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Does Argumentation Matter? A Systematic Literature Review on the Role of Argumentation in Doctor–Patient Communication

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In view of a growing interest in argumentative discourse in the context of patient-centered consultation and shared decision making, this article explores the role that argumentation has been attributed in the literature on doctor–patient consultation so far. It studies to what extent theories and concepts of argumentation have been applied by scholars from various fields in order to analyze, understand, facilitate, and improve the argumentative nature of medical consultation. It reports on an extensive and systematic literature search—using eight online databases, expert suggestions, and a manual search—and the subsequent evaluation of 1,330 abstracts on the basis of strict inclusion and exclusion criteria. Forty relevant scientific contributions are grouped into four main categories and discussed accordingly: (a) argumentation theory, (b) discourse analysis, (c) medical informatics, and (d) medical ethics. Because of its systematic approach, this study forms a solid starting point for further integration of argumentation theoretical insights into contemporary views of patient-centered medicine and evidence-based medicine. It provides suggestions for further interdisciplinary and theory-driven research with a strong focus on empirical reality. Doing so, a preliminary model is proposed that outlines the potential effects of the quality of doctors' communication on proximal, intermediate, and long-term consultation outcomes.

Over the past decades, the shared decision-making model has been increasingly promoted as the preferred standard of treatment decision making in doctor–patient communication. In contrast to a traditional approach in which the doctor is assumed to know best and is regarded as the primary decision maker, the shared decision-making model advocates a decision-making process in which doctor and patient actively take part as coequal partners (Charles, Gafni, & Whelan, 1997, 1999; Gwyn & Elwyn, 1999). While the model views the doctor as an expert holding specialist medical knowledge, it considers the patient to bring a unique personal perspective to the consultation that captures feelings, expectations, and treatment preferences. Hence, doctors' and patients' viewpoints are considered to be distinct yet of equal importance to the decision-making process.

Charles et al. (1997) define the practice of shared decision making as "the involvement of both the patient and the doctor, a sharing of information by both parties, both parties taking steps to build a consensus about the preferred treatment, and reaching an agreement about which treatment to implement" (p. 681). Following Frosch and Kaplan (1999), the model of shared decision making goes several steps further than the legal doctrine of informed consent. Beyond presenting the patient with medical information and asking the patient to consent prior to treatment, shared decision making promotes a process in which both doctor and patient explicitly voice their preferences as well as their underlying rationales. It is assumed that both parties have a legitimate investment in the decision process and, moreover, make a commitment to resolve any disagreement that arises in a mutually respectful manner (Roter & Hall, 2006). Such disagreement may surface when there is no unambiguous evidence about the best treatment option or when doctor and patient disagree about the implications of a certain treatment method. "Physician and patient are then in conflict, and a solution needs to be negotiated" (Towle & Godolphin, 1999, p. 768).

Promoting a decision-making process in which doctor and patient aim to build consensus about the appropriate

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treatment to implement and coequally negotiate a resolution to any disagreement that arises during consultation, shared decision making constitutes more than explicitly engaging in a dialogue. Shared decision making can be said to involve a process of argumentation in which the participants act as rational discussion partners who are expected to be capable of critically evaluating their interlocutors' treatment preferences and to provide a rationale for their own. In other words, doctor and patient are expected to each "argue their case."

The argumentative character of doctor–patient communication aimed at shared decision making has thus far been largely neglected. Studies that explicitly explore the role of argumentation in medical consultation seem still rare. A possible explanation for this is that the term "argumentation" is often associated with acts of bickering and quarreling (van Eemeren, 2010, p. 26). Defining argumentation as such, indeed, analyzing doctor–patient consultation as an argumentative activity, is at odds with a shared decision-making approach. In this article, however, a definition of argumentation is chosen that resembles its usage in other languages, like Dutch ("argumentatie"), German ("Argumentation"), and Italian ("argomentazione"), in which the negative connotation is not present. Argumentation, as used in this article, refers to a joint effort of dialogical partners to resolve a difference of opinion by rationally convincing the other party of the acceptability of one's treatment preference by means of advancing arguments. Therewith, the resolution-oriented and shared character of treatment decision-making discussions is emphasized.

In order to provide a comprehensive starting point for the integration of insights from argumentation theory into contemporary views of patient-centered medicine and evidence-based medicine, this literature review aims to systematically explore and map out the role that has been attributed to argumentative discourse in the literature on doctor–patient consultation. To what extent have theories and concepts of argumentation been applied by scholars from various fields in order to analyze, understand, facilitate, and improve the argumentative nature of medical consultation? From which scientific disciplines do contributions acknowledging the argumentative nature of doctor–patient consultation originate? By answering these questions and providing suggestions for further research, this literature review seeks to contribute to endeavors in the field of health communication to explore the potential for improving the quality of doctor–patient consultation and, ultimately, its outcomes.

METHOD

In order to identify relevant studies, eight online databases were searched, encompassing both databases with a medical orientation and databases with a focus on the humanities and social sciences: Communication and Mass Media Complete, JSTOR, PsycInfo, PubMed, Sage, ScienceDirect, SpringerLink, and Wiley Online Library. To retrieve all relevant literature discussing the argumentative nature of medical consultation, a combined keyword search was formulated. Search words related to argumentation were combined with either the term "doctor patient consultation" or "medical consultation." In order to select the keywords related to the topic of argumentation, first an intuitive list of search terms was created. Subsequently, a thesaurus search was conducted in order to complete the list of possible terms. This set of keywords was then discussed with an expert in the field of argumentation theory. This resulted in a final list, consisting of the 10 terms related to the (process of) argumentation that were most likely to yield relevant results. While the authors were aware of the ambiguity of some of the search terms because of academic jargon ("discussion," "argument"), these terms were considered too important to be dismissed. To include as many variants of each word as possible, a wildcard search was used when available. This resulted in a final search strategy as described in Table 1.

