The Effects of Physicians' Communication and Empathy Ability on Physician–Patient Relationship from Physicians' and Patients' Perspectives

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Abstract

Physician communication (PC) is central to influencing physician–patient relationship (PPR), and physician empathy (PE) is central to PC. A comprehensive and objective assessment of the mechanisms underlying PPR from the two-way perspective of physicians and patients are important for social development. However, the relationship between these three variables under the two-way perspective is not clear. To examine the effectiveness of PC in predicting PPR from a two-way perspective of physicians and patients and the underlying mechanisms that influence PPR. We selected 2665 physicians and 2983 patients in China and examined the effect of physician empathy on PPR and the mediating role of PC between PE and PPR using structural equation modeling. The results of the physician self-assessment showed that the link between PC and PPR was not significant, while the results of the patient other assessment showed that physician communication was not only effective in predicting the doctor–patient relationship but also mediated the relationship between physician empathy and PPR; further analysis of the underlying mechanisms affecting PPR revealed that the results of the physician self-assessment showed that PC mediated the relationship between perspective-taking and PPR; however, the results of the patient other assessment showed that physician However, patient ratings showed that PC mediated the relationship between perspective-taking and PPR, as well as between empathic concern and PPR. However, patient ratings indicate that PC mediates the relationship between perspective-taking and PPR and between empathic concern and the PPR.

Keywords Physician–patient relationship · Physician communication · Physician empathy · Perspective-taking · Empathic concern

Introduction

The physician–patient relationship is the basis of medical practice and central construct in the healthcare system (Benedetti, 2013; Hoff & Collinson, 2017). This affects social stability, harmony, and health development and has a significant impact on improving patient adherence, their involvement in shared decision-making (Stavropoulou, 2011), and their outcomes (Gulbrandsen et al.,

1998; Haskard et al., 2008; Howick et al., 2018). Physician communication is a central element in building the physician–patient relationship (Lunn & Sánchez, 2011; Rathert et al., 2013). Physician communication is defined as the ability of physicians to perform specific medical tasks and behaviors, such as taking patient history, explaining diagnoses, providing treatment guidance, and counseling (Duffy et al., 2004). Good physician communication improves the physician–patient relationship and increases patient satisfaction (Golda et al., 2018).

A prerequisite for good physician communication is that the patient understands what the physician is communicating (Duffy et al., 2004). Such communication enables them to obtain complete, accurate, and objective patient information, which form the basis for making correct clinical diagnoses facilitate shared decision-making (Mira et al., 2014; Morgan et al., 2020) to achieve the best treatment outcomes and

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improve patient satisfaction (Griffith et al., 2003; Hale et al., 2019; Schrooten et al., 2017; Zolnierek et al., 2009).

Regarding the evaluation of physician communication, some researchers have argued that physician communication should focus on the physicians' self-evaluations (Ji et al., 2021), while others have emphasized the importance of patients' evaluation (Burt et al., 2018; Davis et al., 2006; Fiscella et al., 2007; Wright et al., 2004). However, an increasing number of researchers have suggested that this should be examined from both physician's self-evaluation and patient evaluation perspectives (Kenny et al., 2010). For instance, Guo and Wang (2020) examined physician communication from physicians' and patients' perspectives and found significant differences in their perceptions, as evidenced by the patients' evaluations of physician communication were worse than the physicians' self-evaluations.

An important reason for the difference in the physicians' and patients' evaluations of physician communication is physician empathy (Grosseman et al., 2014), which refers to the ability of the physician to understand the patient's inner experiences and perspective and a capability to communicate this understanding (Hojat et al., 2002). As noted in the physician competency model developed by the American Council for Accreditation of Graduate Medical Education, communication skills are central to physician competency and empathy is the primary component of physician communication (ACGME, 1999). Notably, some researchers have directly referred to physician empathy as empathic communication, arguing that empathic communication is important for improving physician communication and physician–patient relationship (Banerjee et al., 2021; Derksen et al., 2013; Suchman et al., 1997). Conversely, communication without empathy can hinder the physician–patient relationship (Klitzman, 2006).

