



# Verbal engagement in doctor–patient interaction: Resonance in Western and Traditional Chinese Medicine



Vittorio Tantucci <sup>a,\*,1</sup>, Carmen Lepadat <sup>b,2</sup>

<sup>a</sup> Department of Linguistics and English Language, Lancaster University, C45 County South, LA1 4YL, UK

<sup>b</sup> Department of Foreign Languages, Literatures and Cultures, Roma Tre University, Italy

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## ABSTRACT

This study provides a framework for assessing doctors' verbal engagement during medical consultations. It quantifies doctors' degrees of resonance (Du Bois, 2014), a form of interactional alignment (Pickering and Garrod, 2021) that occurs when speakers imitate and re-use words and constructions uttered by their interlocutors. Resonance often involves creativity and active participation in others' speech, overtly signalling that what they said is relevant for continuing the interaction (Tantucci and Wang, 2021). We looked at Chinese naturalistic consultations and explored whether resonance produced by Chinese doctors with a background in Western medicine (WM) differs from Traditional Chinese medicine (TCM) doctors. Our data includes 60 online medical consultations and shows that TCM doctors' resonance is remarkably higher. This reflected stronger involvement in patients' speech in combination with other interactional indicators of engagement such as sentence peripheral markers of intersubjectivity (Tantucci, 2021) and strategies of relevance acknowledgement (Tantucci, 2023). The pragmatics of TCM doctors is also characterised by a more directive language geared towards a healthy lifestyle, whereas WM doctors favour etiological assessment, with a predominant use of assertive speech acts.

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## 1. Introduction

How engaged are doctors with their patients during medical consultations?

This study provides an operational methodology for quantitatively assessing this from large-scale naturalistic interaction. One key component of interactional engagement is resonance (Tantucci, 2023), which is a form of dialogic imitation that involves speakers re-using (parts of) the utterances of their interlocutors (Du Bois, 2014). Resonance is an important aspect of interactional alignment (cf. Pickering and Garrod, 2021), as it is conducive to adapting to an interlocutor's verbal behaviour and the joint representation of beliefs and events. Resonance reflects engagement because re-using the words and the expressions of another speaker is a way to demonstrate that what they said is important for the continuation and the progressivity (Schegloff, 2007) of an interaction. Conversely, consistent absence of resonance underpins interactional

\* Corresponding author.

E-mail addresses: [v.tantucci@lancs.ac.uk](mailto:v.tantucci@lancs.ac.uk) (V. Tantucci), [carmen.lepadat@uniroma3.it](mailto:carmen.lepadat@uniroma3.it) (C. Lepadat).

<sup>1</sup> <http://www.lancaster.ac.uk/linguistics/about-us/people/vittorio-tantucci>.

<sup>2</sup> <https://www.uniroma3.it/persona/ZkRRQnFWRStyVGdVUFk1YVBZMnc3WEVtVHpGNi9TeTluSUJ6WIIISRDFoUT0=/>

detachment, which is distinctive of ASD speech (Tantucci and Wang, 2023). To our knowledge, this would be the first model to shed quantitative light on doctors' proactive attempts to overtly engage with their patients' language and discuss the impact of this phenomenon on health communication.

We sourced 60 conversations, including 1415 utterances from the Chunyu Yisheng<sup>3</sup> platform of online medical consultations, and compared the speech of Western medicine (WM) doctors with that of Traditional Chinese medicine (TCM) doctors. Engagement is a central component of medical communication, particularly in relation to rapport building, small talk, and patient-centeredness (Jin et al., 2022). Palliative care textbooks only occasionally mention the important role of 'active listening', backchanneling and repetitions of patients' words (Jenkins et al., 2021). In this study, we propose that resonance is key for etiological assessment, as it is not limited to repetition but involves inventive engagement as a joint creation of knowledge (Tantucci et al., 2022) between doctors and patients. We provide a multifactorial analysis based on medicine type, gender, turns word count, sentence peripheral markers of intersubjectivity (PIM), overt acknowledgement of relevant interlocutors' speech (RA, Tantucci, 2023), illocutionary force and resonance.

We fitted a mixed effects linear regression showing that TCM doctors' textual engagement with patients is higher than for WM specialists. Resonance in TCM doctors' speech correlates with overt relevance acknowledgement and sentence-peripheral markers of intersubjectivity. We also discovered that the language of TCM doctors is inherently directive, whilst the speech of WM doctors is more assertive. This suggests that TCM is distinctively oriented toward patients' lifestyles and geared towards advice-giving between doctor and patient (Yip, 2020). This supports the idea that TCM is distinctively oriented towards a holistic approach to the body with its social and natural environment (Lu et al., 2004:1854), with a stronger emphasis on harmonious interaction and rapport building (Spencer-Oatey, 2005). Conversely, WM is more assertive and primarily favours etiological considerations.

This paper has important applications for improving patients' understanding and perception of their conditions during consultations. On the one hand, it shows that different medical communities of practice have not just different epistemological approaches to illness but also different interactional behaviours during consultations. At the same time, it contributes to raising the awareness that verbal engagement with patients' words is a key component of doctor-patient interaction. In this sense, resonance is not just an indicator of involvement in conversation but also an interactional goal to be pursued by doctors during medical consultation to improve information transmission and the effectiveness of their diagnosis.

This study is organised as follows: Section 2 introduces the notion of resonance as a form of verbal engagement achieved via imitation and re-combination of an interlocutor's utterances. Section 3 discusses previous research on doctor-patient interaction. In section 4 we illustrate the retrieval of our data. This is followed by three sections focusing on the annotation methodology for the verbal dimensions of engagement included in our study, resonance in section 4.1, PIM in section 4.2, and RA in section 4.3. Section 5 presents the results of our study. Section 6 is devoted to discussing the applied implications of our findings. Our conclusions are finally formulated in section 7.

## 2. Resonance as verbal engagement

This study adopts a usage-based approach to naturalistic speech, which involves analysing linguistic units as constructions, viz. as holistic pairings of form and meaning (i.a. Langacker, 1987; Goldberg, 1995, 2006; Kay and Fillmore, 1999; Tomasello, 2003; Traugott and Trousdale, 2013). The usage-based model focuses on naturalistic interaction and people's ability to categorise constructions as they experience them in use. However, the focus of this framework has traditionally been on constructions as representations of a single speaker. In recent years, new emphasis has been placed on the enactment of constructions through dialogue and how two or more interlocutors conceptualise them (Haugh, 2007; Arundale, 2010; Weigand, 2018; Tantucci, 2023). This has led to new models of dyadic cognising, in which the structure and meaning of utterances are re-combined by both speakers throughout turns at talk.

As part of this new research strand, dialogic constructions have become a key component of Dialogic Syntax (Du Bois, 2014; Zima and Bröne, 2015; Tantucci and Wang, 2021; Tantucci, 2023). This model is based on the idea that a salutation such as [A: *How're you doing?* | B: *Not too bad, how about yourself?*] is conceptualised by both speakers as a unit with structural properties and semantic meaning that is used pragmatically to perform the joint project of a greeting. In this view, constructions emerge dynamically (Hopper, 2011) as a result of interlocutors' dialogic engagement and often involve creative re-elaboration of forms and meanings throughout an interaction, e.g. [A: *Today is a beautiful day isn't it?* B: *Not quite as beautiful as yesterday*]. This means that linguistic processing is inherently 'recombinant' (Tantucci, 2023), in a way that speakers constantly and quickly adjust structure and meaning to new dialogic stimuli, producing dialogic constructions as a result of joint projects at talk (Clark, 1996). When creative recombination of form and meaning occurs across turns, people **resonate** with one another as they re-use (parts of the) utterances and constructions of their interlocutors. **Dialogic engagement** is thus overtly 'on record', as speaker B enactively demonstrates that what A said was relevant for the continuation of the interaction. Resonance is a distinctive form of alignment (e.g. Pickering and Garrod 2021), as speakers do not simply 'coordinate' one another's speech to foster cognitive representation and information transmission. Rather—and more specifically—resonance is a form of complex imitation (e.g. Arbib 2012), inherently acknowledging the relevance of what has just been said by someone else (Tantucci, 2023) as a verbal 'substrate' (Goodwin 2013: 9) that structurally and pragmatically

<sup>3</sup> <https://www.chunyuyisheng.com/>Last accessed: 4/01/2024.

informs a subsequent turn. When speakers overtly—and often creatively—re-use words and expressions of their interlocutors, they overtly sanction that what was said is important and worth re-using for the continuation of the interaction.

Resonance is based on a constructional approach to dialogue, which allows for the quantitative measurement of proactive engagement in interaction on a large scale. Here is an extract from a physician–patient consultation in the United States:

- (1)  
 D: How are you feeling?  
 P: Much better, **I feel good.**  
 D: Okay. So **you're feeling a little better** with *thuh* [...] Chlonadine?

(Drew et al., 2001: 58)<sup>a</sup>

<sup>a</sup> Emphasis added.

In the excerpt above, resonance occurs in the speech transition from patient (P) to doctor (D) and from doctor to patient. D's question *How are you feeling* is creatively resonated by P in the form of *I feel good*. The latter, in turn, is further resonated by D in the form of *so you're feeling a little better*. Focusing on the last turn by D, we can see how utterance similarity correlates with proactive engagement with the patient's speech, as D re-uses part of P's speech to initiate a new topic about the Chlonadine medication that P is using.