TABLE 1
Boolean Search Strategy

Consultation Search Terms		*Argumentation Search Terms*
"medical consultation" OR "doctor patient consultation"	AND	(argu*) OR (reason*) OR ("difference* of opinion") OR (disagree*) OR (persua*) OR (rhetoric*) OR (negotiat*) OR (discuss*) OR (disput*) OR (deliberat*)

Note. An asterisk indicates the break-off point for the wildcard search.

The initial database search, which was conducted in the second half of 2011, was limited to abstracts and titles only, as it was assumed that this would increase the relevance of the results. JSTOR formed the only exception. This database explicitly discouraged an abstract-limited search.[1] Sage did not allow for a complex search containing multiple AND/OR options. Yet, as the simple search for either "medical consultation" or "doctor patient consultation" yielded only 20 results, it was decided to include all these articles in the initial corpus and search these manually for relevant articles. No limitation was set for the time frame.

The search yielded 1,330 articles eligible for analysis. Two coders, both trained in argumentation theory as well as health communication, independently judged the articles for their relevance on the basis of the titles and abstracts,[2] applying a strict set of inclusion and exclusion criteria. In order to be included, records (journal articles, books and chapters,

[1]JSTOR discourages abstract-only searches as only ten percent of all records contain an abstract. Moreover, JSTOR allows for maximally three wildcards (*) to be used. Therefore, only the terms argu*, reason*, and discuss* were used.

[2]When an abstract was not included, the coders relied on all other relevant information available in the database.

and proceedings papers) had to be published, either online or in print. All poster presentations, (extended) abstracts, review articles, and encyclopedia entries were excluded from review. For practical reasons, only records written in English were included. With regard to content, publications were deemed relevant when they explicitly discussed or acknowledged the role of argumentation processes in the context of medical consultation or when they referred to the role of argumentation concepts and theories in explaining or aiding the interaction between doctors and their patients.

Upon completion of the abstract analysis, the two coders compared their findings and resolved all differences of opinion through a discussion until full agreement was reached. The ratings prior to full agreement were compared to test for interrater reliability. Overall, there was substantial agreement between the two raters (97%, $k = .68$). When specified per database (see Table 2), it appeared that while for two databases the agreement was almost perfect (Ebscohost and Springerlink), the interrater agreement for JSTOR and Sage was substantially lower than for the other databases. Notably, these were the two databases that did not allow for an abstract search, which made the analysis of the potential relevance of the articles more difficult.

In total, 46 unique publications were unanimously deemed relevant and included for further review. In order to ensure that all important contributions would be included, a complementary manual search was conducted. First, the references of the first 46 articles were scanned for missing publications. In addition, five experts in the field of health communication and argumentation theory were consulted and asked to add to the existing list of references. Furthermore, a meta-search of Google Scholar was conducted in order to capture any articles published after the initial search date and to account for unindexed publications that were still missing. Upon suggestion of one of the experts, the meta-search included the additional search terms "doctor patient interaction" and "doctor patient communication." Lastly, throughout the writing process a Google Alert was set in order to keep track of newly published articles containing the search terms.

TABLE 2
Interrater Reliability

	Articles		*Interrater Agreement*	
Database	*Found*	*Included*	*%*	*k*
Ebscohost	88	5 (6%)	.99	.93
JSTOR	291	3 (1%)	.98	.24
PubMED	219	8 (4%)	.98	.77
SAGE	20	1 (5%)	.90	.47
ScienceDirect	102	14 (14%)	.90	.62
Springerlink	214	11 (5%)	.99	.84
Wiley	396	12 (3%)	.98	.66
Overall	1330	54 (4%)*	.97	.68

*Of which 46 unique items.

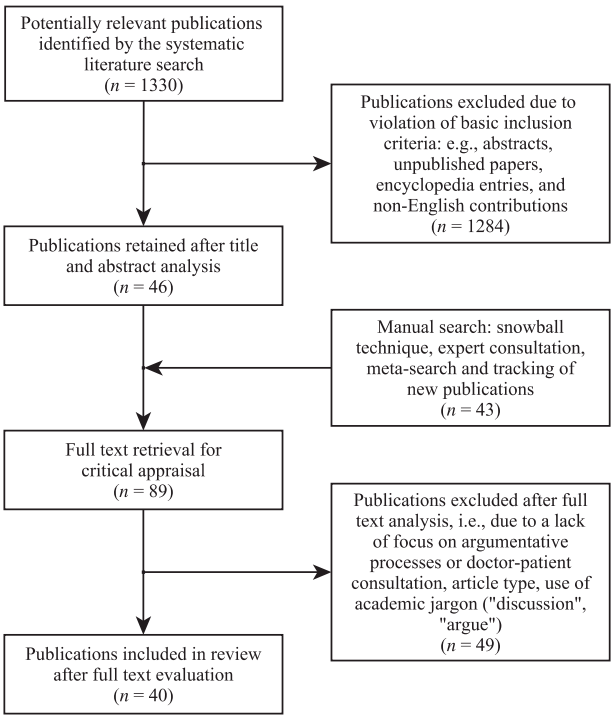

FIGURE 1 Analysis of the identified contributions.

The manual search yielded an additional 43 potentially relevant articles for review. Each of the total number of 89 articles was subsequently analyzed and reviewed on the basis of its full text. Upon careful scrutiny of the texts, taking into account the aforementioned criteria, 40 articles were deemed fit for inclusion and subsequently categorized (Figure 1).

CATEGORIZATION OF THE ARTICLES

Careful scrutiny of the publications yielded by the systematic search reveals that studies focusing on the role of argumentative discourse in the context of medical consultation essentially originate in four scientific domains: (a) argumentation theory, (b) discourse analysis, (c) medical informatics, and (d) medical ethics. Each of these scientific domains is characterized by distinct research aims and objectives and, consequently, by the main theoretical frameworks and research methods used.

While the contributions from the fields of (a) argumentation theory and (b) discourse analysis fall within the broader domain of the humanities and strive to create a unified understanding of communicative interaction in context, the studies originating in (c) medical informatics and (d) medical ethics belong to the realm of medicine and are typically focused on improving medical practice. While research in the first category is primarily aimed at furthering theories of argumentation, studies belonging to the other three categories use argumentative concepts and principles to describe

and improve the communicative interaction between doctors and patients. However, they do not strive to build argumentation theory. This distinguishes discourse analytic studies from contributions that are categorized under the heading of argumentation theory, although the primary object of study ("discourse" or "text") is the same.

