LANGUAGE IN MEDICINE

Language use in clinical interactions about medically unexplained symptoms

INGE STORTENBEKER

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PhD thesis

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ER KOMT EEN TOON HERMANS BIJ DE DOKTER

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Tim Hofman

THESIS OUTLINE


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Chapter 1

General introduction

Communication during clinical consultations plays an important role in the recovery process of patients. Patients who suffer from medically unexplained symptoms (MUS), such as irritable bowels or fibromyalgia, often have limited treatment options. This leaves the clinical consultation as an important resource for the management of their symptoms. Existing observational research has analysed extensively *what* physicians and patients with MUS talk about. It is assumed that *how* they communicate is also a key factor during clinical consultations. Linguistic choices can elicit varying responses and affect patient outcomes. Yet few observational studies have assessed language use variations during consultations about MUS. Therefore, this thesis aims to assess language and interaction in naturally occurring consultations about medically unexplained (versus explained) symptoms in order to uncover communication patterns and consequences. In other words, this thesis studies *language in medicine*.

This thesis takes an interdisciplinary approach to the study of language use in consultations, combining insights from medicine, research about doctor-patient communication, linguistics and persuasive communication. Language use during consultations is studied from two perspectives. Relevant interactional patterns that structure natural consultations between physicians and patients with MUS are assessed with conversation analysis (part 1), and relevant linguistic markers are compared between consultations about MUS and consultations about medically explained symptoms (MES), using quantitative content analysis (part 2). This multi-method approach provides a detailed understanding of why specific linguistic and interactional elements occur, whether and how language use varies in consultations about MUS or MES, and how language use variations relate to patient outcomes.

The following sections discuss the prevalence and background of MUS, and how consultations are perceived by physicians and patients. Next, it is demonstrated why observational research in this setting is necessary, and what the gaps in the current literature are in relation to the study of language use. Finally, an outline is provided of the entire thesis.

MEDICALLY UNEXPLAINED SYMPTOMS

Prevalence and background

Many patients who visit their physician present symptoms that cannot be explained by any recognizable disease. An estimated 30-50% of patients attending general practice (GP) present with at least one medically unexplained symptom (MUS) during the consultation (Khan et al., 2003), as do 50% of patients in secondary care units such as internal medicine or neurology (Nimnuan et al., 2000). Unexplained symptoms often disappear after a while. Yet, in approximately 3-11% of GP patients, severe symptoms persist (Aamland et al., 2014; Verhaak et al., 2006). MUS is an umbrella term for various symptoms such as tension-type headaches or persistent dizziness, or functional syndromes such as fibromyalgia, irritable bowel syndrome, or chronic fatigue syndrome. Usually, the diagnosis is made *per exclusionem*, i.e. after medical explanations have been ruled out. Various other terms exist to describe these complaints, e.g. somatization, functional symptoms, or persistent somatic symptoms. The label 'MUS' will be used throughout this thesis. See Box 1 for a rationale.

Box 1. Use of the 'MUS' label

Various terms exist to label symptoms that are medically unexplained. Patients have been called stigmatizing terms such as "hysterical" (Ferrari et al., 2015), "malingerers", or "heartsink patients" (O'Dowd, 1988) – the latter referring to the feeling of a pit in the stomach when a patient's name appears on the appointment list. As these qualifications can be very offensive to patients (Stone et al., 2002), a variety of other, more neutral labels exist that remove the blame from patients. Examples are subjective health complaints, functional disorders, persistent physical symptoms, somatic symptoms, non-specific symptoms, and medically unexplained (physical) symptoms.

"Medically unexplained symptoms" has been the generally accepted label in research and practice. It is a relatively neutral term that does not blame patients for the experience of complaints. Yet the label is criticized for being a negative label that only describes symptoms with absence of disease (Jutel, 2010). The label does not give any information about the possible causes, duration and severity of the complaints. Furthermore, by defining symptoms as having no organic pathology, connotations arise that symptoms must be "in the mind" instead (Perthen & Stone, 2012), reinforcing a body-mind dualism. This body-mind dualism was dominant in the biomedical model, but modern medicine is based on a biopsychosocial model that takes into account biological, psychological and social aspects in the experience of disease (Engel, 1977).

As a consequence, scholars have assessed which labels are clinically reasonable and acceptable for both patients and physicians (Creed et al., 2010). An international group of experts in this field has recently acknowledged "persistent somatic symptoms" (PSS) to be the preferred term (Kohlmann et al., 2018). This label is assumed to be clinically useful and acceptable without stigmatizing patients – at least stigmatizing them less than many other terms.

Why then, does this thesis still use the – perhaps outdated – term "medically unexplained symptoms" as opposed to "persistent somatic symptoms"? The answer can be found in the data collection procedure for the majority of the chapters (chapters 3 and 5-8). The categorization of patients was based on GPs' judgment of whether patients had *"somatisch onvoldoende verklaarde lichamelijk klachten"* (the Dutch equivalent of MUS), a term that was consistent with Dutch guidelines (Olde Hartman, Blankenstein, et al., 2013; Swinkels & van der Feltz-Cornelis, 2010). Recently, the Dutch network for MUS changed their terminology to *"aanhoudende lichamelijke klachten"* (the Dutch equivalent of PSS). This change in terminology also includes a slight variation in the type of symptoms that should be considered as MUS or PSS. Given that nearly all chapters of this thesis describe consultations with patients who were primarily included according to whether they had MUS, it was decided to retain the term MUS as a reflection of the GPs' categorization.

The severity of MUS varies from mild complaints with slight functional limitations to symptoms that severely limit the daily functioning of patients. For instance, some patients with fibromyalgia feel pain in their entire body, suffer from constant fatigue and have difficulty in maintaining social relationships (Arnold et al., 2008), and patients with psychogenic non-epileptic seizures (i.e. seizures not caused by epilepsy) can experience anxiety, are sometimes unable to work and can lose their feeling of freedom and independency (Rawlings & Reuber, 2016). MUS can thus severely limit the day-to-day activities of patients.

The aetiology of MUS is only partially understood. The interplay between biological, psychosocial and cultural factors as well as the healthcare system could play a role in the causes and persistence of symptoms (Fink et al., 2015). The occurrence of symptoms and their severity depends on patients' susceptibility to develop a disease, direct triggers for symptoms, and circumstances that could maintain or exacerbate symptoms (Olde Hartman, Blankenstein, et al., 2013). For instance, irritable bowel syndrome can be triggered by a viral infection and maintained by circumstances in the patient's life such as work-related problems or a stressful family situation.

Since no clear somatic causes can be detected, somatic interventions are usually ineffective. Non-pharmacological treatment on the other hand, i.e. interventions without the use of medications such as reattribution or cognitive behavioural therapy, lead to a small but significant improvement in symptom severity (Kroenke & Swindle, 2000; van Dessel et al., 2014). Extensive research has shown that the communication between physicians and patients can improve patient outcomes (Howick et al., 2018; Kelley et al., 2014; Mistiaen et al., 2016). This is critical for patients with MUS, because no single effective treatment strategy exists (T. Edwards et al., 2010). This leaves the clinical encounter, and thus the communication between doctors and patients, as a major site for symptom management (Heijmans et al., 2011). It is therefore relevant to study natural communication patterns during these consultations.

Experiences of physicians and patients with MUS during consultations

Physician-patient communication is pivotal for the management of MUS, but consultations can be challenging for both physicians and patients. When physicians examine patients, they cannot detect any physical abnormalities. The presence or absence of organic pathology, however, is the basis of traditional biomedical disease models that physicians acquire during their medical training. Such models do not fit the experience of MUS (Asbring & Narvanen, 2003; Rasmussen & Ro, 2018). Biopsychosocial – as opposed to biomedical – models propose that symptom experiences could at least partially be linked to circumstances in patients' psychosocial environment. Yet the idea that concerns or stress could cause or perpetuate complaints is often rejected by patients (Burbaum et al., 2010; Monzoni et al., 2011a; Peters et al., 2009). Physicians consequently struggle to explain symptoms with explanatory models that fit patients' experiences

(Johansen & Risor, 2017), and to provide treatments that fit patients' needs (Maatz et al., 2016; Wileman et al., 2002). Physicians often feel unable to provide the right care and support to patients with MUS, which can lead to frustration (Hahn, 2001; Olde Hartman et al., 2009).

Attending the physician's office can be demanding for patients with MUS as well. The legitimacy of MUS is often disputed (Mik-Meyer & Obling, 2012), even though the severity of symptom experiences is similar to symptoms with organic pathology, i.e. medically explained symptoms (MES) (Joustra et al., 2015). Patients with MUS are told that 'nothing is wrong' or that 'no abnormalities can be observed'. For many patients, such assessments emphasizing the lack of physical anomalies can feel like a rejection of their symptom experiences (T. Edwards et al., 2010; Salmon et al., 1999). Physicians believe that MUS are less severe, patients' pain levels are lower, and exaggeration of complaints is more likely (de Ruddere et al., 2014; B. Jones & Williams, 2020). Patients consequently report feeling powerless, frustrated and not taken seriously (Nettleton, 2006; Wileman et al., 2002). Patients with MUS thus struggle to be regarded as credible patients with 'real' complaints that warrant medical attention (Werner & Malterud, 2003).

To conclude, consultations about MUS can be difficult for both physicians and patients. The absence of underlying illnesses puts pressure on the doctor-patient relationship. The physicians' medical authority is challenged because they need to treat patients with symptoms they do not fully understand, while patients suffer from symptoms with contested legitimacy. This makes both parties feel powerless and frustrated. This is all the more problematic given that communication between physicians and patients plays an important role in symptom experiences and patient recovery. To advance physician-patient communication about MUS, a better understanding is needed of what is going on during these consultations.

LANGUAGE AND COMMUNICATION ABOUT MUS

Observational research to understand consultations about MUS

Observational research can reveal patterns of communication during natural consultations. This type of research is necessary to complement interview-based studies because reported experiences of communication may not always reflect the reality of actual communication patterns. A series of video-observation studies that recorded and analysed consultations about MUS demonstrated that communication by patients with MUS was different from expectations about their communication (e.g. Dowrick et al., 2004; Ring et al., 2005; Salmon et al., 2005). GPs had the idea that patients would pressurize them to prescribe somatic treatment (Wileman et al., 2002). Yet patient pressure for somatic treatment was hardly observed at all (Ring et al., 2005). Physicians were more likely to propose physical treatment options (Salmon et al., 2007), especially during longer consultations (Salmon et al., 2006). Expectations about how others communicate thus affect how their communication is experienced.

The discrepancy between perceptions of communication and actual communication patterns underlines the need for observational research focusing on naturally occurring consultations. Previous qualitative analyses of MUS consultations revealed what physicians and patients talk about and how they respond to one another within specific interactional contexts. For instance, scholars assessed explanatory models used by physicians, and how these explanation types affect patient responses (L. Morton et al., 2017; van Ravenzwaaij et al., 2010). Patients appeared to accept tangible symptom explanations that are grounded in their concerns (Dowrick et al., 2004), or accept explanations when they are involved in the explanation (den Boeft et al., 2017).

Existing quantitative analyses of consultations about MUS reveal systematic patterns of communication and their effect on patient outcomes. Important differences in communication content are observed between consultations. When patients suffer from MUS, physicians rarely express verbal empathy and provide less reassurance, perform fewer symptom explorations, and engage in less shared decision making compared with MES (Epstein et al., 2006; Kromme et al., 2018; Ring et al., 2005). A relationship is also observed between communication content and patient outcomes. Patients with MUS feel reassured and are less likely to experience future complaints when the meaning of normal test results is explained prior to physical testing (Petrie et al., 2007), and patients' anxiety decreases when GPs use an affect-oriented communication style (Houwen, Moorthaemer, et al., 2019).

Various observational studies thus assessed the content and consequences of communication patterns during consultations about MUS. Qualitative and quantitative analyses provide insights into the meaning and occurrence of communication content within specific contexts, and how this could affect patient outcomes. However, few studies have analysed language use and interactional aspects during consultations about MUS. The analysis of language and interaction in naturally occurring clinical consultations is necessary to uncover communication patterns during consultations about MUS and their consequences.

This thesis analyses language and interaction from two perspectives. Conversation analysis (CA) provides an in-depth contextualized understanding of interactional patterns that structure social actions during the MUS consultation. Quantitative content analysis compares language use variations during consultations about MUS and MES and allows generalizable patterns of communication to be detected. The synergy of these research methodologies allows a detailed understanding to be gained of why specific linguistic aspects occur, when and how they vary between different consultations, and how this relates to patient outcomes. Both perspectives and the accompanying aims for the current thesis will be elaborated below.

Conversation analysis (part 1)

The qualitative section of this thesis (part 1) describes analyses of consultations about MUS according to the principles of conversation analysis (CA). CA is a research method for data-driven analysis of naturally occurring spoken interaction aiming at uncovering interactional patterns that structure social action (Heritage & Maynard, 2006a). One of CA's premises is that social actions are established with language, and it analyses how meaning is constructed through turn-taking (Sidnell & Stivers, 2012). This ethno-methodological approach does not speculate about what interactants might mean or think during interactions, but rather focuses on what people make observable in their talk and how others respond to this. Next turns of interactants are analysed to establish what a previous turn accomplishes in the interaction. CA studies the actions that are performed during natural interactions, their design, and what happens next to discover how interactants understand and respond to one another (Gill & Roberts, 2012).

CA research in the field of MUS showed that physicians use delicacy markers such as implicit words, and vague references to talk about complaints and possible causes (Aiarzaguena et al., 2013; Burbaum et al., 2010). Explanations are designed with epistemic downgrades and presented as what other patients may experience (Monzoni & Reuber, 2015). The design of these explanations demonstrates how physicians orient to the delicacy of discussing MUS to anticipate potential resistance (Monzoni et al., 2011a). CA also demonstrates that slight variations in language use may affect responses in adjacent turns. For instance, when physicians ask whether patients have 'something else' they would like to discuss, patients are more likely to disclose additional concerns as opposed to when they are asked whether they have 'anything else' to discuss (Heritage et al., 2007). Though both questions have similar content, seemingly trivial variations in their formulations significantly affect patient responses.

These examples illustrate that CA can reveal how speakers navigate potentially difficult interactions, and how slight language use variations elicit different responses in adjacent turns. However, no overview yet exists of studies that examined language and interaction in consultations about MUS. Furthermore, CA of general practice consultations about MUS – an important place for symptom management – is still scarce. Therefore, the aim of the first part of this thesis is **to examine language use and interactional aspects in consultations about MUS.**

Quantitative content analysis (part 2)

The quantitative section of this thesis (part 2) describes consultations about MUS according to the principles of quantitative content analysis. Content analysis uses codebooks with predefined observational categories to capture and quantify communication in various settings. Common coding schemes to analyse clinical consultations assess the content of communication between physicians and patients, such as the extent of socio-emotional or task-oriented communication

(Höglander et al., 2020; Roter & Larson, 2002), or types of physician responses (e.g. information giving or blocking further emotional discussions) to patient emotions (M. C. Beach et al., 2021; del Piccolo et al., 2011). This type of research has revealed important insights about *what* physicians and patients with MUS talk about, and how communication may relate to patient outcomes.

Physicians intuitively endorse the fact that the words they and their patients use play an essential role during consultations (Launer, 2006; Patel, 2018), but no coding schemes exist to quantify *how* GPs and patients talk during the consultation. Quantification of language use in clinical settings is necessary to reveal generalizable patterns of language use, and to assess which patterns typify consultations about MUS or MES. To date, no empirical studies have quantitatively analysed the occurrence and effects of language use during consultations about MUS, and compared them to consultations about MES. This is important because language use variations relate to patient outcomes, and reflect and reinforce stereotypes. These two mechanisms will be explained below.

First, physician-patient communication impacts outcomes such as anxiety, pain and recovery (e.g. Bensing & Verheul, 2010; Kaptchuk et al., 2008; Lang et al., 2005; Verheul et al., 2010). To illustrate, variations in message content such as positive or negative communication can improve patients' symptom experiences and quality of life (Howick et al., 2018). Positive communication is therefore advocated for patients with MUS (Olde Hartman, Blankenstein, et al., 2013; Thomas, 1987). The problem with variations in message content is that they also affect the meaning of a message. Daily practice does not allow variations in message content when they deviate from reality, e.g. positive expectations cannot be induced when prospects are bad. Language use variations express messages with similar meaning, but with different formulations (e.g. negations or affirmations). Such variations also affect patient outcomes: doctors who express direct positive messages (e.g. "it will improve") are given a better evaluation by patients and increase patients' treatment adherence intentions more compared to indirect positive messages (e.g. "it won't deteriorate") (Burgers et al., 2012). Slight variations in message form thus have the power to impact patient outcomes.

Second, variations in linguistic form can reflect stereotypical information, e.g. whether someone behaves in a stereotype-consistent manner or not (Beukeboom & Burgers, 2019). For example, GPs use different terminology depending on whether they expect that patients' symptoms have a medical explanation. Lay discourse such as 'high blood pressure' is more likely when GPs expect symptoms to be unexplained, whereas medical disease terms such as 'hypertension' are used more frequently for MES (Gol et al., 2014). Such linguistic constructions may reflect stereotypical ideas about MUS not being a "real" medical condition. Variations in linguistic form also reinforce stereotypes. Physicians have more negative attitudes towards patients who are described as ‘somatizers’ than towards patients who are described as ‘patients with somatization’, or as users of ‘narcotics’ instead of ‘opioids’ (Glassberg et al., 2013; Goddu et al., 2018). Language use variations thus reflect stereotypical expectations of speakers, while at the same time inducing stereotypes in the receiver of a message.

To conclude, language use variations can affect patient outcomes, and reflect and maintain stereotypes. This underlines the need to study language use variations in clinical consultations. No research to date has systematically compared language use during GP consultations about MUS and MES, and no codebooks exist to quantify relevant linguistic markers. It is as yet unknown whether and how GPs and patients vary their language use during consultations about MUS and MES. Furthermore, no research has yet separately assessed language use variations by GPs and patients, which is necessary to reveal relevant linguistic markers according to their interactional roles (i.e. GP or patient). Finally, little is known about the relationship between natural language variations and patient outcomes. Therefore, the aim the second part of this thesis is **to compare how GPs’ and patients’ language use varies in consultations about MUS versus MES.**

The two sub-aims underlying the quantitative section of this thesis are 1) to compare GPs’ language use during consultations about MUS and MES, and to assess its relation to patient anxiety, and 2) to compare patients’ language use during GP consultations about MUS and MES, and to assess its relation to the GP’s language.

Rationale for this thesis

Though the role and consequences of communication content in consultations about MUS have been extensively researched, linguistic research in this setting is still scarce. The study of language use in clinical consultations is pivotal because language use variations elicit varying responses in adjacent turns, affect patient outcomes, and reflect and maintain stereotypical biases. The multi-method approach of CA and quantitative content analysis provides important insights into how language and interaction structure social actions in GP consultations about MUS (part 1), and which relevant linguistic markers differ between MUS and MES consultations (part 2). The combination of these perspectives allows a contextualized understanding to be gained of language use and interactional aspects of MUS, and an assessment of which linguistic variations are representative for consultations about MUS or MES. The findings of this thesis uncover communication patterns and their consequences during naturally occurring consultations about MUS (versus MES).

OUTLINE

This thesis is divided into two parts. The first part focuses on consultations with patients with MUS alone, and the second part revolves around the comparison between consultations with patients presenting with MUS and consultations with patients presenting with MES.[1] Recently collected video-recordings of Dutch GP consultations are used to analyse the role of language and interaction in consultations in which patients present with MUS.[2] Box 2 (see end of this section) describes the data collection procedure, characteristics of the data and ethical considerations related to the secondary use of the data.

Part 1: The role of language and interaction in consultations with patients presenting with MUS

Part one aims to examine language use and interactional aspects in consultations about MUS, by using conversation analysis. **Chapter 2** serves as a starting point with a systematic review describing earlier linguistic studies of natural MUS consultations. This review reveals key linguistic and interactional aspects of clinical consultations about MUS. The research question answered in this chapter is: *How do linguistic and interactional elements characterize natural consultations about MUS?*

The occurrence of MUS is often related to the patient's psychosocial environment, but discussing this issue is a delicate activity that has been claimed to lead to patient resistance. **Chapter 3** uses CA to study how different forms of such psychosocial ascriptions raised by GPs affect the relevancy of patient responses, and to explore how GPs lay the grounds for ascribing psychosocial causes to symptoms earlier in the consultation. The key contribution of this study is to reveal how varying actions of GPs during a defining moment of the consultation can elicit varying patient responses in adjacent turns. The research question underlying this chapter is formulated as: *How do GPs raise psychosocial ascriptions in GP consultations about MUS, and how does this affect patient responses?*

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[1] The chapters have been published in or submitted to various scientific journals. Minor adjustments in phrasing and layout were made to the original articles for coherence and overall visual pleasure.

[2] The data are used for all analytical chapters except chapter 2. This chapter describes a systematic review of previous research analysing language and interaction in MUS consultations.

Part 2: Comparing language use during consultations with patients presenting with MUS versus MES

Part two of this thesis aims to compare how language use differs in consultations about MUS versus MES. To do so, it uses quantitative content analysis. Systematic content analysis reveals which patterns of language use are (not) specific to consultations about MUS. Since no coding protocols existed to quantify language use in clinical consultations, a codebook was developed to guide the quantitative analysis of relevant linguistic markers. **Chapter 4** describes the development procedure for the linguistic coding system. This methodological paper adds to the current literature by providing a practical guide to the coding of linguistic markers during various (clinical) interactions that are relevant to theory and practice.[3] The research question is: *How does one develop and implement a coding procedure to systematically analyse language use in naturally occurring consultations?*

Part 2.1: GPs' language use

Part 2.1 aims to compare GPs' language use during consultations about MUS and MES, and to assess its relation to patient anxiety. Guidelines advocate the use of positive communication during consultations about MUS, but research thus far has focused on messages with varying content rather than variations in language use. **Chapter 5** therefore assesses GPs' positive and negative language use during MUS and MES consultations and addresses the question: *To what extent do GPs' message formulations, in terms of their content and directness, vary in consultations about MUS versus MES, and how does this relate to patient anxiety?*

MUS is surrounded by medical uncertainty. GPs may explicitly disclose more uncertainty during consultations about MUS versus MES, which could affect patient outcomes. Yet implicit strategies used by GPs to express uncertainty in a more subtle manner have not yet been researched. The question that guides **chapter 6** is: *To what extent do GPs' implicit uncertainty expressions vary between consultations about MUS versus MES, and how does this relate to patient anxiety?*

Chapters 5 and 6 are the first to quantify relevant linguistic markers in GP consultations about MUS. They contribute to the current field by revealing systematic differences in GPs' language use between consultations about MUS and consultations about MES, and by showing how subtle message variations relate to patient outcomes.

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[3] The codebooks used to analyse GP (chapters 5, 6 and 8) and patient language use (chapters 7 and 8) can be found in appendix 2 of this thesis.

Part 2.2: Patients' language use

Part 2.2 aims to compare patients' language use during GP consultations about MUS and MES, and to assess its relation to the GP's language. First, it is often thought that patients with MUS have a specific way of presenting complaints. **Chapter 7** compares relevant linguistic markers used by patients with MUS and MES, addressing the following question: *To what extent do patients' utterances vary linguistically between consultations about MUS versus MES?*

Whereas chapters 5-7 focus on GPs' and patients' separate use of linguistic markers, **chapter 8** explores the systematic relationship between GP and patient language use, and compares this for MUS and MES consultations. Previous research demonstrated the relation between GP and patient language on a local level, but no research has assessed the overall relationship on an aggregated level. The underlying question is: *How does GP language use relate to patient language use in general practice consultations about MUS versus MES?*

Chapters 7 and 8 are the first to quantify relevant linguistic markers in patients with MUS and MES to reveal how language use by patients with MUS may or may not differ from that of patients with MES.

Finally, **chapter 9** summarizes the results and discusses the theoretical implications of the findings. Limitations and directions for future research are formulated, and practice implications are provided.

Box 2. Data description

Data collection procedure

For the current analyses of language use in GP consultations about MUS, access was permitted to a dataset of video recordings collected in 2015 as part of the 'CATMUS' project (Communication as Therapy for patients with Medically Unexplained Symptoms) (Houwen et al., 2017). This project aimed to develop a training programme for GPs and GP residents about communication with patients suffering from MUS (Houwen et al., 2021).

GPs in the Nijmegen area were approached to participate in a video observation study. Patients who visited the GP practice during data collection were invited to participate and asked for their written informed consent. They filled in a pre-consultation questionnaire that assessed their familiarity with the GP, whether they had recurrent or new symptoms, the reason for the encounter, communication expectations, state anxiety, functional health status, and demographic information. After filling in the questionnaire, patients entered the consultation room where an unmanned camera was placed facing the GP.

After the consultation, the patient returned to the researcher to fill in a brief post-consultation questionnaire assessing their current level of anxiety (state anxiety) and satisfaction with the consultation. GPs specified whether they thought patients had MUS on a three-point answering scale, indicating that symptoms were not explained (MUS) partly explained (partial MUS) or explained by a recognizable disease (MES). The same procedure has been used elsewhere (Bensing et al., 2006; Ring et al., 2005; Salmon et al., 2009; van Dulmen et al., 2012) and resembles clinical daily practice. GPs also filled in the ICPC (international Classification of Primary Care) coding of the consultation (Lamberts, 1987), and specified whether patients presented with new or recurrent symptoms, the symptom management plan and their satisfaction with the consultation. If fewer than three patients were identified as having MUS during the first recording day, the researcher returned for another day and applied the same data collection procedure.

GP and patient characteristics

Thirty-six GPs in the network of the main researcher were approached; twenty of these GPs (56%) agreed to participate. Eleven GPs were female and nine were male. Their age ranged from 31 to 69 years, and they had between 2 and 43 years of experience. Patients who did not speak Dutch or who were younger than 18 years of age were not invited to participate. A flow chart of the number of patients who attended their GP during the study days and the data used for the current thesis is displayed in figure 1.[1] Patient characteristics are described in the method section of the analytic chapters.

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[1] Two consultations where patients presented with MUS were excluded due to technical problems with the video recordings. Forty-one recordings of patients with MUS were matched to 41 recordings of patients with MES visiting the same GP on the same day (except for three consultations). Patients with partial MUS were excluded from the analyses as the main focus of the study was to analyse language use in MUS consultations (chapter 3) and compare it to language use in consultations about MES (chapters 5-9). CA required video observations. Therefore, two GPs in the personal network of the researcher were excluded from the CA study.

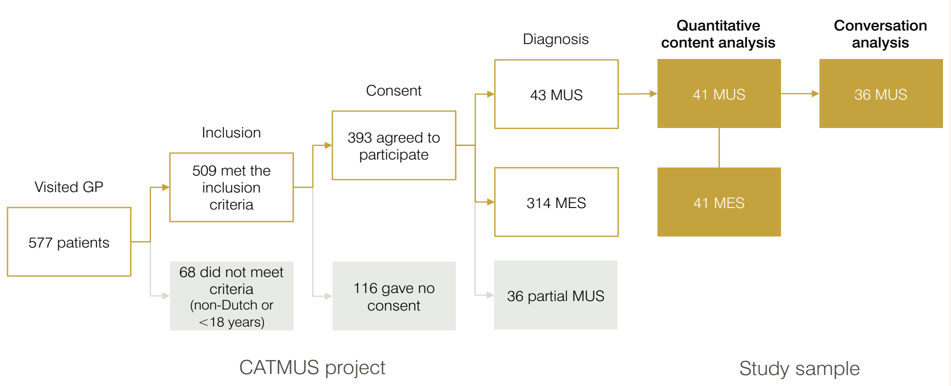

Figure 1. Flow chart of the study sample.

Ethics and secondary analyses

The videos were recorded during regular GP consultation hours without additional invasive procedures. The research did not infringe the physical or psychological integrity of patients. Therefore, the study was assessed by the Radboudumc Medical Research Ethics Committee as not subject to the Medical Research Involving Human Subjects Act (WMO) (file number 2015-1566). Patients who gave their written informed consent agreed that their consultation would be recorded for scientific research focusing on the communication between GP and patient. Since the current thesis performs secondary analyses of the data, an amendment was filed with the ethics committee describing the purpose and rationale for secondary linguistic analyses of the consultations. The ethics committee granted permission for these secondary analyses.

Researchers participating in the project signed a confidentiality statement, declaring that they complied with the diligence and privacy norms related to the conduct of research. For instance, the researcher could only view videos in a closed room, was not allowed to view videos of patients or GPs personally known to the researcher, and needed to use an observational protocol for video analysis (van Dulmen et al., 2012).


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PART 1

The role of language and interaction in consultations with patients presenting MUS


2

Chapter 2

How language and interaction characterize consultations about MUS

Stortenbeker, I., Stommel, W., van Dulmen, S., Lucassen, P., Das, E. & olde Hartman, T. (2020). Linguistic and interactional aspects that characterize consultations about medically unexplained symptoms: A systematic review.

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ABSTRACT

Objective

The apparent absence of any specific underlying diseases challenges patient-provider communication about medically unexplained symptoms (MUS). Previous research focused on general communication patterns in these interactions; however, an overview of more detailed interactional and linguistic aspects is lacking. This review aims to gain a detailed understanding of communicative challenges in MUS consultations by synthesizing evidence from conversation and discourse analytic research.

Methods

A systematic review of publications using eight databases (PubMed, Embase, CINAHL, PsychINFO, Web of Science, MLA International Bibliography, LLBA and Communication Abstracts). Search terms included 'MUS', 'linguistics' and 'communication'. Additional studies were identified by contacting experts and searching bibliographies. We included linguistic and/or interactional analyses of natural patient-provider interactions about MUS. Two authors independently extracted the data, and quality appraisal was based on internal and external validity.

Results

We identified 18 publications that met the inclusion criteria. The linguistic and interactional features of MUS consultations pertained to three dimensions: 1) symptom recognition, 2) double trouble potential (i.e. patients and providers may have differing views on symptoms and differing knowledge domains), and 3) negotiation and persuasion (in terms of acceptable explanations and subsequent psychological treatment). We describe the recurrent linguistic and interactional features of these interactions.

Conclusion

Despite the presence of a double trouble potential in MUS consultations, validation of symptoms and subtle persuasive conduct may facilitate agreement on illness models and subsequent (psychological) treatment.

INTRODUCTION

The apparent absence of a specific underlying disease challenges patient-provider communication about medically unexplained symptoms (MUS). Whereas patients feel that their symptoms have biomedical causes, healthcare providers tend to highlight the importance of the psychosocial context in which symptoms have emerged (Johansen & Risor, 2017). This incongruence can make patients and healthcare providers feel powerless and frustrated (Nettleton, 2006; Wileman et al., 2002). Healthcare providers often feel unable to provide the right support (Olde Hartman et al., 2009) and no single effective treatment strategy exists for these patients (T. M. Edwards et al., 2010), who account for 3-20% of all medical consultations (Aamland et al., 2014; Fink et al., 2004). This leaves the clinical encounter, and thus the communication between healthcare providers and patients, as a major site for symptom management (Heijmans et al., 2011). Interactional and linguistic research can reveal important insights in communication patterns by studying the actions that are performed, their design (e.g. grammar, pitch or intonation) and what happens next (i.e. the sequentiality) (Gill & Roberts, 2012). By gaining a more detailed understanding of linguistic (e.g. word choice) and interactional (e.g. turn-by-turn sequence design) aspects of communication, this type of research can facilitate improvement in clinical practice and policy (e.g. Heritage et al., 2007).

Previous research has documented several relevant communication patterns in the MUS context, but an overview of interactional and discourse analytical research is still lacking. A systematic review of how linguistic and interactional aspects characterize natural patient-provider interactions about MUS can reveal important insights into communication patterns in various medical settings and provide a deeper understanding of such patterns (Land et al., 2017; Parry et al., 2014).

METHODS

We performed a synthesis of results according to the principles of meta-ethnography (Noblit & Hare, 1998). The review follows PRISMA guidelines (Moher et al., 2009).

Literature search

We searched for relevant publications in eight databases that include research in medicine, communication and linguistics (PubMed, Embase, CINAHL, PsychINFO, Web of Science, MLA International Bibliography, LLBA and Communication Abstracts) in April 2019. The search string combined search queries related to medically unexplained symptoms, communication and linguistics. For medically unexplained symptoms, we combined search terms used by Olde Hartman et al. (2009), Hoedeman et al. (2010) and terms used in the Dutch multidisciplinary guideline for MUS and somatoform disorders (Swinkels & van der Feltz-Cornelis, 2010; van der Feltz-Cornelis et al., 2012). We based our search string for communication on a review by Mistiaen et al. (2016) and the search string for linguistics on a review by Parry & Land (2013). The full search strategy is shown in Appendix 1: 2.1. We searched for additional studies by screening the reference lists in the included studies and other work by the included authors, by consulting experts on MUS or language and interaction, and by screening handbooks on health communication.

Inclusion and exclusion

We only included observational studies that analysed video and audio recordings of natural patient-provider interactions dealing with MUS. We adopted a broad definition of MUS as an umbrella term for various 'unexplained' symptoms, since we aimed to provide an overview of all relevant research conducted in this area. This included single-symptom MUS (e.g. tension headache or persistent dizziness), functional syndromes (e.g. fibromyalgia or irritable bowel syndrome) and undifferentiated somatoform/somatic symptom disorders (olde Hartman et al., 2009; Swinkels & van der Feltz-Cornelis, 2010; van der Feltz-Cornelis et al., 2012). All healthcare providers operating in medical or paramedical settings were eligible for inclusion. We considered studies to be linguistic or interactional when the methodology encompassed such analysis (e.g. conversation, narrative or discourse analysis) or when the study described linguistic categories, actions and/or prosodic or paralinguistic phenomena. Conversation analysis (CA) is a data-driven, ethno-methodological approach to studying 'sequences' in natural interactions, which aims to reveal structural patterns in spoken interactions (Drew et al., 2001; Maynard & Heritage, 2005). Narrative analysis in medical settings focuses on how patients construct their illness stories (Frank, 1998), and discourse analysis encompasses a variety of research methods focusing on "language, meaning and context" (Jaworski & Coupland, 2014). Studies coding content features only without consideration of linguistic features were excluded (den Boeft et al., 2017; Ring et al., 2005; Salmon et al., 2007). Qualitative and quantitative research methods were considered. All inclusion and exclusion criteria are described in Table 1.

Study selection

Two reviewers (IS and either NH [medical student] or IP [PhD student]) independently screened the titles and abstracts of all the citations produced by the database search. They met up to discuss the findings. The reviewers independently read full the publications that seemed to match the inclusion criteria and subsequently discussed these publications. Disagreements were resolved through discussion and by consulting a third reviewer (PL). After selecting the relevant studies, we contacted experts and screened the reference lists of the selected publications to search for additional relevant publications. These studies were also discussed by two reviewers (IS and IP).

Table 1. Eligibility criteria for study selection

	Inclusion
Study eligibility criteria	
Participants	Patients with MUS in (para)medical settings
Data	Video and audio recordings of natural patient-provider interactions
Outcomes	Linguistic and interactional aspects
Design	Observational studies
Report eligibility criteria	
Language	All languages (English abstract)
Year	Start database – April 2019
Publication status	Published studies or accepted for publication, book chapters, dissertations, case reports

Data extraction and synthesis

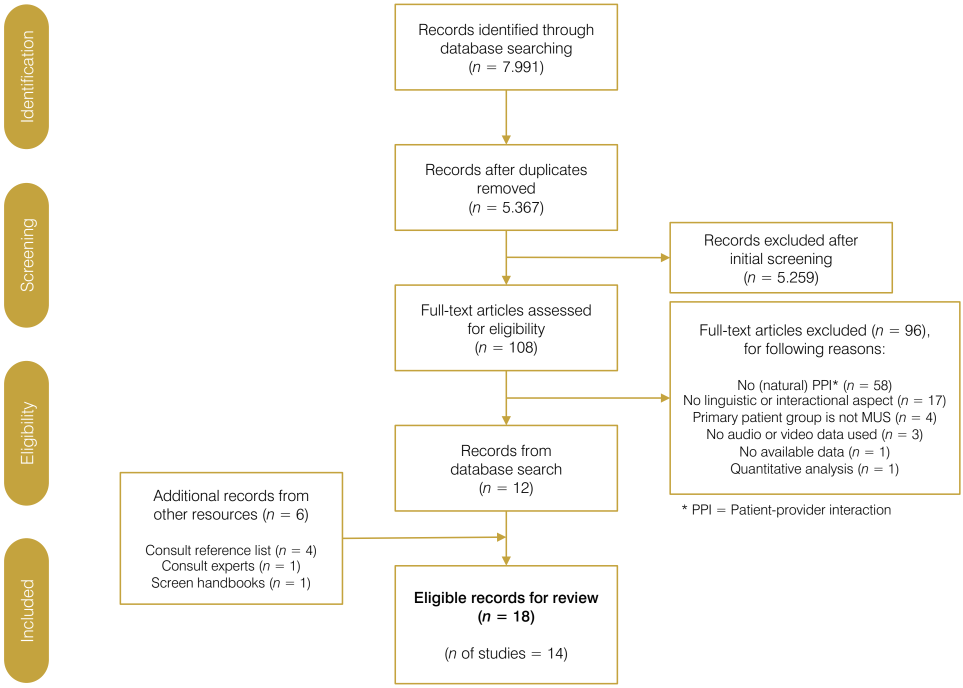
The data were synthesized in an iterative process in which the interdisciplinary review team of CA experts, communication researchers and clinicians collaborated closely. We aimed to compare individual findings and create potential new interpretations. IS, ToH and PL screened all the included studies and established for each communicative practice what was addressed by *whom* and – if described – *when*, *how* and *why*. The data from each study were synthesized by at least two team members. All identified communicative practices in the individual studies were compared and grouped in an iterative process. We identified candidate dimensions by comparing the concepts and practices in one paper with practices assessed in others. We compared studies based on addressing specific practices (e.g. 'category-constrained questions' (Ekberg & Reuber, 2015) and restricted question answer sequences (Hyden & Sachs, 1998)) or their communicative implications (e.g. dramatizing expressions to emphasize involuntary nature (Tarber, 2013) and historical present to recreate a vivid experience (Elderkin-Thompson et al., 1998)). Candidate dimensions were further refined in ongoing interdisciplinary team discussions, and by going back and forth to the original studies. This process continued during the writing of the review. Eventually, the team agreed upon three main dimensions covering most of the communicative practices addressed in the papers. To make sure no potentially relevant details were missed, IS read all the papers once more to further refine the analysis wherever possible.

Quality appraisal

This research additionally aimed to gain an understanding of the strengths and weaknesses of the methodological and analytical aspects of the included studies. Parry and Land (2013) propose that, since it is not possible to perform a single assessment of quality for interactional research, two separate dimensions should be assessed: 1) the type and amount of data; and 2) the detail and depth of analysis. We compared these criteria to other reporting criteria for qualitative research (Lucassen et al., 2018; O'Brien et al., 2014) and a checklist for reporting CA research (Albury, 2018). Ongoing team discussion generated a quality appraisal form based on criteria given by Parry and Land (2013), supplemented with additional items describing CA principles and participant characteristics (Albury, 2018). The form (see Appendix 1: 2.2) allowed us to gain an understanding of the data characteristics and the depth and detail of analysis. The description of data characteristics, representing the external validity, included items such as 'number of interactions', 'patient characteristics' and 'provider characteristics'. The depth and detail of the analysis, representing the internal validity, included items such as 'Are established analytic findings used as "tools" in the analysis?' and 'Does analysis include examination of the sequential environment in which practices occurs?'. Four included studies were scored by IS and WS. IS continued the quality appraisal for the remaining studies since no major interpretation differences were observed between the scorers. Doubts about the quality appraisal were resolved in discussion with WS.

RESULTS

The database search yielded 5367 publications after removing duplicates. Of these, 108 records seemed to meet the inclusion criteria based on the title and abstract. After assessing the full publications, 12 articles were selected for inclusion. Important reasons for exclusion were that the studies did not describe natural patient-provider interactions (*n* = 60) or any linguistic or interactional aspect (*n* = 17). We identified only one quantitative study (Stortenbeker et al., 2018), which was excluded from further analysis since its methodology differed too much from the qualitative studies. Our additional search yielded six additional publications. One publication retrieved by screening publications from the included authors also appeared in the database search but had been missed by both reviewers (Nessa & Malterud, 1998). Another study, retrieved by screening reference lists, did not appear in the database search (no full publication available; search strategy corresponded with information provided in full text) (Hyden & Sachs, 1998). Other studies were book chapters (*n* = 3) (Monzoni & Reuber, 2015, 2016; F. Roberts & Kramer, 2014), and a chapter from an unpublished PhD dissertation (Tarber, 2013). This resulted in a total of 18 included publications (Figure 1), based on 14 different studies.



* PPI = Patient-provider interaction

Figure 1. Flow of inclusion

Eight publications were based on neurology settings, five on general practice, two on chronic fatigue syndrome clinics, two on physiotherapy and one study involved internal medicine (Table 2). Most of the studies were performed in the United Kingdom. Five publications were based on the same dataset about functional neurological symptoms (Monzoni et al., 2011b, 2011a; Monzoni & Reuber, 2014, 2015, 2016). Most of the studies analysed consultations with patients suffering from severe MUS, e.g. based in specialized secondary care units (Banks & Prior, 2001; Hyden & Sachs, 1998) or neurology centres (Ekberg & Reuber, 2015; Monzoni et al., 2011b, 2011a; Monzoni & Reuber, 2014, 2015, 2016; Robson et al., 2016; Toerien et al., 2011), presenting at least four-six symptoms for more than a year (Aiarzaguena et al., 2013), or with a complex case history (Tarber, 2013).

Table 2. Characteristics of included studies.

Study	**Year**	**Country**	**Setting**	**Illness**	**Sample**	**Analysis**	**Focus of analysis**
Aiarzaguena	2013	Spain	General practice	MUS	10	CA	Physicians' symptom explanations and patient responses
Banks	2001	UK	CFS Clinic	CFS	16	DA	Lay and professional ideas about the nature of CFS
Ekberg	2015	UK	Neurology	Seizures*	38	CA	History taking style and linguistic differential diagnostic pointers
Elderkin-Thompson	1998	US	Internal medicine	MUS	116	NA	Narratives of somatising & non-somatising patients
Hyden	1998	Sweden	CFS clinic	CFS	15	DA	Negotiation of relevant symptoms, collaborative diagnosis work
Monzoni[†]	2011a	UK	Neurology	FNS	20	CA	Passive vs. overt patient resistance
Monzoni[†]	2011b	UK	Neurology	FNS	20	CA	Formulation effort and accounting activities
Monzoni[†]	2014	UK	Neurology	FNS	20	CA	Psychosocial attributions
Monzoni[†]	2015	UK	Neurology	FNS	20	CA	Self-restricted practices
Monzoni[†]	2016	UK	Neurology	PNES	17**	CA	Use of diagnostic labels and formulations
Nessa	1998	Norway	General practice	IBS	1	DA	Relationship between observation and talk through medical gaze
Opsommer	2014	Switzerland	Physiotherapy	LBP	6	CA	Exploration and assessment of pain experience during initial encounters
F. Roberts	2014	US	General practice	MUS	21	CA	Discussion of medication and addiction
L. Roberts	2018	UK	Physiotherapy	LBP	25	CA***	Interruption and overlap by patients and providers
Robson	2016	UK	Neurology	Seizures*	13	CA	Companion behaviour to differentiate between epilepsy and PNES
Tarber	2013	Denmark	General practice	Chronic pain	1	CA	Orientations to the purpose of the encounter
Toerien	2011	UK	Neurology	Seizures	13	CA	Offering of choices in providing treatment options
Undeland	2008	Norway	General practice	MUS	2	DA	Discourse contributing to unexplainedness

NB: *UK = United Kingdom, US = United States of America, CFS = Chronic fatigue syndrome, MUS = medically unexplained symptoms, FNS = functional neurological symptoms, PNES = psychogenic non-epileptic seizures, IBS = irritable bowel syndrome, LBP = Low back pain, CA = conversation analysis, DA = discourse analysis, NA = narrative analysis.*

[†] Based on same dataset

* Compared PNES and epilepsy; this review only considered PNES consultations

** Focused on labelling of PNES, excluded patients with other FNS

*** CA-based framework approach

Thirteen publications used conversation analysis, four used discourse analysis and one narrative analysis. Collections contained between six and 51 interactions, and two publications were based on a single case analysis (Nessa & Malterud, 1998; Tarber, 2013). Between one and 18 healthcare providers participated, and the studies included between one and 116 patients, with 297 patients in total. The quality of the analysis (i.e. internal validity) was assessed as high for 11 studies, moderate for five and low for two studies. We refer to Appendix 1: 2.3 for a general description of the data (i.e. external validity).

We could distinguish three main interrelated interactional and linguistic dimensions in the included studies: 1) symptom recognition; 2) double trouble potential; and 3) negotiation and persuasion. These dimensions were loosely related to the phases of the consultation, i.e. problem presentation, problem exploration, and diagnosis and treatment respectively.