To annotate resonance as in (1), one needs to identify dialogic constructions that consist of repeating at least one lexical item from one turn to the next, which in the last row is *feel/feeling*. This often entails innovatively modifying a previous structure and creating affordances for categorising a more schematic construction that can be applied to both forms uttered by P and D, which in this case would be [Pers.P<sub>patient</sub><sup>4</sup> FEEL AP<sub>physical</sub><sup>5</sup>]. This can be visualised in a table, representing what in dialogic syntax is called a **diagraph**, i.e. a syntactic structure resulting from the coupling of two or more utterances through resonance relations (Du Bois and Giora 2014: 354). When the original ad hoc construction is modified, that is marked as underlined text (in case of replacement) and in brackets (in case of addition) Table 1:

**Table 1**  
 Diagraph of the dialogic construction [P.Pronoun FEEL AP<sub>physical</sub>].

	Pers.P <sub>patient</sub>	FEEL	AP <sub>physical</sub>	IF
P:	<i>I</i>	<i>feel</i>	<i>good</i>	Expressive
D:	<u><i>you</i></u>	<u><i>(re) feeling</i></u>	<u><i>(a little) better</i></u>	Rogative

In the transition from P to D's speech, the personal pronoun *I* is resonated as *you*, the verb *feel* is re-combined in the form of *'re feeling*, and the adjectival phrase of physical fitness (AP<sub>physical</sub>) *good* is then re-used in the extended form of *a little better*. The formal and semantic analogy among those constituents allows for the more schematic construction [Pers.P<sub>patient</sub> FEEL AP<sub>physical</sub>], which is realised 'on the fly' from one turn to another.

Resonance is an important pragmatics device. In (1), formal variation from P to D's utterance also involves a change in the illocutionary force from the original turn to the next one, as P's expressive speech act about how she is feeling is then re-combined as a rogative by D to make sure that the prescription is successful. Resonance can then be assessed quantitatively by looking at the number of constituents included in the emerging dialogic construction, namely 3: Pers.P<sub>patient</sub> + FEEL + AP<sub>physical</sub>. A large-scale account of this phenomenon has the power to inform the statistical modelling of proactive engagement in naturalistic conversation.

Doctor–patient consultations are not the only context where resonance has been measured quantitatively. Children start to develop the ability to resonate creatively with their parents around their third year of life, which coincides with the development of a Theory of Mind (Tantucci and Wang, 2022b). Children with Autism Spectrum Disorder (ASD), in turn, have difficulty with creative resonance as compared to neurotypicals (Hobson et al., 2012; Du Bois et al., 2014; Tantucci and Wang, 2023). Resonance has also been shown to vary across cultures and languages, e.g., informal Chinese naturalistic dialogues among family members show greater resonance than American English naturalistic interaction (Tantucci and Wang, 2021, 2022a). Sociopragmatic variation is also captured via resonance measures, i.e. showing how British conversation style has changed across classes in the last 30 years (Tantucci and Wang, 2024). One of the goals of this study is to provide a replicable model to assess the degree to which doctors overtly engage with the language of their patients during consultations. As we will compare doctors specialised in Western Medicine (WM) vs one specialised in Traditional Chinese Medicine (TCM), this study also seeks to determine whether the community of practice where the doctors operate impacts how they verbally engage with what their patients' speech. We will address this via the following research questions:

- i. Do TCM doctors engage verbally with patients in the same way as WM doctors?
  - i. If not, does this involve different degrees of resonance?
  - ii. What other forms of verbal engagement correlate with resonance?
  - iii. Are there differences in the speech acts realised by TCM and WM doctors?

<sup>4</sup> Personal Pronoun, referring to a patient of a medical consultation.

<sup>5</sup> Adjectival phrase referring to physical fitness.

### 3. Doctor-patient interaction

In General Practice (GP) full-time doctors who see 30 patients a day on average are estimated to consult with over 240,000 patients throughout their working career. Despite being highly repetitive practices, contexts of medical consultation are inherently social and relational kinds of interaction (Balint, 1957; Goffman, 1964; Heritage and Maynard, 2006). Most importantly, communication in medical care is key to successful clinical treatment and relationships between professionals and patients (Barnes, 2019).

There is a body of commentaries and reviews centred on the conversation analytic (CA) side of doctor-patient consultations (Barnes, 2005; Drew et al., 2001; Gill and Roberts, 2013; Peräkylä, 1997; Pilnick et al., 2009; Robinson and Heritage, 2014). From this angle, sequentiality is often found to be quite conventional in doctor-patient interaction. Robinson (2013) notes that the overall structural organisation of encounters between patients and physicians often involves four stages:

- i. Patients present their medical concerns (normally in response to physicians' solicitations of the 'reason for' visits, such as *What can I do for you today?*).
- ii. Specialists gather additional information about the patients' concerns (e.g. history taking, physical examination).
- iii. Specialists deliver diagnoses.
- iv. Specialists provide treatment.

Stivers and Barnes (2018) identifies 5 typical formats through which doctors make recommendations to their patients. These include pronouncements (e.g. *I'll start you on X*), suggestions (e.g. *You could try X*), proposals (e.g. *Let's try X and see how that goes*), offers (e.g. *Would you like me to give you X?*), and assertions (e.g. *X is good for this*). Along a sequence of actions, doctors and patients orient collaboratively (Lerner, 1996; Schegloff, 2007) to the final diagnosis, progressing in a directional fashion. Throughout this process, doctors accordingly prefer to overtly comment on some aspects of a physical examination when they expect the patient to resist the upcoming diagnosis. This communicative practice seems to reflect the doctor's understanding of some prior talk in which the patient showed signs of potential disagreement with his/her view (Drew et al., 2001). This is, in turn, a textual environment that favours resonance as a form of verbal engagement with the patient's talk, even in contexts of disagreement (Tantucci and Wang, 2021).

A key aspect of doctor-patient interaction is the situated nature of the conversation, which involves intra-cultural and cross-cultural differences. For instance, Bergen et al. (2018) compared U.S. and UK patients' reasons for resisting treatment recommendations. They found that patients in the United States favour prescription drugs rather than 'over-the-counter' medication. However, patients in the United Kingdom exhibit a more reserved attitude towards prescription medications. This mismatch highlights how patients and physicians jointly construct definitions of good-practice prescribing (2018:1388) that vary depending on contextual, intra- and intercultural factors. Drew & Sorjonen argue that research in the field of naturalistic conversation and health communication "should be comparative in scope, encompassing knowledge about both ordinary conversation and institutional discourse (preferably from a range of institutional settings)" (1997:110). The current study on resonance is also inherently comparative. It is situated in online doctor-patient interaction and focuses on the degree to which doctors' overt interactional engagement at talk is affected by their medical background, namely Western vs Traditional Chinese Medicine.

#### 3.1. Traditional Chinese medicine

Traditional Chinese Medicine (TCM) is a combination of philosophical and medical knowledge dating back to more than 3000 years ago with the Yijing (I Ching or The Book of Changes) and, later, the Huangdi Neijing (The Yellow Emperor's Classic of Internal Medicine). Its roots are deeply grounded in Daoism and, to some extent, Confucianism (Liu, 2019; Pun and Chor, 2020).

Central in TCM system is the Yin-Yang theory, which is both holistic and dialectic, for it "posits that the universe is a complete whole consisting of two complementary opposites" (Jin et al., 2022: 2). Yin and Yang represent the forces governing all things in the universe, including the human body—which is closely related to its social and natural environment (Lu et al., 2004). Their relationship is dynamic, and any health disorder may be explained as an imbalance between the two (Liu, 2019; Jin et al., 2022; Sun et al., 2013). Fundamental in TCM is also the Five Elements Theory, according to which the universe and the human body are equally made up of five primal elements: wood, fire, earth, metal and water. These match the heart, liver, spleen, lung, and kidney and have the important task of regulating both qi—"the vital force or energy which flows through a system of channels and conduits in the body" (Chen and Xu, 2003: 226)—and blood. In this view, any health disorder results from an imbalance between the body and the external natural and social surroundings (Jin et al., 2022; Liu, 2019). TCM adopts an integrated perspective, paying "more attention to the patient's personal experience, physical body conditions, and the possible links between the patient's own symptoms and the surrounding environment" (Pun and Chor, 2020: 1). This is where practitioners rely heavily on the assessment of patients' interpersonal and emotional needs, lifestyle, and wellbeing in order to better assess their clinical conditions (Jin et al., 2022). Wider use of interpersonal-oriented strategies characterises TCM communication, such as small talk, colloquial expressions, emotional talk and inclusive language (Wei and Mao, 2023). At the

same time, other studies have also highlighted that TCM—unlike WM—favors a directness in advice-giving, which might be connected with the patient's beliefs and life habits rooted in Daoist and Confucian values (Yip, 2020). Gu (1996) and (Yip, 2020) report TCM doctors' tendency to make wide use of advice-giving strategies not only in the area of prescriptions and physical treatments but also connected to the patient's eating, sleeping and socialising habits.

This differs from Western Medicine (WM), which mainly focuses on the specificity and etiology of a disorder (Lu et al., 2004; Sun et al., 2013). Studies on doctor-patient interactions in WM identified several strategies doctors and nurses use to reduce and mitigate advice-giving, including sharing professional knowledge and facts in the form of informative speech acts (Kyuru et al., 2004; Zayts and Schnurr, 2012). The strong advice-giving character of TCM connects its holistic orientation with its prescriptive nature, which is in line with Confucian moral ethics (Lewis, 2017). This, in turn, also involves the patient's willingness to seek and receive not just medical prescriptions but also lifestyle recommendations from doctors in the Chinese context (Pan et al., 2018). As we will see in the ensuing case study, this cultural tendency is reflected in how TCM doctors engage with their patients via resonance, directive illocutionary force and other rhetorical strategies.