Also, medical informatics and medical ethics are characterized by distinct research aims and objectives. While medical informatics is concerned with the design of decision-making systems and the implementation of models of argumentation, medical ethics takes a theoretical approach to doctor–patient communication and reasoning aiming to establish norms for good medical practice. Table 3 provides an overview of all categorized contributions, the theoretical frameworks and methodological approaches used, and their main findings. In the remainder of this article, each of the four categories is discussed and, after a discussion of the limitations of the present study, the implications of the findings are considered alongside some suggestions for future research.

Argumentation Theory: Argumentation as a Critical Discussion Procedure

Traditionally, the discipline of argumentation theory is concerned with establishing the requirements that make arguments "correct"—by some appropriate standard of proof, examining the errors of reasoning that discussants make when engaging in argumentative discourse (Walton, 2009). In recent years, scholars of argumentation have increasingly focused on the study of argumentation in context, exploring the extent to which argumentative discourse is shaped by the institutional setting it occurs in (van Eemeren, 2010). A discussion context that has received particular attention is the context of doctor–patient consultation. Walton (1985) summarizes the argumentative character of doctor–patient consultation as follows:

> Medical treatment is a complex two-person interaction where each party has a distinct role. Underlying the interaction is a technical or productive process, an action. Partly physical in nature, the action also has a purposeful element. And overlaying the action is a network of communicative interchange, a dialogue or reasoned exchange of information and argumentation. (Walton, 1985, p. 13)

Today, the majority of argumentation theoretical research that focuses on the context of medical consultation takes a pragma-dialectical approach (see Table 3). The (extended) pragma-dialectical theory of argumentation (van Eemeren, 2010; van Eemeren & Grootendorst, 2004) views argumentation as a part of a critical exchange that is ideally aimed at resolving a difference of opinion. At the heart of the theory lies an ideal model of a critical discussion that specifies the different stages that can be analytically distinguished in any argumentative discussion, as well as the verbal moves that are functional in resolving the difference of opinion throughout these different stages. The basic principles of a critical discussion are laid down in a series of basic rules that together constitute a code of conduct for discussants engaging in an argumentative dialogue. Each rule violation amounts to an impediment to the resolution of the difference of opinion at hand and is therefore considered an unreasonable discussion move, or a *fallacy.* Thereby, the pragma-dialectical ideal model provides a normative account of argumentative discussions that can be used to analyze and evaluate argumentative discourse in reality.

Pragma-dialecticians reconstruct medical consultation as an essentially "argumentative activity type" (e.g., Labrie, 2012; Pilgram, 2009; Snoeck Henkemans, 2011; van Eemeren, 2010) in which doctor and patient ideally act as rational discussion partners who strive to resolve any difference of opinion by means of a reasonable discussion process. Such difference of opinion may, for example, concern the doctor's diagnosis or prognosis, the proposed method of treatment, or the advised prevention plan (Labrie, 2012; Rubinelli & Schulz, 2006). Doctor and patient may have opposing viewpoints, but also in the case of the patient's (assumed) doubt about the doctor's medical opinion or advice, pragma-dialecticians speak of a difference of opinion.[3]

Goodnight (2006) argues that a pragma-dialectical reconstruction of doctor–patient interaction is particularly relevant in light of informed consent, which as a "legal constraint, institutional norm, and personal ethic" essentially aims to ensure that doctor–patient communication is based in a reasonable discussion: "The standard of informed consent requires doctors to justify proposals for treatment or procedures, while honoring the duty to create patient understanding, listen to objections, and obtain assent" (p. 84). Rubinelli and Schulz (2006; Schulz & Rubinelli, 2006, 2008) underline this observation and show that a doctor's choice of arguments to support his or her medical advice can influence the informed decision-making process (Rubinelli and Schulz, 2006, p. 362).[4]

Going beyond the legal doctrine of informed consent, several authors (Labrie, 2012; Snoeck Henkemans, 2011; Snoeck Henkemans & Mohammed, 2012; Snoeck Henkemans & Wagemans, 2012) point out the compatability of the ideals laid down in the pragma-dialectical model of a critical discussion and those advocated by the

[3] A distinction is made between a "mixed difference of opinion," in which the discussion parties hold opposing standpoints, and a "non-mixed difference of opinion," in which one of the parties has—or is assumed to have—doubts about his or her opponent's standpoint (van Eemeren & Grootendorst, 2004).

[4] Also Bickenbach (2012) and Rubinelli and Zanini (2012) connect argumentation in consultation to the notion of informed consent and the shared decision-making model. However, they do not (explicitly) adopt a pragma-dialectical perspective. Zanini and Rubinelli (2012) do use the model of critical discussion, developed in pragma-dialectics.

