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Metaphors for patient education. A pragmatic-argumentative approach applying to the case of diabetes care

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Abstract The purpose of this article is to investigate metaphors as argumentative devices in the context of communication in chronic care and, more specifically, in diabetes care. While scholars have compellingly insisted on the strong cognitive power of metaphors in communication and education (BLACK 1962, BURGERS, KONIJN and STEEN 2016, GIORA 2003, HESSE 1963, LOW 2008, ORTONY 1975, STEEN 2008, 2011), these insights have barely received attention in the field of health communication (CASARETT *et al*. 2010, DEMJEN, SEMINO & KOLLER 2016; DEMMEN *et al*. 2015, NAIK *et al*. 2011). This article introduces the main theoretical and practical problems with respect to the relationship between metaphors and argumentation, in both fields of health communication and philosophy of language. We will adopt a pragmatic-argumentative model of verbal communication with the final aim to propose a theoretical framework useful to evaluate metaphors in clinical contexts. The theoretical step discussed in this article constitutes the preliminary phase of a larger research program – *Metaphors for diabetes* – devoted to test the educational aptness of diabetes metaphors, in order to propose them as evidence-based instruments to health providers for patient education.

Keywords: metaphor, argumentation, patient education, diabetes, perspective change

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0. Introduction

The thesis that metaphors might have a relevant educational role has a robust tradition. Within the contemporary debate, for example, Ortony (1975) stresses this idea by arguing that metaphors are teaching devices. As many other scholars, Ortony points out that the educational utility of a metaphor depends on its strong proximity with our perceptual and emotional experiences; this embodied and embedded closeness of metaphors to the human experience makes it possible for unknown or not-well known concepts (communicated through metaphors) to become more imaginable, comprehensible and so more learnable. Aristotle (1966) had already recognized such a pedagogic function: due to their ability to put things in front of the eyes, metaphors give the opportunity to see and to grasp new relations and, as a consequence, they make knowledge acquisition possible and pleasant (for a comment to Aristotle's view of metaphor see e.g., LEVIN 1982). It is no coincidence that

metaphors intended as teaching devices are particularly used in the case of scientific divulgation and comprehension of abstract concepts (e.g., BLACK 1962, HESSE 1963, LAKOFF & JOHNSON 1980). Notwithstanding this recognized idea, there is still lack of a solid framework to understand metaphors as educational instruments; this goal would require a solid understanding – from a philosophical, linguistic and cognitive point of view – of the features that affect metaphor's quality or aptness.
From a theoretical point of view, the possibility to offer instruments to improve understanding depends on the possibility to distinguish between metaphors that are more or less apt to their educational function. The notion of aptness is used in a technical sense here; as specified by Giora: «Apt metaphors are those rated high in 'goodness', that is in getting across the figurative meaning» (GIORA 2003: 118). Although there are controversial positions on the notion of aptness and on its prior relevance with respect to other notions (e.g., salience, processing complexity), it is a well-recognized idea that aptness is one of the most important factors for metaphor understanding (CHIAPPE, KENNEDY & CHIAPPE 2003, DAMERALL & KELLOG 2016, KATS 1989, GIBBS 2008, GIORA 2003, TOURANGEAU & RIPS 1991).
While bearing in mind this debate, in this article we will propose a notion of *argumentative aptness* as a pertinent notion to qualify and classify metaphors from an argumentative point of view and within a particular dialogical context (§ 2). With respect to the educational effect of a metaphor, our assumption is that an argumentatively apt metaphor should involve a balance between (1) the complexity of the reasoning processes involved in the reconstruction of its meanings and (2) its informativeness: in an educational context, apt metaphors are metaphors sufficiently easy to be processed and understood (for a similar position see GREGORY & MERGLER 1990; PEXMAN, FERRETTI & KATZ 2000, these scholars distinguish between inferential processes and processing strategies in conventional and novel metaphors). Using an argumentative framework (WALTON, REED & MACAGNO 2008, MACAGNO & ZAVATTA 2014), we will analyze the well-known connection between metaphor, science and education to aim at explaining why patient education might be effectively grounded on the use of metaphors. More specifically, by using medical concepts as examples of abstract and very complicated concepts, we will point at the role of metaphors as instruments for comprehension and self-management within chronic care area.