Unfortunately, it has been found that physician empathy is less than ideal (Chen et al., 2015; Kelm et al., 2014). The results of existing studies regarding the evaluation of physicians' empathy have been inconsistent. For instance, Hermans et al. (2018) found that physicians and patients did not rate physician empathy in the same manner. However, Jensen et al. (2020) used neuroscience techniques to examine physician empathy and found that it was correlated with brain regions and the physicians' and patients' evaluation results. Therefore, it is important to examine physician empathy from the physicians' and patients' perspectives to help physicians improve their empathy skills; thus, improving the physician–patient relationship.

Self- and other evaluation scales that measure physician empathy include the Jefferson Scale (Hojat et al., 2002) and the Consultation and Relational Empathy questionnaire (CARE) (Mercer et al., 2004). These scales are based on the binary component theory of empathy (Davis, 1983; Gladstein, 1983), suggesting that empathy has two main components, cognitive and affective empathy. Cognitive empathy, also known as perspective-taking, emphasizes the mental processes by which individuals imagine or speculate views and attitudes of others from others' perspectives, while affective empathy highlights empathic concerns for alternative feelings to others' emotional experiences (Davis, 1983, 1994; Decety, 2011). However, neuroscience research has shown that the neural mechanisms underlying these two components are not identical (Decety & Jackson, 2006; Hein, 2008). Therefore, we hypothesize that the type of empathy may also be responsible for the differences in physicians' and patients' evaluations of physician communication. Therefore, we measured perspective-taking and empathic concern and their impact on physician communication and physician–patient relationship with the help of the binary component theory of empathy.

A review of the past literature revealed that many studies had examined the relationship between physician empathy, physician communication, and physician–patient relationship or the relationship between two of them (Duffy et al., 2004; Howick et al., 2018). However, few studies have deeply examined how physician empathy affects the physician–patient relationship through physician communication. Furthermore, there is a lack of consensus between physicians and patients regarding actual perceptions of physician empathy and communication and the physician–patient relationship. Therefore, it is necessary to investigate how physician empathy affects the physician–patient relationship from the physicians' and patients' perspectives. In addition, numerous studies have found that physician–patient conflicts and violence are frequent in China and physician–patient relationships are tense (The Lancet, 2020; Zhao et al., 2014). In the USA, physicians and patients are increasingly dissatisfied with the physician–patient relationship (Zulman et al., 2020). Thus, this study aims to examine the impact of physician communication and physician empathy on the physician–patient relationship. We hypothesize that physician communication and physician empathy can directly affect the physician–patient relationship based on existing studies. Physician communication plays a mediating role between physician empathy and the physician–patient relationship. Moreover, the core components of empathy, perspective-taking, and empathic concern directly influence physician communication and physician–patient relationship and physician communication mediates between perspective-taking and physician–patient relationship and between empathic concern and the physician–patient relationship.

Methods

Participants

This study conducted a survey among physicians and patients in hospitals from 28 provinces of China. The questionnaires were distributed between September 18, 2019 and January 10, 2020. We enrolled Chinese physicians with a medical license for physician participants. The physicians' questionnaires were filled online by physicians at their convenience, after being sent the test link by the hospital managers. After completing the test, the hospital management compensated the physicians with small, inexpensive gifts, such as pens and wipes. Lastly, we distributed 2765 questionnaires nationwide and 2665 valid questionnaires were returned with a valid return rate of 96.38%. The effective recovery rates for each sampling city ranged from 93.9% to 98.7%. For patient participants, our target group was Chinese patients older than 18 years with the ability to act and be conscious. The patients' questionnaires were distributed by trained hospital administrators to patients who visited the hospital and returned directly to the surveyor after completion and each participant was compensated with small, inexpensive gifts, such as pens and wipes. We distributed 3376 questionnaires and 2983 valid questionnaires were returned with a valid return rate of 92.51%. The effective recovery rates for each sampling city ranged from 90.7% to 96.3%. All study data in this study were collected anonymously and kept confidential.