TABLE 3
Studies on Argumentation in Doctor–Patient Communication

Study	*Theoretical Framework*	*Methodological Approach*	*Proposals/Findings*
Category: Argumentation Theory (20)			
Bickenbach (2012)	Argumentation theory (general)	Reflective	Argumentation theory can shed new light on doctor–patient interaction within the context of informed consent.
Bigi (2011, 2012a, 2012b)	Informal logic, argumentum model of topics, model of communication context	Reflective, qualitative text analysis	Contextual factors (institutional, cultural) affect the soundness and persuasive strength of authority argumentation and other forms of argumentation in doctor-patient interaction.
Brashers et al. (2006)	Pragma-dialectical theory	Focus-group interviews	Pragma-dialectics provides a starting point in understanding patients' self-advocacy strategies and for advancing patient education and empowerment.
Goodnight (2006)	Pragma-dialectical theory	Reflective	Pragma-dialectics offers a framework through which the ideal and practical norms of the deliberative character of doctor–patient consultation can be illustrated and evaluated.
Goodnight & Pilgram (2011); Pilgram (2009, 2011, 2012)	Pragma-dialectical theory	Qualitative text analysis	The institutional context of doctor–patient interaction affects the specific soundness criteria for doctors' strategic use of authority argumentation.
Labrie (2012)	Pragma-dialectical theory	Qualitative text analysis	Pragma-dialectics can shed new light on disagreement between doctors and patients and can provide a starting point for teaching doctors how to support their treatment advice.
Rubinelli & Schulz (2006)	Pragma-dialectical theory, rhetorical theory	Qualitative text analysis	Doctors' argumentation strategies impact information transfer and decision making. Systematic studies should determine the effects of such strategies on, e.g., adherence.
Rubinelli & Zanini (2012)	Argumentation theory (general)	Reflective	Training health professionals in argumentation theory can be beneficial for patients' involvement in the decision making while at the same time preserving doctors' authority.
Schulz & Rubinelli (2006)	Pragma-dialectical theory	Qualitative text analysis	The concept of "strategic maneuvering" should be considered in the evaluation of doctor–patient argumentation. Moreover, the institutional context should be taken into account.
Schulz & Rubinelli (2008)	Pragma-dialectical theory	Reflective	Pragma-dialectics offers a model of critical discussion that can be used to identify good argumentative practices for doctors in light of obtaining informed consent.
Snoeck Henkemans (2011); Snoeck Henkemans & Mohammed (2012)	Pragma-dialectical theory	Qualitative text analysis	Adherence to the pragma-dialectical rules of a critical discussion seems instrumental for the process of shared decision making.
Snoeck Henkemans & Wagemans (2012)	Pragma-dialectical theory	Reflective	When doctors' argumentative appeal to expertise obstructs patients' understanding, it violates both the shared decision-making ideal and the legal rule of informed consent.
Walton (1985)	Aristotelian practical reasoning	Reflective	A reasonable argumentative dialogue leads to informed consent on the part of the patients and to a mutual decision reflecting both medical standards and the patients' needs.
Zanini & Rubinelli (2012)	Pragma-dialectical theory	Reflective	There is a need to focus on the development and testing of instruments to facilitate doctors' and patients' engagement in argumentation.
Category: Discourse Analysis (10)			
Ariss (2009)	Conversation analysis	Qualitative text analysis	Asymmetry of knowledge and authority between doctors and patients affects the extent to which patients engage in discussions with their doctors.
Aronsson & Sätterlund-Larsson (1987)	Politeness theory	Qualitative text analysis	Patients' unvoiced, "polite" disagreement with their doctors can jeopardize patient participation in the medical decision-making process.

(Continued)

TABLE 3
(Continued)

Study	*Theoretical Framework*	*Methodological Approach*	*Proposals/Findings*
Drew et al. (2001)	Conversation analysis	Qualitative text analysis	Explicit provision of diagnostic evidence stimulates patients' involvement in treatment discussions, which can impact patients' understanding, adherence, and satisfaction.
Feng et al. (2011)	Integrated model of medical advising	Quantitative text analysis, survey research	Doctors' use of persuasive strategies pertaining to the four IMMA dimensions does not have any significant impact on patients' satisfaction or intended adherence.
Knight & Sweeney (2007)	Rhetorical theory, logic, narrative analysis	Qualitative research interviews	Rhetorical analysis of argument structures can provide information about people's implicit conception of meaning. This can be useful in medical education research.
Peräkylä (1998)	Conversation analysis, theory of professional work	Qualitative and quantitative text analysis	By providing explicit evidence for their diagnoses, doctors treat themselves as accountable and thereby do not claim unconditional authority in relation to the patients.
Segal (1994, 2007, 2008)	Rhetorical theory	Reflective	Rhetorical theory can provide health care practitioners with insights concerning noncompliance, as well as patients' conceptualization of illness through argumentation.
Steihaug et al. (2011)	Part process analysis	Qualitative text analysis	When the doctor–patient relationship is characterized by recognition, disagreement is allowed and does not damage the relationship.
Category: Medical Informatics (4)			
Dickinson (1998)	Toulmin model*	Reflective	The structural model of argumentation can be used to inform the design of decision support tools and to establish criteria for assessing decisional performance.
Grasso et al. (2000)	New rhetoric, stages of change model, health belief model	System development	There is a need for expressing everyday arguments in advice giving systems and for the use of consolidated theories of informal argumentation that combine logic and dialectic.
Shankar et al. (2006)	Toulmin model	System development	The WOZ system provides doctors access to evidence and information they can use to discuss recommendations with their patients. This can positively affect adherence.
Upshur & Colak (2003)	Toulmin model, Walton model	Reflective	Informal logic can make the role of evidence in clinical reasoning explicit and shed light on its dialogical context.
Category: Medical Ethics (6)			
Sandman & Munthe (2010)	Shared decision-making model	Reflective	Models of shared decision making should include a shared process of reasoning. This is relevant in light of long-term adherence and satisfaction.
Barilan & Weintraub (2001)	Persuasion, patient autonomy	Reflective	Respect for patient autonomy requires doctors' communicative engagement about personal issues that is aimed at persuading patients to accept and comply with medical advice.
Savulescu & Momeyer (1997)	Patient autonomy, informed consent	Reflective	Doctors should assist patients to base their decisions in rational thinking and deliberation.
Smith & Pettegrew (1986)	Rhetorical theory, shared decision making	Reflective	The distinction between rhetoric and sophistic can provide a basis for a model of mutual persuasion that goes beyond the provision of information and that avoids manipulation.
Walseth & Schei (2011)	Habermas's theory of communicative action	Reflective	The argumentation process described by Habermas offers an explicit approach for doctors and patients to create common ground.
Wirtz et al. (2006)	Interpretative, shared, and informed decision-making models	Reflective	Models of participatory decision making should be improved, acknowledging the "reasoning problem" and disentangling the fuzzy concept of doctor–patient deliberation.