1. An overview of metaphor framing as a reasoning device

With the book *Metaphors We Live By*, Lakoff and Johnson (1980) introduce perhaps the most influent contemporary conception of metaphor. By contrasting the traditional view of metaphor, according to which metaphor is primarily a phenomenon related to the realm of poetic or figurative language, the main idea proposed by Lakoff and Johnson was that metaphor is a question not just of novel poetic expressions, but mostly of ordinary everyday language. Within this perspective, metaphor is a central phenomenon also for the ordinary natural language semantics. By describing this revolution in understanding the nature of metaphor, Lakoff stated:

> The word metaphor has come to mean a cross-domain mapping in the conceptual system. The term metaphorical expression refers to a linguistic expression (a word, phrase, or sentence) that is the surface realization of such a

> cross-domain mapping (this is what the word metaphor referred to in the old theory) (LAKOFF 1992: 203).

This idea of metaphor as mental mapping, that is the idea of systematic correspondences from one conceptual domain to another, is useful to illustrate why it is possible to recognize an epistemic (and educative) function to metaphors. It is often said that, by using a metaphor we can explore, explain and understand something that we don't know yet in terms of what we know already. By structuring the less familiar concept in terms of the more familiar one (or by structuring the more abstract concept in terms of the more concrete one), metaphor can facilitate the processes of knowing and understanding. Let us think about the following metaphors: *God is light*; *Love is a journey*; *A Nation is a body*; or within the scientific domain, *The mind is a computer program*, *An atom is a solar system*, and *Light is a wave*. All these powerful metaphors intuitively explain why it is possible to say that metaphors may have a conceptual but also heuristic, epistemic and educative function. However, this is only half the story.

To familiarize with the other piece of the story, let us consider the very popular metaphorical titles of Richard Dawkins's books, *The selfish gene*, *The blind watchmaker*, *Climbing mount improbable*: all of them are metaphors to explain – or should we say popularize? – different aspects of the Darwinian theory of evolution by natural selection (DARWIN 1859). Clearly these metaphors are used to better explain some aspects of the Darwinian theory, but also to disseminate the Darwinian theory from a particular (and controversial) evolutionary perspective. In this context, the use of metaphors seems profitable because of their higher value and communicative effectiveness; namely, due to metaphors' persuasive power.

In more recent works, Lakoff himself points out this topic, by expressing the idea that the use of metaphors is not just a question of linguistic manipulation, but also a question of conceptual manipulation (LAKOFF 2008, 2014). The relevant focus here is the notion of manipulation: when we consider metaphors with respect to everyday reasoning, due to the conceptual manipulation of metaphors, their strong persuasive effect cannot be interpreted as rational (for a discussion see ERVAS, GOLA & ROSSI 2016a); for a review on the metaphorical persuasive effect see Sopory & Dillard (2002) and see Cuccio (2016) for an overview on persuasion and communicative power of metaphors).

Also the Stanford psychologists Paul Thibodeau and Lera Boroditsky (2011, 2013) insist on this connection between metaphors, manipulation and persuasion, and investigate the role of metaphors in the way people conceptualize and reason about complex policy issues like crime, framed by the use of different metaphors. By offering their subjects two different metaphors of crime (the virus metaphor and the beast metaphor), the authors observe that metaphors influence the way subjects reason about complex issues. An experimental framework similar to that of Thibodeau and Boroditsky has been used to investigate the influences of metaphorical framing in the field of healthcare. David J. Hauser and Norbert Schwarz (2015) consider the enemy and war metaphors so widespread for cancer health information with a view to studying their influence on people's reasoning. In more detail, the authors examine the way in which enemy metaphors influence people's intentions to engage different preventive behaviors. By distinguishing between self-limiting behaviors (e.g., avoid sugary drinks; limit consumption of red beats) and self-bolstering prevention behavior (e.g., eat more of a variety of

vegetables; be physically active for at least 30 min every day), Hauser and Schwarz summarize their findings as follows:

> Our findings suggest that framing cancer as a feared enemy metaphor has unintended side-effects that may impair efficient prevention strategies. Main behaviors that reduce the risk of cancer require one to limit enjoyable activities, from sunbathing to drinking alcohol and eating red meats. Yet, limiting a constraining oneself is not a concept closely associated with fighting enemies. Hence, a bellicose message frame that emphasizes fighting an enemy may render these protective behaviors less compelling than they might otherwise be (HAUSER and SCHWARZ 2015: 74).

From these experimental studies emerge the idea that the persuasive effect of a metaphor derives from the way in which such metaphor frames the considered issue. But since metaphorical frames very often influence people in an unconscious manner, the persuasive function is usually associated to a negative view of metaphors in everyday reasoning. Questioning this negative conclusion, Ervas, Gola and Rossi (2014, 2015, 2016a, 2016b) have sketched a framework within which metaphor is understood as a positive instrument of reasoning. This proposal is founded on two assumptions: (1) the adoption of the argumentative theory of reasoning (SPERBER & MERCIER 2011), based on the idea that reasoning is for arguing in communicative social contexts; (2) the interpretation of metaphors as framing and reframing strategies playing a constructive role in argumentation and – building on the first assumption – reasoning. In this article, we aim at continuing the specification of this theoretical framework in order to show that metaphors can be used as educational instruments within the context of chronic care. Whereas the purpose of the current paragraph is to look at the contemporary debate on metaphors' theory to better clarify why metaphors function for reasoning as framing strategies or framing instruments, the next paragraph will be aimed at carefully laying out our argumentative explanation of metaphors.

1.1. Figurative framing and metaphors

In this paragraph, we will look at the contemporary debate with a view to consider some of those models that may be helpful in understanding the educational role of metaphors within the institutional context of patient-provider interactions in diabetes care.

As briefly touched upon in the previous section, after the cognitive turn, it also became clear that metaphors are both linguistic and conceptual devices (for a discussion of the cognitive turn, see STEEN 2011). Within this framework, many scholars have experimentally manipulated metaphorical frames to stress the importance of metaphors as a way to (1) understand things by adopting a certain (and often new) perspective and, consequently, (2) change others' behavioral choices (KEEFER *et al.* 2014, HAUSER & SCHWARZ 2015, SCHERER, SCHERER & FAGERLIN 2015). On a more theoretical level, a recent paper authored by Burgers, Konijn and Steen (2016) discusses important aspects of the framing theory in detail, interpreting figurative language as a framing type, i.e. the figurative framing. In particular, authors clarify the notion of frame expanding the traditional framing theory (e.g., ENTMAN 1993; SCHEUFELE 1999) and emphasizing two distinct elements of a frame: framing device, the linguistic packaging of a frame traditionally

acknowledged – how something is said; reasoning device, the new feature of their proposal, namely the conceptual content of a frame – what is said. Based on this distinction, Burgers, Konijn and Steen (2016: 13) propose a research agenda for figurative framing. More specifically, the authors establish a taxonomy of types of figurative frames and show the importance of the four key processes identified within framing research: frame building, frame setting, individual-level of frames and the feedback loop from audience to journalists (SCHEUFELE 1999). The first process – frame building – is crucial for our purposes. In this regard, Burgers, Konijn and Steen (2016: 13) apply the process of frame building to the case of figurative framing and then underline:

> With respect to the topic, figurative frames containing metaphor and/or hyperbole can present their readers with a particular problem description and evaluation. This suggests that such figurative frames would be used relatively more often if knowledge about the problem is lacking in the audience. That is, we propose that *figurative frames containing metaphor and/or hyperbole are used more often when talking about new topics (e.g., new technological or policy developments such as net neutrality) compared to established topics. Furthermore, abstract and complex topics (e.g., advanced scientific or economic concepts) invite more metaphoric frames than straightforward topics* (BURGERS, KONIJN and STEEN 2016: 13, authors' original emphasis).