#### 4. Data retrieval and annotation

For our study, we analysed 64 naturalistic conversations, comprising 1415 utterances made by doctors when communicating with patients. Data were extracted from the consultation section of the Chunyu Yisheng, one of the most popular Chinese online consultation service platforms. According to The 52nd Statistical Report on China's Internet Development,<sup>6</sup> online medical services in China are employed by one-third of the total Internet users, and online consultation platforms are experiencing a strong development trend. Chunyu Yisheng, founded in 2011, is a pioneering platform that played a crucial role in the development of Chinese online healthcare services (Wang et al., 2021). As of May 2022, it claimed to have 150 million users, over 660,000 licensed doctors practising in public hospitals. The platform archives and makes publicly available doctor-patient consultations in the form of online chats after obtaining permission from the patients during each consultation (Zhang 2020). The platform provides information for each conversation, including the doctor's specialisation, IDs, educational background and professional affiliation, the investigated disease type, and the consultation time. We randomly sampled 32 conversations from the TCM sub-section and 32 conversations from the WM sub-section, ensuring both doctors' genders were equally represented.

For the annotation of all utterances, we primarily focused on resonance, thus the overt repetition or reformulation of a lexical item, an interjection or a morphosyntactic construction in a preceding utterance and the new construction emerging as a result. Our annotation scheme was multifactorial as it included the doctors' names (ID), their gender, the type of medicine they practise (MT, e.g. Western vs Eastern), the illocutionary force of their utterances (Speech acts, SA), the length of each utterance (measured in word count), the presence of peripheral markers of intersubjectivity (PIM, e.g. sentence-final particles, backchanneling tokens, discourse markers), overt strategies of relevance acknowledgement (RA, e.g. *what you say is important because ...*; *This is crucial as ...*). Data relative to these variables was collected in a CSV format and then imported into Rstudio. A sample line of the input of all covariants is reported in Table 2.

**Table 2**  
Input for the multifactorial annotation of Resonance.

ID	Gender	MT	SA	Length	PIM	RA
唐华 (Tanghua)	F	Chinese	Assertive	16	Absent	Yes

In our study, doctors' verbal engagement was tackled across three dimensions included in Table 2: resonance (e.g. the proactive re-use of P's utterances), peripheral markers of intersubjectivity and overt strategies of relevance acknowledgement. In sections 4.1, 4.2 and 4.3 we discuss each dimension in detail and the annotation scheme we adopted for quantifying them.

##### 4.1. Annotating resonance

Resonance can shed light on several aspects of human interaction, such as linguistic categorisation and verbal engagement (Tantucci, 2023), the focus of the present paper. One way of analysing it operationally is when the internal constituents of an emerging dialogic construction are counted. This reflects the degree to which interlocutor B makes a creative effort to verbally engage with a construction originally produced by A.

<sup>6</sup> <https://www.cnnic.com.cn/IDR/ReportDownloads/202311/P020231121355042476714.pdf>.

Example (2) below is a case of resonance in our data occurring from patient (P) to doctor (D):

- (2)  
 [speaking about sex life and menstrual disruption]  
 P: 这种情况还会有机会怀孕吗?  
 Zhè zhǒng qíngkuàng hái huì yǒu jīhuì huáiyùn ma?  
 This type situation still will have chance be.pregnant SFP<sup>7</sup>  
 'Under these circumstances, is there still a chance of pregnancy?'  
 D: 有可能怀孕的。  
 Yǒu kěnéng huáiyùn de.  
 Have possibility get.pregnant SFP  
 'It is possible that [you're] pregnant.'

TCM/Chunyu

In example (2) above resonance occurs from P's original construction [有 *yǒu* 'have' 机会 *jīhuì* 'chance' 怀孕 *huáiyùn* 'get pregnant' 吗 *ma* 'SFP'] 'there is a chance to get pregnant' to D's new form [有 *yǒu* 'have' 可能 *kěnéng* 'probable' 怀孕 *huáiyùn* 'get pregnant' 的 *de* 'SFP'] 'it is possible to get pregnant'. In this case, the lexical repetition of both 有 *yǒu* 'have' and 怀孕 *huáiyùn* 'get pregnant' creates affordances for the emergence of a more schematic dialogic construction. The overall count for resonance thus corresponds to the internal constituents of the new form [有 *N*<sub>possibility</sub> 怀孕 SFP], namely 4, as reported in the diagram in Table 3:

**Table 3**  
 Diagram of the construction [有 *N*<sub>possibility</sub> 怀孕 SFP].

	有	<i>N</i> <sub>possibility</sub>	怀孕	SFP	IF
P:	有	机会	怀孕	吗	interrogative
D:	有	可能	怀孕	的	evaluative

Here, the verb 有 *yǒu* 'have' is followed by a noun of epistemic possibility (either 机会 *jīhuì* 'chance' or 可能 *kěnéng* 'probable/probability'<sup>8</sup>) leading to the complementing predicate 怀孕 *huáiyùn* 'get pregnant', then followed by a sentence-final particle (either the interrogative 吗 *ma* or the representative 的 *de*).

D's verbal engagement with P involves reassuring P that *she has a good chance of getting pregnant*. D does so by re-using a similar morphosyntactic structure as D but transforming the original interrogative illocutionary force of D's utterance into an evaluative one that expresses a high degree of likelihood. This is done by using 可能 *kěnéng* (Tantucci et al., 2018), which semantically expresses high probability, and the intersubjective sentence-final particle DE (Tantucci and Wang, 2020a), in turn encoding a confident stance towards what is being communicated.

Another example of resonance from our dataset is given in (3) below:

- (3)  
 P: 我平时不严重的时候白天6次吧, 晚上一次  
 wǒ píngshí bù yánzhòng de shíhòu báitiān liù cì ba, wǎnshàng yīcì  
 I normally not serious STR<sup>9</sup> time daytime 6 time SFP, evening one time  
 'When that is not serious I go 6 times a day and once at night  
 像今天比较不舒服就是老感觉阴茎里有尿液的感觉  
 xiàng jīntiān bǐjiào bù shū fú jiù shì lǎo gǎnjué yīnjīng lǐ yǒu niào yè de gǎnjué  
 like today quite not well that-is often feel penis in there-is urine STR feeling  
 when I am quite not well like today I often feel there is still some urine  
 然后不去厕所也行, 去了也排不出多少  
 ránhòu bù qù cèsuǒ yě xíng, qù le yě pái bù chū duōshǎo  
 then not go bathrooms also fine, go PF<sup>10</sup> also not exist how-much  
 then if I don't go to the bathroom it's fine, if I go I can't urinate at all.'  
 D: 你这个症状不算啥严重的, 不要焦虑, 焦虑反而会加重病情,  
 Nǐ zhè-ge zhèngzhuàng bù suàn shá yánzhòng de  
 You this-cl symptom not count what serious SFP  
 'This symptom of yours is not serious at all, don't worry, that would make it worse,  
 可以继续把双石通淋胶囊吃上。  
 shítōng línjiāonáng chī shàng  
 keyǐ jìxù bǎ shuāngshítōnglín jiāonáng chī shàng  
 can continue DIS<sup>11</sup> diuretic (brand) capsules eat-up  
 you can keep taking two 'diuretic' capsules.'

TCM/Chunyu

<sup>7</sup> Sentence Final Particle. SFPs in Mandarin operate as peripheral markers of intersubjective concern about how the hearer will react to the ongoing utterance (Tantucci et al., 2018; Fang and Hengeveld, 2022).

<sup>8</sup> The adjectival 可能 *kěnéng* becomes nominalised when following the existential verb 有 *yǒu*.

<sup>9</sup> Structural particle, it is used express possession or genitive case (cf. Li and Thompson, 1981).

<sup>10</sup> Perfective.

<sup>11</sup> Disposal Particle.

In the exchange above, the original construction uttered by the patient P [我 *wǒ* 'I' 不 *bù* 'not' 严重 *yánzhòng* 'serious'] '(When) I am not seriously ill' is resonated by the doctor D in the form of [你 *nǐ* 'you' 这个症状 *zhè ge zhèngzhuàng* 'this symptom' 不 *bù* 'not' 算 *suàn* 'consider' 啥 *sha* 'at all' 严重 *yánzhòng* 'serious'] 'this symptom of yours is not serious at all'. This creates affordances for the emergent dialogic construction [Topic-PersP<sub>patient</sub> Subj 不 严重]. In fact, while the internal specific constituents 不 *bù* 'not' and 严重 *yánzhòng* 'serious' are repeated, some generalisations are possible about the topic position of the construction, which in both cases is occupied by a personal pronoun referring to a patient (PersP<sub>patient</sub>). Similarly, a higher degree of schematicity involves the structural presence of a following subject (Subj), which is dropped via ellipsis in P's turn. The emergent [Topic-PersP<sub>patient</sub> Subj 不 严重] construction is made of four constituents and thus corresponds to a value of 4 for resonance, as given in the diagram in Table 4:

**Table 4**  
Diagram of the construction [Topic-PersP Subj 不 严重].

	Topic-PersP <sub>patient</sub>	Subj	不	严重	IF
P:	我	/	不	严重	assertive
D:	你	这个症状	不	(算啥)严重	evaluative

Similar to what happens in (2), recombinant creativity is here at work also at the illocutionary level, as P's original assertive speech act is now turned into an evaluative by D. This process of annotation was repeated for every instance in which D overtly engages with P's talk so that a large-scale account of his/her attempts to resonate with what they heard can be quantified statistically, i.e. as a response variable of a linear regression.

A case where resonance is absent in D's turn is the following:

- (4)  
D: 请问白带是什么样的?  
Qǐng wèn bāidài shì shénme-yàng de  
Please ask white-flow be how SFP  
'May I know how is the white flow?'  
P: 白带偏黄.  
bái dài piānhuáng  
White-flow towards yellow  
'The color is a little yellow.'  
D: 那这种情况就要考虑阴道炎症所导致的。  
nà zhè zhǒng qíngkuàng jiù yào kǎolǚ yīndào yánzhèng suǒ dǎozhì de  
Then this type situation just must consider vaginal inflammation str lead SFP  
'Well, in this case it is necessary to consider what led to the inflammation.'