Measurement Tools

Physician Communication Scale

The SEGUE Framework, developed by Makoul (2001), was used to measure the physicians' evaluation of their own communication skills. This scale was first introduced by the Chinese Medical University in 2006 and was revised and piloted in Chinese. For over a decade, many studies have confirmed that the scale has high reliability and validity and can effectively assess the communication skills of Chinese physicians (Guo & Wang, 2020). It consists of 25 items on five dimensions: preparation, information gathering, information giving, understanding the patient, and closing the consultation. A five-point scale was used (1 = "never," 2 = "occasionally," 3 = "sometimes," 4 = "most of the time," and 5 = "all the time"). In addition, the patient questionnaire was fine-tuned according to the characteristics of the target group. For instance, the first item in the physician's version was "I greet the patient politely during the consultation," while the first

item in the patient's version was "The doctor greeted me politely during the consultation." Both scales revealed that a higher score indicated a higher evaluation of physician communication by the participants. In this study, the Cronbach's alpha coefficient for the physicians' scale was .96 and the model fit indices were as follows: chi-square freedom ratio (χ^2/df) = 2.77, root mean square error of approximation (RMSEA) = 0.028, Comparative Fit Index (CFI) = 0.99, Goodness-of-Fit Index (GFI) = 0.99, and Tucker–Lewis Index (TLI) = 0.99. The Cronbach's alpha coefficient for the patients' scales were .97 and the model fit indices were as follows: χ^2/df = 2.93, RMSEA = 0.03, GFI = 0.96, CFI = 0.99, and TLI = 0.95.

Physician Empathy Scale

The Jefferson Scale of Physician Empathy (JSPE) (Hoja et al., 2002) was used to measure the physicians' evaluations of their own empathy skills. The scale has 20 items and includes four dimensions: perspective-taking, empathic concern, fantasy power, and physical and mental worry. The Consultation and Relational Empathy Scale (CARE) developed by Mercer et al. (2004) was used to measure the patients' evaluation of physician empathy at the end of treatment, which includes 10 items, such as the patient feeling relaxed and comfortable to talk. Both scales are scored on a five-point scale, with higher scores indicating higher ratings of physician empathy. The Cronbach's alpha coefficient for the JSPE scale in this study was .80 and the model fit indices were as follows: χ^2/df = 3.11, RMSEA = 0.04, GFI = 0.93, CFI = 0.97, and TLI = 0.96. The Cronbach's alpha coefficient for the CARE scale was .80 and the model fit indices were as follows: χ^2/df = 4.85, RMSEA = 0.05, GFI = 0.86, CFI = 0.97, and TLI = 0.95.

Since this study required two scales of perspective-taking and empathic concern as research variables, the factors of perspective-taking and empathic concern were extracted from each scale. In the JSPE scale, perspective-taking consists of 10 items, which are assessed through statements, for example, "I try to think like my patients to render better care." Empathic concern includes eight items and example of it include "an important component of the relationship with my patients is my understanding of the emotional status of the patients and their families" (Hojat et al., 2002). The Cronbach's alpha coefficients for the two factors were .83 and .86, respectively. In addition, we extracted two factors from the Merce scale, following Bernardo et al. (2019), where perspective-taking empathic concern included four items each, and the Cronbach's alpha coefficients were .93 and .96 for the two factors, respectively.