Note. Contributions that are highly similar with respect to their research aim, theoretical framework, methodology, and main findings are grouped together.
*No explicit reference to the Toulmin model is provided.

shared decision-making model. They argue that, taking a modern perspective of shared accountability, not only the doctor should advance arguments to support his or her treatment advice, but also the patient should actively engage in the treatment discussion—taking up the role of a critical antagonist.[5] In their collaborative attempt to arrive at a treatment decision, doctor and patient moreover should strive to maintain a balance between dialectically reasonable argumentation and rhetorically effective reasoning. In pragma-dialectical terms this argumentative effort is referred to as "strategic maneuvering" (van Eemeren, 2010).

A subtype of argumentation—and strategic maneuver—that has received particular attention is authority argumentation (Bigi, 2011, 2012a, 2012b; Goodnight & Pilgram, 2011; Pilgram, 2011; 2012; Snoeck Henkemans & Wagemans, 2012).[6] In pragma-dialectics, authority argumentation is regarded as a form of argument in which the agreement of a supposed authority with the discussant's standpoint is claimed to be a sign of the acceptability of this standpoint (van Eemeren & Grootendorst, 1992, p. 97). Through case examples, Goodnight and Pilgram (2011) and Pilgram (2011, 2012) elucidate how doctors' strategic and sound use of such argumentation by authority (or "ethos") in consultation may function as an effective discussion move that can contribute to the resolution of a difference of opinion in medical consultation, while its unsound use provides a hindrance to the resolution process and, therewith, the achievement of a mutually accepted decision. As such, Goodnight and Pilgram (2011, p. 12) argue that the basic rules for the reasonable use of authority argumentation in medical consultation can potentially function as a starting point for formulating guidelines for doctors' argumentative conduct in interacting with their patients. A similar line of argument could be used for other forms of argumentation.

The body of argumentation theoretical research that discusses the role of argumentation in medical consultation is growing rapidly and is built on consistent and comprehensive considerations. The pragma-dialectical theory, which encompasses both normative and descriptive elements, provides an efficient tool for the analysis and reconstruction of argumentative discourse in doctor–patient consultation and has been widely applied with a focus on a variety of argumentative phenomena. Thus far, however, research adopting a pragma-dialectical approach to the study of argumentation in doctor–patient communication is only reflective and qualitative in nature. Quantitative studies that measure doctors' and patients' use of argumentative discourse in medical practice are lacking. While qualitative text analyses provide valuable insights into the role of argumentation in doctor–patient consultation, additional quantitative studies could offer a more profound understanding of the frequency to which certain argumentative phenomena occur in empirical reality. Moreover, quantitative studies would allow for the exploration of possible relationships between doctors' (and patients') use of argumentation and other characteristics of medical consultation. As such, a pragma-dialectical approach to doctor–patient interaction could become of interest to scholars of argumentation and health communication alike.

Discourse Analysis: Argumentation as an Inherent Characteristic of Social Interaction

The studies categorized under the heading of "discourse analysis" all display an interest in the verbal interaction (i.e., "text") between doctors and their patients during consultation and explore this discourse starting from conversation analysis, and rhetoric, as well as insights from, for instance, politeness theory (Brown & Levinson, 1987; see Table 3).[7] They examine the use of argumentative discourse in medical consultation as forming part of the social interaction between the doctor and the patient, taking into account the intrinsic role division of doctor and patient during the consultation. Much like the studies originating from the field of argumentation theory, the majority of discourse analytic contributions start from a contemporary, patient-centered conceptualization of medical consultation. However, their research aims and foci are different.

Drew, Chatwin, and Collins (2000) promote the use of conversation analysis as a theoretical framework and method for the study of doctor–patient interaction. They argue that conversation analysis offers the possibility to identify the choices that doctors make in their turns at talk and the effects of these choices on the quality of the interaction between doctor and patient (p. 58). Analyzing Finnish and American consultation excerpts, they focus on doctors' use of explicit argumentative support for their diagnoses.[8] They illustrate that doctors can encourage their patients to engage in the discussion and voice their opinions by making the evidence in support of diagnostic conclusions explicit and

[5] Brashers, Rintamaki, Hsieh, and Peterson (2006) focus on the patient's side of the argumentative discussion in medical consultation through the concept of self-advocacy: the "persuasive efforts of an individual that are in the individual's interest, [. . .] a unique form of critical discussion " (p. 25).

[6] Pilgram (2011) distinguishes between the argument "by authority" and the argument "from authority." While the former term refers to the kind of authority argumentation in which the authority referred to is the discussion party that presents the argumentation, the latter term refers to the kind in which the authority referred to is a third party. Bigi (2011) refers to authority argumentation as "argument from expert opinion."

[7] In this article, rather than referring to a specific method, "discourse analysis" is used as an umbrella term to cover a range of approaches that focus on the use and functions of talk and text within social interaction.

[8] Rather than using the term "argumentative support," Drew, Chatwin, and Collins (2000) use the terms "evidence" and "evidential grounds." They distinguish between two formats for diagnosis delivery. In a "type I" format, doctors do not refer to "the reasons or evidential grounds for reaching the conclusion: they just assert something to be the case." In contrast, in a "type II" format, the doctor explicitly articulates the evidence supporting the diagnosis.

thereby available. As such, the doctor can also anticipate the patient's potential disagreement with the diagnosis. This view is shared by Peräkylä (1998, p. 317), who adds that by providing support for their diagnoses, doctors convey their accountability for their viewpoints and, moreover, refrain from claiming the role of the indisputed authority.[9]

Adopting a different approach, Knight and Sweeney (2007) and Segal (1994, 2007, 2008) apply insights from rhetoric and narrative analysis to analyze the interaction between doctors and patients. While Knight and Sweeney advocate the use of logical inference as an analytic tool to explicate the implicit elements of argumentation within doctor–patient interaction,[10] Segal shows that rhetorical analysis can shed light on the ways in which patients strive to convince their doctors that they are ill and in need of care, as well as on the ways in which doctors conversely aim to convince their patients of a method of treatment (2007, 2008). According to Segal (1994), the latter is particularly relevant in light of endeavors to increase patients' medication compliance, while simultaneously maintaining a patient-centered stance.