The case of the institutional context of patient-provider interactions precisely suits this description. Certainly, it is a communicative context marked by an asymmetrical distribution of knowledge and procedures, both for health providers and patients. Health providers have an advantage with information about procedures, therapeutic regimen and clinical understanding. But on the other hand, patients have an advantage with information about their subjective experience with illness – that can be particularly helpful in establishing diagnosis and plays a major role in disease monitoring; patients also have an advantage when they are called upon to express their preferences and values on treatment options. It follows from the above that frame building and metaphors might be especially useful in this context.

However, it is still not clear what exactly a reasoning device is: what is ambiguous, or at least not yet determined, is the framework within which the nature of reasoning is to be understood (ROSSI 2014). Ervas, Gola & Rossi (2014, 2015, 2016a, 2016b) have already adopted an argumentative perspective to understand the nature of the reasoning process, stressing the evolutionary and cognitive advantages derived from an argumentative theory of reasoning and communication (SPERBER & MERCIER 2011). This article is an attempt to take a further step in this direction by detailing the commitment with an argumentative perspective, further specified at the pragmatic and normative level (§ 2).

1.2. Deliberate metaphors and perspective changes

The current emphasis on figurative framing is a possible effect of adopting a conception of metaphor as mental-mapping. However, Steen (2008) noticed that framing is just one of the forms of perspectivization, and it relates mainly to the way in which metaphor is understood at the conceptual level of analysis. As set out in that article, it is only since we adopt a "Three-Dimensional Model of Metaphor" that it becomes possible to recognize three distinct functions of metaphors: naming, the

function related to the linguistic level of analysis; framing, the function related to the conceptual level of analysis; and perspective changing, the function related to the communication level of analysis (STEEN 2008: 231).

In our opinion, this shift of the focus on the communication function of metaphors has significant theoretical implications, crucial also for our analysis. It is not just that the educational function – which is the subject of this article – needs to be evaluated at both the conceptual and communicative levels of analysis. What is at stake here is a deeper understanding of human communicative interactions. Steen himself (2011) stressed the relevance of a multi-level approach to the psychology of discourse processing in order to have a more comprehensive model of language (and metaphor). Consistently with the increasingly widespread adoption of pragmatic language models (e.g., SPERBER & WILSON 1986, 2008), the identification of the discourse level as the appropriate one leads to constrain any metaphor processing model to a plausible discourse processing model. As we are going to see below (§ 2), the central importance of the discourse level and of the resulting conversational-dialogical dimension of human interactions is a requirement also for a pragmatic-argumentative approach to metaphor and language.

For the purpose of this paragraph, we want to underline that the relevance of the communicative function of metaphor is clearly recognized within this theoretical framework, and it is properly expressed by means of the deliberate use of a metaphor. Steen offers the following definition:

> I propose that a metaphor is used deliberately when it is expressly meant to change the addressee's perspective on the referent or topic that is the target of the metaphor, by making the addressee look at it from a different conceptual domain or space, which functions as a conceptual source (STEEN 2008: 222; see also 2010, 2011).

Steen's analysis of deliberate metaphors as a powerful change in thinking within communication interactions is highly important for our aim of education in chronic care by means of metaphors. In this context, the use of deliberate metaphors might be helpful to reorganize, for example, incorrect knowledge and erroneous symptom interpretations (ERVAS *et al.* in press). For patients with diabetes, both examples might have an indirect impact – but a very important one – on self-management, and therefore on clinical outcomes (STREET 2009).