WM/Chunyu

Excerpt (4) involves a doctor practising Western medicine. In this case, P is the one who resonates with what D said, as s/he re-uses the construct [白带 *báidài* 'white flow' 是 *shì* 'is' 什么样 *shénmeyàng* 'how'? 的 *de* SFP] in the form of [白带 *báidài* 'white flow' 偏黄 *piānhuáng* 'a-little yellow'], giving rise to the dialogic construction [白带 Pred]. Things are different in D's following turn, as nothing of what P has said is resonated, that is, information is transmitted without verbal engagement with P's utterance. The value of D's resonance in this case is 0.

This annotation process required three stages of inter-rater reliability. Three independent annotators disambiguated resonance values throughout the 1415 observations of our dataset. The rate of accuracy across annotators was measured in Cronbach's alphas and corresponded, respectively, to  $\alpha = 0.76$ ,  $\alpha = 0.78$ , and finally  $\alpha = 0.92$ . At each stage, a 25% sample of the data was independently annotated. Cases of disagreement were resolved among the annotators before moving to the annotation of a new randomised sample.

#### 4.2. Annotating sentence peripheral intersubjectivity (SPI)

Intuitively, verbal engagement is not only achieved through resonance. During interactions, speakers align with one another via interjections, backchannels, pragmatic markers and other conventionalised constructions that convey speakers' awareness of their interlocutors' stances, their feelings and so on (Tantucci, 2017a, 2021). It has been found that world languages tend to develop grammaticalised markers at either the right or left sentence periphery (cf. Traugott, 2012, 2016) to modulate intersubjectivity, that is, the overt expression of a surplus of meaning that is centred on a specific or generic addressee's potential reactions to what is said (Tantucci, 2021: 33). For instance, peripheral intersubjectivity includes adverbials such as *apparently*, *clearly* or *as it seems*, all acquiring a pragmatic marking function of evidentiality when they occur at either right or left sentence periphery. They no longer adverbially express what is visible at sight but rather what is assumed to be known by an extended group of people (Tantucci, 2016a,b). This involves the intersubjective expectation that what is said will thus sound plausible to the hearer. Similarly, conventionalised backchanneling functions that acknowledge—in different

ways—what has just been said by others, such as *Yeah, Definitely, Oh* (e.g. Heritage 2012), show a clear tendency to appear at the leftperiphery of sentences or turns at talk.

Most crucially, Mandarin and many other Southeast Asian languages developed a grammaticalised system of sentence peripheral particles to intersubjectively engage with how the hearer may react to what is being said (cf. Tantucci, 2021: 31; see also Lepadat, 2022, 2023; Tantucci and Wang, 2018, 2020b). An example of this is the sentence final particle 吧 *ba*, which is conventionally used to turn directive illocutionary force of a request, command or disposition into a joint action shared with the addressee (Tantucci, 2017b), similar to the English construction [*let's V*]. See example (5) below:

- (5)  
 P: 好的, 那我先吃香砂六君丸, 同时吃补脑丸还有益母草颗粒, 吃三周, 是这样吗?  
 hǎo de nà wǒ xiān chī xiāng shā liù jūn wán, tóngshí chī bǔnǎowán hái yǒuyī mǔcǎo kē  
 lì, chī sān zhōu, shì zhèyàng ma  
 'Okay, then I'll take Xiangsha Liujun Pills first, while also taking Bunao Pills and  
 Motherwort Herb Granules, for three weeks, is that right?'  
 D: 对的, 先这么吃看看效果吧。  
 duì de, xiān zhème chī kànkan xiàoguǒ ba  
 right SFP, first this-way eat look–look result SFP  
 'Exactly, let's take these first and see the effect.'

TCM/Chunyu

In (5) the SPI 吧 *ba* is used as an optional marker by D to mitigate the potential face/threat of what would otherwise sound like a direct order *Take those first!* Following Tantucci (2021), the criteria for the identification of SPI markers are the following:

- i. They are not grammatically obligatory.
- ii. They appear either at left or right sentence periphery.
- iii. They do not change the propositional content of the utterance.
- iv. They can occur in the form of Pragmatic Markers, Backchannels or Sentence Final Particles.

The consistency in the accuracy rate for SPI between the annotators was evaluated through Cronbach's alphas and resulted in  $\alpha = 0.71$ ,  $\alpha = 0.73$ , and finally  $\alpha = 0.87$ , respectively. During each stage of the task, a 25% chunk of the data was annotated independently. Annotation discrepancies were discussed and resolved among the annotators before beginning with the annotation of a new randomised sample.

#### 4.3. Annotating relevance acknowledgement

Speech acts of information transmission inherently involve epistemic reciprocity (Culpeper and Tantucci, 2021; Tantucci et al., 2022), the social expectation that the effort made to inform someone of a piece of information will be acknowledged and treated as relevant for an ongoing interaction. There are several ways to convey that what another speaker says is relevant. An important argument of this paper is that resonance is a verbal tool to demonstrate 'on record' that what was said by an interlocutor is important for the continuation of the interaction. **Relevance acknowledgement** (cf. Tantucci, 2023) is also most conventionally achieved through highly grammaticalised backchannels and pragmatic markers. These forms of backchanneling are all highly entrenched and, to varying degrees, semantically bleached (e.g., Lehmann, 2015; Bybee 2003). While all of these have been taken into account in the present survey (see section 4.2 on sentence peripheral intersubjectivity), this section illustrates how we separately annotated relevance acknowledgement that is achieved creatively, that is not via highly conventionalised backchanneling or pragmatic markers, but rather via speakers' efforts to overtly remark that what was previously said is relevant and interesting for the continuation of the interaction, e.g. *it's interesting that you said that, I wouldn't have thought so*, and so on.

The case below is retrieved from the medical consultations section of the BNC1994 (cf. Leech 1992) as an example of D's verbal engagement achieved not via resonance, but via periphrastic strategies of relevance acknowledgement:

- (6)  
 P: Those tablets you gave me.  
 D: That's right.  
 P: I, I don't want to see any more of them.  
 D: **Oh dear I'm sorry to hear that.**

BNC GY8 8

In (6), D engages with P's commissive *I don't want to see any more of them (those pills)*, via an expressive displaying affective affiliation (Stivers et al., 2011: 21). Cases such as (6) clearly underpin a greater verbal effort of D towards P's speech than the mere use of more atomic backchanneling markers such as *Oh* or *I see*. A similar case from our dataset is the one in (7) below:

(7)



- P: 感觉有痰咳不出，一呼吸进风就觉得喉咙干痒。[...] 这样的情况怎么办好？  
gǎnjué yǒu tán hái bù chū, yī hū xījìn fēng jiù juéde hóulóng gānyáng [...] zhèyàng de  
qíngkuàng zěnmē bàn hǎo  
'I feel there's phlegm I can't cough up, as soon as I breath in the air my throat feels dry and itchy. [...] What should I do in such a situation?'
- D: 你好，根据你描述症状像是上呼吸道感染引起的，流脓鼻涕。  
nǐhǎo, gēnjù nǐ miáoshù zhèngzhuàng xiàng shì shàng hūxīdào gǎnrǎn yīnqǐ de, liú nóng bí tī  
Hello, according to your description these symptoms are caused by an infection of the  
upper respiratory tract, with purulent nasal discharge.

TCM/Chunyu

By means of 根据你描述症状 *gēnjù nǐ miáoshù zhèngzhuàng* 'according to your description these symptoms', D overtly treats what P has said as the evidence for the ensuing diagnosis. Similar to what happens in (6), here D's verbal engagement with what P has said is not expressed via resonance, nor through constructions of PMI, but rather periphrastically. Relevance acknowledgement was identified by looking at whether D's turn initiated with a comment related to what had just been said by P and was annotated as a categorical variable (either present or absent). Cronbach's alpha values for this annotation of RA were  $\alpha = 0.81$ ,  $\alpha = 0.86$ , and finally  $\alpha = 0.92$  over three rounds of inter-rater reliability.

## 5. Analysis

In this section, we discuss the results of our analysis. The first thing to note is that the length of the doctors' utterances in response to patients' concerns was remarkably similar in Western (WM) and Traditional Chinese Medicine (TCM) discourse. No significant mismatch hinging on the word count per speech act across medicine types was found, as shown in the Density plot in Fig. 1:

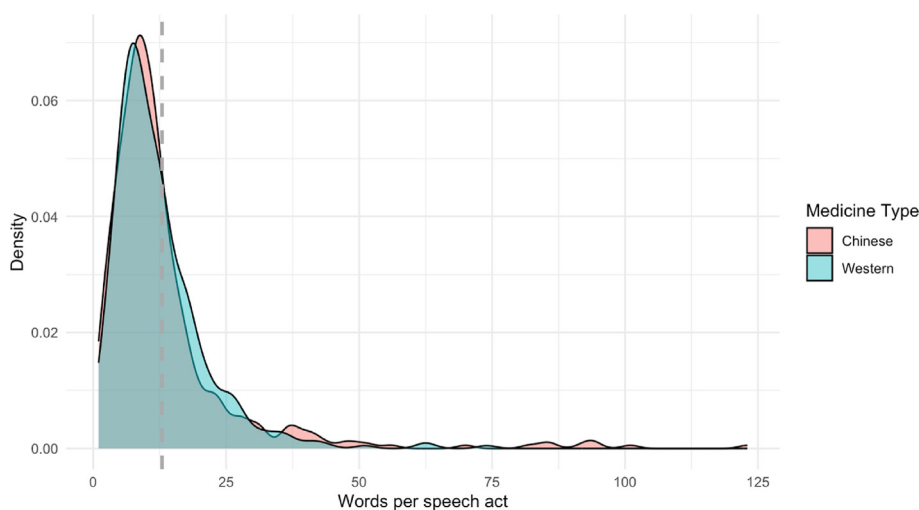


Fig. 1. Words per speech act across Medicine Types.