Physician–Patient Relationship Scale

The Difficult Physician–Patient Relationship Questionnaire (DPPRQ-10) (Chinese version) (Yang, 2011) was used to measure the physicians' evaluation of the physician–patient relationship with statements, such as "After seeing a patient, you look forward to his or her next visit," consisting of three dimensions: "physician's subjective feelings," "objective manifestations of patient behavior," and "symptoms that combine patient behavior and physician's subjective responses," with a total of 10 items. The Patient–Doctor Relationship Questionnaire (PDRQ-15) (Chinese version) (Yang, 2011) was used to measure the patients' evaluation of the physician–patient relationship, including three dimensions: patients satisfaction with the physician, physician's approachability, and patients attitudes toward medical symptoms. Statements such as "I am satisfied with my doctor's treatment" were used in the study. In this study, both scales indicated that a higher score indicated a better evaluation of the physician–patient relationship by the participants. The Cronbach's alpha coefficient for the DPPRQ in this study was .72 and the model fit indices were as follows: χ^2/df = 4.62, RMSEA = 0.04, GFI = 0.96, CFI = 0.97, and TLI = 0.98. The Cronbach's alpha coefficient for the PDRQ was 0.95 and the model fit indices were as follows: χ^2/df = 2.38, RMSEA = 0.05, GFI = 0.97, CFI = 0.98, and TLI = 0.96.

Data Analysis

SPSS 19.0 and AMOS 24.0 were used for data analysis in this study. Firstly, SPSS was used to create a database and perform descriptive statistics and correlation analyses of the demographic variables and core indicators for the physicians and patients. To improve the rigor of the study, statistical control was performed using Harman's one-way test prior to analysis (Podsakoff et al., 2003) and all items were combined for unrotated principal component factor analysis. The results showed that seven factors had eigenvalues greater than one and the maximum factor explained 27.70% of the variance, which was less than the 40% threshold, indicating that there was no serious common method bias in the data in this study.

Secondly, we measured the fitness of the two models using AMOS 24.0 structural equation modeling (SEM). The first model for our study consisted of three main variables: physician empathy as the independent variable, physician communication as the mediating variable, and physician–patient relationship as the dependent variable. The second model differed from the first model in that the physician empathy was divided into two components: perspective-taking and empathic concern. The remaining variables were unchanged. We standardized all data and used structural equation modeling to test for mediating effects to effectively control for measurement error. We began with the analysis of the physicians' evaluation results. After controlling for demographic variables, such as physicians' gender, age, and education level, we used physician empathy as the predictor variable, physician–patient relationship as the outcome variable, and physician communication as the mediator variable for path analysis. Subsequently, the fit of the model was measured using three absolute goodness-of-fit indices: χ^2/df, two absolute goodness-of-fit indices: RMSEA and GFI, and two relative fit indices: CFI and TLI. Among them, chi-square/df ratios between 2.0 and 5.0 indicated a good model fit (Hooper et al., 2008); RMSEA value less than or equal to 0.05 was considered a good fit (Browne & Cudeck, 1993; Schumacher & Lomax, 1996); GFI, CFI, and TLI required values of 0.90 or higher to indicate a good fit (Bentler, 1990; Schermelleh-Engel & Moosbrugger, 2003). Lastly, we used the same methodology to analyze the patient evaluation results as the physician evaluation results.

Results

Descriptive Statistical Results for Physicians and patients

Among the 2665 physician participants, 1186 were male and 1479 were female, aged 25–65 years, $M = 35.94$, and SD = 9.03. Among the 2983 patient participants, 1276 were male and 1,707 were female, aged 18–65 years, $M = 43.23$, and SD = 16.10. The participants' demographic variables are detailed in Table 1.

Correlation Analysis of Physicians' and Patients' Evaluations of Physician Empathy, Physician Communication, and Physician–Patient Relationship

Table 2 shows the Pearson correlation coefficients between the physicians' and patients' scores on each variable after controlling for demographic variables. The results of the physicians' evaluations show that there was a significant positive correlation between all variables, which may indicate a mediating relationship between the variables. Similarly, the results of the patient evaluations showed significant correlations between all variables. According to the previous view (Cook & Campbell, 1979), the existence of a correlation between variables does not signify a causal relationship between them, but the first criterion for exploring the causal relationship between them is satisfied.