While it is well recognized that argumentation and reasoning might play an important educational role by just enabling perspective change (see e.g., SCHWARZ & ASTERHAN 2010), the relationship between metaphor, argumentation and perspective change has not been given sufficient attention. The next section will be devoted to analyze this relationship.

2. Metaphors as argumentative devices

What we can conclude from the previous discussion is that framing and perspective change are two relevant forms of perspectivization exploited by metaphors. With respect to the notion of reasoning device as the conceptual content of a frame (§ 1.1), in this paragraph we will adopt an argumentative perspective on reasoning and interpret more properly the notion of reasoning device as argumentative device. With respect to the relationship between metaphor and perspective changing (§ 1.2), we

will advocate an interpretation of argumentation as a communicative instrument to actualize the metaphorical perspective changing.

On the one hand, scholars have already noted that metaphors are useful to structure and organize the arguments of a message (GENTER 1982, 1989); on the other hand, other scholars have seriously begun to emphasise the role of argumentation in patient-provider interaction (BIGI 2014a; PILGRAM 2015). However, literature exploring the argumentative properties of metaphors is lacking (but see e.g., ERVAS *et al*. 2015, MACAGNO & ZAVATTA 2014, OSWALD & RIHS 2014). With respect to this topic, our hypothesis is that since metaphors are argumentative devices they have a role in educational contexts.

We have already noted that the opportunity to use metaphors as educational instruments relies upon the possibility to assess metaphors and distinguish them on the ground of their (argumentative) aptness. Ortony explicitly makes a similar connection between the educational function of metaphors and their quality; and then he associates the measure of the quality of a metaphor with the notion of presupposition:

> The educational power of metaphor is thus twofold. The vivid imagery arising from metaphorical comprehension encourages memorability and generates of necessity a better, more insightful, personal understanding. But also, it is a very effective device for moving from the well-known to the less well-known, from vehicle to topic. As we shall see, there are potential dangers inherent in the use of metaphor in this respect, dangers associated with the presuppositions underlying the use of any particular metaphor (ORTONY 1975: 51).

There is a sort of paradox in this passage: on the one hand, Ortony (*Ivi*: 45) appreciates the «great educational value» of metaphors; on the other hand, he recognizes a danger in terms of what a metaphor presupposes and implies. This clarification should not be considered just as a theoretical detail: by expecting to be able to point at metaphors as instruments for patient education, our research investigation makes a stronger commitment with this theoretical point. To know with enough precision which constraints make a metaphor an effective educational device is a way to safeguard the quality of instruments of care from a communicative point of view. To this purpose, to explain the dialogic nature of presuppositions (see also e.g., KECKES & ZHANG 2009, MACAGNO 2016a), we advance a pragmatic-argumentative approach.

With the aim to show the relevance of linguistic approaches within the field of health communication in chronic care, Bigi (2016) has offered plenty of reasons that encourage the adoption of a pragmatic-argumentative approach in the domain of patient-provider interactions. These advantages apply also to the case of metaphors.

Within a pragmatic-argumentative framework, the felicity conditions of a speech act are determined on the basis of its effects on the interlocutor. Walton expresses the general criteria for the reasoning evaluation with the following words:

> In this pragmatic framework, two participants are reasoning together in a goal-directed, interactive, conventionalized framework called a *dialogue*. An argument is evaluated as good (correct, reasonable) to the extent that it contributes to the goal of the dialogue. An argument is evaluated as bad (incoherent, fallacious) to the extent that it blocks the goals of the dialogue (WALTON 1996: 1).