The two areas in Fig. 1 indicate the distribution of the word count per speech act in the WM (blue) and the TCM (red) populations, with a mean (grey vertical dotted line) of around 12 words per speech act across practices. The amount of language doctors produce in response to patients' concerns tends to be stable across medicine types.

However, things change once resonance and other indicators of speakers' engagement are considered. In order to assess this, we fitted a mixed effects linear regression (Baayen et al., 2008) with resonance as a dependent variable, medicine type, relevance acknowledgement (RA), and peripheral markers of intersubjectivity (PIM) as predictors. Random effects that we included were the doctors' ID and the speech acts (SA) that they used. The results of our model are reported in Table 5:<sup>12</sup>

<sup>12</sup> The R code of our analysis can be provided upon request.

**Table 5**  
Mixed effects linear regression of resonance across medicine types.<sup>a</sup>

Random effects				
Groups	Name	Variance	Std. Deviation	
ID	(Intercept)	0.061	0.247	
SA	(Intercept)	0.085	0.292	
Residual		1.154	1.074	
Fixed Effects				
	Estimate	Std. Error	T value	Pr (> t )
(Intercept)	0.404	0.136	2.977	0.0126 *
Western	−0.024	0.097	−0.252	0.802
RA	0.149	0.173	0.861	0.389
PIM	0.476	0.119	3.992	6.89e-05 ***
Western:RA	−0.248	0.266	−0.935	0.3499
Western:PIM	−0.395	0.166	−2.369	0.0180 *
RA:PIM	−0.709	0.249	−2.846	0.0045 **
MedicineWestern:RAyes:PIMyes	0.591	0.362	1.631	0.103

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.'

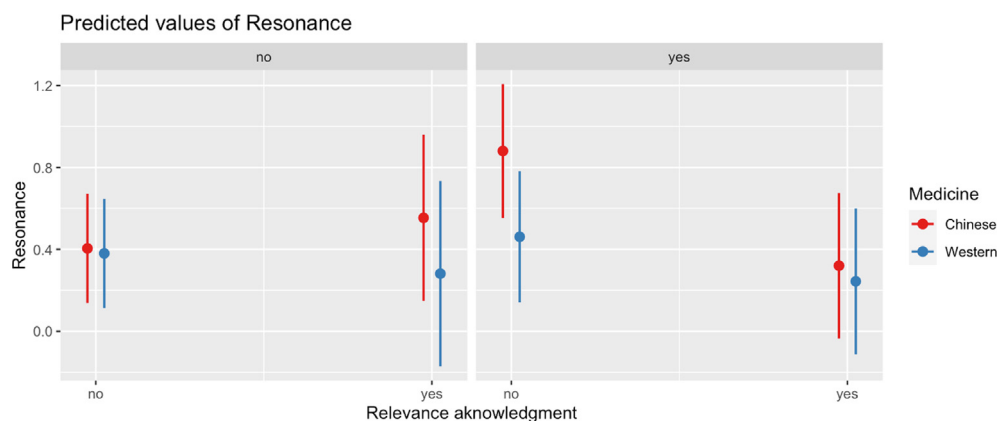
<sup>a</sup> The presence of asterisks (\*) indicates significant slopes.

In Table 5, the random effects section comprises the standard deviation, i.e. the variability from the predicted values due to the random effects (ID and SA) added to the model. The fixed effects section includes the estimate column with the coefficients of the slope for the fixed effects for the prediction of resonance. These are Medicine Type (Western as opposed to Eastern), resonance acknowledgement (RA) and presence of peripheral intersubjective markers (PIM). Standard errors and T values are also reported in columns 2 and 3, while the p-values indicating significance are given in the last column of the table.

Our model shows that PIM is a strong predictor of resonance in Doctor–Patient interaction ( $\beta = 0.476$ ,  $p < 0.001$ ). This indicates that when doctors make a verbal effort to re-use linguistic forms produced by their patients, they tend to do so in combination with sentence peripheral markers of intersubjectivity (e.g. example (3) in section 4.1). This finding is important as it confirms the close interaction between resonance and PIM already found in previous applied research (e.g. Tantucci and Wang, 2022a,b, 2023), with verbal engagement emerging as a byproduct of both verbal imitation and pragmatic marking. This tendency is significantly more prominent in TCM in contrast with WM ( $\beta = -0.395$ ,  $p = 0.018$ ), indicating that the Traditional Chinese Medicine doctors are more inclined to express verbal engagement with patients during consultations. A similar tendency involves TCM doctors adopting periphrastic strategies of relevance acknowledgement (RA) in combination with resonance, which is also higher than in the WM population, albeit not significantly so ( $\beta = -0.248$ ,  $p = 0.349$ ).

Another general tendency that significantly emerged from our model is that RA and PIM compete when they combine with resonance ( $\beta = -0.709$ ,  $p = 0.004$ ). This result is not unjustified. When dialogic engagement is at play, it makes sense that no more than two verbal modalities converge. In fact, the simultaneous presence of resonance, RA and PIM may sound redundant and, in some ways, excessively polite with potential ironic interpretations and reciprocity mismatching (cf. Culpeper and Tantucci, 2021; Leech, 2014: 15). This can also explain why interactions across all three verbal modalities of engagement did not lead to significant results across WM and TCM populations, as in the last row of Table 5.

Fig. 2 shows the results of our model, including the resonance error bars predicted by Medicine Type, PIM, and RA.



**Fig. 2.** Predicted values of Resonance across Medicine Types depending on RA and PIM.

The plot in Fig. 2 is divided into two quadrants, referring to the presence (no, left quadrant) and absence (yes, right quadrant) of PIM, as given at the top of the Figure. Red and Blue error bars refer to TCM and WM doctors, respectively. The x-axis of the plot indicates whether RA is present, while the y-axis displays resonance values.

A striking tendency emerging from the plot is that resonance tends to be higher among doctors practising TCM in all conditions. This underpins an evident socio-cultural and behavioural mismatch in how TCM and WM doctors dialogically engage with the patients. Higher resonance values contribute to ‘making people feel heard’, reduce social distance and facilitate the joint establishment of common ground among speakers (cf. Tantucci, 2023; Tantucci and Wang, 2024). The difference between the two communities of practice is most striking in two cases: i. presence of RA but the absence of PIM (error bars at the right-hand side of the first quadrant); ii. PIM is present, but there is an absence of RA (error bars at the right-hand side of the second quadrant). Consistently lower resonance levels across medicine types involve either the absence of both RA and PIM or the simultaneous presence of the two. This further demonstrates that interactional engagement in doctor-patient interaction is achieved via a maximum of two out of the three modalities of verbal engagement considered in this study, but it rarely underpins all three at the same time. This has important implications for ‘applied’ politeness research, as it shows that extra-politeness (Culpeper and Tantucci, 2021) is not a preferable effect in health communication.

### 5.1. Speech acts across medicine types

Having analysed Chinese doctors’ degrees of engagement during online consultations, we can now examine the speech acts that characterise Western Medicine (WM) and Traditional Chinese Medicine (TCM) doctors when interacting with their patients. Our taxonomy of speech acts draws on Searle (1975), Leech (2016), Faller (2002) and Tantucci (2017a,b). It includes 6 categories: Acknowledgements, Commissives, Directives, Expressives, Representatives and Rogatives.

Respectively, Acknowledgements are speech acts that confirm the importance of an interlocutor’s words. We identified them formally in combination with RA or backchanneling PIMs occurring at turns’ left periphery.

With Commissives, the speaker commits to future actions, as in promises, offers, vows, threats and so on. As face-threats (Brown and Levinson 1987) were unsurprisingly absent from our dataset, Commissives were mostly used politely and could be identified by whether *thanking for the offer/help* would be a patient’s plausible response. This is marked as P<sub>P</sub> in (8), after the naturalist utterance by D from our dataset:

- (8)  
 D: 你要是找不到地方的话, 我就给你发过去。  
 nǐ yàoshì zhǎo-bù-dào dìfāng de huà, wǒ jiù gěi nǐ fāguòqu  
 you if cannot-find place DE word, I then to you send  
 ‘If you cannot find them, I can post them to you.’  
 P<sub>P</sub>: 谢谢您的帮助。  
 xièxiè nín de bāngzhù  
 thank you DE help  
 ‘Thanks for your help.’  
 Chunyu/TCM

Directives are speech acts realised to get the hearer to do something, as in orders, requests and similar forms of elicited behaviour. In Mandarin, they can formally be modified by the pre-verbal marker 快 *kuài* ‘fast’, which can be used to hurry the addressee in pursuing the request (Tantucci, 2017b) or the pre-verbal 请 *qǐng* ‘please’ (cf. Kádár and House 2020), which is used a polite face-saving device. These two items are not felicitous for speech acts with different illocutionary forces. In example (8) they are marked as (快/请)<sub>P</sub>:

- (8)  
 D: 咳得厉害就(快/请)<sub>P</sub>把中药加上吃吧。  
 kē de lìhài jiù (kuài/qǐng) bǎ zhōngyào jiāshàng chī ba  
 cough DE terrible then BA Chinese Medicine add-over BA  
 ‘If the cough worsens (immediately/please) add another Chinese Medicine pill.’  
 Chunyu/TCM

Representatives describe the state of affairs of a situation. They include assertions (e.g. *it’s raining*), evaluatives (e.g. *I think it may be raining*) and information transmission based on some evidence (e.g. *apparently it’s raining*) (cf. Faller 2002; Tantucci, 2016a,b). The diagnostics that we suggested for Acknowledgments and Directives would automatically exclude Representatives. Additionally, the latter could always plausibly be used as evaluatives, e.g. marked by 我的想法是<sub>P</sub> *wǒ de xiǎngfǎ shì* ‘My stance is that’, which would also mitigate eventual ambiguities with Commissives. In fact, in the dialogic context of this study, D’s representative utterances often underpin illness assessments and diagnoses, namely what D observes about P’s condition.