Symptom recognition

Eight studies reported that recognition of symptoms as real and potentially severe is made relevant during the medical interaction. This is evident from additional interactional work addressing the legitimacy of the patient's visit and complaints. Below, we describe how patients pursue recognition and how healthcare providers legitimize patients' experience of unexplained symptoms.

Patients in pursuit of recognition

Patients claim legitimacy for their visit by presenting symptoms as worthy of medical attention. They describe experiencing abnormal (Hyden & Sachs, 1998) and involuntary symptoms (Tarber, 2013) that threaten their daily functioning (Elderkin-Thompson et al., 1998), despite having behaved as "morally sound" (Elderkin-Thompson et al., 1998; Hyden & Sachs, 1998; F. Roberts & Kramer, 2014; Tarber, 2013; Undeland & Malterud, 2008). To underline their need for medical attention, patients refer to previous illnesses (Banks & Prior, 2001; Elderkin-Thompson et al., 1998) and inconclusive or negative results from previous examinations (Hyden & Sachs, 1998). Patients thus position themselves as responsible patients suffering from symptoms that are not yet explained and in need of medical attention.

Patients also account for the visit by illustrating the severity of their complaints with intensified language and variations in verb tenses. Intensified language includes extreme case formulations (Pomerantz, 1986) such as "excruciating pain" (Elderkin-Thompson et al., 1998), "very very sick" (Aiarzaguena et al., 2013) or "terrible flushings" (Tarber, 2013) (Box 1). Variations in verb tenses are also used to emphasize the severity of complaints. A patient in the study by Elderkin-Thompson et al. (1998) uses non-progressive verbs (e.g. "I get numbness") to emphasize that the condition is static and unlikely to disappear in order to endorse the current need for medical attention, while another patient in F. Roberts & Kramer's (2014) study uses progressive verbs (e.g.

"it's getting, it's getting ba::d") to show the immediacy and discomfort of complaints. Another variation in verb use includes the use of the present tense when talking about past events (e.g. "the pain increases" rather than "the pain increased") (Elderkin-Thompson et al., 1998).

Box 1. Extreme case formulations justify the current visit; [Tarber, 2013, ex. 1]

50a P: ·hhhh Because er >*er ay ay*<
51a I: am * I mean and that's also why ·hhh
52a → ~I (am in) HHH am #PRT# (.) **by god** I wish
53a → #PRT# **with all my heart**~ that **by [god]** there's **no**
54a [°m°]
55a → **sign whatsoever** that there is a tumor; ·hh
56a °m[:°
57a → [But those **terrible** flushings that are
58a → just (.) **about to kill me,**

(NB: Extreme case formulations in bold [emphasis added])

The patient demonstrates her resistance to being sick with dramatizing expressions in lines 52a-55a ("by god I wish with all my heart~ there's no sign whatsoever that there is a tumor"). Yet at the same time, she stresses the severity of her complaints with extreme case formulations ("terrible flushings that are just (.) about to kill me"). This choice of wordings legitimizes the claims that are made and emphasizes that the complaints are rather severe and unlikely to disappear without any appropriate treatment.

After the diagnostic phase, patients still perform interactional work in pursuit of recognition. They comment on the diagnosis (Hyden & Sachs, 1998), present additional symptoms (Hyden & Sachs, 1998), express their concerns or return to topics discussed earlier (Tarber, 2013). The data suggest that the purpose of this additional interactional work is to make sure all potentially relevant problems are evaluated.

Healthcare providers validating the experience of unexplained symptoms

We could distinguish explicit and implicit approaches to support a patient’s decision to seek medical care. Healthcare providers explicitly approve of the patient’s story (Undeland & Malterud, 2008) or current visit (e.g. “it is good that you came since you have been having pain for a few days already” (Nessa & Malterud, 1998)) to legitimize symptom experiences. Implicit support includes providing diagnostic labels and syndrome descriptions that are in common use for MUS (e.g. “chronic fatigue syndrome”) (Hyden & Sachs, 1998; Nessa & Malterud, 1998). Such medical labels transform patients’ subjective experience of symptoms into diseases that are generally recognized by society (Hyden & Sachs, 1998). Another implicit approach to legitimize the experience of complaints is providing tangible explanations (see Box 2) that are co-constructed with patients (Aiarzaguena et al., 2013). This approach allows patients to relate explanations to their personal experiences.

Box 2. Tangible explanations legitimize suffering; [Aiarzaguena, 2013, ex. 2]

```
06 D: .hhh there are some:: substances <you- are you familiar >for example<
07    when you uh:::: when you were a student and that, or that you: (.) .h
08    that you had a test o::r (0.3)(that you) that you had like diarrhea when
09    you have a t[est or tha::t_
10 P:             [oh yes. that makes me very very sick=
11 D:  =sure=,
12 P: =[I with my driver’s licen-
13 D: =[yes hasn’t it happened to you, <tha- you’ve heard this has happened
14    to somebo[dy,
15 P:          [I you know what? With my tests i- in school no, but with thi::
16    thing the: with the driver’s li:cense?, (0.5)
17 D: with the driver’s license for example.
18 P: very very si::ck.
```

In lines 6 to 9, the healthcare provider describes a situation that the patient might have encountered in her life, i.e. symptoms due to exam stress. The patient relates this explanation to her experience of getting sick during her driver’s licence exam, thereby translating the provider’s hypothetical example into a personal experience. Such elaborate responses in which patients show extensive agreement with the physician’s explanation indicate that tangible explanations are “legitimizing and exculpating” (Aiarzaguena et al., 2013).

It was found that if healthcare providers do not acknowledge patients' experience of symptoms, that arouses defensiveness and hopelessness in those patients (Undeland & Malterud, 2008). A neutral stance towards patient's prior talk about illness behaviour leads to more elaborate accounts by patients (F. Roberts & Kramer, 2014), while neglecting the emotional content does not provide the acknowledgement that patients are pursuing (Tarber, 2013).

Double trouble potential

Based on the evidence reported in 12 studies, we noted that consultations about MUS carry a double trouble potential that may hinder successful communication between healthcare providers and patients. The double trouble potential refers to two different aspects that we recognised in the included studies: pre-existing differing ideas about the origin of symptoms, and the differing knowledge domains of healthcare providers and patients. The latter is based on CA research about epistemics (Heritage, 2012b), which Monzoni et al. (2011b, 2011a) related to the context of MUS.

Differing views on symptoms

Healthcare providers and patients often have differing views about the nature of MUS. Some patients do not accept psychosocial explanations for their symptoms (Elderkin-Thompson et al., 1998), as they provide accounts of physical causes, while healthcare providers provide explanations in which the patient's mental functioning causes the complaints (Banks & Prior, 2001). Patients may also focus on the pervasive consequences of symptoms, whereas their healthcare providers are mapping out the onset and duration of complaints (Tarber, 2013).

Patients exhibit resistance – passively or overtly – during consultations when these conflicting ideas become manifest. Passive resistance consists of remaining silent when turn-taking could take place (Aiarzaguena et al., 2013; Monzoni & Reuber, 2014) and minimal continuers or acknowledgement tokens (e.g. "hm hm") (Monzoni & Reuber, 2014, 2015). Overt resistance is performed with rejections or disagreements (e.g. "no:::", (Monzoni et al., 2011a)), questioning the explanation (e.g. "well I don't know, if it'll be tha:t")(Aiarzaguena et al., 2013; Elderkin-Thompson et al., 1998) or epistemic claims with extreme case formulations (e.g. "I *never* remember what happens during a seizure" (Robson et al., 2016)). Patients sometimes affirm potential psychosomatic attributions for symptoms in general, but they deny the possibility for their own case (Aiarzaguena et al., 2013; Monzoni et al., 2011a; Monzoni & Reuber, 2014).

Expression of passive or overt resistance mainly depends on two interactional features. First, sometimes healthcare providers do not invite patients to respond or leave no room for them to do so (Aiarzaguena et al., 2013; Monzoni & Reuber, 2014). For instance, symptom explanations in extended turns cast patients as passive recipients of the diagnosis (Monzoni & Reuber, 2015). The second feature relates to the phase of the consultation. Patients mainly display passive resistance during the diagnostic phase and express their disagreement more overtly during discussion of psychosocial attributions or treatment recommendations (Monzoni et al., 2011a) (Box 3).

Box 3. Passive during the explanation, and overt resistance afterwards; [Monzoni 2015; ex. 2]

```
1   D: and often there are other stresses that have=have
2      triggered them (.) comin'=on life. Um: even
3      though the o-=origins of it may go back, way back to
4      childhood;=it's something (.6) quite (.4) a bit closer to
5      home that's causing the immediate problems.
6      (.6)
7   D: .hhh but not unfortunately very very easy to treat.
8      (4.2)
9   D: Does that sound a plau:sible explanation for you=to you?=
10  S: To=to be honest I- I don't believe in things like that.
11     (.6)
12  S: I'm a::=I'm a counsellor, I'm well edu[cated and (1.0)
13  D:                                       [°mm.°
```

The patient is passively resistant by withholding uptake during the explanation and at transition-relevant places (.6 and 4.2 seconds' pause in lines 6 and 8 respectively). However, she verbalizes her resistance to the explanation when invited to express her opinion after the healthcare provider finishes his explanation. Even though the question design prefers a response that aligns with the explanation ("does that sound a plau:sible explanation for you= to you?=", line 9), the patient explicitly rejects the possibility ("To=to be honest I- I don't believe in things like that.", line 10).

Differing knowledge domains

Another determinant for double trouble potential in consultations about MUS relates to the differing knowledge domains of healthcare providers and patients (cf. Monzoni et al., 2011b, 2011a). When healthcare providers diagnose MUS, they cannot rely on their professional authority alone (the epistemics of expertise (Heritage, 2012b)), because their sources of information (e.g. test results) are inconclusive. Instead, healthcare providers rely on patient experiences, i.e. information that pertains to the patient's domain (the epistemics of experience (Heritage, 2012b)) (Hyden & Sachs, 1998; Undeland & Malterud, 2008). Healthcare providers and patients orient to this knowledge asymmetry with different turn design features. For instance, patients do not overtly refute conclusions based on test results, whereas healthcare providers are cautious when raising psychosomatic attributions.

We could distil three practices that demonstrate how healthcare providers explain MUS with caution, i.e. 1) vagueness and mitigation, 2) detached footing, and 3) indirect constructions.

First, psychosocial attributions are introduced with vague language (e.g. "*things* in your life or have been in your life") (Aiarzaguena et al., 2013; Monzoni & Reuber, 2014) and mitigated constructions (e.g. "*maybe* it sounds *a little* strange" (Aiarzaguena et al., 2013; Monzoni & Reuber, 2014, 2015). With such language use, healthcare providers demonstrate how they approach symptom explanations with considerable caution because they are in the patient's knowledge domain (Box 4).

Box 4. Delicate explanation; [Monzoni, 2011b, ex. 2]

```
1   D: Um::, (1.5) you know, things like bullying or::=um:: problems at
2      ho[me
3   K:   [°yeah.°
4   D: or with their fami[lies or:: (w:). .hhhh er::
5   W:                   [((coughs))
6   D: that=that it doesn't necessarily need to happen the week before
7      the attacks *sta:[rt.*
8   K:                  [yea:h.
9   D: but sometimes er: this sort of experience, (.7) may undermine
10     (.8) >people's confidence< or, or, you know, may:: er:: .h (2.7)
11     teach them to deal with th-=things in certa- in, in, in ways or:,
12     or: may just, maybe um:::, this expression be, er:: if=if you're
13     a child then you=you have, a .hhh a limited number of things you
14     can do.
```

The healthcare provider uses vague references ("things like bullying", line 1) and mitigations ("may just, maybe um::, this expression be", line 12), and his turns are constructed with different markers of hesitation such as re-starts ("deal with th-=things in certa- in, in, in ways or: or:", lines 11-12), fillers ("um::" in line 1 and 12; "er::", line 10), repetitions ("if=if you're a child then you=you have", lines 12-13), silences (lines 1, 9 and 10) and vowel elongations ("may:: er::", line 10) (32, 39). Finally, he presents general formulations at a distance from the patient ("but sometimes er: this sort of experience, (.7) may undermine (.8) >people's confidence<", lines 9-10). These practices show that the healthcare provider orients to explaining MUS as a delicate activity.

Second, healthcare providers often do not attribute the explanation directly to the patient's current situation, but rather to what others in similar situations may experience (e.g. "may undermine (.8) >*people's* confidence<", box 4, lines 9-10). Such detached footing (Gill & Maynard, 1995) allows the healthcare provider to mention potentially difficult topics and gives room for patients to display disagreement (e.g. accepting an explanation, but denying it for their own case) (Monzoni & Reuber, 2014, 2015; F. Roberts & Kramer, 2014). Finally, symptom explanations are communicated cautiously with indirect linguistic constructions. These constructions include general non-medical labels (e.g. 'emotions' instead of 'psychological') (Monzoni & Reuber,

2014) and negations (e.g. “it is *not* epilepsy”) (Monzoni et al., 2011b, 2011a; Monzoni & Reuber, 2015, 2016), which help to avoid using direct terms (e.g. ‘dissociation’).

Negotiation and persuasion

We discuss data from 17 studies that reported on the relationship between how healthcare providers gather information and how they provide acceptable explanations to patients. We label specific communicative actions of healthcare providers that pursue patient acceptance of symptom explanations or treatment recommendations as having a persuasive orientation (cf. Huma et al., 2019).

Information gathering

Question-answer sequences are a central device during the history-taking phase (Hyden & Sachs, 1998). Some consultations start with open-ended questions (e.g. “Tell me”) (Hyden & Sachs, 1998; Opsommer & Schoeb, 2014) but opening and follow-up questions are frequently closed-ended and category-constrained (e.g. “So when did you fi:rst have these attacks”) (Banks & Prior, 2001; Ekberg & Reuber, 2015; Hyden & Sachs, 1998; Opsommer & Schoeb, 2014). By doing this, healthcare providers control what information is relevant for them (Hyden & Sachs, 1998; Tarber, 2013) and when patients’ answers suffice, e.g. by interrupting patients in the midst of their accounts (Ekberg & Reuber, 2015; L. Roberts & Burrow, 2018). Interruptions serve to seek or clarify information, which may enhance communication or it may lead to parallel conversations where each follows their own agenda (L. Roberts & Burrow, 2018).

If healthcare providers and patients disagree about the relevance of certain symptoms, traditional question-answer sequences may become problematic for patients as their response options are rather limited (Hyden & Sachs, 1998). We observed several approaches patients use to resist healthcare providers’ history-taking questions. Patients state their inability to answer a question with epistemic disclaimers (e.g. “I don’t know”), turn to their companions, dispute the relevance of previous questions (e.g. “you’ll have to answer that because”) (Robson et al., 2016) or expand their answers to other issues they consider important (Elderkin-Thompson et al., 1998; Robson et al., 2016; Tarber, 2013). A final approach includes reframing information, which encompasses the framing of their actions to refit certain diagnostic criteria (e.g. “I haven’t been doing it [walking] since I’ve been like this, […], but I’m usually out about an hour each day walking”) (Hyden & Sachs, 1998). Healthcare providers’ questioning thus heavily influences the possibility to obtain agreement about what is going on with patients, while patients implicitly influence the relevance of topics to accommodate their own agenda.

Working towards agreement

Healthcare providers pursue agreement with patients because disagreement about the diagnosis hinders further management (Elderkin-Thompson et al., 1998; Hyden & Sachs, 1998; Monzoni et al., 2011a). They engage in (subtle) communicative actions that to establish acceptable explanations *within* the medical interaction (Monzoni & Reuber, 2015). We label such actions constituting persuasive conduct (Huma et al., 2019). These actions may avoid friction and enhance agreement and could, eventually, lead to (psychological) treatment. Persuasive conduct occurs even when patients already aligned or extensively agreed with their healthcare provider (Aiarzaguena et al., 2013; Monzoni et al., 2011b). We could distinguish three kinds of communicative actions in persuasive conduct, i.e. 1) tailoring explanations, 2) framing, and 3) subtle action recommendations.

First, healthcare providers tailor symptom explanations by referring to relatable situations (Aiarzaguena et al., 2013) or issues discussed earlier (Monzoni & Reuber, 2014). They first solicit the patient's perspective before delivering the diagnosis (Monzoni & Reuber, 2014, 2015) and sometimes elicit patients' responses with questions such as "does that sound like a plausible explanation to you?" (Monzoni & Reuber, 2014, 2015) or "How do you see it?" (Aiarzaguena et al., 2013). Though some patients disagree with such retrospective perspective display sequences, a co-construction of symptom explanations promotes agreement and validates the patient's knowledge of symptoms (Undeland & Malterud, 2008).

Second, healthcare providers elicit agreement with rhetorical devices that align with the patient's view. They frame explanations with plain, simple language in terms of physiology rather than psychology (e.g. "that's caused by the same chemical as gives rise to fatigue") (Banks & Prior, 2001). Delicate issues that pertain to the patient's knowledge domain are replaced with technical, medical terms (a "language of chemistry"), which allows healthcare providers to discuss psychosocial attributions without mentioning any (potentially stigmatizing) psychological diagnoses (Banks & Prior, 2001).

Thirdly, healthcare providers continue their persuasive conduct when making treatment recommendations (Monzoni et al., 2011b; Tarber, 2013; Toerien et al., 2011). Common treatment opportunities for MUS are limited to psychological or behavioural interventions (Banks & Prior, 2001), but patients often pursue reassurance (Elderkin-Thompson et al., 1998) or somatic treatments (Banks & Prior, 2001; Monzoni et al., 2011a). When patients resist psychosocial explanations, they implicitly invalidate a diagnosis and thus the rationale for psychological treatment (Monzoni et al., 2011a; Nessa & Malterud, 1998). As a consequence, healthcare providers cautiously (Monzoni et al., 2011b) recommend psychosocial treatment opportunities rather than other options. They introduce treatment options such as further testing or increasing drug intakes, while framing psychotherapy as preferred ("another reason why why you might want to choose this option") to other possibilities ("I am a bit reluctant to go with that option") (Toerien et al., 2011). This suggests that healthcare providers continue their persuasive conduct until the end of the consultation.

CONCLUSIONS AND DISCUSSION

Conclusions

This review aimed to gain a detailed understanding of communication practices and their functions in consultations about MUS. By carefully analysing 18 studies of natural patient-provider interactions, we distinguished three main dimensions characteristic of MUS consultations. First, patients need their symptoms recognized during the medical interaction, as is demonstrated by their intensified language. Second, consultations have a double trouble potential due to the differing ideas and knowledge domains of healthcare providers and patients. This is manifested in patient resistance and cautious symptom explanations, e.g. with indirect linguistic constructions. Third, within the medical interaction healthcare providers construct symptom explanations that are acceptable for patients. Persuasive conduct such as tailoring explanations and framing facilitates consultation management by avoiding friction and eventually facilitating discussion of treatment options in these sometimes challenging interactions.

Comparison with the literature

A recent meta-synthesis of focus group and interview studies demonstrated that, according to doctors, patients and doctors have negative experiences in MUS interactions (Johansen & Risor, 2017). Patients risk legitimacy and want providers to acknowledge their symptom experience (Werner & Malterud, 2003). We show that this becomes manifest during the medical encounter. This is a universal issue for all patients presenting at the doctor's office (Heritage & Robinson, 2006), and can become problematic when symptoms have no medical explanation. Our review demonstrates that patients then account for seeking medical care (Heath, 1992), and claim legitimacy of the visit so their problems are treated as "doctorable" (Heritage & Robinson, 2006).

Previous research demonstrated that patients can have different explanatory models for the experience of complaints (Johansen & Risor, 2017). This review shows that both differing ideas and differing knowledge domains give potential for trouble in MUS consultations. This manifests itself in more complex turn designs (e.g. references to diagnostic evidence) that are generally observed for uncertain or disputed diagnoses (Gill & Maynard, 1995; Maynard, 2004; Peräkylä, 1998). This double trouble potential challenges the healthcare providers' role as a medical expert (Peräkylä, 1998), which, we argue, could contribute to their feelings of discomfort and powerlessness (Wileman et al., 2002).

Furthermore, Johansen and Risor (2017) indicate that healthcare providers work towards successful consultation management with delicate approaches, e.g. by enhancing the relationship. This review indicates that they adopt several subtle strategies, such as tangible explanations or labelling symptoms, to help validate symptom experiences, though medical labels such as fibromyalgia may be perceived as an empty promise (Boulton, 2019). Healthcare providers carefully manoeuvre through the consultation to avoid predicating that patients suffer from a potentially stigmatized mental illness (Kirmayer et al., 2004). This avoids overt friction (too) early in the consultation.

We have demonstrated that instead of merely informing patients about a diagnosis and treatment options, healthcare providers engage in subtle (but sometimes extensive) persuasive interactional work in pursuit of patient acceptance. When healthcare providers use persuasion, it is not to sell patients something they might not want or need; rather, they take the sting out of a potentially difficult conversation. A negotiation of the patient's problem including the use of persuasive strategies thus serves to find common ground, which sometimes appears difficult to achieve (den Boeft et al., 2017).

Finally, the involvement of patients in the diagnostic phase is also observed in the delivery of bad news (Maynard, 1991b) and other situations for which cautious communication is warranted (Parry, 2005). Specifically, the diagnostic news delivery is preceded by a (brief) pre-sequence that first elicits the patient's view. This enables healthcare providers to "confirm his [the patient's] experience, affirm the clinical diagnosis, and thereby co-implicate the patient's perspective in the delivery of the news" (Maynard, 2017). The diagnosis is thus communicated in a sensitive manner. 'Good' news indicating that no severe causes underlie the complaints is delivered as a form of bad news. Depending on patient expectations, 'good' diagnostic news is closely akin to bad news (Maynard & Frankel, 2006) without its potentially life-threatening consequences. Whereas some patients find the diagnosis of MUS a relief since they worried about potentially harmful underlying diseases, others perceive the diagnosis as 'bad' news since uncertainty remains about the cause (and treatment) of symptoms. Treating the delivery of a MUS diagnosis as a form of bad news may help facilitate the communication between healthcare providers and some patients with MUS during consultations that are frequently perceived as challenging.

Strengths and weaknesses

This review was the first to synthesize interactional studies of medical consultations about MUS. Rather than examining post-hoc patient views or provider experiences, we reviewed previous studies of naturally-occurring patient-provider interactions. We performed a systematic review according to PRISMA guidelines with extensive searches, independent selection and assessment of the included studies based on updated quality assessment instruments, and extensive discussions about the dimensions arising from the studies.

There are, however, some limitations to the review. First, consultations were mostly recorded in specialized healthcare settings with healthcare providers who had a special interest in the care of MUS patients. Patients experienced relatively severe complaints, and studies applied very diverse inclusion criteria since no gold standard exists for the operationalization of MUS (e.g. a minimum of four to six complaints (Aiarzaguena et al., 2013), or follow-up consultations (Monzoni et al., 2011a)). Though research has shown that certain practices in MUS consultations may be universal for different medical settings (i.e. neurology and psychotherapy) (Burbaum et al., 2010) or for different types of complaints (Parry, 2005), we found no evidence that specific practices described in individual studies account for all MUS interactions.

Second, though studies in this review (Ekberg & Reuber, 2015; Robson et al., 2016) and quantitative analyses (Reuber et al., 2009; Stortenbeker et al., 2018) suggest that healthcare providers and patients sometimes use language differently depending on the type of complaints patients present, our review did not compare consultations involving patients with medically unexplained symptoms with consultations where the symptoms did have a medical explanation. Future research is required to assess the generalizability of these findings for various medical settings and for different types of complaints.

Furthermore, we faced some challenges with the quality appraisal of the included studies. For instance, though carefully developed, our internal validity quality appraisal hardly discriminated between CA studies, whereas the remaining methods received weaker scores. It remains unclear whether this scoring difference is a result of a stronger internal validity for CA or a mere product of the quality assessment tool itself (Dixon-Woods et al., 2004). For this reason, we did not provide internal validity assessment tables for individual studies. Moreover, external validity was estimated through description of the data characteristics. Yet some studies did not provide data characteristics such as patients' demographic information. This informed us about the quality (or extent) of reporting rather than external validity issues. Future research should strive to further develop a method for appraising the internal and external validity of interactional and linguistic research, and critically assess its applicability for reviewing practices.

Practice implications

This systematic review shows that healthcare providers and patients manoeuvre carefully in medical consultations about MUS. Fine-grained analyses demonstrate that consultations carry a double trouble potential, and healthcare providers should treat the patient's visit as legitimate and attempt to overcome potential friction. Negotiation and persuasion may enhance agreement between healthcare providers and patients, which is required for the successful recommendation of (psychological) treatment. By eliciting patient views and tailoring symptom explanations, healthcare providers involve patients in constructing symptom explanations and treatment opportunities collaboratively. Attention to subtle linguistic and interactional aspects is key for the successful management of MUS consultations.


3

Chapter 3

How GPs raise psychosocial concerns as a potential cause of MUS

Stortenbeker, I., Stommel, W., olde Hartman, T., van Dulmen, S. & Das, E. (2022).
How general practitioners raise psychosocial concerns as a potential cause of
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ABSTRACT

Objective

A common explanation for medically unexplained symptoms (MUS) relates patients' psychosocial concerns to their physical ailments. The present study aimed to examine how general practitioners (GPs) ascribe psychosocial causes to patients' unexplained symptoms during medical consultations.

Methods

We used conversation analysis to examine how GPs raised psychosocial concerns as a potential cause of MUS. The data consisted of 36 recorded consultations from Dutch general practice. Psychosocial ascriptions were raised by GPs in 14 consultations.

Results

GPs' psychosocial ascriptions were either captured in 1) history-taking questions, or 2) diagnostic explanations. Whereas questions invited patient ideas, explanations did not make relevant patient responses in adjacent turns and subordinated patients' knowledge in symptom experiences to the GP's medical expertise. By questioning patients whether their symptoms may have psychosocial causes GPs enabled symptom explanations to be constructed collaboratively. Furthermore, additional data exploration showed that GPs lay ground for psychosocial ascriptions by first introducing psychosocial concerns as a consequence rather than a cause of complaints. Such preliminary activities allowed GPs to initiate rather delicate psychosocial ascriptions later in the consultation.

Conclusion

GPs introduce psychosocial concerns as a potential cause of MUS with history-taking questions or diagnostic explanations. While questions strongly established relevance for patients' – accepting or rejecting – responses, diagnostic explanations did not make relevant such responses. Preliminary activities that introduce concerns as a consequence of physical ailments enabled GPs to propose psychosocial ascriptions later in the consultation.

INTRODUCTION

Medically unexplained symptoms (MUS) – also labelled persistent somatic symptoms or functional symptoms – are physical symptoms that cannot directly be attributed to detectable underlying diseases or an organic pathology. Treatment options are limited, which makes the general practice consultation itself the central place for management of MUS. Effective symptom explanations are crucial in MUS consultations, since they prevent unnecessary and potentially harmful diagnostic testing (Ring et al., 2005).

A common explanation for MUS links the experience of complaints to patients' psychosocial concerns such as tensions, worries, or other (psychosocial) issues (Gask et al., 2011). Yet, patients often reject this ascribed link between symptoms and psychosocial concerns (Burbaum et al., 2010; Monzoni et al., 2011a; Peters et al., 2009), which we refer to as 'psychosocial ascriptions'.[1] They sometimes hold different beliefs about the causes of complaints (Johansen & Risor, 2017) and the lack of a somatic explanation could undermine the legitimacy of their illness (Mik-Meyer & Obling, 2012). Patients may worry about being labelled as malingerers (Burbaum et al., 2010), or that symptom experiences are imagined or 'all in the head' (De Ruddere & Craig, 2016; Ding & Kanaan, 2016). The challenge for doctors, then, is how to communicate with patients who are potentially resistant and may hold conflicting ideas about causes and treatment of their physical, burdensome symptoms.

Fine-grained analyses of medical consultations show that doctors orient to the potential threat to the legitimacy of a patient's illness by displaying delicacy of their (psychosocial) explanations. With delicate, we refer to the anticipation of a potentially unfavourable response (Burdett et al., 2019). During MUS explanations, GPs use delicacy markers such as implicit words (e.g. "tensions" rather than "mental"), and vague references (e.g. "you feel about this thing") to talk about complaints and possible causes (Aiarzaguena et al., 2013; Burbaum et al., 2010). Explanations are designed with epistemic downgrades, presented as potential rather than actual as they co-occur with hesitations, and refer to what other patients may experience (Aiarzaguena et al., 2013; Monzoni & Reuber, 2015). Furthermore, while affirmatives prevail when discussing somatic causes, Joosten et al. (1999) observed that potential causes tend to be raised in interrogative form.

By treating symptom explanations as delicate, doctors orient to the different epistemic domains of their medical profession and patient experiences (cf. Heritage, 2012b). As Heritage (2012a) shows, doctors and patients have unequal epistemic access to diagnostic information, i.e. there

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[1] Also referred to as 'psychosomatic attributions' (Burbaum et al., 2010). We use the term 'psychosocial ascription', since 'psychosocial' refers to patient's psychological (e.g. worries, depression) or social (e.g. family, work) concerns, and 'ascription' causally links this to patients' physical complaints. We also use 'ascription' instead of 'attribution' to prevent connotations of the psychological construct that underlies the term.

is an information imbalance. Doctors are generally more knowledgeable (K+) in diagnostic testing and treatment decisions than patients. Both orient to this interactional asymmetry that entitle (Drew, 1991) doctors to have authority in biomedical reasoning, e.g. patients obliquely present candidate explanations (Gill & Maynard, 2006), and doctors merely assert diagnoses adjacent to physical examinations (Peräkylä, 1998). However, when symptom explanations relate to patients' psychosocial environment, doctors are less knowledgeable (K-). Patients know their own psychosocial concerns and symptom experiences, i.e. these are in the patient's 'empirical realm' (Gill, 1998). Relatedly, doctors do not claim unconditional authority in diagnosing psychosocial complaints (Peräkylä, 1998). They rather ratify patients' knowledge by cautiously ascribing symptoms to psychosocial causes, and patients have resources to challenge the doctor at this point of the consultation (Monzoni et al., 2011a).

Whereas previous research described various explanatory models for GPs (e.g. involuntary physiological processes or patients' influence on symptoms) (L. Morton et al., 2017), this article aims to further refine our understanding of the social actions (e.g. asking or asserting) underlying GPs' psychosocial ascriptions, and how they make relevant patient responses. This is especially relevant for MUS consultations because, although some patients initiate the relationship between emotions and symptoms (Bekhuis et al., 2020), GPs often find it hard to further explore patients' emotions (Houwen, Lucassen, et al., 2019), or to reach agreement on this relation (Banks & Prior, 2001; May et al., 2004). The primary aim of this paper is to examine how different forms of psychosocial ascriptions affect relevancy of patient responses in a selection of Dutch GP consultations about MUS. As a secondary aim, we explore how GPs lay grounds for ascribing psychosocial causes to symptoms earlier in the consultation.

DATA AND METHOD

Participants and setting

The data for this study were drawn from a corpus of 390 video-recorded consultations of 20 GPs (see Houwen et al., 2017). After each consultation, GPs defined whether they thought patients had MUS, indefinite MUS, or medically explained symptoms; following previous research about MUS consultations (Ring et al., 2005). This resulted in a final sample of 43 patients with MUS. We analysed 36 videos of 16 GPs in total (2 recordings had technical problems and 5 could not be viewed due to consent restrictions). Ten of the patients were male and 26 female, and of the GPs eight were male and eight female.

Analytic procedure

We used conversation analysis (CA) to analyse how GPs discuss the role of psychosocial concerns in patient experiences of complaints. CA is a data-driven, qualitative research method for the analysis of naturally occurring spoken interaction, aimed at uncovering interactional patterns that structure social action (Sidnell & Stivers, 2012). The data were transcribed verbatim. Names were replaced by pseudonyms and other personal information was deleted from the transcripts. Our analysis started with explorative analysis and data sessions of the MUS videos. Data sessions serve to generate observations, arrive at, or verify analyses. This led to the identification of the phenomenon that the discussion of potential psychosocial causes seems not to be 'just' done by physicians, but that it involves a trajectory throughout the consultation; GPs seem to make small steps in the direction of psychosocial causes before they actually launch these. Next, one researcher (IS) identified all instances of psychosocial ascriptions, done either by GP or patient, in the data and transcribed these fragments according to CA-conventions (G. Jefferson, 2004).

We found that patients and GPs ascribed psychosocial causes to symptoms in 29 out of the 36 consultations of our dataset. This was not discussed in the remaining seven consultations. Patients initiated a psychosocial link to their symptoms in 15 of these consultations after GPs' open-ended cause-seeking questions (Joosten et al., 1999) or by self-initiation – either as a potential suggestion or a rejection of the possibility. GPs initiated talk about psychosocial concerns in 14 of the consultations. Since our aim was to analyse GP-initiated psychosocial ascriptions, our analysis was restricted to this limited set of consultations. Our collection included 23 instances of GP-initiated psychosocial ascriptions. Ten GPs (4 female, 6 male) raised psychosocial ascriptions in consultations with 9 female and 5 male patients. GP age varied between 37 and 69 years (M = 48.9, SD = 10.5) and patients were between 19 and 73 years of age (M = 53.2, SD = 16.2). The consultations ranged in length from 8:35 to 35:02 minutes with a mean duration of 20:17 minutes. In most of the consultations (11), patients made a return visit, with various reasons for the visit; e.g. headache, nausea, chest pain, blood pressure, and stomach pains.

RESULTS

We identified two distinct ways in which GPs suggest the relevance of psychosocial concerns as explanatory for the patients' complaints. As we will show, GPs ask patients whether they believe that their complaints relate to psychosocial circumstances, and/or they explain this psychosocial link to them. These differing actions to ascribe psychosocial causes to symptoms expect different responses in adjacent turns. Questions expect an answer in the next turn, whereas explanations do not make relevant a full response (patients withhold responses or provide minimal acknowledgement, and GPs interrupt elaborate responses). Furthermore, additional exploratory analyses suggest that psychosocial ascriptions – either as questions or explanations – are preceded by preliminary activities that create a context of talk about psychosocial concerns. Saliently, in this preliminary work psychosocial concerns are proffered as a consequence of complaints. The suggestion that symptoms lead to concerns tends to be unproblematically confirmed by patients. These initial observations suggest that preliminary activities could open up talk about potentially delicate psychosocial issues.

We first present the two different approaches of GPs in raising potential psychosocial concerns for the presented physical complaints. Next, we demonstrate an initial analysis of preliminary activities preceding these psychosocial ascriptions. Finally, we show an example representing the building blocks of psychosocial ascriptions, i.e. establishing concerns as a consequence of complaints prior to raising it as a potential cause.

Raising potential psychosocial causes of physical complaints

GPs initiate a discussion of potential psychosocial causes with 1) a history-taking question, or 2) a diagnostic explanation. See some examples of these two formats in various consultations in Table 1. The initiation of psychosocial ascriptions was less frequent with history-taking questions (4 out of 14 consultations) compared to diagnostic explanations (10 out of 14 consultations). History-taking questions were followed by diagnostic explanations later in the consultation, and GPs switched from explanations to questions in only two consultations. In the next section, we demonstrate that the design of psychosocial ascriptions affects patient responses in the next turn.

Table 1. Psychosocial ascriptions as questions and explanations

History-taking question	
GP 5	But could it BE that-that when you hear something like that that it also has an effect on your body or not?
GP 6	COULD IT ALSO be a-a e:h <a reaction> to e::h (0.5) e::hm how you're feeling <mentally>?
GP 7	Could there be something else that (.) e:h has an effect on these complaints (0.4) are there tensions: stress::?
Diagnostic explanation	
GP 4	Because you (.) you: (.) are WORried; because it really bothers you; •hhhh e::h w-w-w- (.) that only reinforce reinforces these kinds of complaints °°more°°.
GP 5	E::::hm <I do: know> that e:h physical complaints (.) <become WAY worse> when you are fretting about them all the time.
GP 8	So that your <BOdy is apparently reacting> to all sorts of (0.4) well (.) in you- sometimes (.) •hhh tensions, sometimes physical efforts.

History-taking question

Extract 1 shows how history-taking questions about psychosocial causes elicit a patient response in the next turn. The consultation starts with a lengthy sequence about the patient's son's health condition and the complex relationship between the patient and son. Then, the patient presents the current complaints: irritable bowels. This patient has been suffering from these complaints for a long time. Despite a new treatment and a change of diet (line 1), she still experiences the complaints. The patient proffers a lay theory of these somatic aspects that are within her empirical realm (Gill, 1998) when the GP introduces an additional explanation for the bowel problem, i.e. her psychosocial concerns. She does so by back-referencing the complex relationship with the son (cf. Monzoni & Reuber, 2014) in lines 3-4 with the Dutch *spanningen*, which literally translates as 'tensions' but is closely akin to the English 'stress' meaning a nervous feeling or emotional pressure:

Extract 1. History-taking question, rejected by patient (GP 1)

```
1        PT: ↑ik krijg diarree van sui:ker (.) °gebruik ik niet meer°,
             sugar gives me diarrhea (.) °don't use it anymore°,
2            •hh[h (?)          ]
3    →   GP:    [EN en en et dit] soort spanningen met Matthias?=
                [AND and and it ] this kind of tensions with Matthias?=
4    →       =doen die daar nog wat in? merk je daa:r wat op?
             =do they do something there? do you notice something there?
5        PT: nee.
             no
6        GP: ↑↑geen invloed daarvan?
             ↑↑ not affected by it?
7            (0.6) [((shakes head))]
8        PT:       [((shakes head))]
9        GP: helemaa:l niet. (0.5)
             not at all. (0.5)
10       PT: nee et is Z:O <onvoorspelbaar>;
             no it is s:o <unpredictable>;
```

This extract shows two recurrent features of psychosocial questions. First, the suggestion in lines 3-4 is phrased as a history-taking question with interrogative syntax. The question design makes relevant a patient response in the next turn (Hayano, 2012; Stivers & Robinson, 2006) and it is directly addressed to the patient and tailored to her personal situation. Hence, the GP solicits information from the patient, and positions herself as relatively unknowing (K-) about the issue. It acknowledges the patients as an 'expert' (by experience) (Heritage, 2012b) in detecting a potential relationship between psychosocial concerns and physical complaints. The and-prefaced design renders it a 'routine' question fitting the history-taking activity of inquiring information from the patient (Heritage & Sorjonen, 1994) to arrive at a diagnosis later in the consultation (Boyd & Heritage, 2006).

Second, the suggestion is divided into three consecutive questions that demonstrate the delicacy of this action in attracting a potentially unfavourable response. The first question (line 3) carefully back-references (Burbaum et al., 2010) the problematic mother-son relationship with hedging expressions ("this *kind of* tensions"). "*Kind of*" more specifically displays delicacy of the term “tensions”. The second question (line 4) connects the tensions to her complaints, but only implicitly without a direct reference to the symptoms (“do something *there*”) (Bergmann, 1992). The third question (line 4) aligns with the patient’s previous attempts to control or understand the occurrence of symptoms as stressed in line 1 (“do you notice something there”) (Silverman & Peräkylä, 1990). These implicit formulations (back-references, deictic expressions, mirroring patient’s words) indicate that the GP carefully introduces psychosocial concerns as a potential cause of complaints, thereby anticipating potential resistance. Psychosocial causes of complaints are thus carefully introduced with a history-taking question that acknowledges the patient as relatively knowing.

Though the GP carefully attempts to introduce the psychosocial ascription, there is disalignment between GP and patient. First, she introduces the ascription without producing any uptake or confirmation of the patient’s lay theory about potential (somatic) causes (Gill & Maynard, 2006). Second, the patient responds with a straightforward “no” to the psychosocial ascription in line 5, despite the question’s positive polarity, i.e. expecting a positive answer (Boyd & Heritage, 2006). The GP then incrementally shifts to a relatively more “knowing” position on the epistemic gradient, pursuing a reconfirmation of the patient’s position with a reversed polarity repetitional question (“not affected by it?”, line 6) (Koshik, 2002). By repeating the link, the GP indexes the patient’s answer as relevant for establishing a diagnostic hypothesis (Y. Park, 2011), while, more importantly, not accepting her rejection of the suggestion. The GP increasingly strengthens her role as a medical authority as she persists to establish a potential link between concerns and symptoms. This culminates in an extreme case formulation as a candidate response (“not at all”) in line 9 (Schegloff, 2007) after the patient shakes her head in line 7, redoing her denial. Finally, the patient expands her rejection by referring to the unpredictable nature of complaints as a reason for denying the link (line 10).

The psychosocial ascription in this example is thus embedded as a history-taking question. The GP raises a potential psychosocial concern that may cause or exacerbate the complaints, but it is left to the patient to respond to. The interrogative syntax positions the patient as relatively knowing (K+) about the link between her psychosocial concern and the experience of complaints. Such response-eliciting actions differ substantially from an alternative practice for ascribing psychosocial causes to patients’ symptoms: diagnostic explanations.

Diagnostic explanation

In contrast to history-taking questions, patient responses only play a minor role when GPs raise potential psychosocial ascriptions as diagnostic explanations. Explanations usually occur during the diagnostic phase of the consultation when the GP evaluates the patient’s condition (Heritage & Maynard, 2006a). Suggestions in this format have a declarative syntax and they inform rather than inquire about the potential link between psychosocial circumstances and physical ailments.

We will show that patient involvement is now limited, which is typical for the diagnostic phase of the consultation (Heath, 1992). In other words, GPs and patients orient to the norm that GPs have medical authority in establishing a diagnosis when they use the explanation format.

Extract 2, which is the continuation of the interaction presented in extract 1,[2] illustrates the interactional pattern of diagnostic explanations. The explanation follows directly after the patient's account for rejecting the possible relation between her bowel complaints and the trouble with her son in extract 1. Extract 2 shows that information from the patient is now used as a basis for the diagnostic explanation:

Extract 2. Diagnostic explanation format (GP 1, continued)

```
11       GP: °m hm:° •pt •hh ja dat is natuurlijk vaker hè,=
             °m hm:° •pt •hh yeah that happens more often right,=
12              =bij: e::[h <SPASTI]SCHE DARMEN>,=
                =with: e::[h <SPASTI]C COLONS,
13       PT:                 [en ALS IK]
                              [and IF I ]
14       GP:   =dat het zo onsp- onvoorspw- [>SPELBAAR] is<,
               =that it is so unpr- unpredw- [>DICTABLE]<,
15       P:                                 [ja maa-   ]
                                             [yes bu-   ]
16       GP: maar dat is EI:genlijk,
             but that is in fact,
17   →       (ja) uit onderzoeken <lijkt> •hh dat inderdaad allee:n
             (yeah) it seems from research •hh that indeed only
18   →       de <emotione:le problematiek> echt een duidelijke invloed heeft,
             =emotional matters really have a clear influence,=
19           =en dat de rest v(h)aak hee::l e:h eh onvoorspelbaar °is°.
             =and the rest often is very e:h eh unpredictable.
20           °a- e:::h normaal gesproken°;
             °a- e:::h generally speaking°;
21           •hhhh ik DENK dat e::h[m: ]
             •hhh I THINK that e::h[m:]
22       PT:                       [maa]::r als ik nou to[ch (?) ]
                                   [bu]t if I st[ill (?)]
23       GP:                                             [maar JE] HEB NATUURLIJK
                                                         [but OF ] COURSE YOU HAVE
24           #een-een-een he?=
             a-a-a right?=
25           =de: der zijn gewoon wel wat afwijkingen te Zien ook,
             =the: there are just some abnormalities to be seen too,
```

---

[2] We use an example from the same consultation to demonstrate how both formats may occur in the same consultation. See Table 1 for (brief) examples from other consultations.

The GP's explanation starts with a confirmation of the patient's earlier claim that the complaints are unpredictable, and re-appropriates it as medical knowledge ("happens more often", "spastic colons", lines 11-12). The GP thus uses information from the patient's expanded rejection as in accordance with the diagnosis.

Then, in contrast to the history-taking question (extract 1), the potential role of psychosocial concerns in causing the complaints is proposed as a diagnostic explanation (lines 17-19). We previously demonstrated how the GP gradually moved from K- to a more knowing position (Heritage, 2012a) by pursuing acceptance of the first psychosocial ascription. With the explanation format, the GP moves to further establish her role as a medical authority using several interactional features. First, this more 'knowing' format tends to invite confirmation and sequence closure rather than projecting sequence expansion (Heritage, 2012a). Second, the claim is supported with a third-party reference to scientific research to lay grounds for the diagnosis (Peräkylä, 1998). Third, instead of referring to "tensions" to formulate the problematic mother-son relationship (see extract 1), the GP switches to *emotionele problematiek*. The Dutch *problematiek* is idiomatic and does not translate to English. The term refers to an aggregated level with all emotionally loaded problems in one specific domain, and is often used in psychological or health-related contexts, usually by health professionals. With this, the GP thus changes the word choice to a vocabulary that suits her medical role (Drew, 1991).