Table 1 Basic demographic information about physicians and patients

Variables	N (%)	
	Physician	Patient
Gender		
Male	1311 (49.21%)	1406 (47.13%)
Female	1353 (50.79%)	1577 (52.87%)
Age		
18~30	27 (1.03%)	81 (2.71%)
31~40	913 (34.27%)	776 (26.03%)
41~50	1172 (43.98%)	673 (22.56%)
51~60	541 (20.29%)	578 (19.37%)
> 60	11 (0.43%)	875 (29.33%)
Education level		
High school/technical secondary school graduation	56 (2.12%)	1468 (49.21%)
Junior college	241 (9.05%)	602 (20.17%)
Undergraduate	1791 (67.19%)	818 (27.43%)
Graduate	577 (21.64%)	95 (3.19%)
Hospital type		
City public hospital	2503 (93.93%)	2544 (85.27%)
City community/school hospital	27 (1.02%)	135 (4.51%)
Urban private hospital	26 (0.97%)	27 (0.89%)
Township public hospital	67 (2.53%)	240 (8.05%)
Individual clinics, etc.	41 (1.55%)	38 (1.28%)
Medical institution grade		
Tertiary	1767 (66.29%)	2329 (78.09%)
Secondary	755 (28.32%)	261 (8.76%)
Primary	144 (5.39%)	392 (13.15%)
Area		
East	570 (21.37%)	741 (24.83%)
Central	1252 (46.98%)	1492 (50.01%)
West	843 (31.65%)	751 (25.16%)

In China, hospitals are divided into three grades according to the size of the hospital, the hardware facilities, and the scientific research capabilities, in which tertiary hospitals are the best, while primary hospitals are the worst

Mediating Effects Test for Physician Communication from the Physicians' and Patients' Perspectives

Physician evaluation results show that the model fit index was good, $\chi^2/df = 1.365$, CFI = 0.977, GFI = 0.936, TFI = 0.968, and RMSEA = 0.053. The results of the model fit are shown in Fig. 1a. From Fig. 1a, we can see that physician empathy directly predicted the physician–patient relationship ($\gamma = 0.178$, $p < .001$) and physician empathy predicted physician communication ($\gamma = 0.218$, $p < .001$). However, physician communication did not predict the physician–patient relationship ($\gamma = 0.02$, $p > .05$). Therefore, we conducted a test for the significance of a specific indirect effect for physician communication and the results indicated that the mediating role of physician communication was not significant (indirect effect = 0.004, $p > .05$, the mediation effect accounted for 2.42% of the total effect, 95% CI [− 0.01, 0.01]).

We analyzed the patients' evaluation results using the same method. It was found that the model fit index was good, $\chi^2/df = 1.213$, CFI = 0.973, GFI = 0.966, TFI = 0.933, and RMSEA = 0.031. The results of the model fit are shown in Fig. 1b. From Fig. 1b, we can see that physician empathy directly predicted the physician–patient relationship ($\gamma = 0.359$, $p < .001$) and physician empathy predicted physician communication ($\gamma = 0.281$, $p < .001$). Moreover, physician communication predicted the physician–patient relationship ($\gamma = 0.238$, $p < .001$). This suggests that physician communication mediated the relationship between physicians' empathy and the physician–patient relationship (indirect effect = 0.281 × 0.238 = 0.07, $p < .05$, the mediation effect accounted for 15.7% of the total effect, 95% CI [0.02, 0.03]).

To further examine the core mechanisms of the physician–patient relationship, we developed separate mediation models with perspective-taking and empathic concern as predictor variables, physician communication as a mediating variable, and physician–patient relationship as an outcome

Table 2 Correlations between variables in physicians' and patients' perspectives

| Participants	Variables	Mean (SD)	1	2	3	4	5
Physicians	Perspective-taking	40.62 (4.33)	–				
	Empathic concern	20.50 (4.67)	.281**	–			
	Physician empathy	66.45 (8.49)	.231**	.859**	–		
	Physician communication	105.29 (12.94)	.452**	.259**	.207**	–	
	Physician–patient relationship	31.54 (5.15)	.168***	.286**	.294**	.170*	–
Patients	Perspective-taking	16.43 (2.37)	–				
	Empathic concern	16.42 (2.19)	.828**	–			
	Physician empathy	32.85 (4.41)	.988**	.903**	–		
	Physician communication	101.11 (16.31)	.634**	.591**	.632**	–	
	Physician–patient relationship	61.30 (7.67)	.403**	.405**	.450**	.520**	–