Expressives involve the communication of one interlocutor’s feelings and affective emotions. They were identified as conventionalised constructions in contexts of thanking, such as 谢谢 *xièxiè* ‘thank you’, 不客气 *bù kèqì* ‘you’re welcome’, but

also with less entrenched expressions of doctors' sentiments 很高兴为您解答 *hěn gāoxìng wèi nín huídá* 'I am happy to respond to this'. In periphrastic expressions of this kind, Expressives can plausibly be preceded by 我的心情是 *wǒ de xīnqíng shì* 'My personal feelings are that'.

Finally, Rogatives encompass asking questions as in seeking information from the hearer (cf. Leech, 1983). As our data was entirely retrieved from written online consultations, presence of a question mark '?' was taken as a formal criterion for their identification. As for other variables of this study, speech acts' annotations were compared across three researchers and assessed in Cronbach's alphas at three stages of disambiguation, resulting in  $\alpha = 0.62$ ,  $\alpha = 0.66$ , and finally  $\alpha = 0.86$ , respectively. Annotation disagreement was discussed and resolved among the annotators before beginning with annotating a new randomised sample of 20% of the data.

The barplot of the in Fig. 3 shows the speech acts distributions in our dataset across TCM (red bars) and WM (blue bars) doctors:

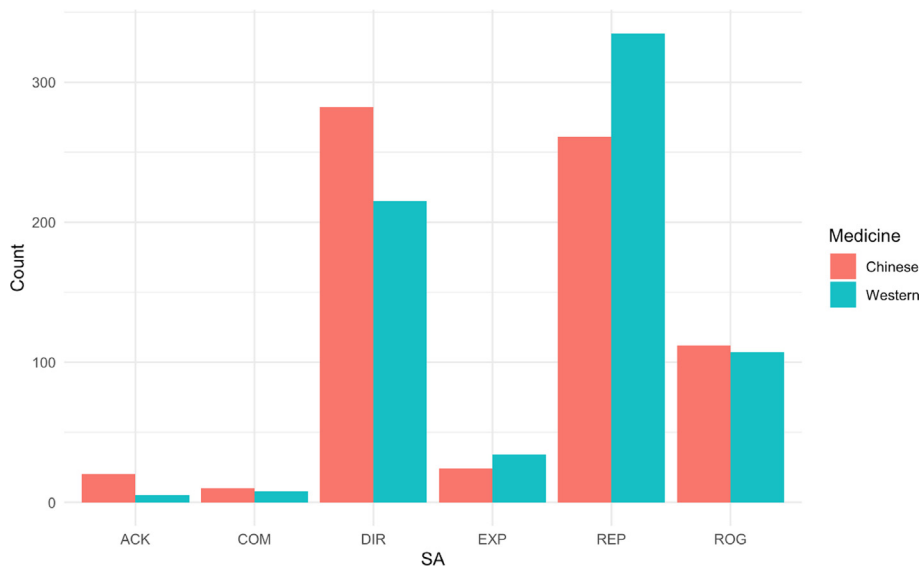


Fig. 3. Barplot of Speech acts across Medicine Types.

The plot clearly shows that Acknowledgements (ACK), Commissives (COM) and Expressives (EXP) tend to occur much less frequently than Directives (DIR), Representatives (REP) and Rogatives (ROG). This makes sense, as in consultations the most frequently performed actions by doctors are questions about the disease (ROG), assessments/diagnoses (REP), and requests for physical examinations and prescriptions (DIR). What is most remarkable about the plot is that TCM doctors (red) use Directives, Rogatives, and Acknowledgments much more often than WM doctors (blue). The latter's speech is much more characterised by Representatives. In particular, WM doctors' stance is distinctively geared towards Assertions (i.e. stating something as an absolute fact), corresponding to 84% of all the Representatives in the WM population.

To assess the incidence of speech act types across the two populations, we fitted a conditional inference tree (CIT) (cf. Levshina 2015, 2021). This was done via the "ctree" function of the R package "party" (cf., Levshina 2015: 291). CIT is classificatory method testing the null hypothesis that the distribution of the dependent variable (Medicine Type) is equal to the conditional distribution of the same dependent variable given some predictors (cf., Levshina, 2021: 616), in our case, Speech acts and verbal engagement involving Resonance, PIM, RA. By default, the algorithm returns the p-values with a  $\chi^2$  distribution (Hothorn et al., 2006).

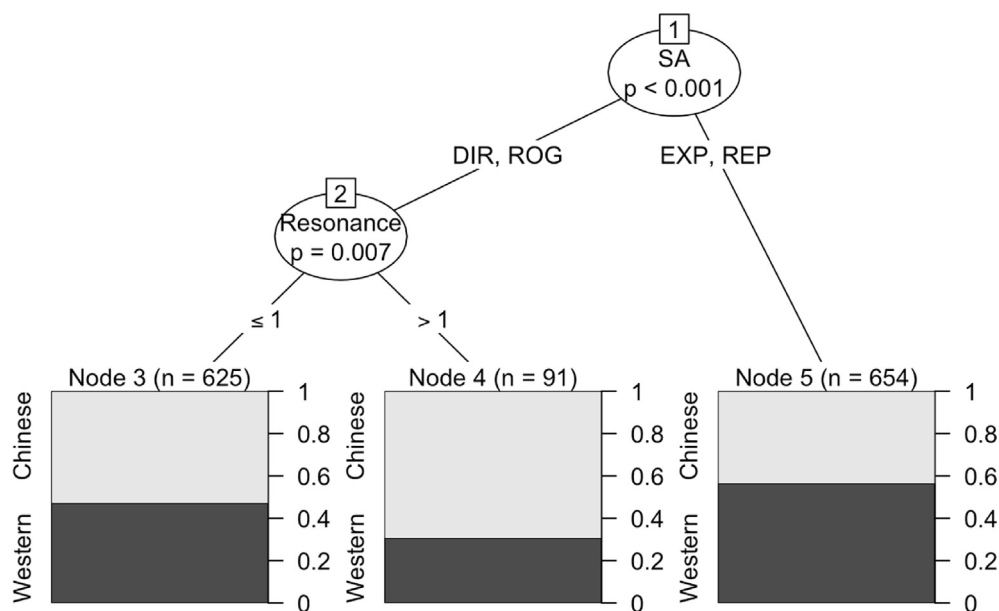


Fig. 4. Conditional Inference Tree of speech acts occurring with Resonance across Medicine Types.

The plot in Fig. 4 shows conditional dependencies among variables: higher nodes indicate higher significance for the partition of each split. The descending order of each node shows a significant condition for assessing whether it is TCM rather than WM doctors using certain speech acts and whether Resonance, PIM and RA affect these partitions. For this model, we included the speech acts that were most frequently used in our dataset, namely, Directives, Rogatives, Expressives and Representatives (cf. Fig. 3).

What the model shows is a most significant split in Node 1, at the top of the tree, among speech acts that elicit an action or a response (Directives and Rogatives) vs ones describing some state of affairs (Representatives) and conveying an affective state (Expressives). The language TCM doctors use is much more oriented to prompting the patients 'to do something', as shown in nodes 3 and 4, i.e. the stacked bars at the bottom of the graph. Higher degrees of resonance ( $>1$ , Node 2) further boost this tendency, leading to even higher usage of Directives and Rogatives by TCM doctors. Higher usage of Representatives characterises WM doctors' speech, as shown in node 5. This appears as a general tendency, somewhat independent of resonance and engagement, indicating that WM doctors's interactional style is much less involved with the words and expressions that patients specifically use during consultations.

These results ultimately demonstrate that the Pragmatics of TCM doctors is much more characterised by actions aimed at telling patients 'what to do' and proactively asking them questions about their disease and their lives. This correlates with verbal reference to the actual words and constructions used by their patients, as they 'resonate' more with them. Quite differently, WM doctors' language is more assertive, which, in the context of these data, mostly hinges on the etiological nature of the patient's illness, yet without significant tendencies to verbally engage with their speech.

## 6. Discussion

This study is the first to provide a replicable methodology for measuring doctors' verbal engagement during naturalistic consultations. We tackled this via three verbal dimensions: resonance, peripheral intersubjective marking (PIM) and relevance acknowledgement (RA). The combination of all three dimensions as a byproduct of engagement proved to be extremely rare. This is presumably due to the risk of extra-politeness (Culpeper and Tantucci, 2021; Leech, 2014), which might lead to negative perceptions of sarcasm or insincerity.

Our data demonstrate that the sociocultural and epistemological background of doctors from different traditions plays a decisive role in how consultations are performed and the degree to which doctors verbally engage with the language of their patients. TCM doctors demonstrated consistently higher levels of engagement in comparison with WM doctors. They resonated with their patients more, both in combination with PIM and RA. In addition to that, TCM doctors also demonstrated a completely different behaviour when it came to the speech acts that were performed during consultations. They made much more use of Directives and Rogatives, thus enacting a stronger concern for what patients 'had to do' in order to feel better. WM doctors' illocutionary behaviour was much more procedural, primarily centred on assertively making a diagnosis, as the language was mostly centred on Representative speech acts. Their levels of resonance, PIM and RA were much lower, demonstrating a much less involved interactional style with their patients.