Aronsson and Sätterlund-Larsson (1987) illustrate that disagreement concerning a medical diagnosis or advice is not necessarily detrimental to the doctor–patient relationship. They argue that it is the doctor's role to elicit the patient's opinions and possible "silent" disagreement (e.g., for reasons of politeness) (p. 25). The doctor should, moreover, recognize the patient as an eligible discussion party and respect the patient's perspective. To support his or her own views, the doctor should provide rational argumentation, and only when based on solid medical knowledge and with a fundamental respect for the patient's perspective is the doctor's use of persuasion legitimated (Steihaug, Gulbrandsen, & Werner, 2011).[11]

Doctors' use of explicit, rational argumentation to support medical diagnoses and advice not only adheres to the ideal of patient-centeredness, but also potentially affects consultation outcomes. Several authors argue that doctors provision of argumentation can improve outcomes such as patient adherence and satisfaction (Drew et al., 2000; Feng, Bell, Jeran, & Kravitz, 2011; Segal, 1994; Steihaug et al., 2011) and may contribute to the clarification of expectations, increased patient participation, and a more balanced doctor–patient relationship (Aronsson & Sätterlund-Larsson, 1987; Peräkylä, 1998; Steihaug et al., 2011).

Much like the contributions from the field of argumentation theory, the vast majority of studies taking a discourse analytic approach to the study of argumentation in medical consultation focus on the qualitative analysis of doctor–patient communication in order to gain a deeper understanding of the interaction between doctors and their patients. Moreover, and in contrast to argumentation theoretical research, these analyses are merely descriptive in nature. That is, no precise normative account is provided as to how doctors and patients ideally should communicate and as to what constitutes a "rational" argument. As such, discourse analysts could benefit from insights gained in the field of argumentation theory. Notably, many authors point out the potential relevance of insights yielded by, for instance, conversation analysis and rhetorical analyis for the improvement of consultation outcomes. Feng et al. (2011) provide a quantitative attempt at elucidating the effects of doctors' attempt to persuade patients to follow medical advice, but do not use a comprehensive theory of argumentation and, moreover, yield inconclusive results. Their findings, in the absence of other quantitative studies, justify the need for futher research in this area.

Medical Informatics: Argumentation to Guide the Design of Intelligent Systems

Medical informatics, a discipline on the intersection of computer sciences and health care, is concerned with optimizing, obtaining, storing, retrieving, and using information in the (bio-)medical context. It focuses on the development of computer-based tools and systems that can facilitate doctors and patients in the medical care process. In medical informatics, argumentation theoretical insights are used in order to aid the design of decision-support systems. In the context of doctor–patient interactions, such systems focus on doctors' diagnostic reasoning and treatment decision making. In contrast to studies originating from argumentation theory and discourse analysis, studies in medical informatics do not set out to analyze the argumentative discourse of doctors and patients. Instead they seek to apply knowledge from argumentation theory to improve clinical practice. Medical informatics, as a discipline, is thus primarily a practice-oriented field.

Studies that focus on the design of computer-based tools to aid doctor and patient during consultation are characteristically based on the Toulmin (1958) model as well as insights gained in informal logic. Toulmin, going beyond a formal logical approach, starts from a practical definition of argumentation. He outlines an analytic model in which a successful argument consists of a claim that has been supported by sufficient backing. Informal logicians typically take their inspiration from the Toulmin model and focus in

[9] Ariss (2009) argues that the inherent gap in knowledge and authority between doctor and patient affects the extent to which patients engage in discussions with their doctors. Taking the perspective of Drew, Chatwin, and Collins (2000) and Peräkylä (1998), however, doctors' provision of explicit argumentation to support a medical opinion or advice could potentially serve to close this gap during the consultation and encourage patients to take part in the discussion.

[10] Logical inference is also referred to as syllogistic or deductive reasoning, a form of reasoning in which the one statement is inferred from the truth of two others.

[11] The idea that a doctor should base his or her argumentation on rational, medical knowledge while simultaneously striving to be persuasive resembles the pragma-dialectical concept of strategic maneuvering (van Eemeren, 2010).

particular on reasoning in ordinary language. Thereby informal logicians explicitly move away from the formal criterion of deductive validity and argue for the context dependency of the criteria for argument soundness (van Eemeren, 2009).

Upshur and Colak (2003) use the work of Toulmin (1958) and Walton (e.g., 1998) in their design of a tool for diagnostic reasoning. They show how Toulmin's diagrams can be effective in illustrating "the warrant establishing nature of research evidence in argumentation and in making explicit the relationship between claims, their evidential support and highlights the sources of conflicting evidence claims" (p. 294). Moreover, they claim that the pragmatic vision of the clinical encounter expressed in informal logic resonates with clinicians' experience, as it places patient values, clinical experience, and clinical research on equal grounds (p. 296). A similar argument is made by Shankar, Tu, and Musen (2006). They illustrate how a computer-based tool can be used by doctors to retrieve up-to-date medical information as well as the necessary arguments to convince their patients of a medical diagnosis. As such, the tool can serve an educational as well as an explicatory purpose, aiding both doctors and patients.

Dickinson (1998) proposes a practical theory of argumentation to inform the design of decision support tools. While he does not refer to Toulmin explicitly, Dickinson's theoretical model seems to draw primarily on the Toulminian perspective. Dickinson uses a hypothetical clinical scenario in order to elucidate the use of evidence in treatment decision making to establish warrants that can be used to justify an inference from data to conclusion (i.e., clinical claim). He argues that a structural model of argumentation has the potential to contribute to evidence-based medical practice and, moreover, to establish the criteria needed to assess decisional performance in medical consultation. Also, Grasso, Cawsey, and Jones (2000) focus on treatment decision making, but start from the dialogical context of conflict. That is, they propose a theory of informal argumentation to solve conflicts or disagreements between health care providers and receivers in the context of healthy nutrition. In doing so, they introduce a formal agent that is able to provide advice on the controversial subject of healthy eating behaviors by using dialectical argumentative tactics.

