definitions of SDM vary greatly^{5,6} and there is a lack of consensus, the SDM definition provided by Charles⁷ probably achieves the closest agreement between the authors concerned.⁵ Following Charles, SDM can be described as a two-way exchange of information between the parties concerned with the medical decision either from the professional or from a patient's point of view. This definition refers firstly to the term *information*, secondly to its transfer by *two-way exchange* and thirdly to the *process* character of a decision to which both parties contribute.⁷ A specification of this definition applicable in research and practice has been lacking since.

Information as part of medical risk communication

The information to be exchanged is anything but trivial. Risk information is complex and ambiguous. Even physicians fail to correctly interpret probabilistic explanations.^{8,9} Patients are all the more easily overburdened when processing this kind of information because of their emotional involvement in decisions concerning themselves.¹⁰ More thorough consideration shows that the relevant subject in risk information is uncertainty rather than data on probabilities.

Uncertainty can consist in the absence of data that can be drawn upon to provide relevant information on medical procedures. Uncertainty exists in the ambiguity of contradicting information or in the difficulty of applying existing evidence, for instance, on probabilities of benefit and side-effects in a certain case. Uncertainty appears in the choice of a treatment option on both sides of the decision-making dyad.^{11,12} Uncertainty is referred to in some of the SDM literature.^{13–15} It is even seen by some authors as an exclusion criterion for SDM¹³ and by others as a disadvantageous condition that should be prohibited.¹⁴ In our view, uncertainty is neither a side-issue nor something that explanation alone can remove. It is the subject of both parties' engagement in the communication.¹¹ The case of a young woman recently diagnosed with multiple sclerosis can help to illustrate this. Her diagnosis is based on a single neurological event and two magnetic resonance images with a 4 week delay between. The diagnosis suddenly hit her with a jolt. However, there is little more to say with certainty. The challenge for physician and patient negotiating early immunotherapy is to inform this decision by thorough consideration of the remaining uncertainties: It is uncertain whether, when and how often she may relapse in the future. It is uncertain whether she will become increasingly limited in her mobility. And it is uncertain whether she would be among the 10–20% of patients responding to immunotherapy.¹⁶ The question of efficacy of early vs. later treatment in a longer time frame is even more uncertain.

On a more abstract level, we see the initial motivation to communicate not in the provision of information but in the uncertainty perceived by one of the two parties in a communication. In 1948, Shannon¹⁷ provided a relevant definition of information (entropy) in terms of uncertainty as part of a mathematical theory of communication. Shannon defined information as the uncertainty contained in a finite sequence of signals or, more generally, in a distribution. The more irregular the sequence, and the less predictable and uncertain, the more information it contains. This can be understood as a metaphor indicating the importance of seeing uncertainty

as an aspect of content that should not be neglected when discussing medical decisions. But it can also be taken literally and seen as immediately transferable to social communication theory. In the following sections, we seek to elucidate this position by addressing the question as to which process we assume *information* evolves from.

Information as construct

Developers of SDM interventions traditionally define *information* as data or knowledge transmitted from sender to recipient by linear transfer. This includes the assumption that the information does not change during transfer and is represented on the recipient's side in the same form. This assumption arises from the idea of a digital information model, where interferences and biases do not occur. By contrast, 'people make decisions ... by attending selectively to external information to create an internal, mental representation of the decision context or problem.' And 'it is the mental representation that is evaluated to reach a decision, not the information originally provided'.¹⁸ In the digital model, a passive recipient is attributed to one of two possible states – understanding or not – which gives little space for participation. An invitation to participate and thereby to assume responsibility would as a precondition offer increased options with regard to the individual's behaviour. '*Only a free person (who could always act differently) is able to act responsibly*'.¹⁹ The following definition of information seems more suitable to the idea of involvement as it provides an active role for the recipient:

'I can never be sure what the meaning is that you read into my words, because what moves from me to you are signals and not the meanings of signals. This is to me the basic fact of communication. As long as you use something like signals that run in a channel, you have to have a code to turn the signals into meaning.'²⁰

These principles provide the foundations for a communication theory. Information and reality construction in this context are self-organizing and therefore not instructable. The reception of

external knowledge requires a suitable cognitive structure on the recipient's side. Von Foerster,¹⁹ who is considered as one of the 'founding fathers' of constructivism, defines communication as a kind of individual process of sense-construction: 'The world is full of signals, but there is no information around.' Although these ideas are not new, and are implemented into many communicative contexts, some readers may doubt whether it is useful to apply constructivist ideas to physician patient consultations. In particular, the probabilistic nature of the subject offers much room for interpretation and appraisal and we feel that this implies a need for communication to be perceived as a co-construction of reality. However, even if the theory is quite difficult to agree with in its radical tenor, it can still introduce the concept of *process* into the definition of *information*. This contrasts with the common use of the term in the SDM literature, where information is assumed to be a digital and static entity which is merely delivered to the recipient. Another significant implication of constructivism is the dependence of observation on the individual observer's cognitive structure. This means that the same signals (for example data on frequencies or expression of medical advice) take on different meanings in different individuals.