Note that, while the question directly related the patient's personal psychosocial concerns to her bodily experiences, potential causes are now more generically formulated without any direct reference to the patient, her concerns, or symptoms. With this *detached footing*, the GP orients to the delicacy of the issue (Gill & Maynard, 1995; Monzoni & Reuber, 2015), which is supported with hedges ("seems") and downgrades ("often", "generally speaking"). Detached footing also serves another function; it bolsters the GP's medical authority. Even though the patient may not see the link, the GP draws on medical research to claim that "emotional matters really have a clear influence" (line 18) on the affliction under discussion, hence on the patient's complaints. The existence of a link between physical symptoms and emotional matters has now become indisputable, and the patient is only able to deny the possible link *for her own case*.

The patient attempts to contribute to the explanation three times. The first is in the midst of the GP's explanation ("and if I", line 13) and remains unattended. Then, the patient seems to initiate disagreement with the contrastive discourse marker "but" (Schegloff, 1987) in line 15 ("yes bu-) and line 22 ("but if I still"). Even though the GP reclaims the conversational floor in both instances, she attends the patient's contributions by mimicking the patient's "but", and explicating scientific ("it seems from research", lines 16-20) and sensory evidence ("some abnormalities to be seen", lines 23-25) (Peräkylä, 1998) in support of her psychosocial explanation for the patient's complaints.

Whereas the patient in extract 2 does not get the opportunity to respond to the diagnostic explanation, the patient in extract 3 could have taken a turn but remains silent. Despite a transition relevant place at the potential ending of the explanation, the patient does not produce a verbal response:

Extract 3. Diagnostic explanation format (GP 2)

```
1        GP: •hhhh e::n e:::hm (0.9) ja ut-t-t-t tis tis:
             •hhhh a::nd e:::hm (0.9) yeah it-t-t-t is is:
2            een e:h (1.3) het is #e:h ja;
             an e:h (1.3) it is #e:h yeah;
3            (0.8) #e-en het vervelende is (0.9) •pt het is all- is-is
             (0.8) a-and the annoying thing is (0.9) •pt it is all- is-is
4     →      dat op het moment dat je je ZORgen maakt over een lichaamsdeel,
             the moment you start WORrying about a body part,
5     →      (0.3) •hhh ga je vanZELF dat lichaamsdeel beter waarnemen.
             (0.3) •hhh you will automatically better detect that body part.
6        PT: (1.3) / ((minimal head nods))

7        GP: °he° dus je [gaat ]-
             °right° so you [will]-
8        PT:             [°hm;°]

9        GP: op het moment dat je zorgen heb over een versleten knie?
             the moment you start worrying about a worn knee?
10       PT: nou ja:;=
             we:ll yeah;=
11       GP: =ga je die knie beter voelen want daar zit DREIGING in.
             =you will better feel that knee because it's threatening.
```

Here, the explanation precedes in an insertion sequence in lines 1-3 with several hesitations (repetitions, *eh*s, pauses and self-initiated self-repairs). By assessing that it is "annoying" (line 3), the GP introduces psychosocial concerns as inherently connected to physical symptoms (D. Edwards & Potter, 2017), and he forecasts the dispreferred nature of the upcoming explanation. The psychosocial ascription that follows in lines 4 to 5 is a carefully designed diagnostic explanation. A direct reference to the complaints is avoided with the relatively vague "physical sensations", and the indefinite "you" refers to how worries affect these sensations for people in general rather than the patient in the consultation room (Gill & Maynard, 1995). The falling intonation at the end of the GP's turn creates a transition relevant place where the patient could take a turn.

The patient, however, withholds a verbal response (line 6) which is common in response to GPs' diagnostic assessments (Heath, 1992; Peräkylä, 2002). By remaining silent, patients orient to doctors' expert position in the delivery of a diagnosis (Maynard, 1991a), and it could serve as a form of implicit resistance to the explanation. The patient's "well yeah" in line 9 during the GP's expansion of his explanation (line 7 and 9) suggests that the patient's prior lack of verbal uptake indeed tacitly displayed her resistance to the explanation (Pomerantz, 1984). The GP does not attend the patient's attempt to contribute and he continues his analogy between a worn knee and the patient's complaints (her chest pain). Only later in the consultation, the patient disagrees in a slightly more explicit way by presenting new symptoms that counter the GP's explanation (data not shown) (Peräkylä, 2002; Stivers, 2007). This extract shows that the diagnostic explanation format of psychosocial ascriptions does not necessarily require patients to respond - at least not as strongly as questions do.

To conclude, we identified two different ways in which GPs relate symptom experiences to potential psychosocial causes in MUS consultations. In line with previous CA research (Hayano, 2012; Heath, 1992; Schegloff & Sacks, 1973; Stivers & Robinson, 2006), we observed that history-taking questions strongly establish a relevance for patients to verbalize a – agreeing or disagreeing – response. They claim a relatively weak epistemic stance towards the potential explanation for the patient's situation (Heritage, 2012a), and serve to arrive at a diagnosis later in the consultation. Explanation formats of psychosocial ascriptions, on the other hand, generate a weaker conditional relevance of a patient's response in the next turn, which leads to patients displaying their (dis)agreement in more tacit, deferent ways (cf. Gill, 1998). Explanations claim a relatively stronger epistemic stance as is demonstrated with, for instance, declarative syntax (Heritage, 2012a), reference to third parties (Peräkylä, 1998), or institutional jargon (Drew, 1991). Our analysis shows that the explanation format treats psychosocial ascriptions as a diagnostic activity. They subordinate the patient's epistemic domain related to symptom experiences to the doctor's domain as a medical expert with knowledge of medical research and illness trajectories.

Preliminary activities

Inherent to psychosocial ascriptions is that psychosocial concerns are presented as a potential *cause* of complaints. Additional exploratory analyses of our data suggested that, prior to discussing potential psychosocial causes, GPs engage in preliminary activities that create a context of talk about psychosocial concerns. Such activities establish the presence of patients' psychosocial concerns, usually as a direct *consequence* of the presented complaints. The causal relationship between concerns and physical symptoms is thus reversed compared to psychosocial ascriptions that are raised later in the consultation. In contrast to psychosocial ascriptions, preliminary talk about psychosocial concerns is rarely met with resistance from patients in our sample. In this section, we tentatively show that establishing the presence of emotional distress may set a basis for discussing it as a cause of complaints later in the consultation. We use examples from two consultations different from the previous extracts.

Preliminary activities often occur during the history-taking phase after GPs have inquired about physical symptoms. For instance, in extract 4, the GP explores the patient's physical symptoms through a series of question-answer sequences (Boyd & Heritage, 2006), e.g. about the physical sensations of the complaints (line 1). When the GP treats the patient's contribution to this inquiry as sufficient, she marks the movement to a new topic with "yeah (0.9) okay (1.0)" (W. Beach, 1995). The question that follows in line 11 as part of the question-answer sequence addresses the emotional consequences for the patient being short of breath:

Extract 4. Preliminary activity preceding a PA later in the consultation (GP 3)

```
1         GP: voelt t alsof je een br:↑OK in de keel ↑h[ebt?]
              does it feel as if you have a lUMP in the th[roat? ]
2         PT:                                              [jA:.]
                                                           [yEA:H.]

          ((6 lines omitted, patient confirms feeling of a lump))

9         GP: =°ja° (0.9) °°oke.°° (1.0)
              =°yeah° (0.9) °°okay.°° (1.0)
10        PT: hhhhhh=
11    →   GP: =ja (.) maakt je dat ↓bang?
              =yeah (.) does it scare you?
12        PT: J:A (0.6) >gister zat k gewoon te< kokhalzen
              Y:EAH (0.6) yesterday I was gagging
13            omdak geen ↑lucht meer kreeg.
              'cause I just couldn't breathe anymore.
```

By empathically inquiring whether her complaints scare the patient (line 11), the GP shifts the history-taking activity that thus far concentrated on physical aspects, to the psychosocial domain. In lines 12-13, the patient confirms and elaborates her "being scared"; she describes her physical reaction when she felt unable to breathe, which she legitimizes with several extreme case formulations ("gagging", "just couldn't breathe") (Pomerantz, 1986). By corroborating the negative psychosocial impact, the patient thus illustrates the severity of her complaints, and she claims legitimacy of her current complaint (Heritage & Robinson, 2006).

Later during this consultation, the GP inquires "having tensions" as a more general state of mind (see extract 5), which follows after the patient and her mother further elaborated the severity of the patient's complaints (data not shown). The GP seems to project an explanation that disaffiliates with the mother's previous turn with the turn-initial "well you know" in line 47 (Asmuss, 2011; Heritage & Sorjonen, 2018). Yet, she self-repairs to launch another history-taking question in line 48, which refocuses the mother's physical contribution (line 45) to the psychosocial domain:

Extract 5. Inquiring mental state without direct link to complaints (GP 3, continued)

```
45        MO: ja >ik weet ook nie< wat er zit;
              yeah >I don't know either< what's in there;
46            [(?)]
47        GP: [ja:] ja •HHhh  nou ja: weet je?-
              Yeah •HHhh well you know?
48   →        (.) e:h he- heb je veel <spanningen> de laatste tijd?
              (.) e:h do- do you have a lot of <tensions> lately?
49        PT: (1.3)/ ((shakes head))
50            <nee?> (0.4)
              <no?> (0.4)
51   →    GP: °nee;° (0.5) maar dit maakt je wel heel erg ↓bang e:h;
              °no;° (0.5) but this does really scare you e:h;
52            (0.7)
53        PT: >ja omdat het gewoon< steeds ERger w#ordt.
              yeah just because it is getting WORse every time.
```

Rather than feeling “scared” due to the complaints, the GP generally inquires whether she experiences “a lot of tensions lately”. This is denied by the patient as she shakes her head and says “no” (lines 49-50). The GP’s uptake of this denial demonstrates the conflicting interactional goals when establishing the presence of psychosocial concerns. That is, the GP challenges the patient’s denial by emphasizing with extreme case formulations that the symptoms “do really scare” the patient (Pomerantz, 1986). This claim sets the basis for raising it as a cause of complaints later on.[3] The patient, however, minimizes this general implication (“*just* because”) (Lee, 1987), and she justifies feeling scared as a result of the severity of her physical symptoms (“it is getting worse every time” line 53). She hereby re-invokes the severity, and hence the “doctorability” of her complaints (Heritage & Robinson, 2006).

The final example of preliminary activities is taken from a consultation where the patient self-initiates his concerns in relation to the complaints during the history-taking phase. The GP formulates the patient’s worries about the experience of complaints in a summary of the history-taking phase:

---

[3] Later in the consultation, the GP provides the following psychosocial ascription: “It also has something to do with, right with the fact that you are very worried about it, that causes stress, which also makes it tenser in here ((points to throat)).”

Extract 6. Topicalizing mental states in the summary of complaints (GP 4)

1 GP: °nee°•pt •HHh nee.
°no°•pt •HHh no.

2 → •hh GOED E::h: (1.2) nou wat heb jij.
•hh GOOD E::h: (1.2) well what do you have.

3 → e::[h >in ieder geval< zorgen.
e::[h >at least< concerns.

4 PT: *[((sighs smiling))*

5 GP: •hh hh (1.6) ik denk dat dat- dat vind ik het meest e:h
•hh hh (1.6) I think that that that I find this the most e:h

6 •hh meest opvallende.
•hh most striking.

7 de:: je- je maakt je zorgen over je gezondheid.
the:: you're worried about your health.

The GP marks the shift from history-taking to the diagnostic phase in line 2 with "well what do you have" (Heritage & Sorjonen, 2018). The GP's formulation first highlights the patient's reported worries (lines 2-3). He thereby focuses on this specific aspect of the problem, moving away from physical symptoms as the primary focus of the consultation (Antaki et al., 2005). This is made explicit in lines 5-6, where the GP marks the patient's concerns as the "most striking" of his symptom presentation. Thus, by formulating the patient's worries at the beginning of the diagnostic phase, the GP marks this formulation as indicative for the diagnostic conclusions.[4]

These explorative analyses suggest that preliminary activities of GPs might set a basis for ascribing psychosocial causes to patients' symptoms. GPs achieve that psychosocial concerns are put 'on record' before they are proposed as a potential cause of the complaints. Patients generally confirm feeling concerned due to the experience of complaints. This could endorse the severity of complaints and may also underline the legitimacy of the current visit. The cause-effect relationship is reversed when GPs raise psychosocial ascriptions; psychosocial concerns are then presented as a cause rather than a consequence of complaints. In contrast to preliminary activities, psychosocial ascriptions potentially threaten the visit's legitimacy, because they would suggest that the problem is 'psychological'.

Building a psychosocial ascription

So far, we presented short fragments of consultations to highlight specific formats of psychosocial ascriptions and preliminary activities. What the analyses of these short fragments did not show is

---

[4] The GP (implicitly) ascribes 'worries' as a potential cause of her complaints later in the consultation: "you're feeling your large intestines, that's obvious. And yeah you are worried about it, which makes you feel somewhat bloated".

that psychosocial ascriptions tend to be built up over the course of multiple sequences or phases of the consultation. Furthermore, while various patients in the previous examples resisted the psychosocial ascriptions made by GPs, resistance was not always pervasive in these consultations. Extract 7 shows an entire sequence of preliminary activities leading to a psychosocial ascription. This extract is different from earlier examples (e.g. extract 1), as the patient aligns with the carefully constructed psychosocial ascription. He suffers from tiredness and joint pain, and he recently discovered that he might have an aneurysm that needs surgery. When the patient describes the treatment he received from his cardiologist (new medication, line 1), the GP suggests that this might have caused serious worries in lines 4-16 (i.e. preliminary activities):

Extract 7. Psychosocial ascription preceded by preliminary activities (GP 5)

```
     1        PT: (dan) (0.3) kon die ook zien wat het e[:h ]
                  (then) (0.3) he could also see what the e[:h.  ]
     2        GP:                                          [jA.]
                                                               [yEAH.]
     3        PT: (0.4) nieuwe medicijn deed.
                  (0.4) new medicine did.

1a [ 4   →        jA (.) •h ↑wat spannend↑ eigenlijk.=
                  yEAH (.) •h that’s quite frightening actually.=
     5        PT: =echt wel.
                  =definitely so.
1b [ 6   →    GP: >↑kan me↑ voorstellen dat je daar ook wel< van schrikt of niet?
                  I can imagine that this does somehow scare you or not?
     7        PT: JA dan ben je wel eventjes [e::h] ja. (.)
                  YES for a moment you are [e::h ]
     8        GP:                            [JA; ]
                                           [YEAH;]
     9            j:a (0.2) j[a.]
                  yeah (0.2) y[eah.]
     10       PT:            [ja]: °hij zei dus ook van° e:h,
                              [yea]:h °he also said like° e:h,
     11           (1.5) drie komma negen en als het naar boven gaat,=
                  (1.5) three point nine and if it goes up,=
     12           =dan vinden we dat e:h
                  then we’re considering it e:h
     13       GP: JA.
                  YEAH.
     14       PT: (0.7) (?) als het boven vijf en een half en dan moet je geopereerd,=
                  (0.7) (?) if above five and a half and then you need surgery,=
     15       GP: =dan zit je aan een operatie te den[ken] jA: (.) ja (.) ja.
                  =then you’re considering sur[gery] yE:S (.) yes (.) yes.
     16       PT:                                    [ja.]
                                             [yes.]
2  [ 17  →    GP: (.) •hh maar kan het ZIJN dat-dat als je dat zo te horen [krijgt,]
                  (.) •hh but could it BE that-that when you hear something like [that.]
```

```
   18     PT:                                                   [JA.    ]
                                                                  [YES. ]
2 [19  →  GP: dat ↑dat ook een↑ weerslag op je lijf heeft
              that it also has an effect on your body
   20        of [niet? ]
             or [not?]
   21     PT:    [missch]ien wel,
                 [may ]be it does,
   22          (0.6)
   23     GP: he want ik b- ↑ja (0.5) >is toch geen< fijne @boodschap om te horen@.
             right because I m- yeah (0.5) >rather isn't< a nice message to receive.
```

The GP establishes the presence of psychosocial concerns in two small consecutive steps (brackets 1a and 1b). First, by formulating that "it's quite frightening" (line 4), she produces an affiliative (Ruusuvuori, 2007) response that assesses the negative valence of the patient's troubles telling (Prior, 2018). When the patient agrees a brief upgraded second assessment ("definitely so", line 5) (Heritage & Raymond, 2005; Pomerantz, 1984), the GP carefully ("I can imagine") inquires how this "may have scared" the patient in line 6. This inquiry invites the patient to provide a more elaborate response in which he confirms and illustrates his reason for being "scared"; i.e. he may need surgery (lines 10-14).

The affiliative assessment of the potential emotional impact of symptoms in lines 4 and 6 serves two functions. First, it validates the patient's experience of psychosocial concerns. Next, it paves the way to ascribe psychosocial causes to the symptoms in lines 17-19 (bracket 2). The assessment thus leads to a topic shift that helps to complete the institutional task of finding potential causes of symptoms (W. Beach & Dixson, 2001; Ruusuvuori, 2007). Several hedges ("could it be"), hesitations (e.g. repetitions), and vague references (e.g. generic effect on the patient's body rather than specific complaints presented by the patient) signal the delicacy of introducing the patient's worries as a potential cause of complaints (Silverman & Peräkylä, 1990).

When the patient carefully agrees in overlap with the suggestion ("maybe it does", line 21), the GP closes the sequence with a euphemistic description of the bad news in line 23 ("rather isn't a nice message to receive") (Bergmann, 1992). The history-taking question format of the psychosocial ascription positions the patient as relatively knowing (K+) and makes relevant his response. Interestingly, the GP ends both inquiries (bracket 1b and 2) with an "or not"-tag (Seuren, 2018), which allows the patient to either agree or disagree with the GPs' suggestions. The patient nevertheless aligns with the GP during every small step of the sequence, as demonstrated with upgraded second assessment (line 5), elaboration (lines 10-14) and agreement in overlap (18-21). This example thus demonstrates that small, affiliative steps to carefully build a psychosocial ascription may help validate the experience of (unexplained) physical symptoms.

CONCLUSION AND DISCUSSION

Our analysis showed that GPs carefully ascribed psychosocial causes to patients' symptoms in two ways; with history-taking questions, or with diagnostic explanations. While questions strongly established relevance for patients' – accepting or rejecting – responses, diagnostic explanations did not make relevant such responses. GPs claimed a relatively stronger epistemic authority over the interplay between patients' psychosocial concerns and physical states with explanations than with questions. The way in which they introduced psychosocial ascriptions to the consultation thus pre-allocated the extent to which patients were accommodated to participate in this important moment in the consultation. Further, we tentatively showed that GPs lay grounds for psychosocial ascriptions by first introducing concerns as a consequence of physical ailments. These preliminary activities enabled GPs to propose psychosocial concerns as a potential cause of physical symptoms later in the consultation.

Scholars have shown that, even though doctors would find explaining MUS a challenge (Olde Hartman et al., 2009), 'effective' explanations are likely to be the most powerful intervention that exists for MUS (van Ravenzwaaij et al., 2010). Our findings add new insights to previous research about symptom explanations for MUS in three ways. First, scholars have developed a classification of explanation types and their components to support doctors in explaining MUS (L. Morton et al., 2017). Whereas this taxonomy enables doctors to provide symptom explanations based on different contents, we have shown that different *forms* of symptom explanations, in specific with history-taking question format, may especially facilitate 'effective' explanations.

Second, we demonstrated that GPs interactionally involved patients in diagnostic reasoning by asking them about the role of psychosocial concerns in their symptom experience. Since collaborating with patients would be crucial during symptom explanations (Burton et al., 2015; Salmon, 2007), we provided novel insights in how this can be achieved interactionally. By asking questions, doctors implicitly made suggestions for the potential diagnostic hypothesis, and they left room for the patient to express their ideas. Such practice could contribute to achieving patient-centred care, and stresses the importance for doctors to explore patients' symptoms, thoughts and ideas (Houwen et al., 2017).

Third, our analysis showed that GPs lay the ground for the delicate relationship between psychosocial issues and physical symptoms by first introducing psychosocial concerns *as a consequence* of complaints. Prior studies have shown that patients often resist psychosocial explanations (Burke, 2019; Monzoni et al., 2011a) as it would make them accountable for their complaints (Robson & Lian, 2017). Preliminary activities, on the contrary, are usually accepted by patients as they underscore the doctorability (Heritage & Robinson, 2006) of complaints. This supports the notion that a 'reversed causality' of symptoms leading to psychosocial concerns is better accepted by patients than vice versa (Burke, 2019). So, although these preliminary activities are empathic in validating patients' concerns (Stommel & te Molder, 2018), they also pave the way for making psychosocial ascriptions later in the consultations.

Previous research suggests that typically interrogatives are used to discuss psychosocial causes (Joosten et al., 1999), but in our corpus the explanation format was far more common. A potential explanation lies in the moment in the medical trajectory the consultation takes place. Possibly, questions with psychosocial ascriptions are useful for newly presented complaints, while explanations, offering less room for patient responses, may be more apt in subsequent consultations. Previous research also found that patients tend to be resistant to MUS explanations (Monzoni et al., 2011a), while some patients in our data agreed with explanations presented by the GP. Patients may be more resistant to potential psychosocial explanations in secondary care environments or in subsequent GP visits. Future research should examine potential psychosocial ascriptions in relation to the medical trajectory beyond single visits.

There are some caveats in our findings that require further research. First, we restricted our analysis to GP-initiated psychosocial ascriptions, but in some consultations, not the physician but the patient claimed their symptoms could have psychosocial causes. Future studies need to examine in which interactional contexts patients self-initiate psychosocial ascriptions. Second, we provide an initial analysis of preliminary activities prior to GPs' psychosocial ascriptions. The variety and scope of these activities need further examination. Third, we focused our analysis on consultations with patients presenting MUS, but some GPs interpreted the inclusion criteria for MUS more strictly than others, which may have resulted in a relatively diverse sample.

PRACTICE IMPLICATIONS

This study highlights that GPs introduce psychosocial concerns as a potential cause of MUS with history-taking questions or diagnostic explanations. Questions (e.g. "could it be that when you hear something like that, that it also has an effect on your body or not?") invite patients to express their ideas, whereas explanations (e.g. "emotional matters really have a clear influence") allow doctors to 'tell their story' with relatively little patient participation. Questions value patients as experts in their symptom experiences. On this basis it could be recommended that GPs should collaboratively construct symptom explanations by enquiring a potential link between symptoms and psychosocial concerns. Though GPs run the risk that psychosocial ascriptions are explicitly rejected when they are introduced as questions, explanation formats are just as little effective when they fail to be tuned in with patients' ideas. In addition, empathically designed preliminary activities first put psychosocial concerns 'on record' before they are proposed as a potential cause of complaints. This could be considered a patient-centred practice to validate and better understand patients' psychosocial concerns. Yet, the potential downside is that GPs use such information against patients to overcome resistance to psychosocial ascriptions later in the consultation. Hence, GPs need to carefully balance between searching for potential psychosocial issues, while at the same time, listening to patients' concerns and ideas. Tailoring explanations to patients and inviting patients to respond is crucial for providing effective explanations.


AQUA
FOENIC
LINGUA
M3
U4
S1

PART 2

Comparing language use during consultations with patients presenting MUS versus MES


4

Chapter 4

Coding linguistic elements in clinical interactions

Stortenbeker, I., Salm, L., olde Hartman, T., Stommel, W., Das, E. & van Dulmen, S. (2022) Coding Linguistic Elements in Clinical Interactions: A step-by-step guide for analysing communication form.

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ABSTRACT

Objective

The quality of communication between healthcare professionals (HCPs) and patients affects health outcomes. Different coding systems have been developed to unravel the interaction. Most schemes consist of predefined categories that quantify the content of communication (the *what*). Though the form (the *how*) of the interaction is equally important, protocols that systematically investigate and aggregate variations in form are lacking. Patterns of form and how they may differ between groups therefore remain unnoticed. To fill this gap, we present CLECI, Coding Linguistic Elements in Clinical Interactions, a protocol for the development of a quantitative codebook aimed at analysing communication form in medical interactions.

Methods

Analysing with a CLECI codebook is a four-step process, i.e. preparation, codebook development, (double-)coding, and analysis and report. Core activities within these phases are research question formulation, data collection, selection of utterances, iterative deductive and inductive category refinement, reliability testing, coding, analysis, and reporting.

Results and conclusion

We present step-by-step instructions for a CLECI analysis and illustrate this process in a case study. We highlight theoretical and practical issues as well as the iterative codebook development which combines theory-based and data-driven coding. Theory-based codes assess how relevant linguistic elements occur in natural interactions, whereas codes derived from the data accommodate linguistic elements to real-life interactions and contribute to theory-building. This combined approach increases research validity, enhances theory, and adjusts to fit naturally occurring data. CLECI will facilitate the study of communication form in clinical interactions and other institutional settings.

INTRODUCTION

The quality of communication between healthcare professionals (HCPs) and patients affects health outcomes. For example, positive (vs. negative) messages enhance patient recovery and decrease sensations of pain (E. Hansen & Zech, 2019; Howick et al., 2018; Mistiaen et al., 2016). Many studies examine interactions with observational coding schemes like the Roter Interaction Analysis System (RIAS) (Roter & Larson, 2002) and the Verona Coding Definitions of Emotional Sequences (VR-CoDES) (del Piccolo et al., 2011; Zimmermann et al., 2011). These schemes consist of predefined categories that capture and quantify the content of communication between HCPs and patients to assess relevant communication phenomena such as the degree of patient-centered communication in homecare (Höglander et al., 2020) or the association between a doctor's response to patients' emotions and visit duration (M. C. Beach et al., 2021). Such observational coding schemes are effective in systematically summarizing relevant communication phenomena into cohesive and interpretable codes. The quantification of natural interactions helps to understand natural patterns of communication (e.g. when and how do patients voice their concerns) and to assess the relationship between specific communication phenomena and outcomes (e.g. the relationship between patient-centered communication and patient's anxiety) (Allen, 2017).

Apart from communication content like positive messages, form is an imperative aspect of communication as well. The same message can be presented in different ways, e.g. benign test results can be presented as 'the results look fine' or 'the results do not look bad'. While the message of both utterances is identical, their formulation differs. Such variations in form can elicit different outcomes in patients. For instance, compared to affirmative positive communication ('the medicine is safe'), indirect positive communication ('the medicine is not dangerous') can increase patient anxiety and decrease adherence intentions and understanding of medicine use (Burgers et al., 2015; Stortenbeker et al., 2018). Subtle differences in form also affect the course of doctor-patient interactions. General practitioners who ask whether there is 'something else' patients want to discuss evoke more follow-up responses from patients than when they ask whether there is 'anything else' patients would like to discuss (Heritage et al., 2007).

However, research on communication form is mainly experimental. Observational research of form is scarce and often qualitative in nature (Land et al., 2017; e.g. Parry et al., 2014). No well-defined coding protocols such as RIAS or VR-CoDES exist that systematically investigate variations in form, implying that patterns of form and how they may differ between groups remain unnoticed. Ultimately, little is known about how language use may systematically vary in everyday medical interactions and how this affects patient-reported outcomes. Therefore, we developed a coding protocol to quantitatively analyze variations in form.

CLECI (Coding Linguistic Elements in Clinical Interactions) – pronounced as ‘classy’ – enables the quantification of linguistic elements in medical interactions. Examples of linguistic elements are intensifiers or markers of uncertainty. CLECI is a theory- and data-driven observational method, which combines relevant theory-informed codes with potentially relevant linguistic elements that arise from observations of the interactions under analysis. Subsequently, linguistic elements are systematically analyzed to reveal communication patterns in real-life interactions (Nordfalk et al., 2019), such as the use of intensified language by patients or markers of uncertainty by HCPs.

The aim of this paper is to describe the development of a codebook aimed at quantifying linguistic elements in clinical interactions. We present step-by-step instructions for the development, application, analysis, and reporting of the CLECI coding scheme, and we illustrate the methodological challenges related to the protocol using a case study (Stortenbeker et al., 2022).

METHODOLOGY

The CLECI protocol has been developed for a research project analyzing linguistic markers by GPs and patients in the context of medically unexplained symptoms, see (Stortenbeker et al., 2018, 2019, 2022) for the rationale and findings of these studies.

Step-by-step plan

The coding process is divided into four phases, i.e. preparation, codebook development, (double-) coding, and, analysis and report. Figure 1 displays an overview of the phases and different accompanying steps. The preparation phase consists of multiple data-driven (inductive) and theory-informed (deductive) iterative cycles to develop a codebook that describes the selection and categorization of utterances. The third phase encompasses a double-coding procedure to calculate the reliability of the codebook, followed by the coding of the entire corpus. Lastly, the codes are analyzed and results are reported in the fourth phase.

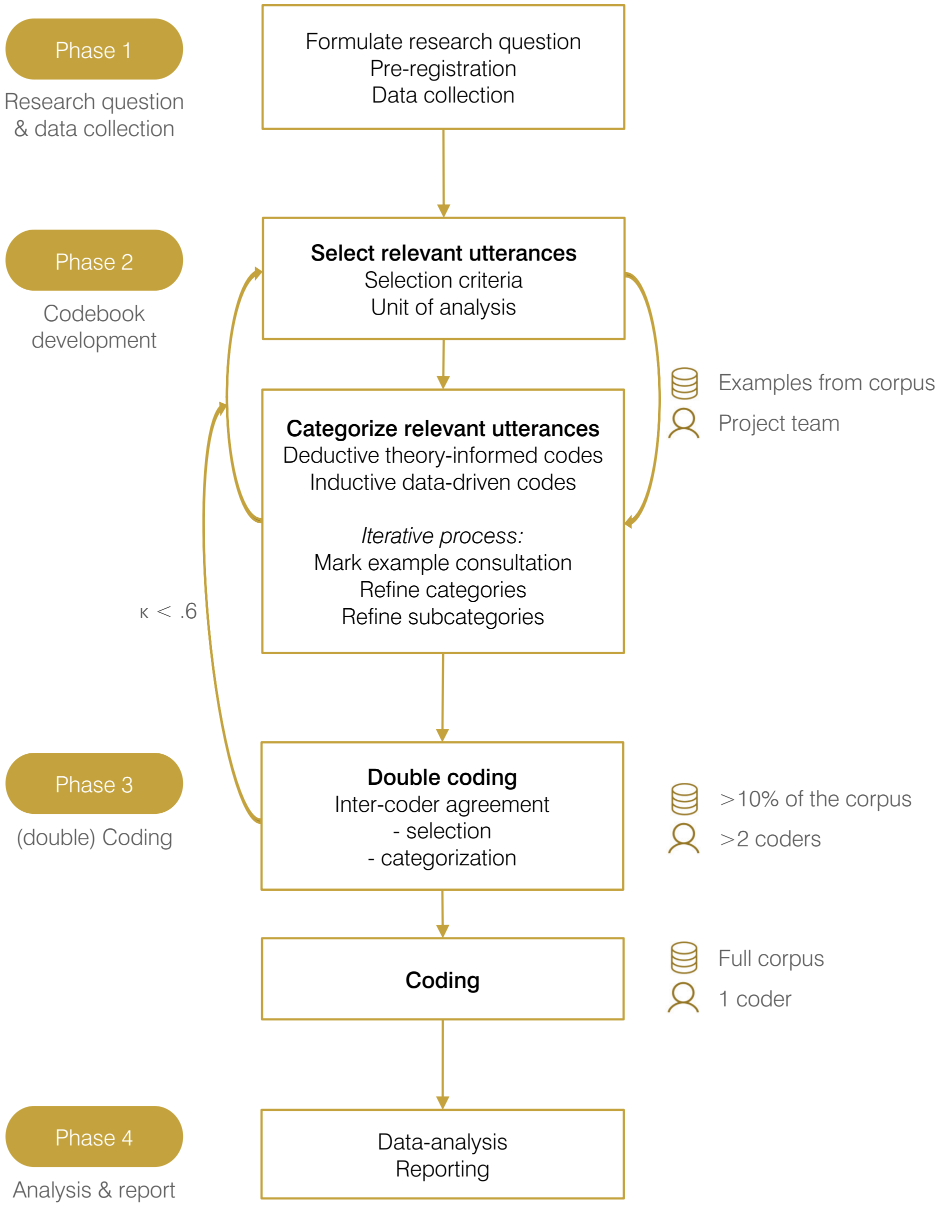

Figure 1. Visualisation of the CLECI process

Phase 1 – Research question and data collection

The first phase describes the preparatory steps required before codebook development, which include the joint formulation of the research question, data collection, and preregistration of the study (optional).

Research involving CLECI is aimed at the recognition and comparison of communication patterns of orally spoken data. Communication patterns are systematically recurring word formulations or language use. On their own, communication patterns offer little informative value as reference or control utterances are absent (e.g. patients using X number of negations in symptom descriptions). A comparative analysis, on the other hand, provides important insights into differences or similarities between various groups, e.g. patients with patients with non-epileptic seizures use more negations than patients with epileptic seizures. Differences in such linguistic elements can be used to predict a diagnosis (Schwabe et al., 2007). CLECI, therefore, answers comparative research questions, i.e. questions that analyze differences between groups (between-subject design) or within one group over time (within-subject design or longitudinal research). Examples of research questions that can be answered with CLECI are presented in Table 1.

Table 1. Examples of research questions for CLECI

Research aim	Between groups – analysis of differences in communication patterns between two or more groups of people or between two or more types of consultations	Over time (longitudinal) – analysis of differences in communication patterns at different points in time
Examples of research questions	How do frequent GP visitors and occasional GP visitors differ in expressing anxiety about their health?	How have patients' claims of epistemic authority changed in the last decade compared to twenty years ago (through the use of online health searching information)?
	To what extent does positive communication by the doctor differ in good versus bad news consultation?	How do patients' pain and symptoms descriptions change during the course of a disease or illness?

Data collection follows the formulation of the research question and aim. CLECI can be used to analyze naturally occurring interactions, i.e. interactions "that would have happened regardless of the role of the researcher" (Lester et al., 2017, p. 89). Examples are doctor-patient consultations or (unedited) television interviews with medical experts. The rationale for using naturally occurring data is that patterns of language use are exposed as they occur in real-life (Downe-Wamboldt, 1992). Furthermore, naturally occurring data are not influenced by the researcher or the research aim. Researchers can analyze the data deductively while also inductively searching for unexpected or novel aspects that are not (yet) covered but do relate to the research aim (Lester et al., 2017).

Video-recordings give more insights into non-verbal behavior such as gaze or body posture compared to audio-recorded data. Since this type of information can help the interpretation and analysis of communication form, data are preferably recorded with video. For some research phenomena, however, audio-recordings also suffice (e.g. use of negations). The data are first transcribed verbatim following a Jefferson-lite style method by which additional interactional details such as pauses, pitch or interruptions are only transcribed if relevant to the research question (see Plug et al (2019) for an example).

It is recommended to preregister the study prior to data collection. Open science practices increase reproducibility and accessibility for academic and public audiences. This enhances discussion and implementation of research findings as well as collaboration among academics and participation of public audiences (Burgelman et al., 2019). Specific theory-driven elements should be preregistered, while data-driven elements need further specification during the codebook development. Preregistration of the research questions and deductive concepts helps to specify the initial boundaries of the study. The clear distinction between predictions and postdictions prevents cherry-picking (see Haven & Grootel (2019) for more information).

Phase 2 – Codebook development

Development of the codebook is divided into two stages, namely selection of relevant utterances followed by their categorization. In the first stage, coders define rules for exclusion and inclusion of utterances and the unit of analysis. In the second stage, rules on how to categorize utterances are formulated. All steps in phase 2 are subjected to an iterative process of deductive and inductive reasoning.

Selection of relevant utterances

Clinical interactions between physicians and patients cover a wide variety of topics beyond medical information. Selection criteria delineating relevant and irrelevant utterances ensure that the analysis corresponds to the research aim and question, e.g. selection criteria define HCPs' utterances related to treatment when the role of language in treatment recommendations is researched.

Selection criteria are formulated in two interrelated steps. Firstly, coders mark all utterances related to the research aim using an exemplar consultation. Cases of doubt are collected and analyzed to (re)formulate coding rules and/or exceptions to the inclusion criteria, which are required to define the boundaries and limits of the research phenomenon. After discussions among coders, criteria are further specified and tested in another consultation. This process is repeated until doubts or differences between coders are case-specific and do not contribute to the formulation of generic coding rules.

Secondly, coders divide the utterances into units of analysis, allowing a systematic comparison between groups or over time. A unit of analysis is the smallest possible unit without losing its meaning (Krippendorff, 2013). As CLECI focuses on language use within specific contexts, grammatical finite clauses, i.e. clauses with one finite verb (Burgers et al., 2015), will typically serve as the unit of analysis. Sentences containing multiple finite clauses, e.g. *I am tired because my headache kept me up*, are split up and analyzed separately. Contextual boundaries deviating from grammatical finite clauses as units of analysis can be defined if relevant for the research question. In this case, a turn-constructional unit, "the smallest interactionally relevant complete linguistic unit" (Selting, 2000, p. 447), is commended as an alternative unit of analysis. It can consist of clauses without finite verbs (*too bad*), finite clauses (*I have a headache*), or whole sentences (*I think I have an ear infection*) (Clayman, 2012). Using turn constructional units as the unit of analysis allows a more flexible approach to the selection of relevant utterances. For instance, when studying uncertainty markers in patient utterances about symptoms, coders may need to include two finite grammatical clauses as one relevant utterance (e.g. "I think I have hay fever"). Similar to the formulation of selection criteria, units of analysis are applied and discussed until boundaries are mutually agreed upon by coders.

Categorization of relevant utterances

The second stage addresses the development of the coding categories. Coders construct or have constructed a preliminary codebook with categories and various sub-categories based on literature research in the preparation phase. The (sub-)categories cover any linguistic phenomena of interest, such as intensified language, language abstraction, or markers of uncertainty. The linguistic phenomena are translated into observable linguistic elements, see Table 2 for examples. Coders read exemplar consultations while focusing on three aspects:

1) deductive categorization. They examine whether the theory-based categories apply to the data, i.e. whether linguistic elements inspired by theory or taken from previous research occur in the data. Infrequent or absent categories are exempted from the codebook.

2) inductive categorization. Coders look for other possible (sub-)categories. If relevant to the linguistic phenomenon or research aim, they register linguistic elements not yet defined in the codebook, scan the literature for potentially relevant theories – if necessary – add these data-driven (sub-)categories to the codebook.

3) refinement of categories. Deductively and inductively developed categories are included in a revised codebook and assessed on four criteria: relevancy to the research aim, frequency in the data, whether they are mutually exclusive and exhaustive, and the extent to which they can be coded based on objective observations. Based on iterative assessments similar to the formulation of selection criteria and unit of analysis, coding (sub)categories are further refined or removed.

These three steps are repeated until no new categories or refinements arise from the data. Two aspects during category development require special attention, i.e. the number of categories and the extent to which examples are provided. These will be discussed below.

Table 2. Examples of linguistic elements for CLECI

Research phenomenon	Linguistic phenomenon	Linguistic element	Example
Exaggeration	Intensified language	Diminishers	A little, somewhat, a bit
		Intensifiers	Really, completely, particularly
Uncertainty	Uncertain language	Uncertain verbs	I think, it could
		Lexical items	Maybe, perhaps

Number of (sub)categories

During the development of a codebook, coders make a trade-off between the quantity in main categories and subcategories. Coders decide upon the number of (sub-)categories depending on the research aim and theory. Research questions focusing on one or a few main categories require a detailed and elaborate analysis of a specific linguistic phenomenon (e.g. Liebrecht, 2015). For instance, the analysis of HCPs' expression of uncertainty during the diagnostic phase may be divided into subcategories such as explicit statements, modal verbs, lexical items, pragmatic particles, and conditional phrases. On the contrary, research questions covering multiple linguistic phenomena limit the extent to which they are subdivided into various subcategories. For instance, it is recommended to restrict the number of subcategories when analyzing various relevant linguistic markers in patients' symptom descriptions (e.g. intensified, uncertain and abstract language versus uncertain language). A trade-off exists between the number of subcategories and reliability of coding; the more subcategories, the more complex the coding, which is likely to cause less agreement between coders.

Exhaustiveness of examples in categories

The codebook can describe categories in great depth with a list of examples taken from the data, or with general criteria that support coders to interpret and apply codes. Using a list of examples is objective and requires little to no interpretation from the coders, decreasing the likelihood of inconsistencies in the coding. A major drawback of this coding approach is that the example list must be exhaustive and complete. The lack of instructions accompanying the examples makes this approach inflexible, could create a tunnel vision for coders, and may result in potentially omitted relevant markers. A codebook using examples to illustrate rather than define coding categories allows a more flexible approach to coding. It can handle unique cases and irregularities that did not emerge during test coding sessions. A flexible codebook requires thorough training of coders and a deep understanding of the research aim, since coders are more likely to interpret the various (sub)categories in different ways.

If the categories are not clearly defined, over- or undercoding may occur. Overcoding occurs when coders incorrectly assign a category to a unit, e.g. ‘surprisingly’ is incorrectly coded as a diminisher in the utterance ‘the skin is surprisingly red’. Undercoding arises when coders overlook or miss instances of a certain category, e.g. a diminisher is omitted in the utterance ‘the skin looks red-*ish*’. Over- and undercoding can be minimized by providing concrete examples from the raw data and intensive training (K. Roberts et al., 2019). Intracoder reliability measures help gain insights into the extent of over- and undercoding (Liebrecht, 2015). These measures estimate the consistency of one coder in the coding process, thereby revealing which categories with low intracoder reliability may be unstable. To assess intracoder reliability, coders re-code a part of the initially coded dataset after two weeks. They calculate the reliability score similar to the intercoder agreement measures explained below. Coders discuss categories with low scores to explore discrepancies in the category description or interpretation of the coder and adjust the codebook accordingly.

Phase 3 – (Double-)coding

The third phase is divided into two steps, i.e. double-coding and coding. First, reliability of the codebook is assessed by calculating the agreement in the selection and categorization of relevant utterances among coders. When reliability is sufficient, the main coder proceeds to the next step of coding the entire corpus.

Double-coding

Consistent coding is imperative when qualitative data is quantified or (sub)groups are compared (Burla et al., 2008). Consistency of coding among coders can be assessed with intercoder agreement (between coders, as opposed to within coders). The extent of agreement amongst coders is calculated separately for the identification and categorization of relevant utterances. As these steps are cumulative, coders reach a consensus about inclusion criteria before moving on to categorization.

Intercoder agreement is calculated by double coding a randomly selected subset covering at least ten percent of the entire corpus (O’Connor & Joffe, 2020; Roter, 1997). For identification, a document is created containing all utterances from the subset, divided into separate units of analysis. Next, coders individually mark whether an utterance is relevant or not. Both relevant and irrelevant utterances are included to calculate intercoder agreement in the identification phase. If agreement is sufficient, the main coder selects all relevant utterances from the corpus to be categorized. For categorization, two or more coders individually code the selected subset of relevant utterances.

Intercoder agreement for identification and categorization are calculated with a reliability measure, e.g. Cohen's Kappa, Scott's Pi, or Krippendorff's Alpha, see Popping (1988) and Krippendorff (2013) for an overview of the differences between reliability measures. For a more detailed description of how to perform an intercoder agreement analysis, see Burla et al. (2008). Interpretation of the measurement scores is presented in Table 3.

Table 3. Interpretation of reliability measure scores

Measurement score	**Interpretation (McHugh, 2012)**	**Action recommended**
< .4	Insufficient	Examine differences between coders and refine boundaries of inclusion criteria and categories. Perform another round of double-coding on a new data subset
.4 - .6	Moderate	Explore potential systematic differences between coders to further improve the codebook. Perform another round of double-coding on a new data subset. If the score remains > .4 and < .6, continue to coding. Present results with caution
.6 - .8	Substantial	If desired, systematic differences can be explored
> .8	Almost perfect	No

Coding

The development of the codebook is finished when coders attain a sufficient intercoder-agreement level. The main coder proceeds to the final step in which he or she codes the full dataset according to the final codebook. Coders are preferably blind to the condition, though a coder's expertise does not always make it possible to do full blinding (e.g. coders with medical expertise may recognize the type of symptoms patients present). Since coding is based on transcripts rather than videos, coders are less prone to bias related to speaker characteristics such as age or gender.

Cognitive load (i.e. pressure on the coders' capacity to process information) during the coding process should be limited to achieve reliable coding and to prevent over- and under-coding. Coders can choose to code categories horizontally (per utterance) or vertically (per category). Simultaneous coding is recommended when the coding of a specific category depends on another category. As an example, negations change the valence of an utterance ('there is a need for a higher dose' versus 'there is no need for a higher dose'). Full transcripts are consulted when contextual information related to the utterance is required to decide upon the appropriate coding category. Finally, it is recommended to split the coding task into multiple sessions to prevent coding mistakes due to fatigue, and to mark cases of doubt and make a final decision at a later session.

Phase 4 – Analysis and report

The final phase describes the analysis of categorized utterances and reporting of the results.

Analysis

A final file for analysis is created after the main coder has coded all relevant utterances. We discuss two aspects regarding statistical testing, i.e. the model for analysis and hierarchical data (clustering).