Despite the small number of contributions that focus specifically on the use of argumentation theories for the development of computer-based tools to facilitate the interaction between doctors and their patients, this line of research forms a favorable starting point for further integration of argumentation theory in the context of health. Going beyond the mere analysis of discourse, scholars in the field of medical informatics use insights from the field of argumentation theory to facilitate and improve the interaction between doctor and patient. Toulmin provides a functional model of argumentation that can guide medical informaticians in their endeavors. However, other theories of argumentation should also be considered. Although the Toulmin model does not give a definition of what constitutes a sufficient backing, the pragma-dialectical theory provides a model of argumentation that encompasses both normative and descriptive elements that can be used to determine argument reasonableness. Moreover, a dialectical approach to argumentation does more justice to the dialogical context of medical consultation.

Medical Ethics: Argumentation as an Ethical Ideal

The contributions categorized under the heading of medical ethics at first glance seem to form a diverse group of publications in the field of medical philosophy, medical law, and medical decision making. Yet the articles all seek to explore the principles underlying treatment decision making in the context of patient-centered medicine and are, consequently, all focused on the ethical concept of patient autonomy. The majority of articles focus specifically on the merits, limitations, and philosophical underpinnings of the shared decision-making model. Doing so, they address the inherent argumentative character of a shared decision-making procedure.

Exploring the limitations of three models of patient involvement—interpretative decision making, shared decision making, and informed decision making—Wirtz, Cribb, and Barber (2006) argue that one of the main issues of contemporary decision-making models is formed by what they refer to as the "reasoning problem." They note that there is a general absence of any detailed account of how doctor and patient should "embark on a deliberation that involves a discussion about values, preferences and beliefs and the making of a (sometimes) joint decision" (pp. 121–122). Instead, the process of doctor–patient dialogue and deliberation is described with short umbrella terms (i.e., "mutual discussion" and "negotiation") that do not capture the actual process and that consequently obscure far more than that they clarify. The authors argue that models of participatory decision making should be improved, acknowledging this reasoning problem and disentangling the fuzzy concept of doctor–patient deliberation.

Sandman and Munthe (2010) aim to provide such an improvement of the shared decision-making model. They argue that ideally doctor and patient use a shared rational deliberative joint decision model in which all parties are given the opportunity to participate and express whatever they deem relevant. All parties should be open to the other's interests and allow their own interests to be questioned. In doing so, the position of the party should not play a role. Moreover, all interests, goals, and reasons should be openly displayed and argued for. Savulescu and Momeyer (1997) and Walseth and Schei (2010) take a similar perspective, particularly emphasizing the importance of rationality in the discussion between doctor and patient.

Smith and Pettegrew (1986) also focus on the ethical and philosophical starting points for shared decision making to

take place, but they take a rhetorical perspective. They use the distinction between rhetoric and sophistic to provide the basis for a model of mutual persuasion that enables free communication but avoids manipulation. Following the authors, in such model mutual persuasion, participants are allowed a free choice that is based in reasons and brought about by discourse. They take premises from each other's beliefs and values and accept "the ethical imperative of attempting to serve the ends of those beliefs and values" (p. 143).[12] Each should be open to persuasion by the other party. However, sheer manipulation should not be allowed.

The shared decision-making model has received considerable attention over the past decade, and ever since its introduction, scholars in the field of health communication have been concerned with its further development. Not only have researchers explored the practical relevance of the model, but they have also aimed to elaborate on the model's philosophical and ethical foundations. A number of conceptual papers have argued for the importance of rationality in treatment decision making. In order to participate in the decision-making process, patients should be enabled to engage in a critical discussion procedure with their doctors. In this procedure, all perspectives should be taken into account and arguments should be weighed. Moreover, the discussants should refrain from techniques that could amount to a manipulation of the decision-making process.

Conceptualized as such, the shared decision-making model seems to closely resemble the pragma-dialectical ideal model of critical discussion. While in pragma-dialectics this resemblance has been acknowledged and explored (Snoeck Henkemans, 2011; Snoeck Henkemans & Mohammed, 2012), in medical ethics conceptual insights from argumentation theory have thus far been largely neglected. To create a solid normative framework for the interaction between doctors and patients, a collaboration between the two disciplines could be fruitful, particularly also in light of the potential practical applications of the shared decision-making model.

LIMITATIONS

The findings described in the previous sections provide a promising starting point for further research. However, before discussing the implications of these findings, some of the limitations of the study design should be considered. Even though it can be assumed that most important contributions that deal with argumentation (theory) in the context of doctor–patient consultation were retrieved using a search strategy in which a database search and an extensive manual search were combined, still some publications may have remained undetected in the search.[13] Yet due to the thoroughness of the search, it seems unlikely that these are contributions of high relevance.

Moreover, as a result of the abstract and title analysis, articles containing only in-text reference to argumentation in medical consultation may have been missed. However, it was assumed that articles discussing the argumentative character of doctor–patient interaction in depth would report on this in the abstract or title. Moreover, the search for keywords in the abstract and titles only was a practical choice. It proved impossible to review all articles that fulfilled the search criteria starting from a full text search. By conducting an abstract–title search, the number of positive results due to the usage of academic jargon ("discussion," "line of argument") was minimized—even though a large number of abstracts still appeared to contain such jargon and were dismissed on the basis of this.[14]

DISCUSSION AND CONCLUSION

This study systematically explores and maps out the role that argumentative discourse so far has been attributed in the literature on doctor–patient consultation. The findings underscore that there is a growing interest in argumentative discourse in medical consultation and, moreover, elucidate that scientific contributions focusing on this topic essentially originate in four scientific domains: argumentation theory, discourse analysis, medical informatics, and medical ethics. While these domains are largely united in their view of doctor–patient interaction as an ideally rational and patient-centered discussion procedure, each of the four domains is characterized by distinct research aims and objectives and, consequently, the theoretical frameworks and methods used.

The contributions from the field of argumentation theory are primarily focused on advancing a theoretical understanding of argumentative discourse. In doing so, they study argumentative discourse in the specific context of medical consultation. Yet the insights gained in the field of argumentation theory could be valuable for researchers from the other disciplines as well. Argumentation theory not only offers a descriptive tool for the analysis of argumentation in medical context, but also a normative tool for the evaluation of its quality or "reasonableness"—this in contrast to most discourse analytic contributions that take a descriptive approach

[12] Barilan and Weintraub (2001) even go further, arguing that "clinicians are morally obliged to make a strong effort to persuade patients to accept medical advice" and that the value of autonomy is "derived from the right persons have to respect, as agents who can argue, persuade and be persuaded in matters of utmost personal significance such as decisions about medical care" (p. 13).