Information resulting from a social construction process

If even information, which is the basic parameter in risk communication is a process which is hard to control or predict, what should we then conceive *exchange* to be? Exchange is the social process to develop information on both sides of the dyad. Social systems theory yields the transfer of constructivist epistemology to the experience of the world of sociology and communication, including the opportunity to verify theorems through everyday experience. Adopting the process-definition of *information*, social systems theory conceives the social dimension of this very process.²¹ The absence of certainty about the correct interpretation of received signals instigates a construction of

meaning on both sides. The interpretation of a communicative action, the 'turning of signals into meaning', is a contingent selection. It is not predetermined, but represents one of many possible choices. Co-ordination of one's communicative actions with one's counterpart requires high frequency feedback.^{21,22} As it is unlikely that situation definitions are ever identical on both sides a specific definition cannot be imposed by one side on the other. In this regard, *two-way exchange* does not mean that person A presents his/her information while person B contributes information from another background, as the method is described in the SDM literature.¹⁴ Moreover, more or less mechanistic concepts of SDM, such as step-by-step communication guides or skill-based taxonomies, are not sufficient because they miss the interactive core of the method.²³ The process of transferring information is seen from a systems theory viewpoint as a co-operative invention, where information results from interaction. Beyond this co-operation on the level of content, this process is shaped by the dyad's interpersonal relations. These relations are not a static condition, either, but evolve from the very process of information transfer within a social system.

The interpersonal information in communication

From the beginning, a climate of interpersonal non-dominance was assumed to be implicit in the SDM process,^{7,24} which is supposed to be open concerning the choice finally made. Hitherto, interpersonal dynamics have not, apart from a few exceptions,²⁵⁻²⁸ been recognized as being of particular interest in SDM research.

Existing programmes focussing the succession of actions within decision-making communication^{14,15} address the meso-process rather than the interpersonal micro-process that emerges through both parties responding to each other. The interpersonal relationship is a subtle and dynamic series of occurrences and is established anew by each interaction in a communicative process.²⁹ The interpersonal relationship, as an important criterion of SDM, deserves consider-

ation in modelling and measuring risk communication by applying the interactional focus.^{23,25,26} SDM instruments so far do not take into account the interpersonal focus on this process level. There is a need to clearly define and operationalize effective communication in terms of interpersonal concepts, such as those introduced by Kenny,³⁰ Benjamin³¹ or Kiesler.³² A recent study³³ investigated the degree of congruence of physicians' and patients' perceptions of their communication using a dyadic measurement approach with appropriate analytical methods. Interdependency in this study is defined as a marker for mutuality in the medical communication. A large body of research has been studying interpersonal behaviour using the constructs drawn from the interpersonal circle.³² It is assumed that people in dyadic interactions negotiate the definition of their relationship through verbal and non-verbal cues, which can be described as interpersonal variables arranged around a circle in two-dimensional space.³⁴ Although neglected up to now, theory, theorems and assessment tools generated by the interpersonal paradigm already exist.^{25,29,34}

Implications for evaluation of SDM

As becomes obvious, information as referred to in constructivism, in social systems theory and in interpersonal theory is defined in a process dimension. Information in this regard is no longer a static entity, but emerges from mutual exchange in a social sense-constructing process.

Existing instruments and evaluation strategies for communication in clinical practice do not take this process character into account and therefore cannot adequately indicate the degree of sharing in a physician patient consultation.²³ Currently, SDM is assessed as the patient's feeling of trust or of being involved or by others as the physician's engagement in performing a set of skills regarded as likely to enhance involvement.³⁵ However, an observation-based method can only be valid to the extent by which a patient correctly interprets the physician's activities and might show little of the actual process taking place within the dyad. This

assumption can be illustrated by an example from a qualitative study which was part of one of our controlled decision-making trials. We conducted separate in-depth interviews with physicians and patients when they had finished their consultation. One physician comprehensively reported on the content and the course of a particular consultation with an older woman with multiple sclerosis. Our impression was that the physician processed the decision about immunotherapy to a high standard of SDM. The patient, in turn, reported that the major topic of the consultation was her insufficient bladder function and could hardly remember any decision about immunotherapy. An observation-based instrument focussing on the physician's communication behaviour would not have revealed this fundamental misunderstanding. Assessment of SDM from the point of view of one of the involved parties, or from that of a third person, as is usual, seems to miss the target. Inconsistencies have been reported in a number of studies employing more than one single SDM measure. Little or no correspondence was found either between observer and patient views or between physician and patient views.³⁶⁻³⁹ In terms of constructivist theory, these results indicate incongruence of sense construction by representatives with different perspectives. Rather than limiting validity, the degree of congruence in sense construction is the central parameter targeted by SDM. However, a measurement approach systematically analysing the congruence of communication measures as perceived from different perspectives is still missing. Interaction-based operationalizations, e.g. consideration of the physician's responsiveness to the patient's participation behaviour that goes beyond ensuring understanding, have not been found in the literature.^{26,40,41} Although representing the fundamental unit of evaluation, the dyad has hitherto rarely been taken into account in the SDM measurement field.⁴² Methodological and data-analytic approaches useful in the study of dyads are, however, available.^{43,44} A study of decisional conflict, including data on both physician and patient, shows how dyadic analyses can fruitfully be