The basic model for CLECI analysis is displayed in Table 4. In this model, linguistic elements (i.e. presence or absence per relevant utterance) serve as the outcome variable and comparison groups or different time points serve as predictor variables (e.g. comparing expressions of uncertainty markers before and after an intervention). Predictors and outcome variables may be reversed depending on the research question (e.g. Schwabe et al., 2007). The data for analysis is hierarchical, as the utterances occur within interactions, with specific HCPs possibly working at various institutions. Random intercepts should be tested and added to the research model whenever necessary, see (Bell et al., 2019; Hayes, 2006).

Table 4. Basic analytical model of CLECI assessing potential predictors of patterns of language use

Variable type	**Variable content**	**Example**
Outcome	Linguistic elements	Uncertainty markers, language abstraction, diminishers
Predictor	Comparison groups or points in time	Females & males, patients with medically explained & unexplained symptoms, before intervention & after intervention
Potential confounders	Pre-determined potentially relevant confounders	Age (patient and/or HCP), duration of interaction, years of experience of HCP

Reporting

The final step in the procedure consists of reporting the methods and results. A detailed description of the methodological process of the codebook development enhances reliability and encourages open science (K. Roberts et al., 2019).

The results section should clearly distinguish between explorative and hypothesis-based analyses and discriminate between predictions and postdictions. In addition, researchers mention the stability of each category with regard to their respective Kappa's as an indicator of how the results should be weighed. For instance, categories with Kappa's above .8 can be regarded as stable, whereas Kappa's below .6 should be interpreted with caution.

CASE STUDY

Box 1 describes a case study illustrating the codebook development procedure of CLECI. This study aimed to compare linguistic elements in utterances of general practice patients presenting medically unexplained versus medically explained symptoms (see Stortenbeker et al., 2022). The aim of the case study is to illustrate the methodological considerations and challenges that accompany the CLECI protocol. The research question, data, and analysis (phase 1 and 4) are briefly described to provide background information, and we elaborate on particular challenges related to the codebook development and coding process (phase 2 and 3). We refer to the original publication for the theoretical background and findings of the study (Stortenbeker et al., 2022). The complete codebook as used in the case study can be found in appendix 2 (codebook for patients' language use).

Box 1. A case study illustrating the codebook development for CLECI (Stortenbeker et al., 2022)

Phase 1: Research question and data collection

Step	Example from Stortenbeker et al (2022)
Research question	"To what extent do linguistic markers in utterances differ between general practice patients presenting MUS and MES?"
Data collection	Verbatim transcripts of general practice consultations were derived from an existing research project (Houwen et al., 2017).

Phase 2: Codebook development

Step	Issue	Action	Example from Stortenbeker et al. (2022)
Selection criteria	Inclusion and exclusion	Define research scope	Language use of patients presenting medically explained or unexplained symptoms to GPs.
		Read through training consultations	Patients talk about their past ('but it was always low') or current health problems ('I am unstable') as well as about potential future health issues ('I think it could go wrong').
		Redefine selection criteria	Scope was limited to include only utterances relating to current or past condition of patients, not prospective conditions.
Unit of analysis	Turn constructional unit	Define unit of analysis	Grammatical finite clauses served as unit of analysis in earlier stages.
		Read through training consultations	A more flexible unit of analysis was needed for subjectivity markers in cases such as '[I notice though] [that I'm getting sensitive to it]'.
		Redefine unit of analysis	Turn constructional unit was selected as the new unit of analysis.

Deductive categorization	Retain predefined category	Scan literature for relevant linguistic elements	Patients with MUS use more negations when describing (non-) occurrences of symptoms than patients with MES (Reuber et al., 2009; Schwabe et al., 2008).
		Formulate code	Negation – a) absent; b) syntactic; c) morphological
		Read through training consultations	Plenty of examples were found, such as 'I am unstable' and 'I cannot move comfortably', so negation was retained in the revised codebook.
Deductive categorization	Exclude predefined category	Scan literature for relevant linguistic elements	Doctors use more 'illness terms' (e.g. urination problems) towards MUS patients, whereas MES patients are often described with 'disease terms' (e.g. bladder infection) (Gol et al., 2014).
		Formulate code	Terminology – a) illness; b) disease
		Read through training consultations	Differentiating between the two was not easy (e.g. 'I got dizzy', 'well then you're all worn out') and remained subjective. As an objective definition of the boundaries was not possible, the category was removed from the codebook.
Inductive categorization	Include category based on observations	Read through training consultations	Salient utterances such as 'that ear keeps on whizzing' were marked, suggesting 'that ear' operating as a separate agent as opposed to 'I can hear pretty badly'.
		Scan literature for relevant studies	Patients can be disconnected from emotional and/or somatic experiences in various degrees (Balabanovic & Hayton, 2020).
		Formulate new code	Grammatical subject – a) first person (the patient, 'I'); b) third person (patient's biomedical or psychosocial state, 'that ear').

Iterative refinement	Add subcategory after test coding	Define code	Grammatical subject – a) first person; b) third person.
		Read through training consultations	Some utterances could not be indicated as having a first- or third-person subject, such as ‘[positive though] [that I do not have any new lesions]’ in which no subject is present in the first TCU.
		Redefine code	“Empty subject” was included as a subcategory in the revised version of the codebook.

Phase 3: (double) coding

Step	**Issue**	**Action**	**Example from Stortenbeker et al (2022)**
Double-coding	Refine coding categories	Double code session	Intensity displayed a Kappa of .66.
		Explore systematic differences	One coder did not interpret certain time words as intensifiers, whereas the other coder did, e.g. ‘sometimes’, ‘all of a sudden’.
		Fine-tune codebook and coders	Remarks were added to the codebook. Words denoting an in- or decrease in time /frequency words are only marked when intensified such that ‘after that it was wrong again’ is not intensified, ‘all the time I think oh I’m getting tired’ is intensified.
Coding	N/A	N/A	Final coding was performed by the main researcher in various separate coding sessions. Cases of doubt were marked and evaluated at a later point in time.

Phase 4: Analysis and reporting

Step	**Example from Stortenbeker et al (2022)**
Analysis	Logistic binary random intercepts models with various linguistic markers as outcome variables, and consultation type (unexplained or explained symptoms) and codes related to message content as predictor variables, controlled for various relevant confounders.
Reporting	Distinguished between hypothesis-based and explorative analyses. For more information, see Stortenbeker et al. (2022).

DISCUSSION

This chapter presented CLECI, Coding Linguistic Elements in Clinical Interactions, a protocol for the development of a quantitative codebook analyzing communication form in medical interactions. Communication form refers to *how* something is said in addition to *what* is said, such as communicating the safety of a medicine as 'safe' or 'not dangerous'. Linguistic elements are categories of form, such as negations and intensifiers. It is important to study form in clinical interactions because variations in form can affect patients' outcomes (Burgers et al., 2015). Yet, previous observation protocols focused on the content of communication, and studies assessing form have been mainly experimental rather than observational (e.g. Ainiwaer et al., 2021; Webster et al., 2019). Since little is known about how linguistic elements are used in real-life clinical interactions, this paper introduced a carefully developed coding protocol to quantify communication form. CLECI codebooks follow a deductive and inductive development procedure. Theory-based codes serve to assess how relevant linguistic elements occur in natural interactions (deductive coding). On the other hand, codes derived from the data accommodate linguistic elements to real-life interactions and contribute to theory-building (inductive coding). This combined approach increases the validity of the research (K. Roberts et al., 2019), enables theory-testing, and adjusts to naturally occurring data.

The systematic analysis of form in natural interactions facilitated by CLECI protocol has the power to reveal communication biases that are invisible to the naked eye. This is important since biases impact patient health outcomes (e.g. Claréus & Renström, 2019; FitzGerald & Hurst, 2017). CLECI is suitable for detecting implicit biases as these are communicated using specific linguistic elements, such as negations (see negation bias, Beukeboom et al., 2010). Moreover, unlike experiments or interviews, CLECI is less likely to be affected by social desirability issues. When participants interact directly with researchers, they may display fewer biases in order to present a favorable image of themselves (Lavrakas, 2008). Socially desirable answering is less salient for participants as the data is unobtrusively gathered during natural interactions in which participants interact within their usual context and with authentic conversation partners instead of in a laboratory with a researcher (Rose et al., 2015). Finally, CLECI can assess the degree to which biases are accurate. Patients with medically unexplained symptoms are, for example, expected to be vaguer in retellings of seizure accounts (Schwabe et al., 2007). CLECI analysis of language can indicate whether this is indeed the case by systematically comparing patterns of abstract language between different groups (Stortenbeker et al., 2022).

Next to revealing communication patterns, CLECI can be applied for various other purposes. For example, CLECI can assess whether and how communication form affects patient outcomes. Quantitative observations of linguistic elements in natural interactions are, in this case, related to pre- and post-interaction measures such as patient anxiety or adherence intentions. To illustrate, HCPs who provide information about medical risks can induce anxiety in patients. Their level of anxiety may depend, however, on the statistical format used. When risks are described as "1 in 25", patients perceive a higher likelihood of the risk to occur compared to when they are described as"4 in 100" (Beaudart et al., 2022). Such variations in form may affect anxiety levels of patients. By combining a CLECI analysis of statistical risk formats (how risks are formulated) and measuring patients' outcomes before and after the interactions (how anxious are patients about certain risks), experimental research is complemented with insights from real-life interactions, thereby endorsing external validity.

Furthermore, CLECI can evaluate how communication training affects variations in form in medical interactions over time. For instance, analysis of positive language in interactions before and after positive communication training could assess whether HCPs communicate more positively after receiving the training. Finally, the CLECI protocol can be expanded to other institutional settings such as education or judiciary. Analysis of linguistic elements in educational interactions may provide insights in the effect of form on learning and memorization, whereas juridical interactions can be analyzed for potential biases in testimonial statements and court verdicts or the effect of form on understanding.

The CLECI protocol has some limitations. First, the local context of utterances is not taken into consideration. Data is unitized and aggregated to reveal overall patterns between various interactions. Since CLECI aims to analyze overall patterns of language use, no sequential coding takes place and form variations within a single interaction are not separately assessed. Consequently, utterances are not analyzed within their interactional context and may lose communicative meaning. For instance, when patients express uncertainty ('I'm worried about my blood sugar levels'), HCPs can provide reassurance with intensified language ('Your blood results in the past weeks have been particularly good'). In clinical interactions, the consultation phase – opening, history-taking, physical examination, diagnosis, plan, or closing phase – can be used as a proxy of how form changes during the progression of an interaction (Stortenbeker et al., 2022).

Second, between-group comparisons provide valuable insights into patterns of communication. Yet, groups are selected based on naturally occurring features rather than a controlled manipulation. Though statistical analyses allow to control for potential confounding, comparison groups may have features that cannot be detected or manipulated (e.g. when comparing communication form of patients with unexplained and explained symptoms, explained symptoms may have an unexplained component and vice versa).

Third, the development of a codebook requires extensive time and resources, especially when inductive and iterative components are involved (Gale et al., 2013). To reduce the time and effort needed for coding, automated natural language techniques can be used. These techniques tag words and utterances with, for example, their respective part-of-speech (Voutilainen, 2012). Automated coding can process large quantities of simple coding categories, which are in this case linguistic elements consisting of one word like negations or intensifying adjectives. Reliability of automated techniques is lower for more complex linguistic elements that require interpretation, such as coding utterance valence when negations are used (Patterson et al., 2019; e.g. Rivera Zavala & Martinez, 2020). Manual coding in addition to automated text processing is therefore necessary to guarantee consistent coding (Pilny et al., 2019).

CONCLUSION

Subtle differences in language can have a significant impact on patients' outcomes. It is therefore important to analyse *how* (form) interactants communicate in addition to *what* (content) they are saying. Yet, existing coding schemes focus on the content rather than form of communication. This article has outlined the steps for developing a CLECI – Coding Linguistic Elements in Clinical Interactions – codebook and illustrates this process in a case study. CLECI is an observational and quantitative method for analysing form in clinical interactions. The codebook development procedure combines theory-based and data-driven coding. This approach enables theory-building and theory-testing, and accommodates to naturally occurring interactions, establishing research results with high external validity.


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PART 2.1

Quantifying GPs' language use


5

Chapter 5

GPs' positive communication

Stortenbeker, I., Houwen, J., Lucassen, P., Stappers, H., Assendelft, P., van Dulmen, S., olde Hartman, T. & Das, E. (2018) Quantifying positive communication: Doctor's language and patient anxiety in primary care consultations.

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ABSTRACT

Objective

Positive communication is advocated for physicians during consultations with patients presenting medically unexplained symptoms (MUS), but studies generally focus on *what* is said rather than *how* it is said. This study quantified language use differences of general practitioners (GPs), and assessed their relation to patient anxiety.

Methods

Language use of 18 Dutch GPs during 82 consultations was compared for patients with MUS versus medically explained symptoms (MES). Message content (positive or negative) was differentiated from its directness (direct or indirect), and related to changes in patient's state anxiety (abbreviated State Trait Anxiety Inventory; STAI).

Results

In total, 2590 clauses were identified. GPs approached patients with MES with relatively more direct (vs. indirect) positive and indirect (vs. direct) negative messages (OR 1.91; 95% CI 1.42–2.59). Anxiety of both patient groups increased when GPs used more direct (vs. indirect) negative messages (b = .67, 95% CI .07–1.27)

Conclusion

GPs use different language depending on the content of messages for patients with MES, but not MUS. Direct negative messages relate to an increase in patient anxiety. GPs could manage patient's state anxiety by expressing negative messages in an indirect rather than direct manner.

INTRODUCTION

Research on doctor-patient communication has shown that interactions with health care providers can lead to patients experiencing changes in health outcomes that are not directly related to the medical treatment itself (Benedetti, 2008) For instance, positive verbal suggestions are a strong predictor of pain decrease when patients need to undergo an invasive procedure (Lang et al., 2005) or when they are provided with pain relief (Bingel et al., 2011; Vase et al., 2013). A physician's positive (versus negative) communication style has been found to lead to a better recovery (Thomas, 1987), and raising positive expectations about treatment outcomes appears to decrease pain experiences (Price et al., 2007) and to increase illness outcome expectancies; a strong predictor of health outcomes (Crow et al., 1999). Conversely, negative health effects can emerge when, for instance, patients receive warning messages about medical procedures (Lang et al., 2005), or when they receive information about potential side effects of a treatment (Barsky et al., 2002). Evidence thus suggests that communication can lead to an improvement or worsening of health outcomes.

Previous studies mainly examined variations in message content. For instance, an early – and often cited – study by Thomas studied effects of doctor-patient communication on patient outcomes by providing a different diagnosis and prognosis (Thomas, 1987). The study reported communication effects by comparing very diverse experimental conditions, which could not be replicated in a later study (Knipschild & Arntz, 2005). Moreover, research compares effects of messages such as "It will sting a little bit" with no warning messages during medical procedures (Lang et al., 2005), or effects of receiving information about pain relief versus no information (Price et al., 2007). These findings indicate that messages with different contents have an effect on health outcomes.

A key problem in such variations in message content is that they affect the meaning of a message. This study will define positive or negative communication in terms of language (how it is said) rather than message content (what is said). Differences in language use can change the directness of a message while keeping its content stable. For example, when warning a patient about an upcoming injection, physicians could use different language by saying that "it could give an *unpleasant* feeling" rather than "it will *sting* a little bit". Here, the message's content is similar (the patient is warned), but it is formulated with different and more indirect wordings. Thus far, few empirical studies systematically compared differences in physician language use. The objective of this study is to extend previous research by disentangling message content from message directness in medical consultations, and to build towards a quantification of 'positive communication'.

Language use of physicians can have an impact on patients visiting general practice. Framing research shows that different wordings to describe logically equivalent concepts, e.g. “a success rate of 40%” or “a failure rate of 60%” lead to differences in patient outcomes. Positively framed information could, for instance, make patients feel less anxious (Porensky & Carpenter, 2015) or increase perceived treatment efficacy (Bigman et al., 2010). Moreover, preliminary evidence suggests that variations in language use during doctor-patient interactions can evoke different cognitive and emotional reactions (Burgers et al., 2012; Das & Jacobs, n.d.). Individuals would generally have more positive outcome expectancies when they hear that their quality of life is “likely to improve” instead of “not likely to deteriorate” (Burgers et al., 2012).

Language use is especially relevant in consultations with patients presenting symptoms that cannot be attributed to detectable underlying diseases. Such medically unexplained symptoms (MUS) are common, with numbers of persistent MUS in general practice varying from 3 to 11% (Aamland et al., 2014; Verhaak et al., 2006), and from 1.5 to 20.2% in medical specialities (Arolt et al., 1997; Fink et al., 2004). The absence of a clear organic cause in MUS challenges communication between doctors and patients. Physicians find it difficult to explain symptoms (Dowrick et al., 2004), and to provide appropriate care for patients with MUS (Hahn, 2001). They are less empathic with these patients (Ring et al., 2005), and they pay less attention to symptom explorations when patients present symptoms that are likely to be unexplained as opposed to symptoms that have a somatic cause (Epstein et al., 2006). Patients with MUS generally feel more anxious and not taken seriously (Barsky & Borus, 1995; Salmon, 2007).

Assessing communication patterns is necessary because effective medical treatments are lacking for most of patients with MUS. Previous studies show that explanations of unexplained symptoms tend to be unclear, tentative and uncertain (Aiarzaguena et al., 2013), with use of indirect formulations (e.g. “it is *not* an epileptic seizure”) (Monzoni & Reuber, 2015) and vague labels (e.g. “counselling” instead of “psychotherapy”). Patients often react defensively towards psychosomatic explanations of symptoms (Burbaum et al., 2010; Salmon, 2007). The possibility exists that linguistic expressions used in these consultations contribute to these patients feeling stigmatized (Looper & Kirmayer, 2004) and dissatisfied (Page & Wessely, 2003). However, no empirical studies systematically compared quantitative differences in physician language use for patients with medically unexplained or explained symptoms, nor have these related language use to patient outcomes in a naturalistic setting.

The aim of the present study is twofold. First, to assess whether GPs use different language when communicating with patients with MUS or with patients with medically explained symptoms (MES) by quantitatively comparing physicians’ language use in terms of message content and its directness. Second, to explore how directness in doctors’ messages relates to changes in anxiety related to the consultation of general practice patients.

METHODS

This naturalistic study compared the communication of general practitioners (GPs) towards patients with MUS and patients with MES, and examined its relation to patient anxiety.

Participants and setting

One of the researchers (ToH) contacted Dutch GPs in the area of Nijmegen to ask for participation in a video consultation study. Twenty out of the 36 approached GPs agreed to participate. Consultations with GPs and patients were recorded for the course of one or two days from April to September 2015 (Houwen et al., 2017). Patients who agreed to participate were provided a written informed consent. Procedures were approved by the research ethics committee of the Radboud University Medical Centre.

In total, 393 of 509 patients visiting their GP agreed to participate in the study. Dutch speaking patients older than 18 years were eligible for study participation. In a post-consultation questionnaire, the GPs had to indicate whether they thought patients had MUS, partial MUS or MES (Ring et al., 2005; Salmon et al., 2009). Based on their judgments, symptoms of 43 patients were labelled as MUS, 36 as partial MUS and 314 as MES. In order to compare communication of GPs for patients with MUS and MES, each patient with MUS was linked to a patient with MES visiting the same practitioner at the same day, following a similar method performed by Salmon et al.(2005). Patients with partial MUS were excluded because the main focus of the study was to analyse GPs' language use with patients with definite MUS or MES. Consultations of the sample were transcribed with verbatim transcription methods (personal identifiers removed).

Patient questionnaires: State anxiety measure

Patients filled in a questionnaire before and after the consultation that assessed patient anxiety with the shortened version of the State Trait Anxiety Inventory (STAI) (Spielberger et al., 1983). Ten four-point Likert scaled statements (before consultation, $\alpha = .88$, after consultation, $\alpha = .91$) concerning patients' anxiety, such as "I am worried", "I feel calm", and "I feel nervous", had to be completed with answering options varying from "not at all" to "very much so". The average anxiety scores varied between 1.00 and 3.80, with higher scores indicating more anxiety.

Coding procedure and reliability

To analyse GPs' language use, a codebook was developed that described criteria for categorization of clauses that were relevant for inclusion. The codebook was created based on observations of the video data, complemented with existing linguistic literature on, for instance, the use of negations (Burgers et al., 2015; Haeseryn et al., 2012). Previous versions of the codebook were refined by testing its specificity (coding too specific or vague) and comprehensibility (all relevant clauses included) on videos from the corpus, and after discussions in research group meetings.

The final coding procedure was divided into two steps. First, two coders identified clauses relevant for inclusion out of a subset of 18 consultations (i.e. 21% double coded). Clauses of the GPs about patients and their medical situation were identified. These related to comments about the patient's physical or mental state during physical examination, the (explanation of) the diagnosis, or the treatment policy and expected outcomes. Krippendorff's Alpha (α_k) was used as a measure of inter-coder reliability. After having identified clauses relevant for inclusion (N = 2249, α_k = .62, 95% CI .40 to .79), both coders categorized language use in terms of content and directness out of the clauses selected by the first coder from the same subset (n = 503). As an example, positive messages could be expressed directly (e.g. "your symptoms are *benign*"), or indirectly (e.g. "your symptoms are *not malignant*"). Similarly, messages with negative content could be expressed in a direct (e.g. "your symptoms are *malignant*"), or indirect (e.g. "your symptoms are *not benign*") manner. Clauses were categorized in terms of consultation phase (physical examination, diagnosis, or treatment recommendations; α_k = .71, 95% CI .63 to.79), message content (positive, negative, or neutral; α_k = .86, 95% CI .81 to .89), and message directness (direct or indirect; α_k = .94, 95% CI .88 to .98). More information on the coding procedure is provided in Appendix 1: 5.1.

Statistical analysis

Baseline differences between patient groups were evaluated using *t*-tests for continuous variables and χ-squares for categorical variables.

Multilevel models with binary outcomes were used to assess differences in language use adjusted for clustering of GPs and patients. The Intraclass Correlation Coefficient (ICC) of the random factors GP and patient were .012 and .018 respectively, suggesting a minimal clustering of the data on the indicated levels. Patient and GP gender were included as potential confounding factors. The fixed factors as predictors of message directness (direct vs. indirect) were complaint type (MUS vs. MES), message content (positive vs. negative), the interaction term between complaint type and message content, and the potential confounding variables. Stratified analyses were performed in case of a significant interaction between the predictor variables.

Next, associations between message directness and anxiety were assessed with a hierarchical linear regression analysis. We first aggregated scores of directness for positive and negative messages per consultation. Indices for direct (vs. indirect) positive messages per consultation were created using the following formula: (direct positive-indirect positive messages) ÷ (positive messages + negative messages), with indices closer to 1 indicating a relatively higher amount of direct positive messages in relation to the total amount of relevant messages. A similar approach is used in classical studies on persuasion (Killeya & Johnson, 1998; Sherman et al., 2000). The index for direct positive messages is adjusted for the total amount of negative messages; it decreases when more negative messages are expressed in relation to the amount of positive messages, whereas it increases when relatively few negative messages are used. The formula thus corrects for the relative comparison between positive and negative message content. The same calculations were performed to create an index score for the directness of negative messages, i.e. (direct negative-indirect negative messages) ÷ (positive messages + negative messages).

To test for differences in patient anxiety, a difference score comparing anxiety before and after the consultation was included as outcome variable. The potential confounders and complaint type (MUS or MES) were entered as predictors in the first model, index scores for directness of positive and negative messages were included in the second model, and interactions between complaint type and index scores in the third.

RESULTS

Two patients with MUS were excluded due to technical problems with the video recordings. This resulted in a total sample size of 41 MUS and 41 MES consultations from 18 GPs (9 males and 9 females, age *M* = 45.83, *SD* = 10.38), located in urban (*n* = 8) or rural (*n* = 10) areas with experience ranging between 2 and 43 years. Two GPs reported that no patient with MUS visited their practice during the video recordings. Demographic information of the patients is displayed in Table 1.

Table 1. Comparison of patients' (MUS and MES) demographic information

	MUS (*n* = 41) **M (SD)**	**MES (*n* = 41)** **M (SD)**	**Sig.**
Age	50.68	54.48	.340
	N (%)	N (%)	
Sex			.043
Male	12 (29.3)	21 (51.2)	
Female	29 (70.7)	20 (48.8)	
Level of education*			.242
Primary school	5 (12.2)	2 (4.9)	
Secondary school	24 (58.5)	20 (48.8)	
(Applied) University	12 (29.3)	18 (43.9)	
First visit of symptoms *	13 (38.7)	16 (41.0)	.386
Currently working	19 (46.3)	19 (46.3)	1.00

* One missing value for level of education and two missing values for first visit of symptoms for patients with MES.

In total, 2590 clauses were identified and coded, number per consultation varying from 2 to 89 (Mean = 32). As can be observed in Table 2, 1124 clauses had a positive message content, 1017 had negative content, and 449 were neutral description of symptoms. A quarter of the clauses were indirect (*n* = 653). With regard to the consultation phase, 297 clauses were expressed during physical examination, 1149 during explanation of the diagnosis and 1144 during treatment recommendations. Language use during history taking was not included, because this research focused on judgmental expressions rather than question formulations of GPs.

Table 2. Message content and directness for patients with MUS and MES (*N* = 2590).

	Quote*	**MUS** *n* **(%)**	**MES** *n* **(%)**	**Total** *N* **(%)**
Message content				
Positive	*"This looks tidy"*	598 (40.4)	526 (47.4)	1124 (43.2)
Negative	*"The toes are a bit cold"*	634 (42.8)	383 (34.5)	1017 (39.3)
Neutral	*"The pain must be neurosympathic"*	248 (16.8)	201 (18.1)	449 (17.6)
Message directness				
Indirect	*"Your back is not completely straight"*	394 (26.6)	259 (23.3)	653 (25.2)
Direct	*"You are improving from a physical perspective"*	2196 (73.4)	2331 (76.6)	1937 (74.8)
Consultation phase				
Physical examination	*"I do not feel a really intense resistance"*	158 (10.7)	139 (12.5)	297 (11.5)
Diagnosis	*"Your physical complaints are related to fatigue"*	737 (49.8)	412 (37.1)	1149 (44.4)
Treatment recommendation	*"It is better to use a real fungus ointment"*	585 (39.5)	559 (50.4)	1144 (44.2)

* Quotes are derived from the corpus

NB: Clauses expressed during history taking were not included

Systematic variation in message directness for MUS versus MES

Message directness was significantly associated with complaint type (MUS or MES) and message content. Messages were more likely to be direct (vs. indirect) when patients had MES rather than MUS, and when content was positive compared to negative. A significant interaction term between the two predictors indicated that GPs used different language for patients with MUS and MES (figure 1). Stratified analyses showed that when patients had MES, GPs were more likely to express direct formulations in positive rather than negative messages ($b = -.65$, $SE = .16$, OR .53; 95% CI .39 to .71), while such difference in message directness was not observed for patients with MUS ($b = .15$, $SE = .13$, OR 1.16; 95% CI .89 to 1.51). This indicates that the directness of a message was different depending on the content of the message for patients with MES, but not for patients with MUS.[1]

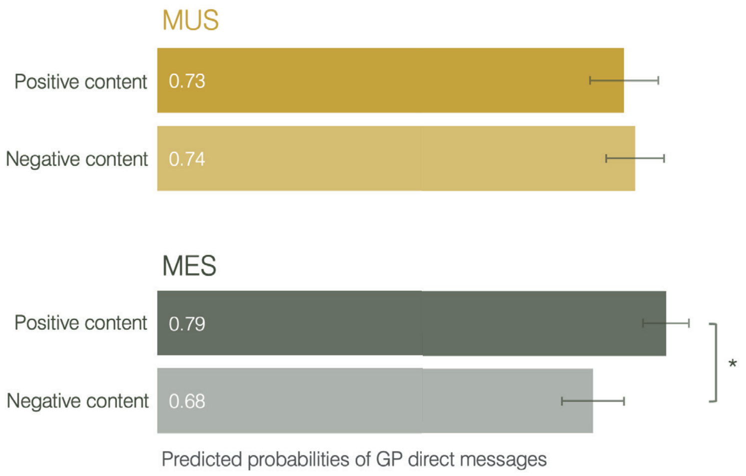

Figure 1. Interaction between message content (positive versus negative) and complaint type (MUS versus MES) for direct formulations.

Message directness in relation to patient anxiety

Two patients with MES that filled in less than 60% of the anxiety scale were removed from analyses. The average anxiety scores varied between 1.00 and 3.80. The difference in anxiety before and after the consultation varied between -1.40 and 1.37, with higher scores indicating an increase in patient anxiety. As can be observed in Table 3, complaint type (MUS vs. MES) and the potential confounding variables were entered in the first regression model. This model appeared insignificant (F (3, 76) < 1). Next, indices of direct positive and negative messages were added to the second model (F_{change} (2, 74) $= 3.36$, $p = .040$), which explained 9.5% of the variance. Although the index score for direct positive messages did not predict changes in patient anxiety ($b = -.14$, $SE = .22$, 95% CI -.58 to .31), it appeared that the index score for direct negative messages was a significant predictor for changes in patient anxiety ($b = .67$, $SE = .30$, 95% CI .07 to 1.27). The more direct (vs. indirect) negative messages were expressed in consultations, the more anxious patient felt. Since the third model with the interaction terms between message directness and complaint type appeared not significant (F_{change} (2, 72) < 1), it was excluded from

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[1] Analyses were also considered with consultation phase added to the model. A significant three-way interaction was observed between consultation phase (diagnosis vs. treatment), complaint type and message content (b = 1.09, SE = .44, OR 1.96, 95% CI 1.25 to 7.11). Stratified analyses per consultation phase showed a significant interaction between complaint type and message content during diagnosis (b = 1.26, SE = .34, OR 3.54, 95% CI 1.8 to 6.91). Differences in GPs' messages were thus mainly existent during diagnosis.

the final model. The relation between message directness and anxiety did not differ for patients with MUS or MES.

Table 3. Summary of linear regression analysis for variables concerning complaint type (MUS vs. MES) (model 1 and 2) and indexed direct positive and negative messages (model 2), corrected for confounder variables ($N = 80$)

	Model 1		**Model 2**	
	B(SE)	**95% CI**	**B (SE)**	**95% CI**
MUS vs. MES	.09 (.11)	.12; .31	.16 (.11)	-.05; .38
Direct positive messages			-.14 (.22)	-.58; .31
Direct negative messages			.67 (.30)*	.07; 1.27
Confounders				
GP gender (m vs. f)	-.06 (.11)	-.27; .16	.05 (.11)	-.18; .27
Patient gender (m vs. f)	.06 (.11)	-.17; .28	.04 (.11)	-.18; .25
R^2	.01		.08	
F	.33		3.36*	

* $p < .05$

DISCUSSION AND CONCLUSION

Discussion

This content analysis was the first to disentangle message content (what is said) from message directness (how it is said) in communication of physicians, and to assess how differences in message directness are related to changes in patient anxiety. Two key findings were identified. First, GPs changed the directness of a message depending on its content for patients with MES. These patients were more likely to receive indirect negative messages (e.g. “the thyroid was *not normal*” rather than “the thyroid was *anomalous*”) and direct positive messages (e.g. “your back is looking *good*” rather than “your back is looking *not bad*”). GPs did not vary their language use for patients with MUS. The second key finding was that directness of messages turned out to be related to psychological wellbeing of patients, such that direct (as opposed to indirect) negative messages were associated with increased self-reported anxiety. This occurred equally for patients with MES and MUS. From this it can be concluded that slight differences in the directness of negative messages relate to patient outcomes. This knowledge is of utmost importance as it can be used to improve doctor-patient interactions.

There are two likely causes for the finding that GPs changed the directness of messages for patients with MES but not MUS. First, prior negative expectations of GPs about patients with MUS may have been translated into their language use. Patients with MUS are often perceived as difficult patients (Hahn, 2001) and physicians experience difficulties when communicating with them (Olde Hartman, Woutersen-Koch, et al., 2013). It is possible that differences in language use reflect GPs' own discomfort in communicating with these patients. Another possibility is that physicians felt the urge to clearly formulate negative messages for patients with MUS using unambiguous and direct symptom explanations rather than indirect formulations as a face-saving strategy (Burgers et al., 2012; Giora et al., 2004).

Second, unexplained symptoms are established as most likely cause after physical tests and examinations that exclude (potentially harmful) organic causes (Cash & Chey, 2004). This diagnosis *per exclusionem* – based on what is *not* wrong – is perhaps reflected in the absence of a different message strategy in positive messages for patients with MUS. Recently, however, it has been argued that the nomenclature of unexplained symptoms should be based on positive diagnosis rather than exclusion of other possibilities (Evens et al., 2015). The emphasis should be on what complaints the patient *does* have instead of which symptoms *are not* present.

The key finding that patients were more anxious after hearing direct negative messages is consistent with intuitive ideas of MUS experts (Heijmans et al., 2011) and quasi-experimental research on communication with patients with MUS that physicians should try to communicate positively (Thomas, 1987). When indirect formulations are used to express negative messages (comparable to 'not good'), relatively more positive wordings are expressed. The exact reversed concept is introduced ('good') and consequently activated and made more accessible in the patient's mind (Beukeboom et al., 2010).These findings potentially reveal the role of communication in non-specific effects of the consultation.

The results of this study provide novel insights in doctor-patient interactions from a linguistic viewpoint. Where previous medical research failed to provide specific examples (Heijmans et al., 2011), empirical research did not distinguish between content and formulation (Lang et al., 2005; Thomas, 1987), and communication research mainly provided evidence from experimental settings with healthy volunteers (e.g. Porensky & Carpenter, 2015), this study was able to systematically disentangle which aspects of communication predict changes in patient anxiety in a quantitative, structural manner. The study provides clear-cut examples of how a positive communication style can be achieved in terms of message directness for patients with MUS with evidence from daily practice.

Other communication practices next to language use are also important predictors of patient outcomes. Extensive research has demonstrated the importance of generic interventions in doctor-patient interactions about MUS such as reassuring patients, giving tangible explanations and providing support (Heijmans et al., 2011). Showing empathy with patients with MUS helps to lower patient anxiety and improve satisfaction (Derksen et al., 2013). Additionally, different types of explanations could also have important implications for patients with MUS (L. Morton et al.,

2017) and the extent to which they accept the message (den Boeft et al., 2017). This study adds to the current field of research by targeting a specific yet important aspect of communication rather than a more generic approach to communication.

Even though this study reveals importance of varying language use in doctor-patient interactions, there are two major reasons why not all physician's negative messages should be expressed indirectly. First, the relation between language use and anxiety was based on a ratio of (in)direct positive and negative messages expressed during the course of the consultation. This suggests that in general, patients benefit from the use of indirect negative messages over direct ones. The current data, however, do not provide evidence for the amount of negative messages that should be expressed (in)directly during GP consultations, and which contextual factors (e.g. patient concerns or individual preferences) might play a role. Second, previous research reveals that potentially differences in meaning can occur for messages with identical content expressed in a direct or indirect manner (Giora et al., 2004; Kamoen et al., 2015). Especially when the content is positive, indirect messages could convey a weakened meaning as opposed to direct ones. By altering the directness of a message, it must be considered that a slightly different message is conveyed.

This study has some limitations to consider. Since this study focused on evaluations of the GPs about patients rather than question formulations, language use related to history taking was not included. Yet subtle variations of question formulations can have important consequences for how patients present symptoms (Heritage et al., 2007). Future research should expand the scope of the current study by systematically analysing the role of question formulations during the history taking consultations about MUS.

Similarly, clauses of patients were not addressed. Language use, however, is construed in the interaction between physician and patient. If patients formulate symptoms with certain words (e.g. "I am not feeling well"), physicians may tend to adapt the same formulation to explain symptoms (e.g. "because you are not feeling well, […]"). Further work is needed to establish the role of patients in message formulations of physicians. Moreover, patients' direct responses to language use were not addressed, and, as a consequence, no causal relations could be established. Additional experimental research is desirable to test how messages with identical content can evoke different effects depending on how they are formulated.

Finally, consultations of patients with unexplained symptoms were linked to MES consultations visiting the same GP and the same day, following a similar method performed by Salmon et al. (2005). It was not possible to match patients on the International Classification of Primary Care (ICPC) codes, subjective presentation of complaints, age, or gender. Future studies should strive for matching patients based on common socio-demographic factors.

Conclusions

Doctor-patient communication plays a pivotal role in recovery for patients with MUS. Previous studies showed that what a doctor says can have an effect on health outcomes. This study on naturalistic language in doctor-patient interactions shows that language, how it is said, also plays an important role in predicting patient anxiety. Even though GPs express more positive language for patients with MES (i.e. "good" rather than "not bad"), they do not have different message strategies for patients with MUS. Language, however, can have therapeutic effects for patients such that indirect negative messages are related to decreased patient anxiety.

Practice implications

The results of this study have direct implications for what language physicians should use during consultations, which is universal to many languages. Positive communication can be achieved by using more indirect negative messages in statements such as:

- "The treatment will not evoke positive outcomes" (instead of "It will evoke poor outcomes");
- "Your physical complaints are not improving" (instead of "Your physical complaints are persisting").

Very subtle changes in wordings can have a significant impact on emotions of patients. Physicians should be provided with tools for how to communicate in a more – but not overly – positive manner.


6

Chapter 6

GPs’ implicit uncertainty

Stortenbeker, I., Houwen, J., van Dulmen, S., olde Hartman, T. & Das, E. (2019)
Quantifying implicit uncertainty in primary care consultations:
A systematic comparison of communication about medically unexplained
versus unexplained symptoms.

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ABSTRACT

Objective

General practitioners (GPs) disclose more uncertainty (e.g. "I don't know") in consultations with patients presenting medically unexplained symptoms (MUS) versus medically explained symptoms (MES), which could negatively affect patient outcomes. This study assessed if this pattern also holds for more subtle, implicit uncertainty expressions (e.g. "maybe", "might") during different consultation phases, and assessed their relation to patient pre-post consultation anxiety.

Methods

We quantified implicit markers of uncertainty of 18 GPs in 82 consultations about MUS or MES during different consultation phases. Relative frequencies of implicit uncertainty per consultation were regressed on differences in momentary anxiety pre and post consultation.

Results

We coded 2590 GP utterances. Uncertainty expressions were more frequent in MUS versus MES consultations ($OR = 1.54$, $p = .004$), especially during diagnosis and treatment recommendations compared to physical examinations ($OR = .45$, $p = .001$). Implicit uncertainty was not related to patients' changes in anxiety ($b = -.11$, $p = .817$).

Conclusion

GPs express more uncertainty during MUS (versus MES) consultations, especially during the diagnostic phase and treatment recommendations. Implicit uncertainty expressions reflect the mere complexity of communicating a medically unexplained diagnosis, which does not necessarily affect patient anxiety.

INTRODUCTION

Uncertainty is inherent to medicine (Ghosh, 2004; Wellbery, 2010). Physicians verbally disclose uncertainty in nearly three-quarters of medical encounters (Gordon et al., 2000). Especially when patients present symptoms with no detectable underlying cause, i.e. when they present medically unexplained symptoms (MUS), a physician's message inevitably has an element of uncertainty (Page & Wessely, 2003). Physicians state their uncertainty more often when patients have MUS (e.g. vague chest pain) compared to their medically explained counterpart (e.g. chest pain due to acid reflux; i.e. medically explained symptoms (MES))(Epstein et al., 2007).

Previous research has operationalized the extent to which uncertainty is disclosed in medical consultations by including explicit statements such as "I don't know" (Epstein et al., 2007), "it is not clear" (Gordon et al., 2000), and "I need to find out more" (Ogden et al., 2002). There are, however, other, implicit strategies to express uncertainty in a more subtle manner, e.g. with certain adverbs (e.g. "probably", "maybe"), modal verbs ("might", "may"), and conditional phrases ("if you feel better in a week") (Cousin et al., 2013). Uncertainty statements such as "I don't know" may negatively affect patient satisfaction with a consultation or physician, because patients infer that their physician is not competent (Blanch et al., 2009; Johnson et al., 1988), though findings are mixed (McGovern & Harmon, 2017). However, implicit uncertainty expressions may also reflect physicians' formulation effort (Monzoni et al., 2011b) during medical interactions about MUS. Rather than producing negative effects, such implicit uncertainty expressions may facilitate talk about delicate issues, though researchers pointed to potential downsides such as inviting patients' resistance (Monzoni et al., 2011b).

Previous analysis of implicit uncertainty in MUS consultations is based on qualitative analyses (Monzoni et al., 2011b). Whether implicit uncertainty is specific for MUS consultations is yet unknown, because to date a systematic quantitative analysis of medical interactions is lacking. This research therefore aimed to extend previous qualitative findings by quantifying general practitioners' (GPs) implicit uncertainty expressions for MUS and MES consultations during different phases of the consultation, and explored its relation to patient anxiety. Based on previous findings (Epstein et al., 2007), we hypothesized that implicit uncertainty would be more prominent in MUS (versus MES) consultations, across different phases of the consultation (Monzoni et al., 2011b). Furthermore, we looked into the potential effects of GP's implicit uncertainty expressions no changes in patient anxiety post consultation.

METHODS

Participants and procedure

This study was part of a larger research on GP-patient communication about MUS in which 393 everyday consultations of 20 GPs were video-recorded on 1-2 days per GP. Forty-one consultations were labelled as MUS consultation by 18 GPs (Houwen et al., 2017; Stortenbeker et al., 2018). To compare uncertainty of GPs, each MUS consultation was compared to a MES consultation (same GP, same day for all except three consultations) resulting in a dataset of 82 consultations. Patient's age (49 female) varied from 18 to 86 years (M = 52.6; SD = 17.9). All patients filled in a pre- and post-consultation questionnaire including the short version of the State Trait Anxiety Inventory (STAI) (Spielberger et al., 1983) with ten statements (1= "not at all", 4 = "very much so") assessing their state anxiety (range: 1.00–3.80, difference score range: -1.40–1.37; higher scores indicated higher anxiety levels).

Coding procedure and reliability

Two coders identified and categorized GPs' expressions about patients' medical situation. We describe the coding procedure in more detail elsewhere (Stortenbeker et al., 2018). Frequent expressions of implicit uncertainty such as uncertain verbs (e.g. "could", "I think"), lexical items (e.g. "probably", "maybe") and pragmatic particles (e.g. "sort of") were coded (Krippendorff's α = .77, 95% CI .62 to .90) (Green, 1984; Vold, 2006). The consultation phase of these expressions was also coded (physical examination, diagnosis, or treatment recommendation; Krippendorff's α = .71, 95% CI .63 to .79).

Data analysis

We used binary logistic mixed-effects models to predict variation in uncertainty expressions across consultations with patients with MUS and MES, and we used a linear mixed-effects model to test the relationship between the relative frequency of uncertainty per consultation (uncertain expressions + 1 / all relevant expressions + 1) and difference scores of patient anxiety. The data were analysed using R with the lme4 package.

RESULTS

We identified 2590 expressions about patients' medical situation. Table 1 presents the distribution of implicit uncertainty expressions per phase of the consultation for patients with MUS and MES.

Table 1. Distribution of uncertainty expressions in GPs’ statements per phase of the consultation for consultations with patients with MUS ($n = 1480$) and MES ($n = 1110$).

	MUS ***n* (%)**	**MES** ***n* (%)**
Total	**439 (29.7)**	**295 (26.6)**
Physical examination	29 (18.4)	34 (24.5)
Diagnosis	228 (30.9)	100 (24.3)
Treatment recommendations	182 (31.1)	161 (28.8)

We first specified an empty model, i.e. a model without predictor variables for random intercepts with the best model fit ($AIC = 3067.5$, $\chi^2(3) = 8.94$, $p = .003$). There was significant variance in intercepts across GPs (variance = .05, $SD = .23$), and patients (variance = .07, $SD = .26$). We added potential predictors to the empty model. “Type of complaints (MUS or MES)”, “consultation phase”, and the interaction term between the two variables significantly improved the model fit ($AIC = 3057.0$, $\chi^2(8) = 19.89$, $p = .002$). Potential confounding variables (GP sex or age; patient sex, age, educational level, work status, or repeated visit for symptoms; word total per consultation) or random slopes did not contribute to the model fit. As can be observed in Table 2 and Figure 1, GPs were 1.54 times more likely to express uncertainty when patients had MUS compared to MES. Furthermore, whereas uncertainty expressions were significantly higher for the diagnostic phase and treatment recommendations than the physical examination phase in MUS consultations ($OR = .45$, $p = .001$), this difference was absent for MES consultations ($OR = 1.07$, $p = .785$).

We related indices of uncertainty per consultation to patient anxiety. There was a significant variance in intercepts across GPs (variance = .02, $SD = .15$). No significant random slopes or confounding variables improved the fit of the model. We observed no significant relationship between the amount of uncertainty expressed by GPs, and the pre-post consultation difference in anxiety of all patients (MUS and MES) ($b = -.11$, $SE = .49$, $p = .817$, 95% CI -1.19–0.91).

Table 2. Final binomial mixed model of GP expressed implicit uncertainty.