[13] The relatively small number of contributions in the field of medical informatics, particularly, may seem surprising. However, this may have to do with the fact that relatively few contributions focus on the doctor–patient context specifically. Moreover, some contributions may have remained undetected as they were published in conference proceedings only.

[14] The prevalence of academic "jargon" in the retrieved publications also accounts for the considerable "jump" from 1,330 contributions to only 46 retained articles after the first review round.

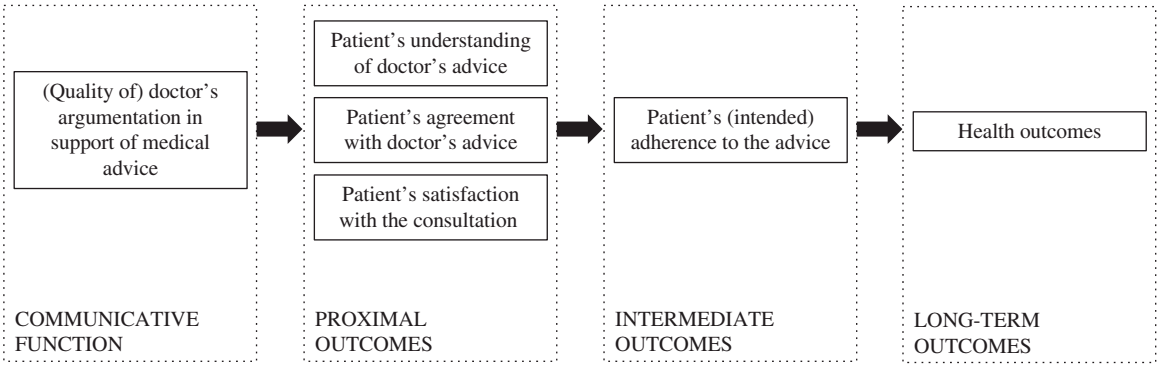

FIGURE 2 From argumentation to consultation outcomes—a tentative model.

to the study of social interaction in medical consultation. The practice-oriented field of medical informatics, but also medical ethicists, could benefit from further integration of insights from contemporary argumentation theory into their own research. Simultaneously, aiming to situate their analyses in medical practice, argumentation theorists could profit from the empirically-based knowledge gained in the medical domains. Interdisciplinary collaborations could thereby contribute to closing the gap between the normative ideal and actual medical practice.

A question that thus far has remained unanswered is what the potential practical implications are of an interdisciplinary, theory-driven and empirically oriented perspective to the study of argumentation in medical consultation. Put differently: To what extent can an argumentative approach contribute to the study and, ultimately, the improvement of doctor–patient interaction? Noticeably, research that addresses argumentation in medical consultation has predominantly focused on theory building and case-based analyses. Empirical investigations that explore the effects of argumentative discourse on the doctor–patient consultation are currently lacking. The contribution by Feng et al. (2011) forms a single exception. As such, also a conclusive answer to the question posed in the title of this article cannot yet be established. A possible explanation for the absence of empirical studies could be that recognition of the argumentative character of medical consultation is a relatively recent development. However, the pursuit of a more empirical line of research that explores the relationship between argumentative discourse and other characteristics of the medical consultation seems promising.

Various contributions included in this review have argued for the positive effect that argumentation may have on consultation outcomes such as adherence and satisfaction. Moreover, and despite not specifically focusing on the role of argumentation, Stewart et al. (2000; Stewart, 1995) show correlations between patient-centered communication and patients' perceptions of finding common ground (i.e., agreement), as well as an association between their perception of agreement and health outcomes. In their meta-analysis of the effects of doctors' communication on patient adherence, Zolnierek and DiMatteo (2009) report on similar results relating the quality of doctors' communication to patient adherence. Street, Makoul, Arora, and Epstein (2009) propose a pathway to improved health outcomes that relates doctors' and patients' ability to present their own views and understand the perspective of the other to, for instance, patient satisfaction and commitment to treatment. They argue that a pathway to better health requires a communicative encounter in which doctor and patient present and understand one another's perspective, find common ground, reconcile differences of opinion, and achieve consensus on treatment.

Starting from the preceding and following the suggestion by Street et al. (2009, p. 299) that studies should examine the relationship between specific communication behaviors and proximal and intermediate outcomes that can contribute to meaningful health outcomes, a tentative model concerning the role of argumentation in medical consultation can be drafted. As a doctor's argumentation in support of his or her treatment advice can be seen to form an essential part of the communicative message in medical consultation, its quality can be assumed to influence the outcomes of consultation, affecting proximal outcomes such as patients' understanding of, and agreement with, the doctor's advice and their satisfaction with the consultation at large. These proximal outcomes in turn can be hypothesized to have positive effect on intermediate outcomes such as (intended) adherence and potentially health outcomes. In order to operationalize the quality of doctors' argumentation, the pragma-dialectical theory of argumentation (van Eemeren & Grootendorst, 2004) seems to offer a solid theoretical foundation, providing a normative blueprint for reasonable and rational argumentative conduct that takes into account both context-independent and –dependent elements while simultaneously accounting for discussants' pursuit of rhetorical effectiveness. Moreover, the pragma-dialectical theory of argumentation seems to fit well within the ideal of shared decision making (Figure 2).

Whether focusing on the advancement of theoretical knowledge of the argumentativity of doctor–patient consultation, or using qualitative research methods to analyze single cases, or perhaps even exploring the causal relationship between doctors' argumentation and consultation outcomes, research that aims to integrate insights from argumentation theory into contemporary conceptions of doctor–patient communication can only yield meaningful results when it combines a highly theory-driven approach with a solid (methological) basis that is rooted in empirical reality. Moreover, such research seems most promising when scholars from the various scientific disciplines join forces.

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