The value of such a dialogical effect therefore depends on the way the speech act contributes to the determined contextual goal – e.g., practicing shared decisions making on treatment options and care plans (WALTON 1996, WALTON, REED & MACAGNO 2008; MACAGNO 2016). Along the same vein, Macagno underlines two crucial elements within a pragmatic-argumentative approach to presuppositions: «(1) presupposition can be considered as a form of *decision* to treat a proposition as shared; (2) presuppositions are crucially related to the speaker and hearer's beliefs and knowledge» (MACAGNO 2016: 8). With respect to this second element the author further specifies that «presupposition involves essentially a gap of knowledge, as the speaker cannot know the hearer's beliefs or values, or what he holds to be true» (*Ivi*: 14). That is because sometimes metaphors could be dangerous: they are subject to presuppositional failures.

From this point of view, the hearer fills the gap of knowledge by interpreting, reconstructing and then accepting a presupposition through a contextual renegotiation of meanings. The interpretation is driven by at least two types of different reasoning processes: the presumptive reasoning process and the non-presumptive or systematic one. Considering metaphors as «presumptive failures that trigger the non-presumptive interpretation» (MACAGNO & ZAVATTA 2014: 464), then the acceptance – and communicative effectiveness – of a metaphor depends on the type of presumptive clash called into question. Going back to our definition of argumentatively apt metaphor, we are proposing to assess the argumentative strength of a metaphor by calculating the number and type of violated presumptions (see also MACAGNO 2016, ROSSI, MACAGNO & BIGI 2016a and 2016b).

3. Metaphors for diabetes

In this paper, we aim at proposing a theoretical framework that suits the usage of metaphors as educational instruments within the context of chronic care. The sketched pragmatic-argumentative model represents the philosophical preliminary step of a broader research program devoted to the assessment and test of metaphorical educational value.

The use of metaphors might be exploited in the context of chronic care due to the crucial role played by patient education. In such a context, this theoretical implication has also a strong social relevance: it is consistent with the view proposed by the paradigm of patient-centered medicine, whose social relevance is already highlighted in the field of health communication (e.g., BALINT 1957, ENGEL 1980) and within worldwide health policy guidelines (WHO 2007). More specifically, the dialogical effect interpreted as an effort to reach a common dialogical purpose has an important role in chronic care, where the active participation of patients is a constitutive part of care. Or to put it another way, the dialogical effect on the interlocutor can be considered an indirect mediator of behavior change and therapeutic adherence (see also BIGI 2016, STREET 2009).

Built on this basis, a critical scrutiny of health providers' recourse to metaphors serves as our starting point. Some studies have produced preliminary evidence by showing that the use of metaphors in clinical encounters leads to a positive evaluation of the providers' communication skills (e.g., CASARETT *et al*. 2010). While this topic has already been investigated in some fields of healthcare such as psychotic disorders (e.g., MOULD *et al.* 2010) or end-of-life and cancer care (e.g., DEMJEN, SEMINO & KOLLER 2016, DEMMEN *et al*. 2015), much remains to be done in other fields such as diabetes care. In this last area, studies on medical

metaphors are devoted mostly to observing the use of metaphors by patients, as ways to understand their illness experience (e.g., PATERSON, THORNE & DEWIS 1998, YOUNGSON *et al.* 2015) and there is still a lack of significant data on the use of metaphors by providers for patient education. A notable exception is represented by the study conducted by Aanand D. Naik *et al.* (2011). These researchers have mapped the diabetes ABCs (hemoglobin A1C, systolic Blood pressure, and low density lipoprotein (LDL) Cholesterol) with a weather metaphor and have used weather icons «as a method of translating the ABCs into predictors of future health consequences» (NAIK *et al.* 2011: 385). By introducing this metaphor as one of the two educational innovations with patients with a diagnosis of type 2 diabetes mellitus, Naik and collaborators have indirectly proposed that an educational approach based on the use of metaphors would facilitate understanding, engage patients and increase their self-management abilities.