	Estimate	SE	OR	z-value	P r(>|z)	95% CI
Intercept	-1.20	.14	0.30	-8.50		
MUS vs. MES	.44	.15	1.54	2.56	.004	1.15-.2.10
Contrast 1: PE[a] vs. diagnosis and treatment	.05	.23	1.06	0.24	.812	.66-1.68
Contrast 2: Treatment vs. PE and diagnosis	.21	.15	1.23	1.35	.178	.91-1.68
MUS vs. MES * contrast 1	-.86	.33	0.42	-2.61	.009	.22-.81
MUS vs. MES * contrast 2	-.28	.20	0.76	1.83	.167	.51-1.12

[a] PE = physical examination

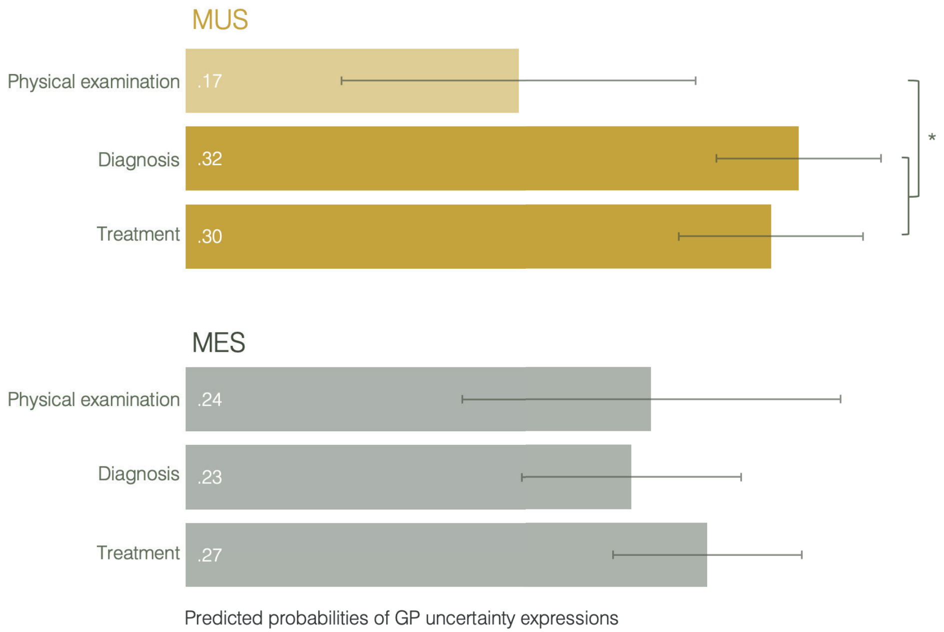

Figure 1. Predicted probabilities with standard errors of implicit uncertainty expressions for the type of complaints (MUS vs. MES) and phases of the consultation.

DISCUSSION AND CONCLUSION

Discussion

This study was the first to quantitatively analyse GPs' implicit expressions during consultations about MUS versus MES, and their relationship with patients' pre-post consultation difference in anxiety. GPs expressed more implicit uncertainty in consultations about MUS compared to MES, especially during the phase of diagnosis and treatment recommendations. This indicates that, apart from explicit uncertainty expressions such as "I don't know" [5], GPs also systematically express more implicit uncertainty in consultations about MUS. These findings provide a quantitative extension of previous qualitative studies reporting a high formulation effort (e.g. self-corrections, reformulations) in MUS consultations, especially during diagnosis and treatment recommendations (Monzoni et al., 2011b). We demonstrate that this only holds for MUS but not MES consultations. The increase in implicit uncertainty may be attributed to the fact that GPs can rely on their professional knowledge when physically examining a patient, while diagnosis and treatment recommendations for MUS are made within the physician-patient dialogue. This could contribute to increased uncertainty expressions during those phases of the consultation.

Although it was previously shown that linguistic elements (directness of positive and negative messages) may affect patients' state anxiety (Stortenbeker et al., 2018), our findings show no relationship between implicit uncertainty and patient anxiety. This contributes to previous findings about uncertainty and patient anxiety (Blanch et al., 2009), which has reported both positive and negative effects of uncertainty expressions on patient satisfaction (Cousin et al., 2013; Gordon et al., 2000; Johnson et al., 1988). Rather than reflecting physicians' professional insecurity, implicit uncertainty may reflect the complex reality of communicating a medically unexplained diagnosis. It could be a way to search for the right label when medical explanatory models do not suffice to explain symptoms (Johansen & Risor, 2017), which need not affect patient anxiety after the consultation.

Some limitations of the study need to be addressed in future research. We did not compare effects of different types of uncertainty expressions, which could also explain a lack of association between implicit uncertainty and patient anxiety. Future studies should focus on comparing different types of uncertainty expressions (e.g. "I don't know" vs. "maybe"), and their relationship with patient responses, taking into account potential cultural differences that may underlie the interpretation of uncertainty expressions (Doupnik & Richter, 2003). Further analyses should take into account the sequentiality of these interactions (i.e. how patients respond, e.g. remaining silent or minimal responses (Monzoni et al., 2011b)) to examine how this could affect physician implicit uncertainty expressions. Finally, we compared implicit uncertainty expressions to patients' self-reported anxiety measures. Future research should compare effects of implicit uncertainty expressions for different anxiety measures (e.g. tension scale of Profile of Mood states (Shacham, 1983)), and for different patient outcomes such as patient satisfaction.

Conclusion

This research extends previous findings by providing quantitative evidence that the number of physicians' implicit uncertainty expressions differs between MUS (versus MES) conversations, and is most prevalent during the diagnostic phase and treatment recommendations. Implicit uncertainty expressions do not necessarily affect changes in patient anxiety.

Practice implications

Doctors may affect patient outcomes when they explicitly express their uncertainty (i.e. "I don't know"). We demonstrate that expression of more subtle, implicit uncertainty such as "I think your headache may have two causes" does not affect post-consultation anxiety. Rather, implicit uncertainty expressions such as "maybe" or "it could be" reflect the mere complexity of communicating a diagnosis that has no medical explanation. GPs should not worry about (unconsciously) revealing this complexity during the medical interaction.


AQUA
FOENIC
LINGUA
M3
U4
S1

PART 2.2

Quantifying patients' language use


7

Chapter 7

MUS versus MES:
The difference is not in patients' language use

Stortenbeker, I., olde Hartman, T., Kwerreveld, A., Stommel, W., van Dulmen, S. & Das, E. (2022) Unexplained versus explained symptoms: The difference is not in patients' language use. A quantitative analysis of linguistic markers.

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https://doi.org/10.1016/j.jpsychores.2021.110667

ABSTRACT

Objective

Patients with medically unexplained symptoms (MUS) are believed to have a deviant way of talking about complaints. This study systematically compared linguistic markers in symptom presentations of patients with MUS and medically explained symptoms (MES).

Methods

This content analysis (cross-sectional study) conceptualized relevant linguistic markers based on previous research about MUS communication. Linguistic markers included negations (“not”), intensifiers (“very”), diminishers (“a little”), first or third person subject (“I” vs. “my body”), subjectivity markers (“I think”) and abstraction (“I’m gasping for breath” vs. “I’m short of breath”). We also coded valence, reference to physical or mental states, and consultation phase. We compared 41 MUS and 41 MES transcribed video-recorded general practice consultations. Data were analyzed with binary random intercepts models.

Results

We selected and coded 2752 relevant utterances. Patients with MUS used less diminishers compared to patients with MES, but this main effect disappeared when consultation phase was included as predictor. For all other linguistic variables, the analyses did not reveal any variation in language use based on whether patients had MUS or MES. Importantly, utterances’ valence and reference to physical or mental state did predict the use of linguistic markers.

Conclusion

We observed no systematic variations in linguistic markers for patients who suffered from MUS compared to MES. Patients varied their language use based on utterances’ valence and reference to physical or mental states. Current ideas about deviant patient communication may be based on stigmatized perceptions of how patients with MUS communicate, rather than actual differences in their talk.

INTRODUCTION

Many patients who visit their general practitioner (GP) suffer from medically unexplained symptoms (MUS). These symptoms without detectable underlying illness are serious, but patients struggle to be recognized as credible patients (Rawlings & Reuber, 2016; Werner et al., 2003). Patients with MUS are believed to communicate differently from patients who suffer from medically explained symptoms (MES) (Asbring & Narvanen, 2003; Barsky & Borus, 1999; Houwen et al., 2020; B. Jones & Williams, 2020). GPs sometimes think of MUS as a possible diagnosis when patients present symptoms in a vague or unstructured manner (Houwen et al., 2020). Existing ideas and GPs' experiences with patients' style of symptom presentation thus seem to play a part in the diagnostic procedure (den Boeft et al., 2016). Linguistic research in neurology setting confirms that specific interactional patterns can help distinguish unexplained from explained neurological problems (Elsey et al., 2015; D. Jones et al., 2016; Robson et al., 2012; Schwabe et al., 2007). For instance, patients with non-epileptic seizures use more negations (e.g. "I *can't* hear") or provide less detailed accounts of seizures. MUS-specific linguistic patterns enabled linguistic raters to differentiate unexplained from explained seizures with rates similar golden standard to diagnose epilepsy (Reuber et al., 2009). Language use and interactional patterns of patients with specific neurological problems can thus quite reliably help reveal whether their symptoms have a somatic pathology or not.

However, no research has yet compared language use in MUS and MES primary care consultations. This study aims to systematically compare relevant linguistic markers of MUS and MES patients to explore how language may support diagnostic assessment of MUS in primary care. This is required for two main reasons. First, quantitative evidence is needed to confirm MUS-specific communication patterns. For instance, systematic coding demonstrated that patients with MUS regularly initiated psychosocial talk and GPs mostly proposed somatic treatment or referral to specialists (Ring et al., 2005; Salmon et al., 2009), although it was expected that an opposite pattern would occur during these consultations (e.g. Wileman et al., 2002). Second, systematic linguistic and interactional differences are observed for neurology patients, but this may be caused by a limited, disease-specific cognitive functioning of patients. Further research is needed to compare language use of MUS and MES patients in primary care setting with common symptoms such as irritable bowels or back pain.

Linguistic research enables a systematic analysis of observable elements in naturally occurring talk. We conceptualized various relevant linguistic markers for MUS consultations based on linguistic research, complemented with insights from the medical domain and social psychology. Since patients with neurological problems tend to describe their symptoms with more negations (cf. Reuber et al., 2009), we *hypothesize* that patients with MUS in GP consultations also use negations more frequently than MES patients to describe their complaints (e.g. "it does *not* feel right"). Further, patients with MUS use intensified language (e.g. "an *immense* pain") to emphasize that their visit is legitimate (Elderkin-Thompson et al., 1998; Stortenbeker et al., 2020), and it is believed that they are likely to amplify symptoms (Barsky & Borus, 1999) and exaggerate the severity of complaints (B. Jones & Williams, 2020). We therefore hypothesized that patients with MUS would stress the severity of complaints with more intensifiers and less diminishers (e.g. "*some* redness") compared to patients with MES.

We included various other linguistic markers to *explore* whether existing beliefs about patients with MUS are reflected in their language use. First, patients with MUS may be disconnected from their own emotions and physical experiences (Balabanovic & Hayton, 2020). To capture this phenomenon, we explored whether patients described their emotional and/or physical states from a first-person perspective (e.g. "*I* hear pretty badly") or using third person references (e.g. *My ear* keeps on whizzing"). Whereas first-person pronouns embody an internal perspective of bodily or mental experiences (Brunyé et al., 2009), third person pronouns may describe symptom experience with more detached or disconnected means. Second, unexplained symptoms are understood as subjective illness (Greco, 2017) or referred to as subjective health complaints (e.g. Weerdesteijn et al., 2020). We explored whether explicit subjectivity markers such as verbs expressing patients' viewpoint (e.g. "think") (Bergqvist, 2018) or perception (e.g. "see", "feel") (Whitt, 2011), are more frequently used by MUS or MES patients. Finally, since patients with MUS would suffer from non-specific or vague symptoms (Bransfield & Friedman, 2019), we explore whether vague symptom experiences are reflected in patients' abstract or concrete language using an existing framework (i.e. the Linguistic Category Model) (Semin, 2012).[1] This is relevant because abstractly presented information is usually perceived as less credible and less comprehensible (J. Hansen & Wänke, 2010; Sadoski et al., 2000), which could affect GPs' perceptions of patients.

The research question was formulated as follows: "To what extent do linguistic markers in utterances differ between general practice patients presenting MUS and MES?"

METHOD

This content analysis of single consultations (cross-sectional study) in primary care systematically compared naturally occurring language use of patients presenting MUS or MES in descriptions of their physical or mental states.

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[1] Traditionally, the Linguistic Category Model (LCM) is used to describe whether behavior of others is perceived as adhering to existing stereotypes (using abstract language such as "he is aggressive") or not (using concrete language such as "he is kicking him"). Research suggests that this framework may also yield valuable insights for studying medical interactions (Watson & Gallois, 2002) or investigating self-descriptions (Beukeboom et al., 2012). We discuss the use of LCM for the current setting in Appendix 1: 7.1.

Participants and setting

The data for this study were derived from a research project (the "CATMUS" project (Houwen et al., 2017)), during which GP consultations were recorded for one or two days. Twenty out of 36 approached GPs agreed to participate. Dutch-speaking patients older than 18 years of age who gave their written informed consent were included. After each consultation, GPs indicated whether they thought patients had MUS, partial MUS or MES. This method is based on previous research (Ring et al., 2005; Salmon et al., 2007), and resembles daily clinical practice. In all, 390 of 509 patients agreed to participate. Forty-three patients were diagnosed with MUS, 36 were labelled as having partial MUS and 314 as MES. Consultations were transcribed verbatim with personal identifiers removed. Ethical approval for procedures was obtained from the ethics committee of the Radboud University Medical Centre (file number 2015-1566).

Study sample

We matched MUS to MES consultations (same day, same GP; except for three consultations), and we excluded patients who were labelled by their GP as partial MUS, because these did not suit the current research aim. In total, 41 consultations of patients with MUS were compared to 41 MES consultations from 18 GPs (2 recordings excluded due to technical problems; 2 GPs identified no patients with MUS). The GPs had a mean age of 45 years (*SD* = 10.4), with years of experience varying between 2 and 43 years. Half of the GPs was female, and they were located in urban (*n* = 8) or rural (*n* = 10) areas.

Patient characteristics are described in Table 1.

Table 1. Sample characteristics of patients with MUS versus MES (***N*** = 82)

	Measure / subcategory	**MUS (*n* = 41)**	**MES (*n* = 41)**	***p*-value**
Age	Mean (*SD*)	50.7 (18.1)	54.5 (17.8)	.340
Sex	Female	29 (70.7%)	20 (48.8%)	.042
	Male	12 (29.3%)	21 (51.2%)	
Level of education [a]	Primary education	5 (12.2%)	2 (5.0%)	.242
	Secondary education	24 (58.5%)	20 (50.0%)	
	(Applied) university	12 (29.3%)	18 (45.0%)	
Current visit	First time or unclear	13 (31.7%)	18 (43.9%)	.254
	Repeated	28 (68.3%)	23 (56.1%)	

NB: Group differences are tested with t-test for continuous variables and chi-square for categorical variables.

[a] One missing value

Codebook development and procedure

We developed a codebook describing criteria for categorization of linguistic markers in relevant patient utterances. Coding criteria were based on a previous codebook about GP language use (Stortenbeker et al., 2018, 2019) and previous literature about clinical interactions (D. Roter, 2013), MUS consultations (Bekhuis et al., 2020; Ring et al., 2005), linguistics (Bergqvist, 2018; Liebrecht et al., 2016; van Bogaer, 2011), and social psychology (Semin, 2012). Two researchers (IS and LS or AK) tested the codebook by separately analyzing transcripts, comparing their findings, and further refining the criteria. This process was repeated for six consultations in total (3 MUS and 3 MES)[2]. The final coding procedure comprised three steps. Coders first indicated the consultation phase for all turns. Next, they identified patient utterances that met the inclusion criteria. Finally, they categorized relevant utterances for various linguistic markers. Inter-coder reliability was calculated with Cohen's kappa (κ) for 16 consultations (i.e. 19.5% double-coded) (see 2.3). Though Kappas $>.6$ were considered sufficient, we explored potential systematic differences for coding criteria with inter-coder reliability $\geq .6 < .7$ to further improve our codebook.

Operationalization and reliability

Coding criteria were developed for each coding step. First, phase of the consultation was marked as the opening phase, history-taking, physical examination, diagnosis, plan, or closing phase ($\kappa = .75$)(Heritage & Maynard, 2006b). Second, relevant patient utterances were included when they described their biomedical or psychosocial states ($\kappa = .72$). The unit of analysis was a turn-constructional unit (TCU), i.e. a self-contained, possibly complete, utterance (Clayman, 2012, p. 151).

In the third step, we categorized selected utterances based on linguistic markers. Semantic markers (i.e. meaning-related markers), included valence and mind/body reference. Valence ($\kappa = .68$) denoted whether a patient's state was positive ("this is just lovely"), negative ("the blood pressure is too high"), or neutral (interpretation needed, e.g. "my blood pressure was 120/80"). Body/mind reference ($\kappa = .76$), described whether the TCU referred to patients' biomedical ("my intestines are bothering me"), psychosocial ("that gives me stress") or ambiguous states (no distinct biomedical or psychosocial state, "things are good"). Linguistic markers of interest included negations ($\kappa = .95$), language intensity ($\kappa = .66$), first or third person grammatical subject ($\kappa = .62$), subjectivity marker ($\kappa = .90$) and abstraction ($\kappa = .73$). Operationalizations and examples for each linguistic marker and their subsequent subcategories are provided in Table 2.

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[2] Different consultations were used during the development stage and double-coding procedure. All consultations were coded and analyzed with the final version of the codebook.

Table 2. Linguistic markers defined in the codebook with operationalizations and examples for each subcategory

Linguistic marker	Subcategory	Operationalization	Example*
Negation Use of negations	Absent	No negation present	
	Syntactic	Constituents as negation element	*That's* ***not*** *a bad idea*
	Morphologic	Prefixes as negation element	*That's* ***in****convenient for me*
Intensity Modifiers of the vigor of a TCU	Absent	No intensity marker present	
	Down toner	Marker attenuates vigor of a message	*It's* ***quite*** *all right*
	Intensifier	Marker intensifies vigor of a message	*It* ***really*** *bothers me*
Subject Grammatical subject of the TCU	Empty	TCU lacks a subject	
	First person	Subject refers to the patient	***I*** *cannot breathe anymore*
	Third person	Subject refers to a patient's biomedical or psychosocial state	***That ear*** *keeps on whizzing*
Subjectivity Explicit markers of a patient's viewpoint	Absent	No explicit subjectivity marker present	
	CTMP	1st person declarative expressing the patient's point of view	*I* ***notice*** *that I'm a little slow*
	Perception word	Verbs denoting a speaker's sensory perception or internal state	*I don't* ***feel*** *well*
Abstraction Linguistic Category Model (LCM)	Absent	No verb present	
	DAV / DA	Concrete, observable and objectively described actions or adjectives.	*I'm able* ***to eat*** *a lot again*
	IAV / SAV	Observable actions or emotions with a context-dependent meaning	*It doesn't* ***help*** *at all*
	SV	Verbs referring to states without clearly defined beginning or end	*It's the first time that I* ***have*** *this issue*
	ADJ	Adjectives that describe a specific characteristic	*At some point I become* ***grumpy***

* Examples are derived from the corpus

List of abbreviations: CTMP = complement-taking mental predicate, DAV = descriptive action verb, DA = describe adjective, IAV = Interpretative action verb, SAV = state action verb, SV = state verb, ADJ = adjective.

Statistical analysis

We assessed how patient demographic information (age, sex, level of education, repeated visit[3]) and semantic markers (valence, body/mind reference) were distributed between MUS and MES consultations with *t*-tests for continuous variables and χ2 tests for categorical variables. We used binary random intercepts models with dichotomized linguistic markers as the dependent variables to analyze linguistic markers in MUS and MES consultations.[4]

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[3] Prior to the consultation, patients were asked whether they previously visited their GP with the current symptom(s) or not.

[4] For negations, we analyzed syntactic (e.g. "not") vs. no negations. For grammatical subject, we compared first person pronouns with third person references. For abstraction, we compared DAVs and IAVs with SVs and ADJs.

The statistical procedure was divided into three steps. First, we determined the best null model with potential random intercepts, i.e. patients (82 patients), recording date (26 days) and GPs (18 GPs). Second, we added our predictors of interest. Hypothesis-based analyses (negations, intensifiers, diminishers) included MUS or MES consultation, valence, and their interaction term. Explorative analyses (grammatical subject, subjectivity, abstraction) also included body/mind reference as a potential predictor. Due to the explorative nature of the latter analyses, we only retained valence and/or body/mind reference as predictors when they contributed to the model fit. Multicategorical predictor variables were dummy coded with Helmert coding (Hayes & Montoya, 2017). Third, we included potential confounders (pre-selected based on a significant association ($\chi 2$ or Kendall's τ) with the outcome variable) that contributed to the model fit. Potential confounders were length of the consultation in minutes, sex and age of the GP, and sex, age, patient level of education, and repeated visit.

We performed additional, exploratory analyses with consultation phase[5] and the interaction with MUS vs. MES consultations as potential predictors of linguistic markers, but only if the predictor(s) significantly improved the model fit. We used R for data analysis (lme4 package (Bates et al., 2015)). The output file can be found via https://doi.org/10.1016/j.jpsychores.2021.110667

RESULTS

Frequencies of linguistic markers

We selected and coded 2752 relevant TCUs, varying from 1 to 121 TCUs per consultation (mean = 33.6). As can be observed in Table 3, 536 TCUs were negated, 1054 included an intensifier and 374 a diminisher. Grammatical subject referred to first person pronouns in 1063 TCUs, and subjectivity markers were present in 349 TCUs. Most of patients' TCUs (69.3%) included abstract state verbs or adjectives. Chi-square tests showed a significant relation between MUS vs. MES consultations, and valence ($\chi 2$ (2) = 6.78, p = .034) and body/mind reference ($\chi 2$ (2) = 27.01, $p < .001$) of TCUs. TCUs of patients with MUS were relatively less often neutral compared to patients with MES. Positive and negative valence did not differ between MUS or MES. Patients with MUS referred relatively more often to psychosocial and ambiguous states, and relatively less often to biomedical issues compared to patients with MES.

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[5] To restrict the number of main predictors and interaction terms, we recoded consultations phase with two levels, i.e. "information gathering" (opening, history-taking, physical examination) and "decision making" (diagnosis, plan, closing).

Table 3. Absolute and relative frequencies of linguistic markers, valence and body/mind reference for patients with MUS and MES

	MUS **(*n* = 1761)**	**MES** **(*n* = 991)**	**Total** **(*N* = 2752)**
	***n* (%)**	***n* (%)**	***N* (%)**
Linguistic marker			
Negation	338 (19.2)	198 (20.2)	536 (19.5)
Intensifier	703 (39.9)	351 (35.4)	1054 (38.3)
Diminisher	202 (11.5)	172 (17.4)	374 (13.6)
First person subject[1]	716 (49.9)	247 (42.8)	1063 (47.2)
Subjectivity marker	224 (12.7)	125 (12.6)	349 (12.7)
Abstract language[2]	1064 (69.3)	599 (69.2)	1663 (69.3)
Valence			
Neutral	95 (5.4)	78 (7.9)	173 (6.3)
Positive	371 (21.1)	210 (21.2)	581 (21.1)
Negative	1295 (73.5)	703 (70.9)	1998 (72.6)
Body/mind reference			
Ambiguous	124 (7.0)	44 (4.4)	168 (6.1)
Biomedical	1269 (72.1)	802 (81.0)	2071 (75.3)
Psychosocial	368 (20.9)	145 (14.6)	513 (18.6)

NB: Percentages indicate the presence of a linguistic category in relation to the total amount of TCUs (for MUS, MES, and both)

[1] "Empty subject" (*n* = 502) excluded

[2] "Verb absent" (*n* = 351) excluded

Table 4 outlines the model summaries for all of the linguistic markers. Empty models with random intercepts across patients had the best model fit for all markers.

Negations and language intensity

We hypothesized that patients with MUS would use more negations, more intensifiers and less diminishers compared to patients presenting MES. The use of negations ($p = .39$) and intensifiers ($p = .58$) was not related to whether symptoms were explained or unexplained, but patients less often used diminishers in case of MUS compared to MES ($OR = .54$, $p = .006$). Valence appeared to be a significant predictor for all three linguistic elements; negatively valenced TCUs contained less often negations ($OR = 0.49$, $p < .001$), more often intensifiers ($OR = 1.93$, $p = .037$), and less often diminishers ($OR = 0.47$, $p < .001$) compared to positively valenced TCUs. We did not observe a significant interaction between valence and whether patients had MUS or MES (all p's $> .07$).

Table 4. Binary random intercepts model predicting patients' language use during GP consultations

Hypothesis-testing									
	Negations			**Intensifiers**			**Diminishers**		
Random intercept	*Variance (SD)*			*Variance (SD)*			*Variance (SD)*		
Patient level	0.08 (.29)			0.16 (.40)			0.22 (.47)		
	B (SE)	*OR*	95% CI	*B (SE)*	*OR*	95% CI	*B (SE)*	*OR*	95% CI
MUS vs. MES	**0.15 (.18)**	**1.17**	**0.82-1.66**	**0.10 (.19)**	**1.11**	**0.77-1.61**	**-0.61 (.22)**	**0.54****	**0.35-0.84**
Valence 1: Loaded vs. neutral	0.62 (.34)	1.87	0.96-3.64	0.82 (.32)	2.27*	1.21-4.27	0.41 (.33)	1.51	0.78-2.91
Valence 2: Negative vs. positive	-0.72 (.34)	0.49***	0.34-0.71	0.66 (.18)	1.93***	1.34-2.77	-.76 (.20)	0.47***	0.32-0.69
MUS vs. MES * Valence 1	-0.12 (.45)	0.89	0.37-2.15	0.29 (.43)	1.33	0.57-3.09	0.27 (.53)	1.31	0.47-3.68
MUS vs. MES * Valence 2	-0.41 (.23)	0.66	0.42-1.04	-0.27 (.22)	0.76	0.49-1.18	-0.07 (.26)	0.93	0.56-1.55
Relevant confounds									
Patient sex (f vs. m)	-0.33 (.13)	0.71**	0.55-0.92						
Consultation length				0.02 (.01)	1.02*	1.00-1.04			
GP sex (f vs. m)							0.51 (.16)	1.67**	1.21-2.29
Explorative analyses									
	First person subject			**Subjectivity markers**			**Abstract language**		
Random intercept	*Variance (SD)*			*Variance (SD)*			*Variance (SD)*		
Patient level	0.06 (.26)			0.18 (.43)			0.12 (.34)		
	B (SE)	*OR*	95% CI	*B (SE)*	*OR*	95% CI	*B (SE)*	*OR*	95% CI
MUS vs. MES	**0.22 (.12)**	**1.25**	**1.00-1.58**	**0.06 (.17)**	**1.07**	**0.76-1.49**	**-0.02 (.12)**	**0.98**	**0.77-1.26**
Valence 1: Loaded vs. neutral	0.50 (.20)	1.66**	1.13-2.43						
Valence 2: Negative vs. positive	0.22 (.11)	1.25*	1.01-1.54						
Body/mind 1: Clear vs. ambiguous	0.18 (.19)	1.20	0.84-1.73	-0.28 (.22)	0.67	0.49-1.17	-0.50 (.22)	0.61*	0.39-0.93
Body/mind 2: Psychosocial vs. biomedical	0.70 (.12)	2.0***	1.60-2.52	0.52 (.15)	1.69***	1.26-2.26	0.20 (.12)	1.22	0.96-1.55
Relevant confounds									
GP age	0.01 (.01)	1.01*	1.00-1.03						
Consultation length	-0.00 (.01)	1.00	0.98-1.01	-0.02 (.01)	0.98*	0.95-1.00			

* $p < .05$. ** $p < .01$. *** $p < .001$

NB: Dummy codings for valence were loaded (positive and negative) vs. neutral valence (dummy 1), and negative vs. positive valence (dummy 2). Dummies for body/mind reference were clear vs. ambiguous (dummy 1), and psychosocial vs. biomedical (dummy 2).

Grammatical subject, subjectivity and language abstraction

We explored whether there were differences in the use of grammatical subject, subjectivity markers and language abstraction for patients with MUS or MES. Subjectivity markers (*p* = .705) and language abstraction (*p* = .886) did not vary between patients presenting MUS or MES. We observed a trend for first vs. third person subjects (*p* = .054); patients with MUS (vs. MES) were marginally more likely to use third person rather than first person grammatical subject. Semantic elements significantly predicted occurrences of linguistic markers. Patients were likely to refer to first rather than third person for TCUs with loaded (vs. neutral) (*p* = .010) and negative (vs. positive) valence (*p* = .041). TCUs describing patients' psychosocial states more often contained first person as grammatical subject (*p* < .001) and subjectivity markers (*p* < .001) compared to biomedical states. A clear reference to their body or mind, on the other hand, was more likely to be described with abstract language (*p* = .022) compared to when this was ambiguous. None of the interaction terms with the main predictors (MUS or MES, valence, body/mind reference) contributed to the model fit for all three outcome variables. All of the model's assumptions were met.

Figure 1 visualizes the odds ratios of MUS vs. MES consultations as a predictor of all linguistic markers.

Additional analyses: Consultation phase as a potential predictor of linguistic markers

We performed additional analyses to explore whether linguistic markers depended on the phase in which they occurred (information gathering or decision making). The model fit of all linguistic markers except diminishers did not improve when consultation phase and/or interaction with MUS or MES was added to the model. Adding consultation phase as a potential predictor of diminishers significantly improved the model fit ($\chi 2$ (1) = 7.38, *p* = .006). Patients were 1.49 times less likely to use diminishers during decision making compared to information gathering (*OR* = .67, *p* = 007) in both MUS and MES consultations. Remarkably, in this exploratory additional model, MUS or MES no longer appeared a significant predictor of diminishers (*OR* = .46, *p* = 164). The exploratory adjusted model of diminishers can be found in Appendix 1: 7.2.

In sum, patients with MUS less often used diminishers compared to patients with MES, but this main effect disappeared when consultation phase was included as another predictor of diminishers. For all the other linguistic variables, we did not observe any systematic difference between MUS or MES consultations. Importantly, valence or body/mind reference systematically predicted linguistic elements in patient utterances during MUS and MES consultations.

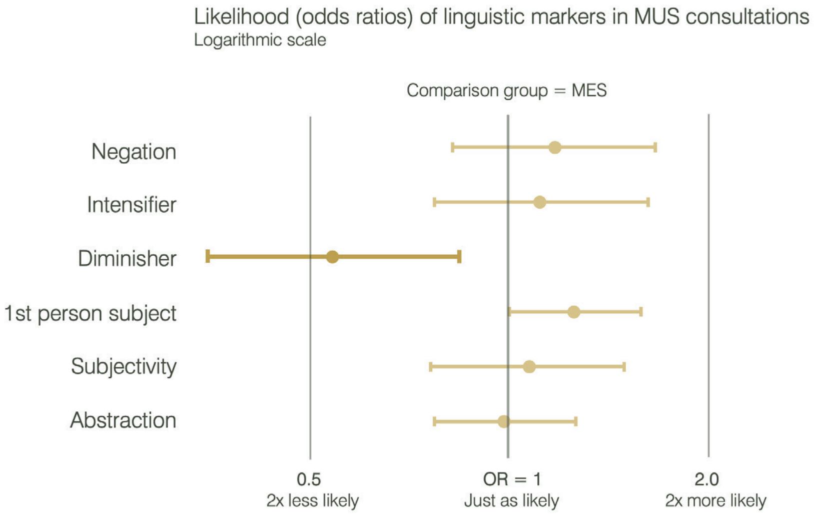

Figure 1. Odds ratios for linguistic markers in MUS vs. MES consultations on a logarithmic scale

DISCUSSION

Conclusion

This study systematically compared language use of patients diagnosed as having medically unexplained versus explained symptoms. We selected a set of linguistic markers to test pre-existing ideas and empirical findings about MUS patients' communication style. Patients with MUS compared to MES did not systematically vary in use of negations (e.g. "It does not feel right"), intensifiers (e.g. "everything sounds really miserable"), subjectivity markers (e.g. "I notice that I'm a little slow"), grammatical subject (e.g. "I feel bloated" vs. "this bloating of mine") or language abstraction (e.g. "I'm gasping for breath" vs. "I'm short of breath"). We observed a difference in diminishers; patients with MUS were less likely to use diminishers (e.g. "It is soaking a bit") compared to patients with MES, though further exploratory analyses showed that this difference did not maintain when consultation phase was added to the model. Importantly, both MUS and MES patients varied their linguistic markers based on an utterance's valence or reference to their body or mind. Our findings suggest that, despite prejudices about MUS symptom presentations being subjective, vague or exaggerated, linguistic markers of patients with MUS are not different from patients with MES.

Comparison with the literature

Our analysis revealed that linguistic markers systematically vary depending on semantic features of patient utterances, but not based on a MUS or MES diagnosis. We propose two likely explanations for the differences based on semantic features. First, patients generally tend to use more intensifiers for negatively valenced utterances, while positive utterances more frequently contain diminishers and negations. This difference in language use may reflect the institutional activity of medical consultations surrounding talk about complaints that require medical attention (Drew & Heritage, 1992). Patients may evaluate complaints using intensifiers (e.g. "this *terrible* fatigue"), while positive states that usually do not support a decision to seek medical care are described more tentatively (e.g. "a *little* better") or euphemistically with negations (e.g. "it is *not* that bad") (Giora et al., 2004). Second, we found that patients are more likely to use first person pronouns and subjectivity markers to describe psychosocial or negative states (e.g. "*I* don't feel well"). This linguistic difference reflects a common view of Western contemporary medicine related to body/mind experiences. While the mind is considered as an interior part of one's self, the body is often viewed as an extended object that works in a more mechanical way (Slatman, 2018). Linguistic constructions such as "my arm is hurting" therefore appear omnipresent while expressions such as "my mind is not feeling well" are far less common.

Previous interviews with GPs (Houwen et al., 2020), qualitative observations (Aiarzaguena et al., 2013; Ring et al., 2004), and comparative analyses of consultations in neurology settings (Reuber et al., 2009) suggested that certain patterns of language use and communication may be typical for patients with MUS. The present study made a first step in comparing MUS and MES communication with a systematic coding system to quantify observable linguistic markers of patients in primary care. The findings do not confirm previous assumptions as we did not observe any systematic differences in various linguistic markers of patients presenting MUS or MES. We show that pre-existing ideas about MUS patients' language use cannot be detected in naturalistic GP consultations. Similar to previous quantitative analyses (Ring et al., 2005; Salmon et al., 2009), our study underlines the need for quantitative evidence to complement fine-grained qualitative research to detect MUS-specific communication.

Previous observations of medical interactions demonstrated that GPs vary their communication style and language use during MUS versus MES consultations. For instance, when patients suffer from MUS, GPs generally perform fewer symptom explorations, and they use less structuring techniques (Epstein et al., 2006; olde Hartman et al., 2013), less positive wordings (Stortenbeker et al., 2018) and more uncertainty markers (Stortenbeker et al., 2019) compared to when patients present with MES. GPs thus adjust their language and communication to the (un)explainedness of patient complaints, while findings of the current study demonstrate that systematic variations do not occur for patient language use. This suggests GPs differentiate MUS from MES, but patients with physical complaints – with or without detectable underlying illness – need recognition for symptom experiences and receive appropriate personalized care (Houwen et al., 2017).

How do we reconcile these diverging patterns for GPS and patients? Studies on stereotypes and language suggest that stereotypic expectancies are communicated via language use (Beukeboom, 2014). GPs who label symptoms of patients as medically unexplained may unconsciously adjust their language use accordingly. Stereotyping, on the other hand, also shapes perceptions of communication (Levon, 2014). Since the MUS label is surrounded with stigma (Picariello et al., 2015), communication patterns adhering to stereotypes could become salient when patient complaints are labelled as MUS. For instance, intensified language use may be more salient when exaggeration is expected during MUS consultations (de Ruddere et al., 2014). Perceived differences in communication of patients with MUS or MES may thus be based on stereotypic expectancies rather than actual differences in their talk (Plug et al., 2020). Though GPs distinguish unexplained from explained symptoms to determine management strategies (Olde Hartman, Blankenstein, et al., 2013), labelling patients as MUS could activate negative stereotyping affecting GPs' language production and perception of patient communication. Preconceived ideas about patients with MUS (Barsky & Borus, 1999) pressurize the doctor-patient relationship (Jutel, 2010; Olde Hartman et al., 2009), and may, eventually, hinder patient recovery.

Strengths and weaknesses

This study was the first to combine insights from qualitative linguistic and medical research to quantitatively analyze relevant linguistic markers in primary care consultations. Our selection of theoretically and practically informed linguistic markers allowed an in-depth and systematic comparison of language use relevant to MUS consultations. We propose that theoretical explanation of the lack of observed differences in MUS vs. MES consultations is most likely, but it is important to consider some of the methodological limitations to this quantitative approach of analyzing natural consultations.

First, our codebook described the absence or presence of a wide variety of explicit and observable linguistic markers. We did not distinguish between different types of markers (e.g. "notice" or "feel" as different subjectivity markers), and we excluded more implicit markers (e.g. causal connectives such as "because" as potential subjectivity markers (Sanders et al., 2012)), potentially relevant interactional aspects (e.g. volunteering of symptom descriptions (Schwabe et al., 2008)), or non-verbal behavior such as gestures or paralinguistic features. The present research does not rule out the possibility that other linguistic markers, subtle variations in markers, and non-verbal behaviors may still be relevant for distinguishing (un)explained symptoms in medical consultations. Further examination of other potentially relevant features via manual coding and/or automated natural language processing techniques is therefore required.

Second, we based our sample on a comparison of a set of relatively heterogeneous, diffuse complaints for all kinds of patients attending their GP for the first time, with a routine visit, or a follow-up consultation. We did not match consultations of patients presenting similar complaints with and without specific organic pathology (e.g. inflammatory bowel disease vs. irritable bowel syndrome). Furthermore, it is possible that language use of patients with severe and/or multiple unexplained symptoms may differ from patients with mild MUS, and it remains unclear how previous consultations may affect language use in subsequent GP-patient interactions. While our selection method has face validity and shows that patients with MUS are generally not different from patients with MES, differences in language use may exist for patients with more severe or homogeneous symptoms.

Finally, relevant utterances were selected and analyzed as separate units of analysis. Language use, however, is used in an interactional context where preceding talk of other speakers may affect the design of speakers' turn. We did not code GPs' language use prior to relevant patient utterances, while the possibility exists that doctors' language affects patients' linguistic markers (e.g. when a doctor observes that "there is *some* redness", a patient could respond with an intensity marker such as "well, it's *really* hurting"). We included consultation phase in our additional exploratory analyses as a proxy of how language use evolves during the consultation. Yet, it is possible that patient language use changes after hearing negative test results, receiving a (non-) diagnosis, or as a consultation progresses. Further research should investigate the role of GP language in patient language use, and study how linguistic markers may evolve over the course of a medical consultation.

Practice implications

Patients with MUS are believed to have a specific way of talking about symptoms. Our systematic comparison of various linguistic markers in patients' symptom descriptions showed that language use of patients with MUS was not different from patients with MES. Current ideas about patients with MUS may be based on stigmatized perceptions of how they communicate, rather than actual differences in their talk. Since GPs adjust their language and communication when patients suffer from MUS, they may unconsciously maintain or trigger communication problems during these challenging consultations. For instance, they could invoke that patients with MUS do not feel heard. GPs need to be aware of the stigma that surrounds MUS, and recognize that all patients attending general practice with physical symptoms – both MUS and MES – are in need of medical attention for a problem that should be taken seriously.


8

Chapter 8

The relationship between GP and patient language use

Stortenbeker, I, olde Hartman, T., Stommel, W., van Dulmen, S. & Das, E. (2022). Exploring the relationship between language use of general practitioners and patients: The case of medically unexplained vs. explained symptoms.

Manuscript in preparation.

ABSTRACT

Objective

General practitioners (GPs) but not patients systematically vary their language use during consultations about medically unexplained symptoms (MUS) versus medically explained symptoms (MES). This pilot study aims to explore the relationship between specific linguistic markers used by GPs and patients.

Methods

Observational study combining two annotated datasets of linguistic markers in GP and patient utterances in 82 consultations (41 MUS, 41 MES). We calculated relative frequency scores of GP linguistic markers (e.g. negations [“not”] or diminishers [“a little”]), and included them as predictor variables in linear regression models with relative frequencies of various relevant patient markers (e.g. intensifiers [“really”] or subjectivity markers [“I believe]) as outcome variables.

Results

We identified 2590 relevant GP utterances and 2752 relevant patient utterances. We did not observe a systematic relationship between language expressed by GPs and patients, which was similar for patients with MUS or MES.

Conclusion

No overall systematic relationship between GP and patient language can be observed in a selection of linguistic markers. The use of specific linguistic markers by patients does not depend on those used by GPs, e.g. GPs’ diminishers (“*somewhat* painful”) does not generally relate to patients’ intensifiers (“*really* awful”) at the consultation level.

INTRODUCTION

General practitioners (GPs) often adjust their communication when patients present symptoms for which no detectable underlying diseases can be found, i.e. medically unexplained symptoms (MUS). Compared to consultations about explicable illnesses (i.e. medically explained symptoms; MES), GPs perform fewer symptom explorations, are more cautious to discuss psychosomatic issues (Epstein et al., 2006; Kromme et al., 2018), and use less positive wordings and more uncertainty markers (Stortenbeker et al., 2018, 2019). Remarkably, though patients with MUS are believed to have a specific way of presenting symptoms (Houwen et al., 2020), this assumption is not supported by robust quantitative evidence (Stortenbeker et al., 2022). GPs thus vary their language and communication during MUS versus MES consultations, while patients do not.

Language use, however, is co-constructed between speakers during interactions. GP talk affects patient utterances and vice versa (del Piccolo et al., 2007; Drew, 2012). Quantitative coding protocols aimed at a sequential analysis of communication patterns have the power to systematically assess the direct relationship between GP and patient utterances (Eide et al., 2004; e.g. Salmon et al., 2006; Zimmermann et al., 2011), but analyses are restricted to predetermined, often adjacent turns (Connor et al., 2009). Though language used by GPs in one turn can directly impact patient utterances in the next turn (Heritage et al., 2007), a relation between GP and patient language use may exist beyond adjacently positioned turns. For instance, when GPs express negations to describe the absence of specific symptoms ("I feel *no* abnormalities") (Heritage & Stivers, 1999), patients may generally use more intensifiers to legitimize their visit ("it *really* hurts").

Previous quantitative studies found evidence for differences in GP language use during MUS versus MES consultations (Stortenbeker et al., 2018, 2019, 2022). Distinguishable linguistic markers used by GPs are 1) negations, which can make patients feel as if nothing is wrong (Salmon et al., 1999), 2) intensifiers, which could be more persuasive in validating symptoms (Burgers & de Graaf, 2013; Liebrecht, 2015; Liebrecht et al., 2019), and 3) diminishers and 4) uncertainty markers, which may relate to patients' resistance (Monzoni et al., 2011b). Since no differences were found in comparable markers used by patients (Stortenbeker et al., 2022), it is relevant to study whether and how GP language relates to patient language use. This study aims to explore how linguistic markers of patients relate to the four GP markers that could affect patient communication or outcomes[1].

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[1] The selection of linguistic markers is based on previous work (Stortenbeker, 2016; Stortenbeker et al., 2018, 2019, 2022).

METHODS

Design

This corpus analysis combined two separately annotated databases of naturalistic GP (Stortenbeker et al., 2018, 2019) and patient (Stortenbeker et al., 2022) language use for secondary analyses. The current analyses add to these previous studies by assessing the systematic relationship between GP and patient language, rather than evaluating them separately.

Participants and procedure

Consultations of twenty GPs were recorded (see Houwen et al., 2017). From the 393 participating patients, 18 GPs indicated that 43 patients suffered from MUS. Transcripts of 41 video-recorded consultations were compared with 41 consultations of patients presenting MES. Sample characteristics are described elsewhere (Stortenbeker et al., 2018).

Coding procedure

Transcripts were coded separately for GPs and patients in a two-step approach. First, relevant utterances related to patients' physical or mental states were identified[2]. The unit of analysis was a turn constructional unit, i.e. a possibly complete clause. Eighteen consultations were double-coded to assess inter-coder reliability with Cohen's Kappa (GPs κ = .62, patients κ = .72). Second, selected utterances were coded for various linguistic markers, see Table 1.

Table 1. Linguistic markers, examples and inter-coder reliability

Marker	**GPs**		**Patients**	
	Example	κ	**Example**	κ
Negation	"You should not underestimate it"	.94	"It is not going well"	.95
Language intensity		.71		.66
Intensifier	"You're a lot better now"		"It is starting to itch really badly now"	
Diminisher	"I can see just a small spot"		"I'm finding it quite hard"	
Uncertainty	"I think this won't be good for you"	.77	N/A	
1st person subject	N/A		"I was panicking" vs. "The panic is bad"	.62
Subjectivity	N/A		"I feel relaxed now"	.90
Abstraction	N/A		"I am panting" vs. "I have a tight throat"	.73

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[2] Relevant GP utterances included evaluative statements related to treatment recommendations, e.g. "exercising is good for you".