This study is not without limitations. For one, the naturalistic data of this analysis draws entirely on online consultations. Further research could analyse whether the same results emerge on a large scale from face-to-face interaction. Secondly, the present results could be enhanced with additional data from the same patients' personal experiences during those consultations. Unfortunately, such data could not be produced, as the patients' contact details were, unsurprisingly, anonymised.

There are yet important implications of this study:

- i. Our results show that doctors' verbal engagement with their patients' speech predominantly occurs through resonance, i.e., through reusing their patients' words and expressions to foster the progressivity of the consultation.
- ii. Medical consultations involve doctors and patients jointly establishing common ground for assessing the etiology of the illness and ensuing prescriptions. It is important that doctors verbally signal that what their patients tell them has 'been heard' and treated as important information for the continuation of the consultation. This might be even more crucial in face-to-face interactions, given the limited time needed to reach a diagnosis and provide a prescription. At the same time, extra-politeness is generally dispreferred in the context of medical consultations.
- iii. Cross- and intra-cultural comparisons among different medical traditions and communities of practice provide fundamental insights for effective language use during medical consultations. The present study is a case in point as it compared Traditional Chinese and Western medicine.
- iv. Resonance is a very important dialogic device for verbal engagement, and doctors should be aware of it for successful and engaged communication with their patients.

## 7. Conclusions

This study provided a novel contribution to methodological and applied research in the pragmatics of health communication. It is the first to shed quantitative light on doctors' engagement with patients during medical consultations. The proposed model combines three verbal dimensions: resonance, peripheral intersubjective marking (PIM) and propositional expressions of relevance acknowledgement (RA). We found that doctors' pragmatics varies significantly depending on the medical tradition and epistemology of practitioners. Traditional Chinese Medicine (TCM) doctors demonstrated higher levels of engagement than Western Medicine (WM) doctors, encompassing resonance, PIM and RA. Additionally, their language was much more geared towards asking questions about patients' illnesses and telling them 'what to do' to improve their condition. WM doctors showed a significant tendency towards a diagnosis via assertive speech acts and displayed much lower verbal engagement with their patients' speech. The implications of this study are inherently transformative. They inform health communication research and doctors' consultation practices, shedding light on the importance of verbally engaging with patients' speech through diverse verbal modalities and the ways of doing so. It contributes to a new applied turn of pragmatics research, whereby pragmatics theory and methods can lead to a transformative impact in neighbouring disciplines so as to improve professional communication and people's lives.

### CRedit authorship contribution statement

**Vittorio Tantucci:** Writing – original draft, Methodology, Formal analysis, Data curation, Conceptualization. **Carmen Lepadat:** Writing – review & editing, Resources, Investigation, Data curation.

### Declaration of competing interest

None.

### Data availability

Data will be made available on request.

[Chunyu Yisheng Randomly Retrieved Data \(OriginalData\)](#) (Mendeley Data)

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### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.pragma.2024.07.002>.

## References

- Arbib, Michael A., 2012. *How the Brain Got Language: the Mirror System Hypothesis*, vol. 16. Oxford University Press.
- Arundale, R.B., 2010. Constituting face in conversation: face, facework, and interactional achievement. *J. Pragmat.* 42 (8), 2078–2105.
- Baayen, R.H., Davidson, D.J., Bates, D.M., 2008. Mixed-effects modeling with crossed random effects for subjects and items. *J. Mem. Lang.* 59 (4), 390–412.
- Balint, M., 1957. *The Doctor, His Patient and the Illness*. Churchill Livingstone, London, England.
- Barnes, R.K., 2005. Conversation analysis: a practical resource in the health care setting. *Med. Educ.* 39, 113–115.
- Barnes, R.K., 2019. Conversation analysis of communication in medical care: description and beyond. *Res. Lang. Soc. Interact.* 52 (3), 300–315.
- Bergen, C., Stivers, T., Barnes, R.K., Heritage, J., McCabe, R., Thompson, L., Toerien, M., 2018. Closing the deal: a cross-cultural comparison of treatment resistance. *Health Commun.* 33 (11), 1377–1388.
- Brown, P., Levinson, S.C., 1987. *Politeness: Some Universals in Language Usage* (Vol. 4). Cambridge University Press.
- Bybee, J., 2003. *Phonology and Language Use*. Cambridge University Press.
- Chen, K.J., Xu, H., 2003. The integration of traditional Chinese medicine and Western medicine. *Eur. Rev.* 11 (2), 225–235.
- Clark, H.H., 1996. *Using Language*. Cambridge University Press.
- Culpeper, J., Tantucci, V., 2021. The principle of (im) politeness reciprocity. *J. Pragmat.* 175, 146–164.
- Drew, P., Chatwin, J., Collins, S., 2001. Conversation analysis: a method for research into interactions between patients and health-care professionals. *Health Expect.* 4 (1), 58–70.
- Drew, P., Sorjonen, M.-L., 1997. Institutional dialogue. In: Van Dijk, T.A. (Ed.), *Discourse as Social Interaction*. Discourse Studies: A Multidisciplinary Introduction (Vol. 2, pp. 92–118). Sage Publications, London, England.
- Du Bois, John W., 2014. Towards a dialogic syntax. *Cognit. Ling.* 25 (3), 359–410.
- Du Bois, J.W., Giora, R., 2014. From cognitive-functional linguistics to dialogic syntax. *Cognit. Ling.* 25 (3), 351–357.
- Du Bois, John W., Hobson, Peter R., Hobson, Jessica A., 2014. Dialogic resonance and intersubjective engagement in autism. *Cognit. Ling.* 25 (3), 411–441.
- Faller, M.T., 2002. *Semantics and Pragmatics of Evidentials in Cuzco Quechua*. Stanford University.
- Fang, H., Hengeveld, K., 2022. Sentence-final particles in Mandarin. *Stud. Ling.* 76 (3), 873–913.
- Gill, V.T., Roberts, F., 2013. Conversation analysis in medicine. In: Sidnell, J., Stivers, T. (Eds.), *The Handbook of Conversation Analysis*. Wiley- Blackwell, Oxford, England, pp. 575–592.
- Goffman, E., 1964. The neglected situation. *Am. Anthropol.* 66 (6\_PART2), 133–136.
- Goldberg, A.E., 1995. *Constructions: A Construction Grammar Approach to Argument Structure*. University of Chicago Press.
- Goldberg, A.E., 2006. *Constructions at Work: the Nature of Generalization in Language*. Oxford University Press.
- Goodwin, C., 2013. The co-operative, transformative organization of human action and knowledge. *J. Pragmat.* 46 (1), 8–23.
- Gu, Y.G., 1996. Doctor-patient interaction as goal-directed discourse in Chinese sociocultural context. *J. Asian Pac. Commun.* 7 (3&4), 156e174.
- Haugh, M., 2007. The discursive challenge to politeness research: an interactional alternative. *J. Politeness Res.* 3 (2), 295–317.
- Heritage, J., 2012. Epistemics in action: action formation and territories of knowledge. *Res. Lang. Soc. Interact.* 45 (1), 1–29.
- Heritage, J., Maynard, D. (Eds.), 2006. *Communication in Medical Care: Interactions between Primary Care Physicians and Patients*. Cambridge University Press.
- Hobson, Peter, Hobson, Jessica A., García-Pérez, Rosa M., Du Bois, John W., 2012. Dialogic linkage and resonance in autism. *J. Autism Dev. Disord.* 42 (12), 2718–2728.
- Hopper, Paul, 2011. Emergent grammar and temporality in interactional linguistics. In: Auer, Peter, Pfänder, Stefan (Eds.), *Constructions: Emerging and Emergent*. De Gruyter, Berlin, pp. 22–44.
- Jenkins, L., Parry, R., Pino, M., 2021. Providing opportunities for patients to say more about their pain without overtly asking: a conversation analysis of doctors repeating patient answers in palliative care pain assessment. *Appl. Linguist.* 42 (5), 990–1013.
- Jin, Ying, Kim, Y., Carlin, A.P., 2022. Co-topical small talk: Troubles-telling in traditional Chinese medical encounters. *Appl. Linguist.* 43 (3), 493–516.
- Kádár, D.Z., House, J., 2020. Ritual frames: a contrastive pragmatic approach. *Pragmatics* 30 (1), 142–168.
- Kay, Paul, Charles, Fillmore, 1999. Grammatical constructions and linguistic generalizations: the what's X doing Y? Construction. *Language* 75 (1), 1–33.
- Kyuru, P., Poskiparta, M., Kettunen, T., Saltevo, J., Liimatainen, L., 2004. Advice-giving styles by Finnish nurses in dietary counseling concerning type 2 diabetes care. *J. Health Commun.* 9 (4), 337–354.
- Langacker, Ronald W., 1987. *Foundations of Cognitive Grammar: Theoretical Prerequisites*, vol. 1. Stanford University Press, Stanford.
- Leech, G., 1992. 100 million words of English: the British National Corpus (BNC). *Lang. Res.* 28 (1), 1–13.
- Leech, G.N., 2014. *The Pragmatics of Politeness*. Oxford University Press.
- Leech, G., 2016. *Principles of Pragmatics*. Routledge.
- Lehmann, C., 2015. *Thoughts on Grammaticalization*. Language Science Press.
- Lepadat, C., 2022. Utterance-Final Pragmatic Markers in Spoken Mandarin: the Case of (Ni) *Zhidao Ma/Ba*. *L'Analisi Linguistica e Letteraria* 32 (2), 5–32.
- Lepadat, C., 2023. Pragmatic markers and the right periphery in Mandarin Chinese: a systematic review of types, functions and co-occurrence. In: Zuccheri, S. (Ed.), *Chinese Linguistics in Italy*. BUP, Bologna.
- Lerner, G.H., 1996. Finding "face" in the preference structures of talk-in-interaction. *Soc. Psychol. Q.* 303–321.
- Levshina, N., 2015. *How to Do Linguistics with R. Data Exploration and Statistical Analysis*, vol. 10. Benjamins, Amsterdam.
- Levshina, Natalia, 2021. Conditional inference trees and random forests. In: Paquot, Magali, Gries, Stefan T. (Eds.), *A Practical Handbook of Corpus Linguistics*. Springer, New York, pp. 611–643.
- Lewis, C.J., 2017. *Ritual and Moral Education: A Confucian Contribution*. The University of Utah, Salt Lake City, USA (Unpublished PhD Thesis)).
- Liu, L., 2019. *Classical Chinese Medicine*. The Chinese University of Hong Kong Press, Hong Kong.
- Lu, A.P., Jia, H.W., Xiao, C., Lu, Q.P., 2004. Theory of traditional Chinese medicine and therapeutic method of diseases. *World J. Gastroenterol.* 10 (13), 1854–1856.
- Pan, D., Chen, Y., Ju, S., 2018. Argumentative patterns in Chinese medical consultations. *Argumentation* 32, 37–52.
- Peräkylä, A., 1997. Conversation analysis: a new model of research in doctor-patient communication. *J. Res. Soc. Med.* 90, 205–208.
- Pickering, Martin J., Garrod, Simon, 2021. *Understanding Dialogue: Language Use and Social Interaction*. Cambridge University Press.
- Pilnick, A., Hindmarsh, J., Gill, V.T., 2009. Beyond 'doctor and patient': developments in the study of healthcare interactions. *Sociol. Health Illness* 31 (6), 787–802.
- Pun, J., Chor, W., 2020. Use of questioning between traditional Chinese medicine practitioners and patients to realize TCM philosophy: holism, five elements and Yin-Yang in the context of doctor–patient communication. *Health Commun.* 37 (2), 163–176.
- Robinson, J.D., 2013. Overall structural organization. In: Sidnell, J., Stivers, T. (Eds.), *The Handbook of Conversation Analysis*. Wiley-Blackwell, pp. 257–280.
- Robinson, J.D., Heritage, J., 2014. Intervening with conversation analysis: the case of medicine. *Res. Lang. Soc. Interact.* 47 (3), 201–218.
- Schegloff, E.A., 2007. *Sequence Organization in Interaction*. Cambridge University Press.
- Searle, J.R., 1975. A taxonomy of illocutionary acts. In: *Language, Mind and Knowledge*. University of Minnesota, Minneapolis, Minn, pp. 344–369.
- Spencer-Oatey, H., 2005. Rapport management theory and culture. *Intercult. Pragmat.* 2 (3), 335–346.
- Stivers, T., Barnes, R.K., 2018. Treatment recommendation actions, contingencies, and responses: an introduction. *Health Commun.* 33 (11), 1331–1334.
- Sun, D., Li, S., Liu, Y., Zhang, Y., Mei, R., Yang, M., 2013. Differences in the origin of philosophy between Chinese medicine and western medicine: exploration of the holistic advantages of Chinese medicine. *Chin. J. Integr. Med.* 19 (9), 706–711.
- Tantucci, V., 2016. Toward a typology of constative speech acts: Actions beyond evidentiality, epistemic modality, and factuality. *Intercult. Pragmat.* 13 (2), 181–209.