Based on these preliminary positive conclusions, we are systematically collecting diabetes metaphors used by patients and providers by conducting a systematic review of the literature. Furthermore, we have already collected metaphors from a corpus of 53 video-recordings of follow-up consultations registered in a monocentric study in the North of Italy, containing over 190.000 words (BIGI 2014b). From the analysis of this corpus, we intend to develop an approach to metaphors as educative devices within the framework of a pragmatic-argumentative model of communication. This will have the double advantage of testing the solidity of a pragmatic-argumentative approach to metaphors, and to produce results that will be used to offer evidence-based communication instruments to health providers.

Rossi, Macagno and Bigi have started looking at the identified metaphors by using two main classification criteria: by using a linguistic criterion, they are distinguishing between conventional vs. creative metaphors; by analyzing the communicative contexts in which metaphors occur, they are also distinguishing among three main communicative functions of a metaphor – information giving, decision-making, and rapport-building. Due to the analysis of the dialogical context we have recognized just 64 metaphors (28%) with an educational role, but only a limited number of them (15; 43%) were creative metaphors. However, their educational role may or may not be positively interpreted also in terms of their argumentative aptness. At the present state of research, we are now analyzing metaphors by using a pragmatic-argumentative approach to metaphors precisely to evaluate their argumentative aptness. Let's consider the following example extracted from our corpus.

> *Dialogical context*: The doctor is explaining the relationship between glycaemia and glycated hemoglobin, two of the most important concepts to understand diabetes functioning and management.
>
> *Text*: *The blood is like a river with polluting substances* (a), which we need to keep under control. The glycaemia during the day tells me how I am doing at that specific moment. The glycated hemoglobin tells me the global trend of diabetes. *If I go to buy a dress, the glycated hemoglobin is the size, and glycaemia is the model* (b). The size tells me my condition; I can the customize the model.
>
> *Type of metaphor*: creative metaphor.
> *Main communicative function*: information giving.
> *Educational role*: ☑.

The doctor deliberately makes use of more than one figurative expression. While the first figurative expression (a) seems easy to be understood – it is an attempt to build a correspondence between the level of glycaemia in the blood and the level of polluting substances in a river; metaphors within the final part of the text (b) are much more complex (and not completely correct): the relationship between size and model does not sound as the same as for the relationship between glycated hemoglobin and glycaemia. Moreover, it is not obvious that they are readily understandable to patients[1]. The major complexity of the reasoning process involved in the reconstruction of the metaphorical meaning for the case (b) should penalize also its informativeness: it does not look so simple understand the correspondence between the pair of glycated hemoglobin-glycaemia through the pair of size-model. What the doctor would like to explain is that the glycaemia values depend on the slight choices concerning healthy habits (e.g., eating habits and healthy lifestyles) within certain limits, and therefore that the patient (1) can modify his/her eating habits and/or lifestyles to keep under control the glycaemia values, and consequently, (2) can also positively affect his/her glycated hemoglobin value. One of the problems with this complex correspondence is that you cannot alter the relationship between size and model in the same way: surely you can choose your preferred model, still this personal choice does not usually alter your size. Before testing the educational efficacy of some diabetes metaphors with patients, we are going to calculate the number and type of violated presumptions to assess their argumentative strength and explain, for example, the difference between the cases (a) and (b) mentioned above.

4. Provisional conclusions

At a general level of analysis, health providers need communicative instruments for engaging and educating patients. Given that patient self-monitoring and patient self-managing play a major role in the process of care, patient education should be considered a primary therapeutic goal in chronic care. The theoretical framework discussed above represents the first step of a broader ongoing research program developed in collaboration with Sarah Bigi and Fabrizio Macagno, named *Metaphors for diabetes* (http://www.unicatt.it/healthyreasoning). Within this research program, metaphors described and classified from an argumentative point of view and within a particular argumentative context (the clinical one) are expected to become evidence-based educational instruments for health care providers.

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[1] A previous discussion of this example is available within the article of Ervas *et al.* (in press).

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