Combining two datasets

Two coding protocols that separately assessed language use of GPs and patients were combined for the purpose of the current study. Similar to automated linguistic coding systems (Pennebaker et al., 2015), we calculated relative frequency scores for each linguistic marker of GPs and patients as follows: linguistic marker present in included utterance / total number included utterances x 100. We used relative frequency scores for three main reasons. First, findings of single consultations are aggregated because the coding systems were developed for an aggregated analysis of GP and patient language use that corrects for individual differences. Fine-grained analyses within single consultations do not suit the coding system's purpose and would not produce reliable results. Second, the current coding system has the power to explore linguistic patterns that go beyond lags, and are invisible 'to the naked eye' (Connor et al., 2009). Third, since we aimed to assess the relationship between linguistic markers within consultations, we did not compare absolute frequency scores. Relative frequency scores of linguistic markers per consultation thus allow for an aggregated analysis of overall linguistic patterns between different GPs and patients.

Statistical analysis

We used linear regression models with relative frequency scores of patients' intensifiers, diminishers and negations per consultation as outcome variables. We tested whether intercepts varied across GPs (18 GPs) or recording date (26 days), and we created a basic statistical model with scores of GP markers (intensifiers, diminishers, negations, uncertainty markers) as predictors. We then added the interaction terms between GP markers and patients' MUS or MES, and potentially relevant confounders in a step-wise approach. Predictors that significantly improved the model fit were retained in the final model[3]. Relevant confounders – patient and GP age and sex, patient education level, first or repeated visit, number of relevant GP utterances – were pre-selected based on a significant association with the outcome variable. Results were analysed using R (see doi: 10.34973/c589-yr79).

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[3] The fit of models including the interaction term was compared to a basic model that included patients' MUS and MES to prevent overfitting of the interaction term.

RESULTS

We identified 2590 relevant GP utterances and 2752 relevant patient utterances. Frequency scores of linguistic markers are provided in Table 2 and the final statistical models are displayed in Table 3. Two consultations with one relevant patient utterance were excluded from analysis, since these extreme but theoretically irrelevant scores violated the models' assumptions.

Table 2. Absolute and relative frequencies of GP (*n* = 2590) and patient (*n* = 2752) linguistic markers

	MUS (*n* = 3245)		**MES (*n* = 2097)**		**Total (*N* = 5342)**	
	n	***M (SD)***	***n***	***M (SD)***	***n***	***M(SD)***
Patient linguistic markers	*1761*		*991*		*2752*	
Negations	338	19.6 (8.3)	198	18.9 (11.0)	536	19.3 (9.7)
Intensifiers	703	39.8 (13.1)	351	31.3 (15.7)	1054	35.6 (15.0)
Diminishers	202	11.4 (7.5)	172	17.8 (11.0)	374	14.6 (9.9)
1st person subject	716	40.4 (12.0)	247	36.6 (17.1)	1063	38.5 (14.8)
Subjectivity	224	12.8 (7.4)	125	13.3 (10.0)	349	13.0 (8.4)
Abstraction	1064	59.4 (9.9)	599	57.0 (19.7)	1663	58.2 (15.5)
GP linguistic markers	*1493*		*1111*		*2604*	
Negations	377	25.7 (11.8)	248	23.0 (12.6)	625	24.3 (12.2)
Intensifiers	313	21.7 (10.6)	274	22.8 (14.2)	587	22.2 (12.5)
Diminishers	309	20.6 (10.4)	216	18.3 (10.9)	525	19.5 (10.6)
Uncertainty markers	439	31.1 (10.9)	295	28.0 (11.8)	734	29.6 (11.4)

Table 3. Linear regression with patient linguistic markers as outcome variables

	Negations		**Intensifiers**		**Diminishers**	
Adjusted R^2	**.05**		**.06**		**.09**	
	b *(SE)*	**95% CI**	**b *(SE)***	**95% CI**	**b *(SE)***	**95% CI**
GP markers						
Negations	.06 (.12)	-.19 – .30	.16 (.12)	-.07 – .30	.00 (.12)	-.23 – .24
Intensifiers	-.09 (.12)	-.33 – .16	-.00 (.12)	-.25 – .24	.14 (.12)	-.11 – .38
Diminishers	-.06 (.11)	-.29 – .16	-.14 (.13)	-.36 – .09	.12 (11)	-.10 – .35
Uncertainty markers	0.16 (.11)	-.07 – .38	.06 (.12)	-.17 – .28	0.02 (.11)	-.20 – .25
Relevant confounders						
Female vs. male patient	.31 (.11)**	-.53 – -.08	.20 (.11)	-.02 – .42		
Relevant GP utterances			.23 (.12)*	.00 – .46	-.28 (.11)*	-.51 – -.05
Female vs. male GP					.19 (.11)	-.04 – .41
	First person subject[i]		**Subjectivity markers**		**Abstract language**	
Adjusted R^2	**.33**[ii]		**-.04**		**.00**	
	b *(SE)*	**95% CI**	**b *(SE)***	**95% CI**	**b *(SE)***	**95% CI**
GP markers						
Negations	-.03 (.11)	-.22 – .18	.01 (.13)	-.24 – .26	.01 (.12)	-.25 – .24
Intensifiers	.16 (.09)	-.07 – .33	-.03 (.13)	-.29 – .22	.20 (.13)	-.05 – .45
Diminishers	-.06 (.10)	-.27 – .11	-.00 (.12)	-.23 – .23	.08 (.11)	-.15 – .30
Uncertainty markers	.11 (.11)	-.10 – .28	.11 (.12)	-.12 – .34	-.12 (.11)	-.35 – .11
MUS or MES	.16 (.09)[†]	-.02 – .34				
GP Negations * MUS or MES	-.25 (.09)**	-.44 – -.08				
Relevant confounders						
GP age	.43 (.11)**	.22 – .60				
Female vs. male GP	-.20 (.11)**	-.41 – -.04				

[†] < .10 * *p* < .05. ** *p* < .01. *** *p* <.001

[i] Random intercepts model with GP as random factor, *variance* = .03, *sd* = .18.

[ii] Marginal R^2

We observed no main effect of GPs' language use (negations, intensifiers, diminishers, uncertainty markers) on patients' linguistic markers (all *p*s >.107). One significant interaction was found between GPs' negations and patients MUS or MES in their use of grammatical subject (β= -.25, *SE* = .09, 95% CI -.44;-.08). Stratified analyses suggest that GPs' negations predict less first person ("I") vs. third person ("My body") grammatical subject for patients with MUS (β = -.41, *SE* = .16, -.71; -.07), but not MES (β = .22, *SE* = .13, 95% CI -.02;-.48). No other interaction term contributed to the model fit for the remaining patient linguistic markers. Relevant confounders are reported in Table 3.

CONCLUSION AND DISCUSSION

Since we previously found quantitative differences in language used by GPs but not patients during MUS and MES consultations (Stortenbeker et al., 2018, 2019, 2022), this follow-up study explored the relation between GP and patient language use during naturally occurring consultations. We quantified and aggregated the use of various linguistic markers to explore systematic patterns between GP and patient language use. On the basis of the coded linguistic markers under study, we could not detect an overall systematic relationship between GP and patient language use – at least not on an aggregated level. Rather, previous analyses suggest that patients' language is mostly predicted by the content of their talk (e.g. describing biomedical or psychosocial complaints) (Stortenbeker et al., 2022). Out of 24 potential interactions, only first versus third person pronouns were predicted by the interaction GPs' negations and patients' MUS or MES. This finding could be a starting point for future studies examining patient language.

Though our approach to analysing language use has several disadvantages (e.g. limited to comparing scores per consultation, unable to assess how language use progresses through the course of an interaction, no insight into the local organisation of GP and patient language use), we believe that our method complements previous observational research of clinical communication in two ways. First, while sequential coding systems analyse pre-determined serial positions (usually adjacent turns) (Eide et al., 2004; Salmon et al., 2006; Zimmermann et al., 2011), the current analysis explored how GP language relates to patient language use on a more global level. Second, dictionary-based automated linguistic analysis systems are limited to a set of selected words that are not adapted to the medical setting (Ellington et al., 2011; Hagiwara et al., 2017; Sonnenschein et al., 2018). The current manual coding system enabled a more fine-grained detection of linguistic markers in relevant utterances.

We propose three methodological advances to further understand language use in consultations. First, while a high number of utterances were manually coded, the language use scores per consultation lowered the statistical power for the analyses of the current study. Future research is needed to further assess the relationship between GP and patient language use in larger corpora. Second, the relationship between GP and patient language use may differ during various consultation phases or depend on the actions performed, e.g. patients may increase their use of intensifiers when GPs normalize symptoms without providing an explanation (Dowrick et al., 2004). Future studies should distinguish between various stages of the consultations and/or take into account the content of talk. Third, language use may co-depend on individual differences such as the extent to which patients feel understood by their GP. Further exploration of language use in single dyads is recommended. Patients with MUS may not talk differently from patients with MES in the context of language variations in GPs, but future research should further examine the relation between GP and patient language.

PRACTICE IMPLICATIONS

Previous research observed no systematic differences in specific language used by patients with MUS or MES. This study adds that the use of linguistic markers by patients does not relate to those used by GPs on an aggregated level, independent of whether patients suffer from MUS or MES.


9

Chapter 9

General discussion

This thesis assessed language and interaction in naturally occurring clinical interactions about medically unexplained (versus explained) symptoms to uncover communication patterns and their consequences. Previous research that analysed clinical interactions about medically unexplained symptoms (MUS) mostly focused on the content of communication, i.e. *what* is talked about. Though physicians endorse that the words they use are essential during consultations, few studies examined *how* general practitioners (GPs) and patients with MUS communicate. The current thesis aimed to fill this gap. Language use in natural GP-patient interactions about MUS was analysed from an interdisciplinary perspective, combining insights from medical research and daily clinical practice with knowledge and methods from linguistics and persuasive communication.

This final chapter draws up the balance. The main conclusions of this thesis are presented briefly; they lay the foundations of three propositions presented in the 'Theoretical implications' section.[1] Then methodological reflections are provided on the limitations of the present study and suggestions given for future research. The chapter concludes with implications for daily practice.

OVERVIEW OF THE MAIN FINDINGS

Two research aims and accompanying methodologies were central to this thesis. The first aim was to examine language use and interactional aspects in consultations about MUS using a qualitative approach, i.e. conversation analysis (CA). Earlier qualitative studies analysed linguistic and interactional elements during consultations about MUS, but no research had yet been done to systematically synthesize the results and arrive at new interpretations. Therefore, a systematic review served as the starting point of this thesis to synthesize previous conversation and discourse analytic research (**chapter 2**). The review distinguished three dimensions that characterize consultations about MUS: 1) patients are in pursuit of symptom recognition; 2) differences exist between physicians and patients in terms of their ideas and knowledge domains; and 3) persuasion and negotiation take place to reach agreement. This review demonstrated how specific linguistic and interactional aspects reflect communicative challenges in consultations about MUS.

Previous studies showed that patients with MUS often resist psychosocial explanations, but it remained unclear how the design of these explanations could affect patient responses. In this thesis, a conversation analytic study described how GPs raise psychosocial ascriptions with patients with MUS (**chapter 3**). GPs either ask patients for potential psychosocial causes or

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[1] See the general summary for a complete overview of the methods, results and conclusions of the different chapters.

explain this relationship to them. The design of GPs' psychosocial ascriptions elicited different responses in patients: questions strongly established a relevance for patients' responses accepting or rejecting potential psychosocial causes, whereas explanations did not. By questioning patients on whether their symptoms could have psychosocial causes, GPs can collaboratively construct symptom explanations with patients. The first part of this thesis gave a detailed understanding of relevant interactional patterns and their consequences at a local level, and showed that language use variations affect the nature of patient responses.

The second part aimed to compare how language use differs in consultations about MUS compared with medically explained symptoms (MES). Existing codebooks to analyse clinical interactions focused on content features of communication, but no coding schemes existed to quantify language use during clinical interactions. The *Coding Linguistic Elements in Clinical Interactions* (CLECI) protocol was developed to analyse language use in addition to communication content during clinical interactions (**chapter 4**).

This coding scheme was then used to compare relevant linguistic markers of GPs in consultations about MUS versus MES and examine their relation to patient anxiety. Previous studies demonstrated differences in the content of GPs' communication during consultations about MUS versus MES, but a quantitative linguistic analysis was lacking entirely. Findings in this thesis (**chapters 5** and **6**) showed that GPs systematically altered their language use in consultations about MUS (i.e. with less positive communication and more implicit uncertainty), which reflects the complex reality of communicating the MUS diagnosis. GPs' message formulations were associated with patient outcomes; direct negative messages but not implicit uncertainty markers were related to an increase in patient anxiety after the consultation. The quantification thus allowed detection of: 1) systematic language use differences by GPs during consultations about MUS versus MES; and 2) the relationship with post-consultation outcomes.

The coding scheme was then used to examine patients' language, comparing relevant linguistic markers of patients in consultations about MUS versus MES and their relation to the GP's language. Relevant communication elements that were thought to be typical for patients with MUS were translated into observable linguistic markers. Findings showed systematic variations in language use for message content, but no systematic differences could be observed in language used by patients with MUS versus MES (**chapter 7**). Patients may not differ in their language in consultations about MUS versus MES, but they could vary their language depending on how their GP talks. Therefore, it was explored how patient language use related to GP language use on an aggregated level. No systematic relationship was observed between GP and patient language use (**chapter 8**). These findings suggest that claims about patient communication may be rooted in ideas of how patients communicate rather than actual differences in their talk.

The second part of this thesis demonstrated that variations in language use can relate to patient outcomes and reflect or invalidate stereotypical expectations of communication.

THEORETICAL IMPLICATIONS

How do the findings of this thesis add to previous research? Three propositions arise from the findings of this thesis. Below, it is argued that the observed linguistic elements are not specific for MUS, that treating MUS as a distinct category could induce stereotyping, and that non-dualistic language is needed to tackle multifactorial problems.

Proposition I: Observed linguistic elements are not specific for MUS

This thesis started with the question as to which linguistic and interactional aspects characterize consultations about MUS. Though the observed aspects are common in clinical interactions about MUS, these elements may not be specific to MUS. Below, it is argued that various other clinical interactions also involve three key qualitative observations made in this thesis: 1) patients are in pursuit of symptom recognition; 2) cautious diagnosis delivery; and 3) persuasion. Next, it is evaluated whether differentiating MUS from MES is relevant at all from the perspective of patients' communication and needs.

First, the finding that symptom recognition and validation is relevant for patients is often described in the MUS literature (e.g. Groenevelt, 2021; Johansen & Risor, 2017; Mik-Meyer & Obling, 2012; L. K. Morton et al., 2016). Patients' interactional work to pursue recognition serves to demonstrate that they present a medical problem that is "doctorable": a problem that is worthy of attention by a medical professional (Heritage & Robinson, 2006). All patients attending the physician's office demonstrate their motivation to seek medical care with various interactional resources, e.g. by referring to third parties, by demonstrating that they did not rush to the physician's office, or simply by coughing (Bailey, 2008; Heritage, 2009; Stivers, 2002). However, the doctorability of complaints does not appear unique to MUS. It is made relevant during consultations about MUS but also in various other medical consultations, e.g. pre-operative assessments, (acute) GP consultations, or telephone triage (Barnes, 2019; Benwell & Rhys, 2018; Erkelens et al., 2021; Nielsen, 2018).

Second, the observation that the diagnosis is treated with delicacy is not restricted to MUS consultations either. Delicate interactional practices are also seen in other consultations that warrant caution. Physicians usually refer to diagnostic evidence when a diagnosis is uncertain or disputed (Gill & Maynard, 1995; Maynard, 2004; Peräkylä, 1998), and they often use vague or general terminology in clinical consultations about sexual health (Kelder et al., 2021). Similarities also exist between diagnostic news delivery of MUS and the breaking of bad news. Good medical news is usually delivered unproblematically with relatively less complex turn designs, whereas the bad news delivery sequence is treated with more caution (Maynard & Frankel, 2006). I argue that delicate practices appear to be used to communicate a potentially unfavourable diagnosis, rather than such communication would be “typical” for MUS.

Third, persuasion and negotiation reflects the careful balancing act required to reach agreement between physicians and patients, which also applies to various other clinical interactions (e.g. Land et al., 2017; Landmark et al., 2015; Stivers, 2006). Co-constructed explanations with words used by patients promote agreement and validate the patient’s experience (McCabe, 2021; Undeland & Malterud, 2008). By asking questions prior to giving explanations or advice, physicians tailor their advice to the needs of patients and acknowledge them as equal partners (Kelder et al., 2021). Some forms of persuasion that are merely aimed at convincing patients do not contribute to a good doctor-patient relationship (Mann, 2022), but subtle persuasion and tailoring of treatment recommendations respect the patient’s view, and contribute to patient-centred care (Labrie & Schulz, 2014).

Together, the quantitative findings of this thesis support the proposition that linguistic elements are not specific for consultations about MUS. Relevant linguistic markers did not differentiate patients with MUS from patients with MES. These combined observations raise the question as to whether communication about MUS should be viewed differently from communication about MES. After all, patients with MUS use similar language (chapter 7), they communicate in similar ways and they have similar expectations about the communication of GPs (Houwen, Moorthaemer, et al., 2019; Salmon et al., 2005). Patients with MUS, just like other patients, have a need for person-centred care (Houwen, 2022). They benefit from a warm and empathic relationship, and wish to be taken seriously and to receive a diagnosis (Houwen et al., 2017; Olde Hartman, Woutersen-Koch, et al., 2013; Salmon et al., 2005). These aspects of communication are not restricted to patients who suffer from MUS. Rather, they are relevant for *any* patient visiting their GP (Mazzi et al., 2018).

Proposition II: Treating MUS as a distinct category induces stereotyping

The quantification of naturally occurring language use allowed patterns of language use to be detected that are invisible at first sight and demonstrated which markers, if any, are different for MUS compared with MES. This type of analysis showed that, in spite of prevailing beliefs (Asbring & Narvanen, 2003; Barsky & Borus, 1999; Houwen et al., 2020; B. Jones & Williams, 2020), patients with MUS do not talk differently from patients with MES.[2] On the contrary, GPs systematically alter the content of their communication (e.g. Epstein et al., 2006; Ring et al., 2005) and language use (chapters 5 and 6) when they talk to patients with MUS versus MES. Why do GPs alter their language and communication during these consultations? And why do they (incorrectly) expect patients to talk differently as well? Existing stereotypes about patients with MUS may have affected perceptions of patient communication, which might have led to adjustments in GPs' communication.

Stereotypes about patients with MUS might contribute to a discrepancy between the perception of communication and actual communication patterns. Stereotypes (i.e. overgeneralized, negative and likely incorrect beliefs) exist surrounding MUS (Dancey et al., 2002; Froehlich et al., 2021). For instance, patients with MUS are thought to experience less pain than patients with MES and to amplify their complaints (Barsky & Borus, 1999; de Ruddere et al., 2014; B. Jones & Williams, 2020). Such stereotypes can affect perceptions of communication (e.g. Ashton-James et al., 2019), because language use consistent with existing stereotypes is generally perceived more salient (Lindvall-Östling et al., 2020; Oakhill et al., 2005). Language use that fits the MUS stereotype may be recognized as "typical" for these patients, whereas similar language does not reinforce specific stereotypes for other patients. In other words, patients with MUS who stress the severity of complaints are perhaps more easily perceived as malingers (Swanson et al., 2010) whereas patients with MES using similar language are not categorized as such. The results of this thesis tentatively suggest that existing stereotypes about MUS elicit biased perceptions of language use that do not correspond with patients' actual patterns of language use.

Stereotypical ideas about patients with MUS may, however, be reflected in the language use of GPs. Linguistic research shows that expectations are communicated via language use, e.g. behaviour inconsistent with stereotypes tends to be described in concrete terms, with negations or irony (Beukeboom & Burgers, 2019). It is possible that the observed differences in language use by GPs during MUS versus MES consultations reflect their stereotypical expectations about patients with MUS (e.g. GPs vary their positive and negative messages for MES but not MUS). This is potentially problematic because individuals are able to infer stereotypes that are implicitly communicated (Beukeboom & Burgers, 2020). Patients with MUS may thus infer from GPs' language use that they are perceived as difficult or exaggerating. The experience and activation of stereotyping has a negative impact on health outcomes (Dancey et al., 2002; Jacobs et

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[2] Differences in language use exist between patients with unexplained neurological problems (i.e. non-epileptic seizures or functional dementia) compared to patients with epilepsy or dementia (Ekberg & Reuber, 2015; Elsey et al., 2015; D. Jones et al., 2016; Reuber et al., 2009; Schwabe et al., 2007); these differences can differentiate reliably between unexplained and explained neurological symptoms (Reuber et al., 2009). As argued in chapter 7, it is likely that the observed differences are specific to the neurology setting. As an example, patients with epilepsy provide a contextualized description of their seizures, while patients with non-epileptic seizures use negations because they do not have any specific memory of the seizures. Differences in cognitive functioning during seizure experiences seem to underlie the observed interactional and linguistic differences in patients' symptom descriptions.

al., 2017; Ko et al., 2022; McManimen et al., 2018). This means that, in addition to the direct relationship between GP language and patient outcomes observed in this thesis, language use variations may also indirectly affect health outcomes via stereotyping. Since the current thesis did not explicitly assess the relationship between language use and stereotyping, further research is needed to study how language use could relate to stereotyping about MUS.

The quantification of language use during consultations about MUS and MES tentatively explored implicit stereotypes that could exist about patients. Patients with MUS often wish to receive a descriptive label such as “tension-type headache” or “irritable bowels”, which help validate symptom experiences as they transform subjective experiences into diseases (Burton et al., 2015; Hyden & Sachs, 1998). The potential downside to the MUS-MES distinction is that labelling symptoms as MUS could automatically contribute to physicians’ perception that patients with MUS are a separate entity (McGarthy et al., 1995). This perceived entativity could then result in stereotype formation (Beukeboom & Burgers, 2019). Labelling symptoms as MUS may trigger a self-fulfilling prophecy: recognizing MUS as a category inherently creates the reality that patients with MUS behave as a distinct category, which thereupon leads to stereotype formation and activation. Hence, there is a delicate balance between labelling MUS, the validation some specific descriptive labels could provide, and the self-fulfilling prophecy that it may activate for physicians.[3]

Proposition III: We need non-dualistic language for multifactorial problems

The aetiology of MUS is multifactorial and calls for a multifaceted treatment approach (Fink et al., 2015). A multifaceted approach deviates from traditional biomedical models of medicine that mainly focus on pathophysiology. Such traditional biological approaches to illness have the underlying assumption that the mind and body have separate entities, which is problematic because symptoms are consequently perceived as either “real” or “psychological” (Deary, 2005). This does not align with current knowledge about the integrated nature of the mind and body (White et al., 2012). The biopsychosocial model (Engel, 1977), the current dominant model for the treatment of patients, integrates patients’ biological, psychological and social experiences and provides a more holistic approach to the diagnosis and treatment of patients compared to the biomedical model. Acknowledgement of the intertwined relationship between biological, psychological and socio-environmental factors may enhance the care of patients with MUS and improve their symptom experiences. Yet, GPs have difficulties using the model in patients with MUS (Burton, 2014).

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[3] A change of label for undifferentiated symptom disorders does not necessarily solve this issue. Though denotations (what information a term depicts) differ for various labels, e.g. MUS or persistent somatic symptoms, the connotations (associations with a term) and accompanying stereotypes are likely to become similar for different labels. This is because the different labels describe a similar category of symptoms that have a disputed legitimacy and are often misunderstood. Underlying beliefs and associations related to the phenomenon will eventually accompany a newly introduced label, independent of its different semantic content.

Challenges for GPs to apply the biopsychosocial model may be rooted in the boundaries of the dualistic basis of our language. The presupposition that the body and mind are distinct entities has been the dominant view in Western medicine since the foundation of Cartesian dualism in the 17th century. Consequently, language use has accommodated to a dualistic framework. A pervasive number of words exist to describe physical aspects or mental experiences, e.g. mental versus physical, body versus mind, or biological versus psychological (Graham, 1967). Vocabulary to describe the integration of the two, however, is rare. Even though the biopsychosocial model attempts to integrate various factors into the experience of disease, the lack of non-dualistic language is reflected in the label of the model itself: it consists of a conjunction of three separate entities – bio(medical), psycho(logical) and social – rather than an integrated whole.

According to linguistic relativity theory, language use influences thought processes (Gumperz & Levinson, 1991). Existing dualistic language use could thus maintain our dualistic thinking. Non-dualistic language is necessary to overcome the body-mind dichotomy and the corresponding dualistic thinking. The concept of embodiment goes beyond dualism by assuming that the body and cognitions, emotions or perceptions reciprocally influence each other (Koch & Fuchs, 2011). Embodiment assumes that people do not have their bodies but rather, they *are* their bodies (Slatman, 2018),[4] and symptoms are subjective lived experiences independent of their pathology (Toye et al., 2021). Some patients also describe their cognitive symptoms as part of their body, e.g. “the brain is out of function” to describe the sensation of tiredness in their head (Bootsma et al., 2020), or “the worry was very painful” to describe emotions and symptoms within one inseparable category (Bekhuis et al., 2020). The problem with the implementation of a non-dualistic perspective is that such vocabulary and constructs are not yet embedded in our everyday dualistic language, which may limit its application for daily clinical practice. Future work is needed to establish which non-dualistic linguistic constructions are applied in daily practice, and how this could help patients to deal with their complaints.

METHODOLOGICAL REFLECTIONS

This thesis was the first to combine conversation analysis and quantitative content analysis to study language and interaction in GP consultations about MUS. The synergy of research methods allowed a detailed understanding to be gained of when, how and why certain linguistic patterns occur on a local level, while also revealing generalizable patterns of language use that are invisible without such analyses. The selection of relevant linguistic markers was based on

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[4] The idea that people have their bodies is currently reflected in patients’ descriptions of their physical and mental states: third-person references are more frequent for the description of patients’ physical states (“My intestines are bothering me”), whereas first-person subjects are more common when they describe their mental states (“I don’t feel well”), see chapter 7.

previous communication research, interview-based studies, experiences from clinical practice, and observations of the data. Relevant communication elements were translated into observable objective linguistic markers. The combination of qualitative and quantitative research methods and deductive and inductive assessment of relevant markers gave insights into patterns of language use that are relevant to theory and resonate within daily practice.

The thesis research was performed together with an interdisciplinary team of researchers in the fields of persuasive communication, physician-patient interactions, conversation analysis and general practice, as well as clinicians working in daily clinical practice. Integration of the various disciplines allowed a reliable analysis of linguistic features embedded in theory and daily practice. Interdisciplinary collaborations are essential to better understand communication patterns and consequences during clinical consultations (Henry et al., 2020). The collaboration was based on mutual respect and a true interest in each other's expertise, (implicit) rules and traditions. Each analysis started with unbiased observations of what was going on during the consultations, without assessment of what constitutes "good" or "bad" communication. The open and interdisciplinary approach to the analysis of communication allowed previously undiscovered patterns of language use to be revealed.

There are some limitations to the current study. Below, I discuss limitations of the data and analytical approach, and I provide suggestions for future research. Two main issues related to the data should be considered: there is a potential sampling bias in the selection of patients and GPs, and the patient sample is very diverse. First, the inclusion of patients as MUS or MES depended on diagnostic assessments of the participating GPs. While this method has face validity as it resembles daily clinical practice, sampling bias could have occurred. Some GPs may have interpreted the assessment criteria differently to diagnose patients as MUS or MES. One patient could have been labelled as MUS by one GP but not another. This is mainly problematic for the analysis of patient language use. It is less of a problem for the investigation of GP language use, since this was aimed at analysing whether GPs alter their language use when they think they are dealing with MUS. A sampling bias may also have occurred in the GPs who participated in the study. They were approached via the network of the main researcher. GPs were informed that the study aimed to video-record consultations and assess communication in consultations where patients presented with MUS. GPs who did not feel comfortable being recorded or who had less affinity with the issue of MUS were more likely to refuse participation. This may have resulted in a sample of GPs who feel confident in treating patients with MUS.

Second, the comparison of naturalistic GP consultations was performed for a diverse sample with patients who suffered from symptoms that ranged from mild to severely limiting, during first visits or routine visits, and with GP-patient relationships of varying lengths. The current study demonstrated that GPs, but not patients, varied their language use in a diverse sample of Dutch GP patients. Though this approach does justice to the naturalistic setting of the daily GP practice, differences in patients' language use may exist between patients who suffer from specific explained and unexplained symptoms, e.g. irritable bowel syndrome versus inflammatory bowel disease or fibromyalgia versus rheumatoid arthritis. Future studies should compare natural language use for patients with comparable symptoms, of comparable severity or in comparable visits (e.g. first visits only) to further investigate the extent to which GPs and patients systematically vary their language use.

Limitations related to the analyses in this thesis also raise questions for further research. The qualitative section of this thesis analysed how GPs raised psychosocial ascriptions with patients with MUS, and demonstrated that the design of these ascriptions affects the extent of patient responses. Some patients with MUS also initiated psychosocial ascriptions, but these were not included in the current analyses. Interesting questions for follow-up research are: When and how do patients initiate these ascriptions, and how do GPs respond to these ascriptions? What activities precede patients' initiatives? Some patients resisted psychosocial ascriptions proposed by the GP and others aligned with the GP, but it remains unclear what circumstances lead to patients' accepting or rejecting responses. Furthermore, the qualitative analyses only assessed consultations about MUS. Future studies could expand the current analyses to consultations where patients were judged as having indefinite MUS or MES. Can differences be observed in psychosocial ascriptions during consultations with patients who had indefinite MUS or MES? These questions remain unanswered in the current thesis and may guide future research.

The quantitative content analyses were guided by a newly developed codebook. The codebook was restricted to explicit verbal linguistic elements that could be coded with little interpretation. Variations within the markers, implicit markers or paralinguistic features were not distinguished. To illustrate, intensifiers were operationalized as language elements that strengthened the meaning of a comparable unmarked utterance. What remains unclear is whether patients with MUS versus MES use intensifiers with differing strength, e.g. "it hurts *a lot*" versus "it hurts *terribly*" (Bolinger, 1972), or with differing paralinguistic features such as loudness or emphasis. Though assessment of variations within specific linguistic markers risks weaken coding reliability, future studies could further assess specific linguistic elements that may be relevant to MUS on a more granular level (see also chapter 4 for an evaluation of this trade-off in reliability versus specificity).

Furthermore, the selection of relevant GP and patient markers was based on previous medical communication research, linguistics, persuasive communication and open analysis of the current transcripts. Manual coding enabled the selection of specific relevant utterances and interpretation of linguistic markers within their communicative content. The current analyses are not exhaustive. Automated analysis of language use in GP consultations about MUS may allow an exploration of other potentially relevant linguistic markers that have not yet been established through human observations (see Koleck et al., 2019; J. Park et al., 2019; Pevy et al., 2021). What are relevant topics of conversation? Is it possible to detect relevant morphologic, syntactic or semantic features of GP and patient talk during consultations about MUS (versus MES)? Do machine learning models allow a reliable classification of GP and/or patient talk? Future studies could perform automatic linguistic analysis and use machine learning to uncover other patterns of language use during these clinical interactions.

Relevant markers in GP and patient language use were assessed separately and allowed patterns of language use to be detected beyond single turns or conversations. Chapter 8 explored the overall relationship between GP and patient language use by using scores of linguistic markers per consultation. Questions that remain unanswered are: How do GPs' linguistic markers affect patient markers in later turns? Does language use evolve during the course of the interaction? If so, how? Are there any influential utterances that affect the language used in the remainder of the consultation? Future studies aimed at providing a more contextualized analysis of language use should assess relevant linguistic markers within their sequential position. CA-based coding or quantitative sequential coding may guide these questions (Connor et al., 2009; Stivers, 2015).

Finally, this thesis explored the relationship between GP language and patient outcomes by relating scores of language use to patients' post-consultation anxiety. Though this method shows how natural language use variations relate to real patient outcomes, no causal relationship between language use and patient outcomes could be established. Experimental studies should further investigate the relationship between language use variations and various relevant patient outcomes such as outcome state anxiety, expectancies, pain levels or satisfaction with the consultation (see for instance Linskens et al., 2022; van Vliet et al., 2012; Verheul et al., 2010).

PRACTICE IMPLICATIONS

Below, six implications are highlighted that aim to give insight into the occurrence and effects of subtle language use variations. These implications are not a set of strict rules regarding words that should or should not be used in consultations about MUS. Reducing communication during consultations to qualifications of good or bad language use is too simplistic and does not do justice to the complex reality of the clinical interaction. Rather, these implications aim to give guidance on how subtle language use variations may benefit the GP-patient interaction when dealing with MUS.

1) Language use is pivotal during consultations about MUS. Varying forms of communication affect the extent of patient responses. When GPs raise potential psychosocial ascriptions to patients using questions, they position patients as experts and give them room to respond.

When GPs explain this relationship to patients, they maintain their expert position and do not make the patient's response relevant. The question format invites patients to participate in the diagnostic process.

2) The unexplained nature of symptoms threatens the legitimacy of the patient's visit. Patients perform additional interactional work to demonstrate that their symptoms are 'doctorable'. GPs can legitimize patients' symptom experiences by explicitly validating the patient's decision to seek medical care (e.g. "It's good that you came today").

3) Language use can serve as a medicine. Subtle changes in GPs' wordings can have a significant impact on patient outcomes. Utterances such as "Your symptoms are not improving" induce less anxiety in patients than "Your symptoms are persisting". This does not mean that GPs should communicate in an overly positive way, but GPs need to be aware that language use affects patient outcomes.

4) Medical education and research focus extensively on how to break bad news to patients, but the question of how to break a MUS diagnosis has received less scholarly attention. While some patients experience the MUS diagnosis as a relief because they worry about potentially severe underlying causes, other patients experience it as bad news because uncertainty about the cause and treatment remain. Treating the delivery of a MUS diagnosis as a form of bad news may facilitate the communication between physicians and patients during MUS consultations that are frequently perceived as challenging.

5) Negotiation and persuasion may facilitate agreement between physicians and patients. Subtle communicative actions, such as tailoring explanations and framing, avoid friction and help to establish acceptable explanations within the medical interaction. These actions serve to find common ground, which sometimes appears difficult to achieve.

6) It is often thought that patients with MUS have a typical way of presenting complaints. Expectations about deviant patient communication may be based on stereotypical perceptions rather than actual differences in their talk. All patients attending general practice – with both MUS and MES – present complaints in a way that underlines their wish to be taken seriously.

CONCLUDING REMARKS

This thesis is about *language in medicine,* a world where there is much still to be discovered. The thesis analysed language use in natural consultations about medically unexplained symptoms. Conversation analysis uncovered relevant interactional patterns and their consequences at a local level; e.g. when GPs raise psychosocial ascriptions as questions (versus explanations), they position patients as experts and create room for patient to respond. Quantitative content analyses revealed systematic patterns of language use. GPs systematically alter their language use when patients suffer from medically unexplained symptoms compared with medically explained symptoms, and these differences are associated with patient outcomes. Patients, on the contrary, do not use language differently. The systematic analysis of language use revealed that perceptions of patient communication may be based on stereotypical ideas about patients rather than actual differences in their language use. The interdisciplinary approach to the analysis of language use in GP consultations – combining insights from medical research, linguistics and persuasive communication sciences – provided important insights into naturalistic consultations that are relevant for theory and daily practice.


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S

Summary
Samenvatting

SUMMARY

This thesis assessed language and interaction in naturally occurring consultations about medically unexplained (versus explained) symptoms in order to uncover communication patterns and their consequences. Previous research that analysed clinical interactions about medically unexplained symptoms (MUS) mostly focused on the content of communication, i.e. *what* is talked about. Though physicians agree that the words they use are a key factor during consultations, few studies have examined *how* general practitioners (GPs) and patients with MUS communicate. The current thesis aimed to fill this gap using research from two different perspectives. The first aim was to examine language use and interactional aspects in consultations about MUS using a qualitative approach, namely conversation analysis (CA). The second aim was to compare how language use differs in consultations about MUS compared with consultations about medically explained symptoms (MES). A newly developed quantitative coding protocol was used for this.

Part 1: The role of language and interaction in consultations with patients presenting with MUS

In part 1, CA was used to examine language and interaction in consultations about MUS. CA is a data-driven qualitative approach to analysing naturally occurring interactions. CA studies the actions that are performed during natural interactions, their design and their sequentiality, which allows the interactional patterns to be uncovered that structure social actions. CA allows the examination of specific interactional consequences of language use variations and can reveal interactional difficulties occurring during consultations about MUS.

Chapter 2 serves as a starting point for this thesis with a systematic review of previous observational research analysing language and interaction in clinical consultations about MUS. A systematic search was performed for relevant publications ($n = 18$). Their quality was appraised and the data were synthesized in an iterative process. Three relevant dimensions were distinguished based on the findings. First, symptom recognition is made relevant during clinical consultations about MUS. For instance, patients claim legitimacy for their visit by illustrating the severity of complaints with intensified language such as “excruciating pain” or “very, very sick”. Second, consultations about MUS carry a ‘double trouble’ potential. This means that physicians and patients can have differing pre-existing ideas about the causes of symptoms, and they have competing knowledge domains (i.e. medical expertise versus symptom experiences), as is demonstrated with physicians’ careful symptom explanations using vague or indirect language. Third, negotiation and persuasion take place to co-construct acceptable explanations, e.g. physicians tailor their explanations and they implicitly use framing techniques to explain symptoms with words that align with the patient’s view. This chapter shows that attention to subtle linguistic details can uncover relevant features of clinical interactions. Physicians and patients with MUS manoeuvre carefully through medical consultations to reach agreement.

An example of how GPs manoeuvre carefully during consultations is when they relate psychosocial concerns to patients' MUS. This topic was not addressed in previous CA studies. **Chapter 3** uses CA to study how GPs suggested that psychosocial concerns could explain the complaints, at least partially. GPs used two distinct approaches: they either asked for potential psychosomatic causes, or they explained this relationship to patients. The questions made relevant patient responses and positioned patients as experts. The explanations did not elicit or allow patient responses, and made the GPs' medical expertise superior to the patients' expertise in symptom experiences. In addition, certain preliminary activities appeared to precede psychosocial ascriptions. GPs established the presence of psychosocial concerns, usually as a direct consequence of the presented complaints. In contrast to psychosocial ascriptions, preliminary talk about psychosocial concerns rarely met with resistance from patients. The difference in how GPs and patients treat this "reversed causality" suggests that the process of symptoms leading to psychosocial concerns is generally more likely to be accepted by patients than vice versa. Preliminary activities validate patients' concerns, while they also pave the way for making psychosocial ascriptions later in the consultation.

The results of these studies contribute to the current literature about MUS communication in two important ways. First, though some previous studies were performed to qualitatively analyse linguistic and interactional patterns during consultations about MUS, no research has yet systematically synthesized the results to come to new interpretations. The systematic review provides important insights into consultations about MUS that are novel to the field, e.g. that the conflict in knowledge domains can explain reported feelings of powerlessness. Second, it was previously demonstrated that patients with MUS often resist psychosocial explanations, but it remained unclear how the design of these explanations could affect patient responses. The conversation analytic study shows how the design of GPs' formulations (questions versus explanations) affects patient responses, and demonstrates the importance of how talk about psychosocial concerns is prepared earlier in the consultation.

Part 2: Comparing language use during consultations with patients presenting with MUS versus MES

Whereas part 1 exclusively analyses language use in MUS consultations, the second part of this thesis aims to systematically compare how language use differs between consultations about MUS and MES, using quantitative analysis. Previous quantitative observations focused on variations in message content, e.g. whether patients propose somatic treatment, or how GPs respond to emotional sequences. While subtle language use variations can also affect patient responses and outcomes, no research had yet quantified relevant linguistic elements in GP consultations about MUS. The quantitative analysis of natural language use patterns allowed an examination of systematic differences between consultations about MUS and consultations about MES.

To guide the analytic process of quantitative content analysis, a codebook describing the coding rules and procedure was required. Since existing coding protocols to assess medical interactions described communication content rather than form, a codebook was developed to annotate and analyse linguistic markers in GP consultations. **Chapter 4** describes the development of the *Coding Linguistic Elements in Clinical Interactions* (CLECI – pronounced as "classy") procedure. This chapter provides a step-by-step guide on how to apply the coding system in various medical settings. The guide includes suggestions for possible research questions, how relevant utterances are selected and categorized, and how the coding process takes place. A major strength of the CLECI coding procedure is that inductive (data-driven) and deductive (theory-driven) analytic steps are combined, enabling both theory building and theory testing. The coding system analyses recurrent patterns of language use that are relevant for theory and practice. This thesis used two CLECI codebooks to assess and compare relevant linguistic markers used by GPs (part 2.1) and patients (part 2.2) during consultations about MUS versus MES.

Part 2.1: GPs' language use

The first part of the quantitative analyses aimed to compare GPs' language use during consultations about MUS and MES, and to assess its relation to patient anxiety. Elements of communication that had been previously reported as relevant for GP-patient interactions about MUS were translated into observable linguistic markers. In total, 2590 relevant GP utterances in 82 consultations (41 MUS and 41 MES) were coded and analysed. Two relevant linguistic markers are described. Firstly, GP guidelines advocate the use of positive communication during consultations about MUS, which is thought to affect patient outcomes. Yet positive communication was previously operationalized based on content features (e.g. "good" versus "bad") rather than form variations (e.g. "good" vs. "not good"). **Chapter 5** therefore defined positive communication in terms of language use. GPs' positive and negative messages were selected and coded based on whether they were expressed in a direct or indirect manner using negations. A systematic difference was observed in GPs' formulations of positive and negative messages during consultations where patients presented with MUS compared with MES consultations. During MUS consultations, GPs were more likely to use indirect positive messages ("not bad" rather than "good") and direct negative messages ("bad" rather than "not good"). Put differently, they used less positive language when patients had MUS compared to when they presented with MES. Direct negative messages were related to an increase in patient anxiety after the consultation. This means that although positive communication is recommended, GPs tend to use less positive language during MUS consultations (compared with MES consultations), and this is associated with increased patient anxiety.

Secondly, since MUS has no detectable underlying disease, the physician's message inevitably has an element of uncertainty. Previous research demonstrated that GPs explicitly disclose their uncertainty more often during MUS consultations, but implicit uncertainty expressions (e.g. “probably” and “might”) had not yet been quantitatively assessed. Implicit uncertainty may reflect a GPs’ formulation effort to talk about delicate issues rather than explicitly disclosing a knowledge gap. **Chapter 6** analysed and compared GPs’ implicit uncertainty expressions in consultations about MUS and MES. It was found that GPs use implicit uncertainty expressions more frequently when communicating with patients with MUS versus MES, especially during the diagnostic phase and treatment recommendations. Implicit uncertainty expressions were not associated with patients’ anxiety after the consultation. The use of implicit uncertainty expressions may reflect the complexity of communicating a diagnosis that has no medical explanation.

Part 2.2: Patients’ language use

The second part of the quantitative analyses aimed to compare patients’ language use during GP consultations about MUS and MES, and to assess the relationship with the GP’s language. It is often argued in medical practice and in qualitative studies that patients with MUS communicate differently from patients with MES. In **chapter 7,** relevant communication elements were translated into observable linguistic markers and the chapter assesses whether systematic differences can be observed in language used by patients with MUS and MES. For instance, it assesses whether patients with MUS are more likely to describe what their symptoms do not feel like (i.e. more negations), exaggerate their complaints (i.e. more intensifiers), and present symptoms in a vague manner (i.e. more abstract language). Relevant linguistic markers were analysed and compared in 2752 relevant utterances of patients describing their physical and mental states in 82 consultations (41 MUS and 41 MES). Patients with MUS did not differ in their use of negations, intensifiers, subjectivity markers, grammatical subject or language abstraction compared to patients with MES. The only difference was found for diminishers (patients with MUS used fewer diminishers compared with MES patients), but this difference was not robust in further exploratory analyses that included the consultation phase. Patients systematically varied their language use based on the valence of an utterance (positive or negative) and whether they talked about physical or mental states, but they did not differ in their language use for MUS versus MES. These findings contradict existing ideas about the communication of patients with MUS.

To summarize, while GPs seemed to adjust their language use when communicating with patients with MUS as opposed to MES, patients did not differ in their language use. Yet, as is also shown in chapters 2 and 3 of this thesis, language use is co-constructed between speakers. What patients say affects the talk of GPs and vice versa. To obtain a generalizable, objective view of this co-construction, **chapter 8** explores how patient language use is related to GP language use. Patients may not vary their language based on MUS versus MES, but they might vary their language depending on how their GP talks. The annotated datasets used in chapters 5-7 were aggregated to relate relevant patient linguistic markers to GPs’ scores for negations, diminishers, intensifiers and uncertainty markers. Scores for linguistic markers per consultation were calculated and compared between GPs and patients, and an analysis was performed to determine whether this potential relationship differed for patients with MUS or MES. On this aggregated level, no systematic relationship was observed between GP and patient language use, and this did not differ between patients with MUS and patients with MES.