- Tantucci, V., 2016. Textual factualization: The phenomenology of assertive reformulation and presupposition during a speech event. *J. Pragmat.* 101, 155–171.
- Tantucci, V., 2017. An evolutionary approach to semasiological change: Overt influence attempts through the development of the Mandarin 吧-ba particle. *J. Pragmat.* 120, 35–53.b.
- Tantucci, V., 2017. From immediate to extended intersubjectification: A gradient approach to intersubjective awareness and semasiological change. *Language and Cognition* 9 (1), 88–120.
- Tantucci, V., 2021. *Language and Social Minds: The Semantics and Pragmatics of Intersubjectivity*. Cambridge University Press.
- Tantucci, V., 2023. Resonance and recombinant creativity: why they are important for research in Cognitive Linguistics and Pragmatics. *Intercult. Pragmat.* 20 (4), 347–376.
- Tantucci, V., Culpeper, J., Di Cristofaro, M., 2018. Dynamic resonance and social reciprocity in language change: the case of Good morrow. *Lang. Sci.* 68, 6–21.
- Tantucci, V., Wang, A., 2018. Illocutional concurrences: the case of evaluative speech acts and face-work in spoken Mandarin and American English. *J. Pragmat.* 138, 60–76.
- Tantucci, V., Wang, A., 2020. From co-actions to intersubjectivity throughout Chinese ontogeny: A usage-based analysis of knowledge ascription and expected agreement. *J. Pragmat.* 167, 98–115.
- Tantucci, V., Wang, A., 2020. Diachronic change of rapport orientation and sentence-periphery in Mandarin. *Discourse Stud.* 22 (2), 146–173.
- Tantucci, V., Wang, A., 2021. Resonance and engagement through (dis-) agreement: evidence of persistent constructional priming from Mandarin naturalistic interaction. *J. Pragmat.* 175, 94–111.
- Tantucci, V., Wang, A., 2022. Resonance as an applied predictor of cross-cultural interaction: Constructional priming in Mandarin and American English interaction. *Appl. Linguist.* 43 (1), 115–146.
- Tantucci, V., Wang, A., 2022. Dynamic resonance and explicit dialogic engagement in Mandarin first language acquisition. *Discourse Process.* 59 (7), 553–574.
- Tantucci, V., Wang, A., 2023. Dialogic priming and dynamic resonance in autism: creativity competing with engagement in Chinese children with ASD. *J. Autism. Dev. Disord.* 53 (6), 2458–2474.
- Tantucci, V., Wang, A., 2024. British conversation is changing: resonance and engagement in the BNC1994 and the BNC2014. *Appl. Linguist.* 040.
- Tantucci, V., Wang, A., Culpeper, J., 2022. Reciprocity and epistemicity: on the (proto) social and cross-cultural ‘value’ of information transmission. *J. Pragmat.* 194, 54–70.
- Tomasello, Michael, 2003. *Constructing a Language*. Harvard University Press, MA.
- Traugott, E.C., 2012. Intersubjectification and clause periphery. *English Text Construct.* 5 (1), 7–28.
- Traugott, E.C., 2016. On the rise of types of clause-final pragmatic markers in English. *J. Hist. Pragmat.* 17 (1), 26–54.
- Traugott, E.C., Graeme, Trousdale, 2013. *Constructionalization and Constructional Changes*. Oxford University Press.
- Weigand, Edda, 2018. Dialogue: the key to pragmatics. In: Weigand, Edda, Kecskes, Istvan (Eds.), *From Pragmatics to Dialogue*. Benjamins, Amsterdam/Philadelphia, pp. 5–28.
- Wang, X., Mao, Y., Yu, Q., 2021. From conditions to strategies: dominance implemented by Chinese doctors during online medical consultations. *J. Pragmat.* 182, 76–85.
- Wei, S., Mao, Y., 2023. Small talk is a big deal: a discursive analysis of online off-topic doctor–patient interaction in Traditional Chinese Medicine. *Soc. Sci. Med.* 317, 1–8.
- Yip, J., 2020. Directness of advice giving in traditional Chinese medicine Consultations. *J. Pragmat.* 166, 28–38.
- Zayts, O., Schnurr, S., 2012. ‘You may know better than I do’: negotiating advice-giving in Down Syndrome screening in a Hong Kong prenatal hospital. In: Limberg, H., Locher, M.A. (Eds.), *Advice in Discourse*. John Benjamins, Amsterdam, pp. 195–212.
- Zhang, Y., 2020. How doctors do things with empathy in online medical consultations in China: a discourse-analytic approach. *Health Commun.* 36 (7), 816–825.
- Zima, Elisabeth, Brône, Geert, 2015. Cognitive linguistics and interactional discourse: time to enter into dialogue. *Lang. Cognit.* 7 (4), 485–498.

**Dr Vittorio Tantucci** is Senior Lecturer in Linguistics at Lancaster University. His research is centred on cross-cultural and cognitive approaches to dialogue, focusing on intersubjectivity, dialogic syntax, (im)politeness and reciprocity, on which he recently published several articles on the *Journal of Pragmatics*, *Applied Linguistics*, *Journal of Autism and Developmental Disorders*, *Discourse Processes* and others. His methods are centred on corpus-based and multivariate approaches to naturalistic interaction. He wrote the monograph *Language and social minds: The semantics and pragmatics of intersubjectivity* (2021 CUP) and is currently writing three monographs *The Pragmatics and semantics of creativity: Dialogic interaction and resonance* (2024 CUP) and *Pragmatics: Theory and Methods* (OUP) and *Pragmatics: A Quantitative Turn* (2024 CUP).

**Carmen Lepadat** is a Postdoctoral Research Fellow at Roma Tre University, focusing on the L2 acquisition of Mandarin directional complexes. She also teaches Chinese language and culture at the University of Siena. Her primary research interests include pragmatics, information structure, intersubjectivity, and modality. She earned her PhD with honors from Sapienza University of Rome, with a thesis discussing the pragmatics of the utterance right periphery in Mandarin, a topic on which she recently published the monograph *Information Structure and the Utterance Right Periphery in Mandarin: A Systematic Overview with Reference to English and Italian* (2024 Lincom).