applied to the evaluation of decision communication to answer process related research questions.^{33,45} Dyadic approaches to communication permit adjustment to accommodate structures of higher complexity, such as triads or groups; however, dyads are the smallest unit of analysis. Moreover, analyses of social relation-based constructs, such as interdependency and concordance in the interpersonal paradigm, could accommodate the process character of the method. This would help to establish the medical communication concept in a rich and powerful tradition.^{30–32,34}

Implications for goal setting

Progress in SDM would affect the setting of goals. Considering a theory of information would offer new insight into the way in which communicative interventions, such as training provided to physicians, can affect the social construction process. Training courses would change their emphasis and move away from step-by-step programmes and would aim, instead, to help patients and physicians to develop skills of responsiveness to each other's participation in the process of communication. Having in mind the importance of evidence based, balanced and comprehensive information, it will nevertheless increasingly be seen as essential to maximize knowledge and to strive for certainty in patients. The management of existing uncertainty, however, and the ability to come to a decision despite uncertainty, could take on greater importance as another specific task in line with basic ideas of shared decision making.¹² A shift in goal setting and new approaches to measurement of SDM communication will even make it possible to reappraise the existing evidence on SDM.

Practical implications

Our epistemological analysis of the SDM concept was informed by our own experiences in clinical practice and its evaluation. When abstracting from actual communicative phenomena and deducing from communication theory, we draw conclusions from an extensive

pool of practical communication examples. Nevertheless, as our essay pleads for awareness of contingency in the meaning of communicative actions, readers will not expect prescriptions for application of SDM in practice. However, in the following, we will comment on some areas of immediate practical relevance for physician patient communication and elucidate what it would mean to base SDM on an actual concept of knowledge. Firstly, we propose to regard all subjects of exchange in the SDM dyad as information, rather than distinguishing between information (that is provided by the health professional) and values (contributed by the patient). Both parties are challenged to consider all sources of information relevant for an informed decision, including the physician's preferences and the patient's knowledge about his or her own body. In a constructivist view, information is never unbiased, but bias can have different causes, which are important to recognize. Secondly, to follow mutuality in practice goes beyond cosmetic amendments in the consultation and also includes the parties making efforts to check whether the physician understands the patient's position. Thirdly, although a mutual exchange is recommended, the parties are not in a symmetric position. As it is the patient's health that is at issue, it is the patient who has to make the decision. The health professional can assist with the information process by exploring the meaning of data to the patient. Questions are powerful interventions in this regard. Opening a discussion about data on efficacy of a treatment by use of a one hundred stick figure pictogram, the physician could ask 'Which figure do you think you are in the diagram?'. Patients clearly identifying themselves with one of the figures (red = no benefit, blue = benefit, green = no benefit, no need for intervention) indicate a poorer understanding of uncertainty from patients answering 'Well, how could I know, don't I have a 12% chance of benefit?'. Fourthly, updating the communication concept leads to a close-to-reality definition of the core process, the sharing of SDM. Rather than insisting on the parties' agreement on equal contribution to the decision, we feel that

consensus can act as an indicator of a co-operative construction of relevant information between physician and patient. Consensus refers to the situational definition including the social roles and the contents within the dyad. This shift in emphasis might relieve from feeling the need to organize their consultation in an unnatural mechanistic manner. To enhance consensual perception of the situation physicians can make use of all standard skills to interweave their information process with that of the patient, such as explicitness, responsiveness, asking questions and paraphrasing. Fifthly, we are aware of the complexity of challenges physicians have to face when making decisions with their patients. Therefore, it seems necessary to outsource parts of the information and decision-making process to other health professionals or to decision aids to provide optimal conditions for communication in the physician patient dyad. Moreover, although basic beliefs regarding the structure of knowledge play a central role in health professionals' and patients' involvement in processing scientific uncertainty, it seems questionable to change epistemological beliefs within a medical decision-making process. It is desirable that such convictions are addressed by community education in critical health literacy or natural sciences.

Conclusion

The debate on SDM appears ambiguous because it promotes an innovative communication method while simultaneously adhering to traditional epistemology. It is claimed that the concept captures an interactive phenomenon. However, its essentials are defined as static components of a linear arrangement. Existing knowledge and methods from dyadic analysis and the interpersonal paradigm should be used to operationalize *exchange* in the SDM setting and to consider the process character of risk information. Modern medical practice is challenged to move from using the language of certainty towards that of likelihood. Rather than functioning as an absolute expert and controller

of the decision-making process, the physician would share uncertainty with the patient, thus becoming 'a broker of choice'.²

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Conflict of interest

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