The results of these chapters add to the previous literature in at least three ways. First, existing codebooks to analyse clinical interactions focused on content features of communication. CLECI is the first coding protocol to analyse language use in addition to communication content. Second, previous studies demonstrated differences in the content of GPs' communication during consultations about MUS versus MES, but a quantitative linguistic analysis was lacking entirely. GPs systematically alter their language use (i.e. with less positive communication and more implicit uncertainty), which reflects the complex reality of communicating the MUS diagnosis. Finally, though previous studies claimed that patients with MUS have a specific way of presenting complaints, the current findings suggest that these claims may be rooted in ideas of how patients communicate rather than actual differences in their talk.

Implications for theory and practice

Finally, in **chapter 9**, I discuss three proposition that arise from the findings of this thesis. First I argue that the observed linguistic elements are not specific for MUS. Rather, I argue, observed aspects of communication are relevant for any patient visiting their GP. Second, I propose that treating MUS as a distinct category induces stereotyping. The MUS label could trigger a self-fulfilling prophecy: labelling patients with MUS creates the reality that they are a separate entity, which thereupon leads to stereotype formation and activation. Third, I posit that we need non-dualistic language for multifactorial problems such as MUS. Existing language is rather dualistic (e.g. body-mind, physical-mental), and we need everyday embodied language use to overcome the body-mind dichotomy. Chapter 9 includes recommendations for future research, and concludes with six practice implications that give insight into the occurrence and effects of subtle language use variations.

NEDERLANDSE SAMENVATTING

Dit proefschrift onderzoekt taal en interactie in natuurlijke consulten over medisch onverklaarde (versus verklaarde) klachten. Vorig onderzoek naar medische gesprekken over somatisch onvoldoende verklaarde lichamelijke klachten (SOLK) richtte zich tot nu toe op de inhoud van communicatie, oftewel *wat* wordt besproken. Hoewel artsen erkennen dat taalgebruik van groot belang is tijdens het consult, bestaat er weinig onderzoek naar *hoe* huisartsen en patiënten met SOLK communiceren. Dat onderzoek is nodig, want daarmee kunnen we patronen en mogelijke consequenties van communicatie blootleggen. In dit proefschrift onderzoek ik taal en interactie in consulten over SOLK vanuit twee verschillende perspectieven. Ten eerste gebruik ik de kwalitatieve onderzoekmethode conversatieanalyse (CA) om taalgebruik en interactionele aspecten in consulten over SOLK te bestuderen. Daarna onderzoek ik met een kwantitatieve analyse in hoeverre taalgebruik in consulten over SOLK verschilt met consulten over medisch verklaarde symptomen.

Deel 1: De rol van taal en interactie in consulten met patiënten met SOLK

Deel 1 gebruikt CA als methode om op detailniveau taal en interactie in consulten over SOLK te onderzoeken. CA is een data-gedreven, kwalitatieve benadering voor de analyse van natuurlijke gesprekken. CA bestudeert de acties die gespreksdeelnemers uitvoeren, het ontwerp van die acties en de volgorde waarin ze plaatsvinden. Met deze methode kunnen we specifieke interactionele gevolgen van talige variaties onderzoeken, en aantonen welke interactionele problemen ontstaan tijdens een consult over SOLK.

Hoofdstuk 2 dient als startpunt van dit proefschrift. Ik presenteer een systematische review van eerder observationeel onderzoek naar taal en interactie in consulten over SOLK. Op systematische wijze zocht ik naar relevante publicaties ($n = 18$), beoordeelde de kwaliteit van die studies, en synthetiseerde de resultaten om tot nieuwe inzichten over SOLK-consulten te komen. Op basis van de bevindingen onderscheid ik drie, nieuwe relevante dimensies. Ten eerste blijkt dat patiënten en artsen het erkennen van de klachtervaring relevant maken tijdens het consult. Zo illustreren patiënten bijvoorbeeld de ernst van de klacht met geïntensiveerd taalgebruik zoals “ondraaglijke pijn” of “heel, heel ziek”. Hiermee claimen ze legitimiteit voor hun bezoek aan de arts. Ten tweede is er bij consulten over SOLK een risico voor potentiële problemen, bestaande uit twee dimensies. Aan de ene kant hebben zowel artsen als patiënten regelmatig verschillende ideeën over de oorzaak van symptomen. Aan de andere kant hebben ze beiden toegang tot een ander kennisdomein. Zo zijn artsen medisch expert, maar hebben patiënten expertise in hun klachtervaring. De oriëntatie op die kennisdomeinen is terug te zien in hun taalgebruik, zoals vage en indirecte formuleringen tijdens de symptoomuitleg. Ten derde vindt er onderhandeling en overtuiging plaats om gezamenlijk tot een acceptabele verklaring te komen. Artsen geven bijvoorbeeld een verklaring op maat, of gebruiken impliciete framing zodat de symptoomuitleg aansluit bij de visie van de patiënt. Met de systematische review laat ik zien dat aandacht voor subtiele linguïstische details nodig is om relevante kenmerken van SOLK-consulten te begrijpen. De review laat zien dat zowel artsen als patiënten manoeuvreren voorzichtig door het consult om gezamenlijk tot overeenstemming te komen.

Een belangrijk voorbeeld van voorzichtigheid is wanneer huisartsen psychosociale problemen relateren aan de klachtervaring van patiënten. In **hoofdstuk 3** gebruik ik CA om te bestuderen hoe huisartsen 'zorgen' als (gedeeltelijke) oorzaak van de klacht introduceren aan patiënten. Ik observeerde twee verschillende benaderingen: huisartsen vragen naar mogelijke psychosomatische oorzaken, of ze leggen deze relatie uit aan patiënten. Het vraag-format maakt het antwoord van patiënten relevant. Het uitleg-format ontlokt daarentegen geen respons van de patiënt, of staat deze simpelweg niet toe. Waar het vraag-format de patiënt als deskundige positioneert, stelt het uitleg-format de medische expertise van de huisarts superieur aan de expertkennis van de patiënt over de ervaring van symptomen. Ook observeerde ik dat specifieke voorbereidende activiteiten voorafgaan aan een psychosociale verklaring. Hierbij wordt het bestaan van psychosociale zorgen vastgesteld, meestal als direct gevolg van de gepresenteerde klacht. In tegenstelling tot een psychosociale verklaring, stuit voorbereidend werk zelden op weerstand bij patiënten. Dit suggereert dat het over het algemeen geaccepteerd is om psychosociale problemen te ervaren als gevolg van klachten, maar een omgekeerde relatie delicaat is en kan leiden tot weerstand bij de patiënt. Voorbereidende activiteiten valideren zorgen van patiënten en maken tegelijkertijd de weg vrij voor het introduceren van psychosociale verklaringen later in het consult

De resultaten van deze hoofdstukken dragen op twee belangrijke manieren bij aan de huidige literatuur over SOLK-communicatie. Ten eerste bestond er geen overzicht van bestaand kwalitatief onderzoek naar linguïstische en interactionele elementen in consulten over SOLK. Een dergelijk overzicht is nodig om bestaande kennis te verbinden en zo tot nieuwe interpretaties te komen. De systematische review geeft daarmee belangrijke inzichten in consulten over SOLK die volledig nieuw zijn voor het vakgebied. Zo kan het conflict in kennisdomeinen bijvoorbeeld bijdragen aan een gevoel van machteloosheid dat zowel artsen als patiënten kunnen ervaren tijdens het consult. Ten tweede toonde eerder onderzoek aan dat patiënten met SOLK vaak weerstand hebben tegen psychosociale verklaringen. Het was echter nog onduidelijk hoe het ontwerp van deze verklaringen de reactie van patiënten beïnvloedt. Mijn CA studie laat zien hoe het ontwerp van de verklaring (vraag versus uitleg) bepaalt in hoeverre patiënten ruimte krijgen om te reageren en met de arts erover in gesprek te gaan.

Deel 2: Taalgebruik bij verklaarde versus onverklaarde klachten – een systematische vergelijking

Deel 1 richt zich uitsluitend op het taalgebruik bij consulten over SOLK. In deel 2 maak ik de vergelijking tussen taalgebruik in consulten over SOLK met consulten over verklaarde klachten. Daarvoor gebruik ik een kwantitatieve inhoudsanalyse. Deze methode is vaak gebruikt om de inhoud van communicatie tijdens consulten te onderzoeken, bijvoorbeeld om te tellen hoe vaak patiënten met SOLK een somatische behandeling voorstellen, of om te bestuderen hoe huisartsen reageren op emotionele uitingen van patiënten. Geen onderzoek heeft echter relevante talige elementen in huisartsconsulten over SOLK gekwantificeerd. Naast de inhoud van communicatie spelen subtiele variaties in taalgebruik een belangrijke rol in hoe patiënten reageren en hoe ze zich voelen. Een kwantitatieve analyse maakt het mogelijk om taalgebruik in gesprekken over SOLK op systematische wijze te vergelijken met gesprekken over verklaarde klachten.

Om het analytische proces van kwantitatieve inhoudsanalyse te ondersteunen, is een codeboek nodig waarin specifieke talige categorieën staan beschreven. Gezien bestaande protocollen voor het coderen van medische interacties zijn gericht op communicatie-inhoud in plaats van vorm, ontwikkelde ik een nieuw codeboek voor het annoteren en analyseren van linguïstische elementen in consulten. **Hoofdstuk 4** beschrijft de ontwikkeling van de *Coding Linguistic Elements in Clinical Interactions* (CLECI - uitgesproken als “classy”) procedure. Dit hoofdstuk geeft een praktische handleiding voor het toepassen van het coderingssysteem in verschillende medische settings. De handleiding bevat suggesties voor mogelijke onderzoeksvragen, beschrijft hoe relevante uitingen worden geselecteerd en gecategoriseerd, en bespreekt het verloop van coderingsproces. De CLECI codeerprocedure combineert inductieve (data-gedreven) en deductieve (theorie-gedreven) analytische stappen, waardoor zijn zowel theorievorming als -toetsing mogelijk zijn.

Dit proefschrift gebruikt twee CLECI codeboeken om linguïstische elementen in gesprekken over SOLK versus verklaarde klachten te vergelijken. Ten eerste analyseer ik taalgebruik van huisartsen (deel 2.1) en daarna die van patiënten (deel 2.2).

Deel 2.1: Taalgebruik van huisartsen

In deel 2.1 maak ik een systematische vergelijking van het taalgebruik van huisartsen bij consulten over SOLK met consulten over verklaarde klachten, en analyseer ik hoe dat relateert aan angstniveau van patiënten. Communicatie-elementen die relevant zijn voor consulten over SOLK heb ik vertaald naar observeerbare linguïstische markeerders en gecodeerd aan de hand van het CLECI codeboek. In totaal is voor 2590 relevante uitingen het taalgebruik van huisartsen geanalyseerd in 82 consulten (41 SOLK en 41 niet-SOLK). Hoofdstuk 5 en 6 beschrijven de analyses van twee relevante linguïstische markeerders.

In **hoofdstuk 5** analyseer positief en negatief taalgebruik van huisartsen. Bestaande richtlijnen pleiten voor positieve communicatie bij consulten over SOLK, omdat dit patiëntuitkomsten zou beïnvloeden. Positieve communicatie was echter tot dusver geoperationaliseerd op basis van inhoudelijke kenmerken (bijv. “goed” versus “slecht”) dan op basis van vormvariaties (bijv. “goed” versus “niet goed”). Daarom selecteerde en codeerde ik positief en negatief taalgebruik van huisartsen aan de hand van negaties. Huisartsen blijken systematisch hun taalgebruik te variëren afhankelijk van de klacht van een patiënt. Als patiënten verklaarde klachten presenteren, gebruiken huisartsen vaker direct positieve boodschappen (“goed” in plaats van “niet slecht”) en indirect negatieve boodschappen (“niet goed” in plaats van slecht”), terwijl ze dat niet doen bij gesprekken over SOLK. Met andere woorden, huisartsen gebruiken minder positieve taal wanneer patiënten SOLK (versus verklaarde klachten) hebben. Terwijl juist het gebruik van direct (vs. indirect) negatieve boodschappen gerelateerd was aan een toename van de angst bij patiënten na het consult. Kortom, hoewel positieve communicatie wordt aangeraden bij SOLK, hebben huisartsen juist de neiging minder positieve taal te gebruiken, wat relateert aan het angstniveau van patiënten.

In **hoofdstuk 6** analyseer ik uitingen van impliciete onzekerheid van huisartsen. Omdat bij SOLK geen onderliggende ziekte kan worden gevonden, heeft de boodschap van de arts inherent een onzekerheidselement. Vorig onderzoek toonde aan dat huisartsen daarom vaker expliciete onzekerheid uitdrukken tijdens consulten over SOLK (bijv. “ik weet het niet”). Meer impliciete talige markeerders van onzekerheid (bijv. “waarschijnlijk” of “het zou kunnen”) waren echter nog nooit onderzocht. Juist die impliciete variant kan voorzichtigheid van de huisarts weergeven om over een delicaat onderwerp te praten. In hoofdstuk 6 toon ik aan dat huisartsen vaker impliciete onzekerheid uitdrukken wanneer patiënten SOLK versus verklaarde klachten presenteren. Die uitingen van onzekerheid hadden geen relatie met het angstniveau van patiënten. Het systematische verschil in impliciete onzekerheid representeert mogelijk de complexe realiteit van communiceren over een diagnose waar geen medische verklaring aan ten grondslag ligt.

Deel 2.2: Taalgebruik van patiënten

In deel 2.2 maak ik een systematische vergelijking van het taalgebruik van patiënten met SOLK en patiënten met verklaarde klachten, en analyseer ik hoe hun taalgebruik relateert aan het taalgebruik van de huisarts. Het idee bestaat dat patiënten met SOLK anders communiceren dan patiënten met verklaarde klachten. Vorig kwalitatief onderzoek liet bijvoorbeeld zien dat patiënten met SOLK beschrijven wat ze *niet* ervaren. Ook blijkt dat huisartsen soms patiënten met SOLK herkennen op basis van de manier waarop ze hun symptomen presenteren, bijvoorbeeld omdat ze symptomen zouden overdrijven of vage taal gebruiken. In **hoofdstuk 7** vertaal ik die relevante communicatie-elementen naar observeerbare talige markeerders en maak ik een systematische vergelijking tussen consulten over SOLK en verklaarde klachten. Ik analyseer talige markeerders in 2752 relevante uitingen van 82 patiënten (41 SOLK, 41 geen

SOLK) over hun fysieke en mentale toestand. Zo kijk ik onder andere naar het gebruik van negaties, intensiveerders en taalabstractie. Ondanks bestaande vooroordelen over “typische SOLK communicatie”, vond ik geen verschil tussen SOLK en niet-SOLK in het gebruik van negaties, taalintensiveerders, subjectiviteitmarkeerders, gebruik van grammaticaal subject (“ik” of “mijn lichaam”), of taalabstractie. Ik observeerde een verschil in het gebruik van verzwakkers (minder verzwakkers bij SOLK vs. verklaarde klachten), maar dat verschil verdween bij additionele analyses waarbij rekening werd gehouden met de fasering van het consult. Wel blijkt een verschil in taalgebruik te bestaan op basis van de inhoud van een uiting (positief of negatief) en wanneer een patiënt lichamelijke of psychische klachten beschrijft. Het gebrek aan verschil tussen taalgebruik van patiënten met SOLK en verklaarde klachten staat haaks op bestaande ideeën over de communicatie van patiënten met SOLK. De perceptie van hoe patiënten met SOLK communiceren is mogelijk gebaseerd op vooroordelen, dan daadwerkelijke verschillen in hun taalgebruik.

De bevindingen van hoofdstuk 5-7 laten zien dat huisartsen hun taalgebruik aanpassen als ze praten met patiënten met SOLK en verklaarde klachten, terwijl patiënten niet verschillen in hun taalgebruik. Taalgebruik wordt echter gezamenlijk geconstrueerd in een gesprek. Wat een patiënt zegt beïnvloedt de uiting van een huisarts en vice versa. Om een generaliseerbaar, objectief beeld van die co-constructie te krijgen, exploreer ik **hoofdstuk 8** hoe het taalgebruik van patiënten zich verhoudt tot het taalgebruik van huisartsen. Misschien variëren patiënten hun taalgebruik niet op basis van hun klachten, maar variëren ze we hun taalgebruik op basis van hoe de huisarts praat. De datasets van hoofdstuk 5-7 dienen als basis van deze exploratie. Relatieve frequentiescores van verschillende talige markeerders van patiënten vergelijk ik met scores van huisartsen om zo te onderzoeken of er samenhang is tussen taalgebruik van huisartsen en patiënten, en of dit verschilt bij SOLK of verklaarde klachten. Op gespreksniveau kon ik geen systematische relatie ontdekken tussen het taalgebruik van huisartsen en patiënten, en was er ook geen verschil te ontdekken voor patiënten met SOLK en verklaarde klachten.

De resultaten van de kwantitatieve hoofdstukken voegen minstens drie inzichten toe aan de huidige literatuur. Ten eerste richtten bestaande codeboeken zich op inhoudelijke kenmerken van communicatie bij medische gesprekken. CLECI is het eerste codeerprotocol dat naast communicatie-inhoud, ook taalgebruik analyseert. Ten tweede toonden eerdere studies aan dat huisartsen anders communiceren bij gesprekken over SOLK dan bij consulten over verklaarde klachten, maar een kwantitatieve talige analyse ontbrak volledig. Dit proefschrift laat zien dat huisartsen hun taalgebruik systematisch variëren bij gesprekken over SOLK versus verklaarde klachten, wat de complexe realiteit weergeeft van het communiceren van de SOLK-diagnose. Ten slotte bestond het idee dat patiënten met SOLK op typische wijze hun klachten presenteren. Dit proefschrift toont aan dat dit soort ideeën eerder geworteld zijn in vooroordelen over hun communicatie, dan daadwerkelijke verschillen in de manier waarop ze praten.

Implicaties voor theorie en praktijk

In **hoofdstuk 9** bespreek ik drie proposities die voortkomen uit de bevindingen van dit proefschrift. Ten eerste argumenteer ik dat de geobserveerde talige elementen niet specifiek voor SOLK alléén zijn. Integendeel, veel van de communicatieaspecten gelden voor iedere patiënt die de huisarts bezoekt. Ten tweede stel ik dat wanneer SOLK als categorie wordt beschouwt, dit stereotypen induceert. Het SOLK-label kan zorgen voor een selffulfilling prophecy*:* het labelen van SOLK creëert een realiteit waarin het wordt gezien als een aparte entiteit, wat vervolgens kan leiden tot de activatie en vorming van stereotypen. Ten derde betoog ik dat we non-dualistisch taalgebruik nodig hebben voor multifactoriële problemen zoals SOLK. Ons huidige taalgebruik heeft een dualistische basis (we spreken bijvoorbeeld over lichaam en geest). Alledaags taalgebruik over lichamelijkheid is nodig om voorbij die dichotomie te gaan. Hoofdstuk 9 bevat ten slotte aanbevelingen voor toekomstig onderzoek en implicaties voor de dagelijkse praktijk.


A

Appendices

APPENDIX 1: SUPPLEMENTARY MATERIALS

Appendices to chapter 2

2.1 Search strategy (for PubMed)

MUS

Somatoform disorders[Mesh] OR Hypochondriasis[Mesh] OR Neurasthenia[mesh] OR Conversion disorder[Mesh] OR Psychophysiological disorder[Mesh] OR Psychosomatic medicine[Mesh] OR “Fibromyalgia”[Mesh] OR “Fatigue Syndrome, Chronic”[Mesh] OR “Irritable Bowel Syndrome”[Mesh] OR “Colonic diseases, Functional” [MESH] OR “Pelvic Pain”[Mesh] OR “Tension-Type Headache”[Mesh] OR “Cumulative Trauma Disorders”[Mesh] OR “Whiplash Injuries”[Mesh] OR “Back Pain”[Mesh] OR “Neck Pain”[Mesh] OR “Chronic Pain”[Mesh] OR “Multiple Chemical Sensitivity”[Mesh] OR “Tinnitus”[Mesh] OR “Burning Mouth Syndrome”[Mesh] OR “Premenstrual Syndrome”[Mesh] OR “Dizziness”[Mesh] OR “Temporomandibular Joint Disorders”[Mesh] OR somatization[tw] OR somatisation[tw] OR ((somatoform[tw] AND (disorder*[tw] OR pain[tw] OR symptom*[tw] OR syndrome*[tw] OR illness[tw]))) OR hypochondriasis[tw] OR neurasthen*[tw] OR conversion disorder*[tw] OR psychophysiological disorder*[tw] OR psychosomat*[tw] OR (((functional[tw] OR unexplained[tw]) AND somatic sympt*[tw])) OR functional somatic syndrom*[tw] OR functional syndrom*[tw] OR FSS[tw] OR unexplained sympt*[tw] OR medically unexplained[tw] OR unexplained medical sympt*[tw] OR unexplained physical symptom*[tw] OR MUS[tw] OR MUPS[tw] OR psychogen*[tw] OR non-organ*[tw] OR non-specific complain*[tw] OR non-specific sympt*[tw] OR fibromyalgia[tw] OR fibrositis[tw] OR “fatigue syndrome”[tw] OR “irritable bowel*”[tw] OR IBS[tw] OR ((irritable[tw] AND (bowel*[tw] OR colon[tw]))) OR “functional bowel disease*”[tw] OR “functional colonic disease*”[tw] OR “pelvic pain”[tw] OR “abdominal pain”[tw] OR “tension-type headache*”[tw] OR “tension headache*”[tw] OR “cumulative trauma disorder*”[tw] OR “carpal tunnel syndrome”[tw] OR “repetitive strain injuries”[tw] OR “repetitive strain injury”[tw] OR RSI[tw] OR whiplash*[tw] OR “back pain”[tw] OR “neck pain”[tw] OR backache[tw] OR “chronic pain”[tw] OR “chronic widespread pain”[tw] OR “multiple chemical sensitivity”[tw] OR “gulf syndrome”[tw] OR “idiopathic environmental intolerance*”[tw] OR “chemical intolerance”[tw] OR tinnitus[tw] OR (“burning mouth”[tw] AND (syndrome[tw] OR symptom*[tw])) OR “burning tongue”[tw] OR (((premenstrual[tw] OR pre-menstrual[tw]) AND (syndrome[tw] OR tension[tw]))) OR dizziness[tw] OR “Temporomandibular Joint Disorder*”[tw] OR (((nonspecific[tw] OR non-specific[tw] OR “non cardiac”[tw] OR noncardiac[tw]) AND “chest pain”[tw])) OR ((nonepileptic[tw] OR “non epileptic”[tw] OR psychogenic[tw]) AND (seizure*[tw] OR attack*[tw]))

Communication

"Communication"[Mesh:noexp] OR "Physician-Patient Relations"[Mesh] OR "Nurse-Patient Relations"[Mesh] OR Communicate[tw] OR Communication[tw] OR communicating[tw] OR Interact[tw] OR Interaction*[tw] OR counselling[tw] OR counseling[tw] OR interview*[tw]

Linguistics

"Linguistics"[Mesh] OR "Narration"[Mesh] OR "Verbal Behavior"[Mesh] OR Language[tw] OR linguistic*[tw] OR wording*[tw] OR word use[tw] OR Verbal[tw] OR Verbali*[tw] OR Frame[tw] OR Framing[tw] OR Reframe[tw] OR reframing[tw] OR metaphor*[tw] OR normalis*[tw] OR normaliz*[tw] OR lexical[tw] OR negation[tw] OR negated[tw] OR Discourse[tw] OR discursive[tw] OR micro-analys*[tw] OR microanalys*[tw] OR micro-analyz*[tw] OR microanalyz*[tw] OR sequential analysis[tw] OR (conversation[tw] AND (analysis[tw] OR analytic[tw]))

MUS AND communication AND linguistics

2.2 Quality assessment form (internal validity)

*	Section/topic	Answer	Notes
	METHODS		
	Description of data		
	Overall size data collection (number of interactions, and minutes)	#	
	Number of episodes in collection(s)	#	
	Number of episodes from the collection that appear in the publication	#	
	Number and description of sites	#	
	Number and description of institutional settings	# …	
	Explicit reference to practices observed in more than one individual/dyad	No / yes	
	Practices observed in more than one institutional group	No / yes, …	
	Principles of CA		
	Is information provided about data sessions?	No / Yes, …	
	Participant characteristics		
	Are provider characteristics provided?	No / yes, …	
	Are patient characteristics provided?	No / yes, …	
	ANALYSIS		
	General information		
*	Is the analysis of action grounded in specific practices of interaction rather than interpretation?	No / occasionally / considerably	

*	For multi-case analyses, have phenomena been identified from thorough examination of the data, and not the selected examples only?	No / yes / unclear / NA
*	Are established analytic findings used as 'tools' in the analysis?	No / occasionally / considerably
*	Reviewer's judgment of degree to which analysis is fine grained	Not / moderately / very
	Principles of CA	
	Does analysis include examination of:	
	More than only party's turns (i.e. attends to sequence)	No / yes
	More than only topical/semantical content – i.e. attention to some aspects of grammatical, pragmatic, and/or prosodic content	No / yes
	Sequential environment in which practice(s) occur(s)	No / yes
	Aspects of turn and/or sequence design	No / yes
	Interactional effects/consequences	No / yes
	Deviant cases	No / yes
	Extracts	
	Are central/key analytic claims supported by direct quote from or reference to the data?	No / sometimes / often
	Is the rationale behind extract selection stated?	No / yes
	Is enough data shown to warrant the analysis?	No / occasionally / considerably
	Does the study include a high ratio of analysis to description of the data extracts?	No / yes
	Transcription	
	Are extracts transcribed following current CA conventions?	No / yes
	Is the type and level of detail used in transcription justified (when analysis focuses on prosodic or multimodal elements)?	No / yes
	For non-English data: are transcripts available in the original language?	No / Gloss with or without literal translation / NA
	NB: If answer option states "yes, …", provide information reported ** Crucial criteria for appraisal of quality*	

2.3 General data description (external validity)

Table 5. Description of data for included studies

	Number of interactions (sequences/examples)			Refers to > 1 interaction	Collection type [a]	Healthcare providers		Patients	
	Overall	*Collection*	*Publication*			*n*	*Characteristics*	*n*	*Characteristics*
Aiarzaguena	118	10 (11)	8 (8)	Yes	CS	18	-	26	8 female, 18 male
Banks	16[b]	16 (-)	11 (14)	Yes	CS	4	2 female, 2 male	11	All female
Ekberg	38	38 (-)	8 (6)	Yes	CS	10	-	38	-
Elderkin-Thompson	116	51 (NA)	3 (NA)	Yes	CS	15	6 female, 9 male[d]	116	56 female, 60 male[d] Mage 37.2, Education 10.5 years; 16 depressed, 21 PTSD, 24 somatisation
Hyden	15	15 (-)	4 (7)	Yes	CS	-	-	15	-
Monzoni[†]	20	20 (57/?)	6 (6)	Yes	CS	3	3 male; 17-33 yrs of experience	20	12 female, 8 male; 17 PNES, 3 FNS; MedAge 38.5 (20-75); 13 accompanied
Monzoni[†]	20	20 (-)	4 (5)	Yes	CS	3	“”	20	“”
Monzoni[†]	20	20 (-)	4 (7)	Yes	CS	3	“”	20	“”
Monzoni[†]	20	20 (-)	7 (8)	Yes	CS	3	“”	20	“”
Monzoni[†]	17	13 (-) / 7 (10)	5 (6)	Yes	CS	3	“”	17	-
Nessa	-	NA	1 (2)	No	SCA	4	1 female	1	1 male
Opsommer	6	6 (-)	5 (9)	Yes	CS	2	1 female graduate, 1 male; 20 yrs of experience	6	2 female, 4 male
F. Roberts	21	12 (-)	3 (3)	No	CS	12	-	3	1 female, 2 male; Age 33-40
L. Roberts	27	25 (1490)	7 (8)	Yes	CS	9	6 female, 3 male, 6 mo-15 yrs of experience.	27	14 female; 13 male Mage 47.8 (20-81), back pain 28 weeks (7 wks-9 yrs)
Robson	31	7 (11)	3 (4)	Yes	CS	2	-	7	4 female, 3 male; Age 20-64
Tarber	197	NA	1 (3)	No	SCA	1	-	1	1 female, Age 58, medical history
Toerien	13	8 (8) / 6 (6)	6 (9)	Yes	CS	1	1 male	13	8 female, 5 male; 11 accompanied
Undeland	86	2 (-) / NA	2 (4)	Yes	CS	2	2 male	2	2 female; Age 40s-50s

[†] Studies based on same dataset

[a] CS = collection study, SCA = single case analysis; [b] 114 overall observations, no video-recordings; [c] 3 different patients analysed as typical for different types of somatisers; [d] *Additional healthcare provider characteristics*: 6 Asian, 5 non-Latino White, 1 Middle Eastern, 3 Latino. Met with 1-6 patients; *Additional patient characteristics*: 87 English-speaking, 87 employed 48 US-born non-Latino White, 29 US-born Chicano, 39 Central American Immigrants

2.4 Key for transcription symbols

Based on Jefferson (2004)

[	Overlapping talk
(.)	Micropause (less than 2 tenths of a second)
(0.0)	Pause (length in tenths of a second)
.hh or ·hh	Audible in-breath
Hh	Audible out-breath
wo::rd	Lengthening of sound
word	Emphasis
WORD	Higher volume
(word)	Possible hearing
((cough))	Transcriber's description
#PRT#	Untranslatable particle
><	Speeded-up talk
<>	Slowed-down talk
-	Truncation
=	No break or gap
.	Falling intonation
;	Semi-falling intonation
,	Flat intonation
?	Rising intonation
°	Soft voice
*	Creaky voice
~	Teary voice

Appendices to chapter 5

5.1 Coding procedure

Development of coding criteria

Given the explorative nature of the study, no explicit coding criteria were existent. Therefore, a new codebook was developed in order to analyse language use. The first author (IS) first viewed a random selection of the video-recordings as a preparation for development of the codebook. An initial framework was developed based on these first observations. Next, linguistic literature on, for instance, the use of negations (Burgers et al., 2015; Haeseryn et al., 2012) was gathered to further define and specify the codebook. Categories were selected if relevant to language use theory or MUS communication. After five test-coding sessions, a second coder joined the study. The coder was first trained in identifying relevant clauses and distinguishing between categories. Then, the second coder independently performed the same coding strategy; reading the transcription, identifying different phases, underlining relevant clauses, and categorising each clause.

Simultaneous identification and selection of the relevant utterances appeared too cognitively exhausting, leading to weak tests of inter-coder reliability (due to over- and undercoding). Therefore, the coding process was divided into two steps. Coders first focused on selection of relevant clauses, and then they categorized utterances selected by the first coder. Assigning one task at the same was expected to increase the change of a reliable analysis.

Unit of analysis

According to Krippendorff (2013) the smallest unit of analysis possible must be selected to enable a reliable content analysis. The recording/coding unit (i.e. unit of analysis) in the current study to identify message formulations were grammatical finite clauses, i.e. clauses that contain a finite, or conjugated, verb. As an example, the sentence “I want to refer you to a specialist, because your tiredness is not normal” can be divided into two clauses that contain a finite verb, namely [I *want* to refer you to a specialist] and [because your tiredness *is* not normal]. Utterances without finite verbs (e.g. exclamations such as “Good!”) were also included as separate units of analysis.

Coding procedure

Judgmental expressions of the GPs about patients and their current medical situation were identified. These descriptions relate to comments about the physical or mental state of the patient during physical examination (e.g. “This looks tidy”), expressions that are related to the diagnosis or explanations the diagnosis (e.g. “Your physical complaints are indeed related to fatigue”), or judgmental expressions about treatment policy or expected treatment outcomes (e.g. “It is better to use a real fungus ointment”, “The skin must improve within two weeks”)

After having identified relevant clauses, both coders categorized the clauses as selected by the first coder ($n = 503$). The *message content* of the clause was indicated as either positive or negative. Clauses with positive message content refer to a positive evaluation or consequence for the patient (e.g. “It is looking very *good*”), and clauses with negative message content refer to descriptions that imply a negative evaluation or consequence for the patient (e.g. “It seems that your blood pressure is way *too low*”). Neutral clauses that referred to the naming of symptoms, either as objective observations (e.g. “I can see some red skin here”) or expressed with clinical viewpoint (e.g. “The pain in your legs must be neurosympathic”) were also coded.[1] Next, the *message directness* was classified in terms of direct or indirect formulations. Indirect language was classified as containing syntactic or morphologic negations. Syntactic negations refer to constituents as negation elements such as explicit (“not”) and implicit (“none”, “less”) particles as negative markers, and morphologic negations are negative prefixes added to nouns, verbs, adverbs, or adjectives (“*non*-smoker”, “*in*complete”). Double negatives (e.g. “not unhealthy”) were coded as both syntactic and morphologic. Finally, the *consultation phase* of utterances was noted down. Coders indicated whether evaluative descriptions were related to physical examination, (explanations of) diagnosis, or treatment recommendations.

Statistical testing

Multilevel models with binary outcomes were used to assess differences in message load, adjusted for clustering of GP (level 3) and patients (level 2). The Intraclass Correlation Coefficient (ICC) of the random factors GP and patient were .012 and .018 respectively, suggesting a minimal clustering of the data on the indicated levels. Patient gender was included as a potential confounding factor because men and women were not equally distributed among the MUS and MES groups, and gender of the GP was also included because male physicians tend to communicate differently from female physicians (L. Jefferson et al., 2013), and men tend to use more indirect formulations than women (Newman et al., 2008). The fixed factors as predictors of message directness (indirect vs. direct) were complaint type (MUS vs. MES), message content (positive vs. negative), the interaction term between complaint type and message content, and the potential confounding variables. Stratified analyses were performed in case of a significant interaction between the predictor variables.

Next, associations between message directness and anxiety were assessed with a hierarchical linear regression analysis. We first aggregated scores of directness for positive and negative messages per consultation. Indexes for direct (vs. indirect) positive or negative messages per consultation were created using the following formula (example for positive messages): (aggregated score direct – indirect positive messages) / (total amount of positive and negative

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[1] Neutral utterances (objective observations and clinical viewpoint) are excluded from analyses because they do not contain judgmental expressions.

messages), with indexes closer to 1 indicating a higher amount of direct messages (cf. Sherman, Nelson & Steele, 2000). To test for differences in patient anxiety, a difference score comparing anxiety before and after the consultation was included as outcome variable. The potential confounders and complaint type (MUS or MES) were entered as predictors in the first model, index scores for directness of positive and negative messages were included in the second model, and interactions between complaint type and index scores in the third. Analyses were conducted using IBM SPSS Statistics. An alpha level of .05 was used as a criterion for all statistical tests.

5.2 Results: additional table

Systematic variation in message directness for MUS versus MES

Table A. Summary of the multilevel random intercept logistic regression for complaint type (MUS vs. MES) and message content (positive vs. negative) predicting message directness (direct vs. indirect), corrected for confounder variables (*N* = 2141)

	B (SE)	***95% CI for Odds Ratio***			***Sig.***
		Lower	***Odds ratio***	***Upper***	
Intercept	0.63 (0.16)				
MUS vs. MES	0.34 (0.17)	1.01	1.44	1.97	.042
Message content[a]	0.61 (0.16)	1.35	1.84	2.51	.000
Message content * MUS vs. MES	-0.74 (0.21)	0.32	0.48	0.71	.000
Confounders					
GP gender (male vs. female)	-0.21 (0.15)	0.92	1.24	1.67	.160
Patient gender (male vs. female)	-0.05 (0.14)	0.72	0.95	1.26	.726
ICC					
GP (level 3)	.012				
Patient (level 2)	.018				

[a] Message content compared for positive versus negative content

Appendices to chapter 7

7.1 Using the Linguistic Category Model to analyse patient language abstraction

The current study uses the Linguistic Category model (LCM) to analyse language abstraction in patient utterances(Semin, 2012). Traditionally, LCM is used in social psychology research to analyse how (non) stereotypic behaviour is described in terms of abstract or concrete language. For example, when a woman exhibits behaviour that is linked to stereotypic image of women, such as being caring, the behaviour tends to be described with abstract language such as adjectives ('the woman is caring'). Aggressive, atypical behaviour that doesn't fit stereotypic behaviour of women, on the other hand, tends to be described in concrete terms such as an action verb that focuses on the temporal aspect of the behaviour ('the woman slaps her husband' instead of 'the woman is aggressive towards her husband').

LCM distinguishes four linguistic concreteness categories varying from more concrete to more abstract, i.e. descriptive action verbs (DAV), interpretive action verbs (IAV), state verbs (SV) and adjectives (ADJ). DAVs describe a specific action with a clear beginning and end. It is an objective description of observable behaviour (e.g. faint, sleep). IAWs describe subjective actions or behaviours in situational contexts that can be performed in different ways and interpreted differently by two observers (e.g. help, work). SVs refer to states that do not have an associated observable action (e.g. feel, have) and lastly, ADJs are descriptions of properties or characteristics that are not tangible (e.g. uncomfortable, honest). Since no explicit LCM coding criteria existed to analyse descriptions of bodily behaviour, we adjusted the framework to fit our data and added descriptive adjectives and nouns (DAN) to the most concrete category (i.e. DAVs). Some adjectives and nouns are more concrete than ADJ or SV in the context of bodily behaviour (e.g. "sometimes I have heart palpitations" is more concrete than "sometimes I feel my heart").

Applying LCM to analyse natural patient talk

Our research applied LCM to analyse natural patient talk about self-descriptions as a proxy for vagueness in symptom presentation of patients with MUS versus MES. Though the data for the current study are different from traditional LCM research, earlier studies show that extending the LCM to healthcare settings (Watson & Gallois, 2002) or self-descriptions (Beukeboom & de Jong, 2008) is feasible. That is, analysis of language abstraction during satisfactory versus unsatisfactory consultations revealed that patients described health care professionals in abstract, positive terms, suggesting that there were low levels of intergroup bias. Further, LCM is previously used to analyse self-descriptions instead of descriptions of others. In a study that analysed the role of bodily feelings and language abstraction, it was observed that bodily feelings associated with global processing (arm flexion) are more abstract compared to bodily feelings associated with analytical processing (arm extension) [3]. This shows that, in a different setting, the LCM can be applied to study language abstraction in self-descriptions. Though no research has yet applied the LCM to analyse patient self-descriptions in natural health care consultations, our research demonstrated that extending the LCM may provide valuable insights in language abstraction during natural doctor-patient interactions.

Language abstraction versus vague descriptions

Though symptom presentations of patients with MUS are perceived as vague, we did not find any systematic differences in language abstraction of patients presenting MUS or MES. The possibility exists that language abstraction as assessed with LCM does not affect perceived vagueness of symptom presentation. Rather, the order and number of symptoms presented could affect GP perceptions of vagueness [4,(Olde Hartman, Blankenstein, et al., 2013; Peters et al., 2009). We propose that a lack of observed differences in language abstraction could be explained by a lack of group salience for MUS and MES patients [1,2]. Generally, language abstraction can be linked to interpersonal salience; i.e. the extent to which people identify as part of collective groups (e.g. "I' as a patient vs. "you" as a GP). Though MUS and MES patients are labelled differently, they may not view themselves as any different GPs label symptoms as medically unexplained or explained, but patients with MUS and MES both experience symptoms, i.e. bodily feelings they would usually not experience. The extent to which symptoms are (un) explained may not determine how patients identify themselves.

7.2 Additional exploratory model for diminishers

Table A. Additional exploratory binary random intercepts model predicting patients' use of diminishers during GP consultations

Random intercept	***Variance (SD)***		
Patient level	0.20 (.45)		
	B (*SE*)	*OR*	95% CI
MUS vs. MES	**-0.78 (0.52)**	**0.48**	**0.16-1.28**
Content 1: Loaded vs. neutral	0.81 (0.36)	2.27*	1.12-4.59
Content 2: Negative vs. positive	0.03 (0.34)	1.03	0.53-2.02
Info gathering vs. decision making	-0.40 (0.14)	0.67*	0.50-0.90
MUS vs. MES * Content 1	0.26 (0.55)	1.30	0.44-3.84
MUS vs. MES * Content 2	0.21 (0.53)	1.24	0.44-3.52
GP Sex (f vs. m)	0.49 (0.16)	1.63*	1.20-2.23

* $p < .05$. ** $p < .01$. *** $p < .001$

APPENDIX 2: CODEBOOKS

CLECI

Coding Linguistic Elements in Clinical Interactions

Codebook for GPs' language use

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OVERVIEW OF CODEBOOK

Phase 1 – Identifying relevant utterances

Criteria for inclusion: The utterance is made during the phase of physical examination, diagnosis and explanation, or treatment recommendations and concerns a value judgement regarding the patient, the symptoms or the disease, or the patient's current situation.

Unit of analysis: grammatically finite clauses

- Phase 1.1: Mark relevant utterances
- Phase 1.2: Note down utterances in separate Excel file

Phase 2 – Categorising relevant utterances

1. Phase
    1) Physical examination
    2) Diagnosis and explanation
    3) Policy

2. Label
    1) Positive
    2) Negative
    3) Naming the complaint/symptoms/disease
        a. Objective observation
        b. Clinical perspective
    4) Normalising

3. Negation
    0) Absent
    1) Syntactic
    2) Morphological

4. Uncertainty
    0) Absent
    1) Verbs with added meaning
    2) Lexical item
    3) Pragmatic particle
    4) Tag question

5. Intensity
   0) Absent
   1) Diminisher
   2) Intensifier
   3) Normalising

CODEBOOK

Overview of coding process

The coding process consists of the following two phases:

- Phase 1 – Identifying relevant utterances:
  - Phase 1.1: Mark all relevant utterances by the GP that involve a value judgement about the patient, the symptoms or disease, or the patient's current situation. Mark any doubtful cases with another colour.
  - Phase 1.2: Go through all relevant utterances and put them in a separate Excel file. Make a final decision about the doubtful cases.
- Phase 2 – Categorising relevant utterances: Code all utterances using the linguistic categories described in the codebook.

Double coding

For all phases, you calculate the inter-rater reliability by double-coding 15% of the conversations (phase 1) and the corresponding utterances (phase 2). In phase 2, you write down all utterances in a separate document according to the unit of analysis, and state whether each utterance is relevant for inclusion. For phase 2, you calculate inter-rater reliability based on the selection of the utterances included.

PHASE 1 – IDENTIFYING RELEVANT UTTERANCES

Phase 1.1: Mark potentially relevant utterances

Mark all potentially relevant utterances by the GP. Mark any doubtful cases in another colour, and make a definitive decision about them in the next phase (phase 1.2).

A language utterance is relevant if:

- The utterance is made during the phase of physical examination, diagnosis and explanation or policy. Utterances that were not made in any of these phases are not included in the analysis.
- The utterance concerns a value judgement about the patient, the patient's symptoms or disease, or their current situation. This utterance can be made during the physical examination, during the diagnosis and explanation, or when discussing the treatment recommendations.

Comments

- Negative observations are also included, for example "I can't find anything wrong".
- Opinions about the possible treatment for the patient are also included. If an utterance about the policy does not contain a value judgement, it is not included, for example
  - "If it occurs more often, you should definitely contact us" (advisory treatment, but not an opinion).
  - "It's important to keep a proper eye on this" (unclear if "it's important" is a positive or negative assessment).
- If it is unclear what the utterance is about, for example because sentences are only half finished, they are not included. For example, "Okay, because if someone's doing better" (unclear who the GP is talking about).
- Sometimes extra information is added to an assessment. For example, "That's officially a smidgen too high, but not much, of course". The part "but not much, of course" does not have a separate verb and does not really add any meaning. But it *is* an extension of the assessment in which it is described in more detail. So you should include the second part in the analysis of the assessment. Similarly, "such a sharply defined red spot — you have that too a bit, don't you?"
- Paraphrasing can be included as a separate assessment, depending on verbs:
  - Merge if there is no added verb: "it can give severe burn reactions, with real blistering"
  - With a verb, treat it as two separate assessments: "The tricky thing is that your skin becomes sensitive to the sun", "so you burn more easily".
- Assessments where it is unclear what they refer to are not included in the analysis. For example, "and as for the tick bite, *that's a tricky one,* because it could mean anything". "Very good" in a physical examination where it is unclear what this refers to (assessment of patient's condition or encouragement regarding physical examination).
- Questions from the GP are generally not included. For example, "does that feel tender?"
  - Please note: sentences that are formulated simply (not as a question), but do contain a question because of words like "right?" are included (see 4. Uncertainty >> E. Tag question).

Unit of analysis

For each analysis, include a sentence that has the GP's assessment. The unit of analysis looked at here is the grammatically finite clauses. These are sentences with a subject and finite verb, such as "it *looks* good". For example, "If the muscle layer is *too weak*, it *will sag* of course": coded separately, because there are two separate grammatically finite clauses.

Unless:

- Two phrases are directly related to the assessment and these are both important for the interpretation of the assessment. For example, "It would be very strange if the pain weren't caused by that spinal lesion". The second part of the explanation ("if the pain weren't caused by that spinal lesion") is needed to be able to interpret the assessment in the first sentence ("it would be very strange"). So this example involves two grammatically finite clauses.

Comments

- In everyday language, this finite verb is sometimes left out. "No diarrhoea?" is the same as "Don't you *have* diarrhoea?", so this sentence is also included in the analysis.

Phase 1.2: Select potentially relevant utterances

Go through all the marked utterances and put them in a separate Excel file. Make a final decision about doubtful cases. Put each relevant utterance in a new row.

When in doubt, consider the following:

- Is the utterance really about the patient themselves (and/or their complaints)?
- Can you judge whether the utterance has a positive or negative connotation?

PHASE 2 - CATEGORISING

Write down the following information about the set categories in a separate Excel file with selected relevant language utterances:

1. Phase

1) **Physical examination:** the GP examines the patient by doing tests, looking at complaints and other activities where the patient is given a physical examination. The comments that the GP makes during the physical examination fall in this phase. For example, "It looks good".
2) **Diagnosis and explanation:** utterances that concern the diagnosis of the patient's condition and an explanation about how the GP came to that conclusion. During the diagnosis, a disease is identified or a working hypothesis is made based on the complaints and symptoms as described by the patient and, if relevant, investigated during the physical examination. In addition to identification of diseases, this can also be about naming the patient's symptoms. A GP can then choose to explain this diagnosis and give a line of reasoning showing how they arrived at the diagnosis. For example, "If your pelvic floor is a bit weakened" the diagnosis is that the pelvic floor is weakened, after which the explanation follows: "you will experience problems with this, especially when exercising". Language utterances needed to support and/or explain the diagnosis count if they concern an assessment about the patient and their situation.
3) **Treatment recommendations:** During the treatment recommendations phase, the GP discusses the treatment with the patient for dealing with the disease or complaints — in

other words the course of action, the treatment or the therapy plan. This includes advice that the patient should follow, treatment options, suggestions for future physical examinations, referral to a specialist, choice of alternatives, etc. For example, "Taking walks is very good for you".

Comments

- Not all the use of language is directly related to the observations from the physical examination, but conclusions about the complaints that are drawn during the physical examination still fall within this phase. For example, "So that's nothing to be worried about".
- Interim diagnoses made during the anamnesis or during the treatment recommendations phase do count as a diagnosis despite the fact that they were not directly made during the diagnosis phase. For example, GP: "Do you have any more symptoms?" Patient: "Yes, my eyebrows droop over my eyes". GP: "Yes, that's *fatigue*".
- If the GP talks during a consultation about wanting to do a certain test during that same consultation, that utterance falls in the 'policy' phase.

2. Label

The value judgement or evaluative description by the GP about the patient or the patient's condition.

1) **Positive:** assessments that have a positive connotation, for example "it looks *good"*, "it *doesn't look bad".*
2) **Negative:** assessments that have a negative connotation, for example "it looks *bad"*, "it *doesn't look good".*
3) **Name of complaint/symptoms/disease:** assessments that are named on the basis of a complaint, symptom or disease, for example "I see a *fracture* in the bone", "it isn't *cancer"*, "there's some *air* in the intestines".
   Objective observation: objectively made observation by the GP, for example, "I see *spots"*.
   Clinical perspective: when talking about the complaints, symptoms or illness, the GP gives an interpretation from a clinical perspective of what they see, for example "it looks like *irritable bowel syndrome*". So this is the GP reasoning on the basis of inferences.
4) **Normalising:** assessments that cannot be directly categorized as positive or negative and mainly have a normalising connotation, for example "it is what it is", "sometimes it will bother you, sometimes less so".

Comments

- When assessing the label, look at the meaning of the word in the context. The assessment "it doesn't look *bad"* is indicated as a positive assessment with a negation.

- An explanation that is given with a diagnosis that expresses some possible outcome in the future, does count (for example, "then it'll start to droop of course"). Of course, this only applies if the explanation is about the patient or the patient's situation.
- An explanation of a diagnosis where other people's physical condition or reaction is described and this description is not about the patient or the patient's situation is not included, for example "People who jog three times a week often have better muscle tone overall", while the patient in question is not physically active.
- An explanation of a diagnosis comparing others in a situation that refers (indirectly) to the patient, is included, for example "many other people with these complaints are often more susceptible".
- Pain, itching, etc. are coded as a negative assessment. Interpretation of the type (e.g. axial pressure pain) belongs to code C.2, as do things such as "redness" and "bluish".

3. Negation

The utterance contains a negation that relates to the value judgement as indicated in point 2 ('Label').

1) **Absent**
2) **Syntactic:** constituents as a negation element. A constituent is a word or word group in a sentence. In the explicit form, this is expressed by the negative adverbial quantifier 'not'. In the implicit variant, the word is fused into words that have a negative meaning. For example, none, nobody, nothing, never, nowhere (fusion with 'no') or less, without, etc. (fusion with other elements). No distinction needs to be made between implicit and explicit forms.
3) **Morphological:** prefix as negation element For example, *non*-smoker, *in*complete, *in*competent.

Comments

- With regard to the meaning, the assessment should be interpreted in combination with the negation. That means that the expression "not good" is coded as a negative assessment (2.B) with a negation (3.B).
- A double negative *(not incompetent*) is then coded as both a syntactic and morphological negative with a positive label.

4. Uncertainty

The utterance contains a form of expressed verbal uncertainty.

1) **Absent**
2) **Verbs with added meaning:** Verbs that indicate an interpretation by the speaker. For example:

- *Auxiliary verb of modality:* These verbs are used to present the statement or the assertion in a certain way in relation to reality. Examples: appears, seems, looks, can, should.
- *Added meaning* by 'qualifiers' of uncertainty, for example "*I think* it's good for you", "*it sounds like* you're not happy", "*I expect* you'll be fine".
- *Conditional mood*: a sentence in which a construction such as 'would + infinitive' or 'might + infinitive' is used. PLEASE NOTE: when combined with conditional conjunctions (if, when, etc.) it refers to a possible situation in the future and is not coded as an utterance of uncertainty.

3) **Lexical item:** lexical items of modality that indicate an uncertainty. Examples: maybe, possibly, evidently, probably, apparently.
4) **Pragmatic particle:** a particle that expresses uncertainty on the part of the speaker. Examples: well, so, but, just, even, at least, oh, right, actually, let's say.
5) **Tag question:** A question added to the end of a sentence to confirm what preceded it. Examples: right, isn't it, aren't you, is it? Examples: "but that pain in your foot, that hasn't got worse, *right*?" "But you don't have a headache, *or do you*?"

Comments

- The following words/expressions do not count as utterances of uncertainty: I know that, I hope that, let's see if, huh.
- Repeating words (also applies to other categories):
  - Do not double-code direct, literal repetitions, for example "*I think I think* it's fine".
  - Do double-code literal repetitions in the sentence that are separated, for example "it is *a bit* darker here *a bit* on the outside, yes".
  - Do double-code non-literal successive repetitions, for example "that tick bite, it *could…* it *might be"*.
- This is only about verbs in the 'epistemic' sense, so concerning what the doctor thinks, believe or knows. The 'deontic' sense, where the more literal meaning of the word is meant, does not count. Example: "you must have a neuropathic condition" is included, but "you must see the psychologist" is not included (in the latter case it is about the basic meaning of must, i.e. an imperative).
- *Can* in the negative form does not count as an utterance of uncertainty, as it indicates an impossibility and is not a form of uncertainty. For example, "You can't treat it properly then".
- 'I think' falls under a different category of uncertainty: it can be added at the end of a sentence, for example, "it seems to be caused by stress, I think". 'I think' is also used to introduce an utterance and falls under the category of supplementary verbs, for example "I think it's because of stress".

5. Intensity

The utterance contains an adjective or adverb that adds meaning to the assessment. This can be an addition or give an extra connotation in the assessment.

0) **Absent**
1) **Diminisher:** the adverb or adjective has a weakening effect on the adjective or noun to which it refers. Examples: "a slight prolapse", "the pelvic floor is a bit weakened", "that's officially too high", "Sometimes you're not sure what to do about it".
2) **Intensifier:** the adverb or adjective has a strengthening effect on the adjective or noun to which it refers. Example: "that is really good".
3) **Normalising:** Normalising adverbs and adjectives, i.e. ones that indicate a value that makes something normal or customary. For example, 'of course', 'normal', 'obviously'. It can be added or already included in the assessment, e.g. "that's not good, obviously" or "the blood count is normal".

Comments

- Diminutives are included with diminishers, e.g. "a touch too high", "it's also spreading a bit".
- Note the context of intensifiers or diminishers for their interpretation. Assessments with diminishers/intensifiers and negation, e.g. "unable to handle stimuli well". Being able to handle stimuli well strengthens the positive assessment, but 'being unable to handle stimuli well' diminishes the assessment.
- Intensifying adjectives such as 'excellent' may not have an adding adverb or adjective, but they do have an amplified meaning. That is why they are also marked as 'intensifying'. That also applies to 'fine', 'great'.
- 'Comparisons' in the form of smaller/larger/more often/faster do not count as diminishing or intensifying elements. This means that "a small chance" is counted as a diminisher, but "the chance is lower than 50%" is not.
- "The blood count is normal" is coded both as an assessment with a positive label and as a normalising adjective.

CLECI

Coding Linguistic Elements in Clinical Interactions

Codebook for patients’ language use

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OVERVIEW OF CODEBOOK

PHASE 1: Dividing the transcript into turns

Divide the transcript into whose turn it is to speak. Number the turns and note the phases.

PHASE 2: Identifying relevant utterances

Inclusion criterion: The linguistic utterance is about the physical or psychological condition of the patient.

Unit of analysis: Turn constructional unit

- Phase 2.1: Mark relevant utterances
- Phase 2.2: Note down utterances in separate Excel file

PHASE 3: Categorising relevant utterances

1. Body/mind reference
   1) Biomedical
   2) Psychosocial
   3) Ambiguous

2. Content
   0) Neutral
   1) Positive
   2) Negative

3. Subject
   0) Empty subject
   1) Patient
   2) Situation

4. Negation
   0) Absent
   1) Syntactic
   2) Morphological

5. Subjectivity
   0) Absent
   1) CTMP
   2) Perception word
   3) Both

6. Intensity
   0) Absent
   1) Diminisher
   2) Intensifier

7. Abstraction
   0) Absent
   1) DAV/DV
   2) IAV/SAV
   3) SV
   4) ADJ

CODEBOOK

Overview of coding process

The coding process consists of the following three phases:

- Phase 1 – Dividing the transcript into turns: Number the GP’s turns and the patient’s turns in chronological order. Read the transcript and note which phase of the conversation each turn takes place in.
- Phase 2 – Identifying relevant utterances:
  - Phase 2.1: Mark all relevant utterances made by the patient about their physical or psychosocial condition. Mark any doubtful cases in another colour.
  - Phase 2.2: Go through all relevant utterances and put them in a separate Excel file. Make a final decision about the doubtful cases.
- Phase 3 – Categorising relevant utterances: Code all utterances using the linguistic categories described in the codebook.

Double coding

For all phases, you calculate the inter-rater reliability by doublecoding 15% of the conversations (phases 1 and 2) and the corresponding utterances (phase 3). In phase 1, you compare the two coders’ categorisation of the conversation phases. In phase 2 ,you write down all the structural units for the turns in a separate document and indicate whether each utterance is relevant and should be included. For phase 3, you calculate the inter-rater reliability based on the selection of the utterances included.

PHASE 1 – DIVIDING THE TRANSCRIPT INTO TURNS

Convert a conversation’s transcript into a table where each new turn is a new row in the table. Remove semicolons that are not written after the speaker’s number. Select the entire transcript and go to Insert > Table > Convert text to table. Make sure your selection does not have blank lines. Select two columns and set semicolons as paragraph separators. After the table has been created, you add two extra columns to the right and a top row with the following titles (see Example 1). First, go through the transcript and remove verbal facilitator utterances such as “OK”, “yes” or “hmm” that have been placed between a longer utterance from one of the two speakers. Only remove if 1) it was not steered by a previous turn (e.g. question or ‘prompt’) and 2) it does not interfere with the next turn in any way (see example 2). Merge cells if necessary. Then enter successive turn numbers for all turns by selecting the row and clicking ‘Numbering’.

Example 1:

Speaker	Turn	Turn no.	Phase
1	So you've not been to the hairdresser?	1	1
2	No, not this time.	2	1
1	No, I don't think that's necessary. Only people who are clearly allowed, all people who look good? (10:02) Glad you're joining us, I'll have to show it to you in a bit. We're going to talk about your fainting spells and so on, and you'll be there too.	3	1
3	For the complete picture.	4	1
1	For the complete picture, yes.	5	1

You can see a fragment below where "oh?" is identified as a turn, while a "yes" later in the conversation is not treated as a turn. The "oh" in this example affects the subject of the next turn (namely "Yes, that"). The following "yes" also has a function in the conversation (it gives the speaker room to continue), but does not explicitly intervene with the turn. It should therefore be removed from the transcript and you merge turns 4 and 6 into one: 'Yes, that, I everything went well. And that's fine [...]".

Example 2:

Speaker	Turn	Turn no.	Phase
1	How's it going?	1	1
2	Well, for a while I had a, quite a session	2	1
1	Oh?	3	1
2	Yes, that, I everything went well.	4	1
1	Yes	5	1
2	And that's fine. People who keep stopping me like, you know, hey not so fast.	6	1

For each turn, note down what phase of the conversation the turn is in. It is possible for a transition between two phases to take place within one turn. In that case, write down both phases in the same column, separated by a dash.

Phase of the consultation

(Source: RIAS; Heritage & Maynard, 2006)

0) **Other:** The content of the turn has no relationship with any of the phases listed below. *1; "One moment please, it's 1 speaking" (GP answers the phone) or 2; "She gives a workshop and high tea for 25 euros"*

1) **Opening:** The patient and GP greet one another and the doctor checks the reason for coming. The opening ends when a closed question by the GP marks the transition to the anamnesis. *1; "Go ahead", 2; "Well, it's a long story."*
2) **Anamnesis:** The GP uses various (closed) questions to find out the nature of the problem, personal and family circumstances, medical background and previous treatment, and other issues regarding the lifestyle or psychosocial circumstances. *1; "Are you still experiencing dizziness?" 2; "Yes, still fatigue".*
3) **Physical examination**: The GP carries out the physical examination. During the physical examination, the complaint or any other information may also be discussed, but the main activity in this phase is the examination itself. *1; "This is just about the most painful place, isn't it?", 2; "Yeah, yeah".*
4) **Diagnosis:** The GP discusses the diagnosis and explains it. During the diagnosis, a disease is identified or a working hypothesis is made. Utterances by the patient in reaction to this also count as the diagnostic phase. *1; "The abdomen is looking OK, it just isn't doing what you want right now." 2; "No."*
5) **Treatment recommendations:** The GP discusses the policy for the disease or complaints. This comes down to the action plan, the treatment, the therapy plan or follow-up appointments.
   2; "I can keep working and just do my thing?" – 1; "Yes, of course."
6) **Closing:** The conversation is concluded. The closing phase is often marked by utterances that mark a transition concluding the conversation.
   1; "We'll keep in contact, right?" – 2; "Yeah OK, thank you."

Comments

- Questions such as "How was your summer?" do not count as questions within the anamnesis as they do not mark the transition from 'Opening' to 'Anamnesis'.
- If the GP asks a closed question about themes as indicated under 'Anamnesis', the phase is referred to as 'Anamnesis'. This also applies if such a question is asked during other phases. If the question is about other subjects, the phase corresponding to the subject is used (e.g. the question "How long have you been taking sertraline?" is marked as the 'policy' phase if it is asked immediately after other utterances in that same phase).
- The 'physical examination' phase starts when the GP announces the examination and proceeds to carry it out, e.g. "I'm going to see what it looks like."

PHASE 2 – IDENTIFYING RELEVANT UTTERANCES

Phase 2.1: Mark potentially relevant utterances

Mark all potentially relevant utterances by the patient. Mark any doubtful cases with another colour, and make a definitive decision about them in the next phase (Phase 2.2).

A language utterance is relevant if:

1. It is about the physical or mental condition of the patient. It pertains to their current situation or a situation that happened in the past.
2. The utterance contains an identifiable 'focal word' that makes clear that the linguistic utterance is about the patient's biomedical or psychosocial condition. (Source: Watson & Gallois, 2002)

Comments

- The patient's behaviour (whether health-related or not) is not included. For example, "I stopped drinking alcohol 14 days ago", "then I'm afraid to lie down".
- (Potential) future situations are not included, such as "I think it could go wrong".
- Utterances that are steered heavily by the GP are not included, for example: 1; "Does this hurt?" 2; "Yes, it hurts". This only applies to utterances that directly follow a question and are a clear repetition or variant on the GP's utterance. So 1; "Annoying or painful", 2; "It's sensitive" should be selected.
- Only select linguistic utterances if they are the patient's own assessment of their situation. Indirect speech such as "Then I call A, like, I don't feel well, getting sluggish" or "that's what P says too, I'm doing really well" are not included.
- Effects of physical examination or the treatment count as relevant utterances, for example, "I still have a mark from the blood test jab" or "and I think that [the medication] is working fine".
- If the utterance describes a cause or consequence of the complaint, it is only included if it refers to the patient's physical or emotional condition. "I did lose some weight" or "maybe that's because I don't feel so well" are included. If the explanation or the consequence does not directly describe the patient's condition, it is not included, e.g. "I'm on full sick leave", or "Where does it come from?"

Quality of transcriptions and recordings

If an utterance is potentially relevant, but the transcript is not good enough to correctly enter the coding, it is possible to listen to the recordings of the conversations again. For example: 1; "How's it going?" 2; "I had quite a session. Yes, that. I… Everything went well." ? (19:33) "and that's fine." This utterance takes place within the problem presentation and is potentially relevant for inclusion. However, the transcript has a few question marks where the transcriber was not sure of the utterance. In that case, you can listen to the original video again to try to refine the transcript. If there is still uncertainty about the transcription of the utterance after listening to the clip again, the utterance should not be included.

Unit of analysis

To guarantee the reliability of the coding, all selected sentences must be in a similar format, preferably as short as possible (Krippendorff, 2013). The unit of analysis in this study is a 'turn constructional unit' (TCU). A TCU is a coherent and independent utterance that is recognisable as "possibly complete" (cf. Clayman, 2012). It can consist of one or several words ("no pain"), a clause ("last night I started stuttering") or a sentence ("well, this morning I measured a blood pressure of a hundred and seven"). It is important that an utterance only refers to one item of interest.

A sentence can consist of multiple TCUs that each have a separate description. For instance, "it's not so bad now but there's a certain wax there" forms one sentence but is split into two utterances. An utterance consisting of multiple TCUs is often marked with a comma or conjunctions such as 'and', 'or', and 'but'. This does not apply to utterances such as "I think that maybe it's a bit like migraine". Here, "I think" is not an independent utterance, and is included in that one TCU.

Comments

- Merged sentences where the finite verb form covers multiple objects, such as "Before that I did have some more problems with my stomach and my intestines", are split up (Watson & Gallois, 2002) into two separate units of analysis. The elements "my stomach" and "my intestines" describe two separate items of interest and are therefore treated separately.

Phase 2.2: Select potentially relevant utterances

Go through all relevant utterances and put them in a separate Excel file. Make a final decision about doubtful cases. Put each relevant utterance in a new row. For each utterance, note:

- The number of the utterance (chronological order);
- The number of the turn as indicated in Phase 1 of the coding process;
- The phase of the conversation as marked in Phase 1 of the coding process.

PHASE 3 – CATEGORISING RELEVANT UTTERANCES

For each utterance, analyse the items below. Code the utterances by indicating the correct category for each variable, using the corresponding number.

1. Body/mind reference

(Source: LCIAS; RIAS, Bekhuis, 2019)

1) **Biomedical:** The utterance is about the patient's physical condition, or how the patient thinks they are doing with regard to their physical condition. *''I have problems with my intestines".*
2) **Psychosocial:** The utterance is about the patient's physical, emotional and/or social condition. *"It's getting a bit too much", "I don't feel well", "It stresses me out".*
3) **Ambiguous:** The utterance cannot be categorized unambiguously as biomedical or psychosocial.
   "It starts like a sort of different perception", "I'm getting more sensitive to it", "There are nights I can't sleep".

Comments

- The utterance must always have an identifiable 'focal word' that makes it clear that the utterance is about the patient's biomedical or psychosocial condition. It can be a verb ("but then I almost faint"), noun ("I don't have a fever right now") or a deictic element referring to the condition ("It's too high now").
- If it is not immediately clear from the context whether the utterance is about the patient's biomedical or psychological condition, the context can be interpreted. For instance if the GP asks "How are you doing now?" and the patient answers "I'm doing better of course", within the context of the GP consultation and the remaining conversation (focusing on other physical complaints) it is most likely that this is an utterance about the patient's biomedical condition.
- Examples of psychosocial complaints are: descriptions of feelings, emotions, stress, general mood, philosophical viewpoints, values and convictions.
- The content of the utterance is described as 'ambiguous' if it is impossible to tell from the context if it is about a biomedical or psychosocial condition. For example, "But I really get it every day. Feeling light in the head and then wobbly on my feet. I'm unstable". Whereas the utterance "wobbly on my feet" is a biomedical description, it is unclear what "I'm unstable" refers to (unstable on their feet or an unstable psychosocial condition).

2. Valence

(Source: Stortenbeker et al., 2018)

0) **Neutral:** The patient's physical or psychological condition is described from a neutral point of view, and it is impossible from the context to tell right away if there are positive or negative consequences to the physical or psychological condition.
   1; "That's good. And taking diclofenac again didn't have an effect on your bowel movements?"
   2; "I don't' think so, because I started taking it again and the result is the same." Or: *"No the pulse rate is normal."*
1) **Positive:** The patient's physical or psychological condition is positive or has positive consequences. *"It's just wonderful."*
2) **Negative:** The patient's physical or psychological condition is negative or has negative consequences.
   "That really bothered me".

Comments

- The categorisation of the valence can be directly based on the part of the utterance that indicates whether the utterance refers to a biomedical or psychosocial condition (e.g. "I'm also very tired"), or to an adjective or verb that characterizes the condition (e.g. "that blood pressure is high").
- If the utterance does not clearly have a positive or negative valence, you analyse the context in which the utterance was made. For example, "Yes, I get that a lot" can refer to a positive or negative condition. In that case you look at the context to see what "that" refers to. If it is impossible to make this categorisation without interpreting what the speaker might have meant, an utterance is described as 'neutral'.
- For the category 'neutral', check properly if the utterance is directly about the patient's biomedical or psychosocial condition; only then is the utterance relevant.
- When assessing the valence, look at the meaning of the utterance. The assessment "It doesn't look bad" is indicated as positive content, expressed with a negation (category 5).

3. Subject

0) **Empty subject:** The sentence lacks a subject, or it is unclear what the subject refers to. This is the case when a sentence is split into two clauses where one does not contain a subject, or if the subject has a deictic element where it is unclear what it refers to. *"On the plus side, I didn't get any new lesions"* (split into two clauses: part 1 is marked as subject 'not applicable')*; "nothing happened really".*
1) **Patient:** The subject of the sentence refers to the patient themselves. *"I have very poor hearing".*

2) **State:** The subject of the sentence refers to the patient's biomedical or psychosocial condition. *"That ear keeps ringing".*

Comments

- If you have trouble determining the subject of the sentence, first look for the finite verb and make the sentence interrogative, e.g. "who or what keeps ringing?" > "that ear". If the answer to this question does not refer to the patient's condition (for example "it does help" > refers to a treatment and its effect), mark it as absent.
- In utterances that contain two clauses because of exceptions (e.g. they contain markers of subjectivity), select the subject of the sentence that the assessment of the biomedical or psychosocial condition is based on, e.g. "[I notice] that my left side doesn't feel right yet".
- If the utterance contains a self-correction, assume the grammatical subject that fits with the corrected utterance, e.g. "I… Everything went well".
- If the finite verb was left out of the utterance, then specify 'no subject', e.g. "of my joints" or "coughing a bit the day before".
- Impersonal 'you' as in "then you don't feel well" is noted as 'subject patient'.

4. Negation

(Source: e-ANS)

0) **Absent**
1) **Syntactic:** The utterance contains a negation that relates to the biomedical or psychosocial condition. In the explicit form, this is expressed by the negative adverbial qualifier 'not'. In the implicit variant, the negation is embedded in words that have a negative meaning such as none, nobody, never, nowhere (fusion with 'no') or less, without, etc. (fusion with other elements). No distinction has to be made between the implicit and explicit form. *"That's not a good idea", "Doing that is never a bad idea".*
2) **Morphological:** The utterance contains a prefix as a negation element. For example, non-smoker, incomplete, incompetent. *"I feel very unstable inside".*
3) **Both:** The utterance contains a syntactic and morphological negation, in other words it is a double negative. *"This doesn't make me unsteady".*

5. Subjectivity

(Source: Bergqvist, 2018; van Beugen & van Schuppen)

0) **Absent**
1) **Complement-taking mental predicates:** The utterance contains words that indicate the speaker's point of view, such as I think, I realise, I believe, I assume, I understand, I notice. These are verbs that need a complement (continuation of a sentence) to become a meaningful utterance.

(e.g. I think, I suppose, I believe, I reckon, I expect, I understand, I guess, I imagine, I realise). *"I've noticed that I am a bit sluggish".*

2) **Perception words:** The utterance contains words that indicate the speaker's perceptions – sight, touch, smell and taste. It can refer to the direct, sensory observations, or be a referral to the speaker's internal state. E.g. feel, smell, hear, see, taste. *"I feel unwell".*

3) **Both:** The utterance contains both a complement-taking mental predicate, and a perception word. *"I think, my shoulder, it feels like an inflammation".*

Comments

- Words or expressions like "I hope that" (dynamic modality), or "I have to" (deontic modality) do not count as utterances of subjectivity.
- Only include explicit utterances of subjectivity in the sentence where the function is not ambiguous (or barely so). Examples are utterances such as "I notice that", "I feel that", "I think that". More implicit markers of subjectivity such as "you could say", where the meaning is multi-interpretable, are not included.

6. Intensity

(Source: Liebrecht, 2015; Liebrecht et al., 2016; van Mulken & Schellens, 2006)

0) **Absent**

1) **Diminisher:** The meaning of the utterance is weakened by words such as 'small', 'a little', 'moderate' or diminutives. These barely change the meaning of the utterance. "And then it starts bubbling a bit", "So that's going pretty well".

2) **Intensifier:** The meaning of the utterance is strengthened by one or more language elements. An intensifier indicates the extent to which the speaker's attitude is different from an unmarked situation, whereby the meaning barely changes. "Everything, everything sounds very awful".

3) **Both:** The utterance contains both a diminisher and an intensifier. *"I'm really almost vomiting".*

Comments

- The qualification must be about the patient's condition, e.g. "My hands feel really bad". Utterances such as "the diastolic pressure, well, it can change every hour or so" do not count as a diminisher/intensifier.
- Language utterances are only marked as an intensifier if it is possible to create an alternative utterance where the intensifying utterance is left out (e.g. "it hurts a lot" > "it hurts") or replace it by a more neutral, weaker variant (e.g. "that looks excellent" > "that looks good"), without changing the positive or negative valence of the assessment as such. In the utterance "for

three of four days, I couldn't go to the toilet sometimes", "sometimes" is not a diminisher because leaving it out would modify the meaning of the sentence (3-4 days not going to the toilet versus not going as often).

- Assess the meaning of the word in the context. "Not good at all" is indicated as an intensifier, but "not quite good" as a diminishing utterance. Sometimes, the intensification or diminution is indicated by multiple words, such as in "it went quite well the last few weeks". This is marked once as the presence of an intensifier (despite the fact that the words 'quite' and 'well' would have been marked separately as diminishers). The same applies to utterances such as "there's nothing I can do": "nothing" is a negation, but within this context it functions as an intensifier (the patient describes there's nothing she can do due to her complaints, but this is used stylistically rather than that she is fully incapable of doing anything).
- Intensifying adjectives such as 'excellent' may not have an additional adverb or adjective, but they do have an amplified meaning and can be replaced by 'good', for example. That is why they are also marked as 'intensifying'.
- Words that indicate an increase/decrease in frequency or time do not count as intensifying, e.g. "after that it happened <u>again"</u> (frequency), "and actually, for three or four days, I couldn't go to the toilet<u> sometimes"</u> (frequency), "so then all is well again <u>for a while"</u> (time). If the time element itself is intensified, it does count as an intensifier, e.g. "and you <u>always</u> feel that here in your throat", "I'm thinking <u>the whole time</u> oh I'm getting more tired now".

7. Abstraction

(Source: Coenen et al., 2006; Schmid, Fiedler, Semin & Englich, undated)

0) Absent: There is no verb in the TCU.

1) Descriptive action verbs (DAV) and descriptive adjectives (BA)

- A DAV refers to one specific action with a clear start and end and that can be unambiguously represented visually. It can also be seen as an objective description of an observable event. Fainting, sleeping, eating
- DAs are adjectives that are associated with nomina (round, triangular, etc.), material adjectives (silver, plastic, etc.), colour adjectives (green, yellow, etc.) and physical nouns (people, animals, things, countries, cities).

  "And I'm going grey", "Yes, but those <u>heart palpitations</u>… sometimes they don't go away", "I'd be panting like a horse" and "I can really <u>eat</u> a lot again".
- In metaphorical use of what at first seems to be a DAV, this is classed not as a DAV but as an IAV(2).

  "Well, well, those kinds of things I literally <u>drop like a hot potato</u>".

2) Interpretative action verbs (IAV) and state action verbs (SAV)

- An IAV refers to an observable event in a situational context, but it requires additional interpretation. The verb does not refer to one specific visible action, object and/or situation, but has a context-dependent meaning. Because of this, it is impossible to make a simple visual representation.
- An SAV is comparable to an IAV, except an SAV does not refer to an action in itself, but to an emotional consequence of an action (surprise, amazement, etc.).

"Well none of that <u>helps</u> me", "That just isn't <u>working</u>".

3) State verbs (SV)

- An SV refers to a permanent condition (feel, notice, hate). These verbs refer to subjective emotional or mental conditions that cannot be perceived by an observer. If the patient is the only person who knows precisely what is up, it is an SV.
- Verbs of perception (see, hear) are often used; these actions cannot be controlled by the subject. When the perception is controlled (look, listen) it is an IAV. You can test this by asking if there is a deliberate action. If the answer is 'no', it is a state verb. This can also be tested by changing the sentence into the imperative. If it is not possible to change the sentence into the imperative, it is a state verb. *"Yeah I <u>feel</u> nothing then", "so, this is the first time I've <u>had</u> it like this", "then, then, then, I do <u>tick</u> a lot of those boxes".*

4) Adjectives (ADJ)

- Adjectives/adverbs that indicate a property or attribute. It says how something is, not what something does or how it feels.
- Nouns that refer to intangible things, such as: feelings, time-space, characteristics, events, imaginary people or things. *"That's what's <u>uncomfortable</u> about it"; "Yes, at some point I get <u>irritable</u>".*

Figure 1 depicts a schematic diagram of the coding process for adjectives and verbs as a measure of language abstraction.

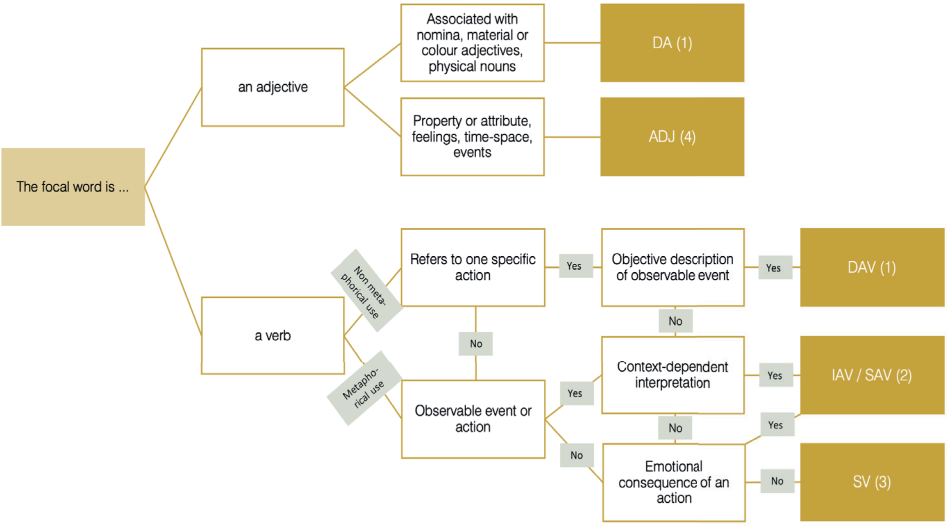

Figure 1. Schematic diagram of the coding process in the linguistic category model

Comments

- One focal word is selected. This is an independent verb or adjective. Linking verbs and/or auxiliary verbs may not be selected as the focal word. Only select an adjective if the sentence does not have an independent verb.
- The focal word can be determined by parsing the selected utterance using the following steps.
  - 1. Select the independent clause (if necessary): Dependent clauses give details about the patient's perspective or a detail of the condition. These are not included in the current coding.
  - 2. Select a verb: no verb = abstraction is absent.
  - 3. Determine the verb type: independent verb, auxiliary verb (be, have, become, will, can, may, must, want) or linking verb (be, become, seem, remain, appear, believe, occur – links the subject to a condition, function, capacity or property).
    - If the verb is not a linking or auxiliary verb: select as focal word.
    - If it is a linking or auxiliary verb: select adjective, noun or adverb as the focal word.

Note: if there are multiple verbs, select the verb that best describes the condition.

AUTHOR CONTRIBUTIONS AND RESEARCH DATA MANAGEMENT

Author contributions

Chapter 2: IS performed the systematic search and screened all publications. IS, ToH and PL synthesized the results. IS and WS developed and performed the quality appraisal. IS wrote the main manuscript in collaboration with WS, ToH and PL. All authors read and revised (earlier versions of) the manuscript.

Chapter 3: IS transcribed the fragments according to CA transcription methods. IS and WS analysed the data. All authors were involved in data sessions. IS prepared the first draft of the manuscript in collaboration with WS. All authors read and revised (earlier versions of) the manuscript.

Chapter 4: IS, SvD, ED, ToH and WS were involved in the development of the research method. LS and IS wrote the main manuscript in collaboration with SvD. All authors read and revised (earlier versions of) the manuscript.

Chapter 5: IS developed the codebook together with ED, JH and ToH. IS coded the data and performed data analysis. IS prepared the first draft of the manuscript in collaboration with ED. All authors read and revised (earlier versions of) the manuscript.

Chapter 6: IS developed the codebook together with ED, JH and ToH. IS coded the data and performed data analysis. IS prepared the first draft of the manuscript in collaboration with ED. All authors read and revised (earlier versions of) the manuscript.

Chapter 7: IS developed the codebook together with ED, ToH, WS and SvD. AK developed the codebook for language abstraction under supervision of IS. IS coded the data and performed data analysis. IS prepared the first draft of the manuscript in collaboration with ED. All authors read and revised (earlier versions of) the manuscript.

Chapter 8: IS prepared the datasets and performed data analysis. IS prepared the first draft of the manuscript in collaboration with ED. All authors read and revised (earlier versions of) the manuscript.

Research data management

For this thesis, I was permitted access to a dataset collected in 2015 as part of a PhD project titled "Communication as Therapy for patients with Medically Unexplained Symptoms" (CATMUS project) (Houwen et al., 2017). The CATMUS project aimed to develop a training program for GP and GP residents about communication with patients suffering from MUS.

Since data collection took place during regular GP consultation hours without additional invasive procedures, the study was assessed by the Radboudumc Medical Research Ethics Committee as not subject to the WMO (file number 2015-1566). Patients who gave their written informed consent agreed that their consultation would be recorded for scientific research focusing on the communication between GP and patient. Since the current thesis performs secondary analyses on the data, I filed an amendment with the ethics committee describing the purpose and rationale for secondary linguistic analyses of the consultations. The ethics committee granted permission for these secondary analyses.

The original data from the CATMUS project, i.e. research forms, questionnaires and videos, are stored in the Radboudumc department archive (archive of primary and community care): (H:) ELGdata$(\\umcfs076) under CATMUS. I followed the policy of my institute and archived the research data associated with my publications in a folder in my Radboud University work group folder (i.e. in my "werkgroepmap") for a minimum of 10 years.

All data suitable for reuse – including standard data and excluding sensitive or critical data – are stored at the Radboud Data Repository (https://data.ru.nl) and can be found on: https://doi.org/10.34973/c589-yr79. These include raw data such as codebooks, processed data with personal identifiers removed, and analysis files, as well as metadata, documentation and an open access license.

Data for chapter 2 can be found in the appendix of the original publication: https://doi.org/10.1016/j.jpsychores.2020.109994. Only published transcripts of chapter 3 are made publicly available. Other pseudonymised transcripts are stored in the workgroup folders and are available upon request. Chapter 4 is based on codebooks that are available via the Radboud Data Repository link provided above. The pseudonymised data for the studies in chapters 5, 6, 7 and 8 can also be found via this link.

DANKWOORD

Wat leuk dat je mijn proefschrift hebt gelezen! Of niet? Oké, hooguit de samenvatting? Of heb je toch gelijk doorgebladerd naar het dankwoord? Ach ja laten we eerlijk wezen: nu komt het meest gelezen gedeelte van het hele proefschrift. Ik heb overwogen het kort te houden, want het wordt zo snel een beetje afgezaagd. Maar dat is niet gelukt. Ik voel me gelukkig met veel fijne mensen om mij heen. Zij hebben op ieder op hun eigen wijze de afgelopen tijd mij door dit traject geholpen en dit is een mooi moment om daar even bij stil te staan. Dus zet je schrap… Komt ie.

Te beginnen met **Enny**. Soms vind ik heb bijna irritant hoe lyrisch ik over jou ben. Je hebt mij in mijn kracht gezet. Je gaf me veel vertrouwen waardoor ik heb kunnen groeien. Samen konden we als nerds losgaan op data-analyses, discussiëren over de implicaties, of brainstormen over nieuwe onderzoeksideeën. Wanneer ik zelf in een spinnenweb van gedachten vastzat, kon jij me eruit helpen met creatieve adviezen. Op momenten dat ik te veel wilde, hielp je mijn grenzen te bewaken. Inhoudelijke discussies wisselden elkaar feilloos af met minder serieuze gesprekken onder het genot van een wijntje tijdens de schrijfweken. Met ontzettend veel lol heb ik dit traject met jou als eerste promotor doorlopen. Ik gun iedereen hun eigen Enny. Met de mijne zet ik de samenwerking nog eens drie jaar door, dat wordt een feest!

Sandra, ik moet bekennen dat ik me altijd een beetje geïntimideerd voel bij jou. Je kennis, betrokkenheid en scherpe analyses zijn op zijn minst indrukwekkend te noemen – en dan druk ik me voorzichtig uit. Je bijdragen waren altijd haarscherp en je was op de hoogte van de kleinste details. Een overzicht van de laatste ontwikkelingen nadat je een meeting had gemist? Nee hoor, dat was onnodig. Je wist precies alle details van mijn project – en dat terwijl ik echt niet de enige promovendus was die onder jouw hoede mocht werken. Naast inhoudelijk betrokken, heb ik je op congresbezoek in Noorwegen en wandelend door de Nijmeegse bossen ook nog eens mogen leren kennen als ontzettend fijn en warm mens met een lekker scherp en humorvol randje. Ondanks dat ik er weer voor koos bij de RU te blijven (ik ben er blijkbaar niet weg te slaan), hoop ik dat de toekomst ons mooie nieuwe vormen van samenwerking brengt.

Tim, mijn persoonlijke mascotte. Als ik even wat minder gemotiveerd voelde was het tijd om jou in te schakelen. Na een gesprek met jou, al was het maar een kwartier, had ik er eigenlijk gelijk weer zin in. Jouw energie en enthousiasme zijn onuitputtelijk en bovendien aanstekelijk. Bij jou is er geen verborgen agenda. Je bent altijd goudeerlijk en open. Over wat jij kan, en ook over jouw grenzen. Jouw altijd terugkerende stokpaardje ("wat heb ik er morgen in de praktijk aan?") en kennis en ervaring over SOLK hebben een onmisbare bijdrage geleverd aan dit proefschrift. En kunnen we de regel instellen dat jouw beroemde gin-tonic avond voortaan open staat voor promovendi én ex-promovendi? Die avond wil ik natuurlijk niet missen…

Tenslotte het laatste lid van de promotiecommissie: **Wyke**. Conversatieanalyse bleek het struikelblok van mijn promotie te zijn. Ik ben zo enthousiast over wat de methode kan blootleggen en de warme groep wetenschappers die zich ermee bezighouden. Tegelijkertijd was het soms een strijd de methode eigen te maken. Het was ontzettend fijn dat jij daar mij de weg in hebt gewezen. Je hebt me begeleid met veel geduld, scherpe analyses, het nodige sturen en daarna juist vrijlaten wanneer ik het nodig had. En niet te vergeten stond je voor me klaar op de momenten dat het persoonlijk even wat minder liep. Als het minder loopt, is lopen (of eerder snelwandelen met jouw tempo) een geweldige oplossing!

Leden van de manuscriptcommissie, prof. dr. **Wilbert** Spooren, prof. dr. **Julia** van Weert, prof. dr. **Henriëtte** van de Horst, prof. dr. **Judith** Rosmalen en dr. **Mike** Huiskes, hartelijk bedankt dat jullie de tijd en moeite hebben genomen het proefschrift te lezen en beoordelen. Individueel heeft ieder van jullie tijdens een fase van mijn promotie ook een bijdrage geleverd en ik vind het geweldig dat deze diverse groep aan intelligente wetenschappers uit verschillende disciplines het eindoordeel heeft mogen vellen. Many thanks to prof. **Chris** Dowrick who took the time to travel from the UK for my defense, and to present at our symposium. I am truly honored to welcome you on this day.

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Bij communicatie-en informatiewetenschappen liep ik als jonge student al rond en heb ik door de jaren heen mijn tweede thuis gevonden. Leden van de Health, Communication and Technology groep, oud-docenten **Agnes**, **Núria**, **Andreu** en **Béryl**, mede (ex)-promovendi **Linde**, **Nina**, **Iclal**, **Marloes**, **Lynn**, **Merijn**, en **Anne** en opnieuw hervonden super-collega **Eva**: bedankt voor alles! **Jessica**, je kwam wat later als eigenlijk een beetje vreemde eend aanwaaien bij CIW. De pandemie zorgde ervoor dat we gedwongen thuis moesten werken en zo ontstond het idee om dat dan maar samen te doen. Wat een briljante zet was dat. Jouw gezelschap heeft mijn promotietraject zo'n enorme boost gegeven. Ik vind het heerlijk dat ik nu als post-doc eindelijk officieel jouw kamergenoot ben geworden. Tot slot blijft ook **Judith** bij dit rijtje staan. Omdat jouw intellect en grootse vermogen tot verbinding thuishoren in de wereld van de wetenschap.

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Ten slotte paranimfen Ilona en Iris. Of beter gezegd: *Triple Blonde I*. **Ilona**, tijdens een cursus van de research master had ik het idee dat wij wel een klik hadden. Dat bleek een grove onderschatting. Niet alleen inhoudelijk was het fijn om een PhD-maatje te hebben die samen met mij schipperde tussen CIW en ELG. Het was vooral belachelijk fijn om alles in onze levens met elkaar te delen. Alles? Ja volgens mij hebben we elkaar weinig onthouden. Elkaars klankbord als de stress te veel werd, de glazen klinken om successen te vieren of om bizarre momenten te verwerken, hilarische of gênante verhalen delen, elkaar troosten bij klein en groter verdriet, en dansen in de werkkamer of in een Portugees paradijs als we even een energie boost nodig hadden. Ik voel me dankbaar dat we al die momenten hebben gedeeld en heb er alle vertrouwen in dat we dat blijven doen – waar onze carrières ons ook leiden.

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ABOUT THE AUTHOR

Inge Stortenbeker was born in Nijmegen, the Netherlands in 1992. After completing her secondary education (VWO) at the Montessori College Nijmegen in 2010, she started her bachelor Communication and Information Studies at the Radboud University. She continued with the research master Language and Communication. She wrote her thesis about GPs' language use during consultations about medically unexplained symptoms, in collaboration with the department of primary and community care at Radboudumc. After finishing her master's (cum laude), she successfully applied for PhD research funding at the Netherlands Institute for Scientific Research (NWO). The PhD was supervised by Enny Das, Sandra van Dulmen, Tim olde Hartman and Wyke Stommel. Since May 2022, she works as a postdoctoral researcher at the SENTENCES project. In this project, she studies the relationship between news reports, social media discussions, and the public perception about cancer screening.

“Language in medicine”
Photo: Michiel Stortenbeker

This thesis studies language use in consultations about medically unexplained symptoms (MUS). How do doctors explain symptoms? Does their language use relate to how patients feel? And which language do patients use to express their complaints? This thesis uses insights from research about doctor-patient communication, linguistics and persuasive communication to answer these questions.

The pharmacy bottles used to be displayed at “Drogisterij De Salamander”, the drugstore owned by my grandfather from 1938 until his sudden death in 1963.