*$p < .05$; **$p < .01$; ***$p < .001$
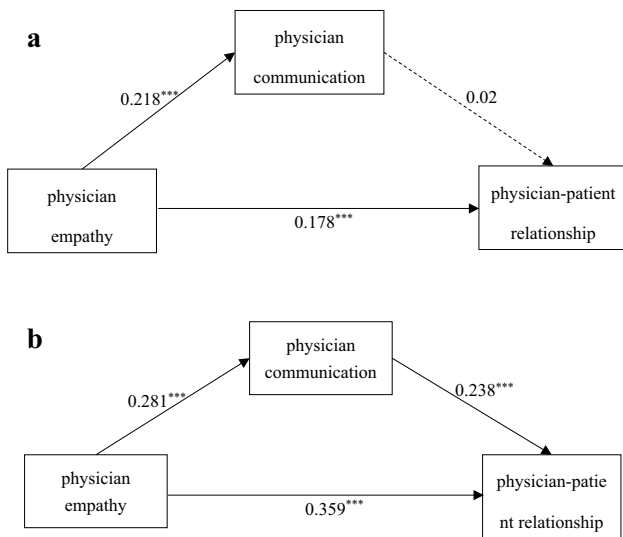
Fig. 1 a The model of physician communication mediating between physician empathy and physician–patient relationship from the physicians perspectives. **b** The model of physician communication mediating between physician empathy and physician–patient relationship from the patients perspectives. *$p < .05$, **$p < .01$, ***$p < .001$, the same below. All regression coefficients were standardized. Single-arrow straight lines indicated predicted relationships, and double arrows indicated correlations. Solid lines indicated significant regression relationships, and dashed lines indicated regression paths that were not significant, the same below

variable. We first analyzed the physicians' evaluation results and found that the model fit index was good, χ^2/df $= 1.765$, CFI $= 0.999$, GFI $= 0.997$, TFI $= 0.997$, and RMSEA $= 0.018$.

From the model path, we can see (Fig. 2a) that perspective-taking directly predicted the physician–patient relationship ($\gamma = 0.098$, $p < .001$) and that empathic concern directly predicted the physician–patient relationship ($\gamma = 0.237$, $p < .001$). Perspective-taking positively predicted physician communication ($\gamma = 0.194$, $p < .001$), empathic concern significantly predicted physician communication ($\gamma = 0.238$, $p < .001$), and the path coefficient for physician communication to the physician–patient relationship was not significant ($\gamma = 0.025$, $p > .05$). A specific indirect effect significance test was conducted for physicians' communication. The results are shown in Table 3. As shown in Table 3, the physicians' evaluation results suggested that only perspective-taking can effectively predict the physicians' communication, which affects the physician–patient relationship, such as physicians' communication mediates only between perspective-taking and the physician–patient relationship, but not between empathic concern and the physician–patient relationship.

The same method was used to analyze the patients' evaluation results. The model fit was found to be good, χ^2/df $= 0.98$, CFI $= 0.964$, GFI $= 0.939$, TLI $= 0.998$, and RMSEA $= 0.181$. In terms of model paths (Fig. 2b), perspective-taking and empathic concern directly predicted the physician–patient relationship ($\gamma = 0.173$, $p < .001$; $\gamma = 0.920$, $p < .001$) and physician communication ($\gamma = 0.265$, $p < .001$; $\gamma = 0.223$, $p < .001$) and physician communication significantly predicted the physician–patient relationship ($\gamma = 0.357$, $p < .001$). A specific indirect effect significance test was conducted for physician communication. The results

Fig. 2 a The structural equation model of physicians' evaluation perspective-taking and empathic concern in relation to physician communication and physician–patient relationship. **b** The structural equation model of patients' evaluation perspective-taking and empathic concern in relation to physician communication and physician–patient relationship. The data in parentheses are the path coefficients of physician communication between perspective-taking and physician–patient relationship and empathic concern and physician–patient relationship, respectively, the same below
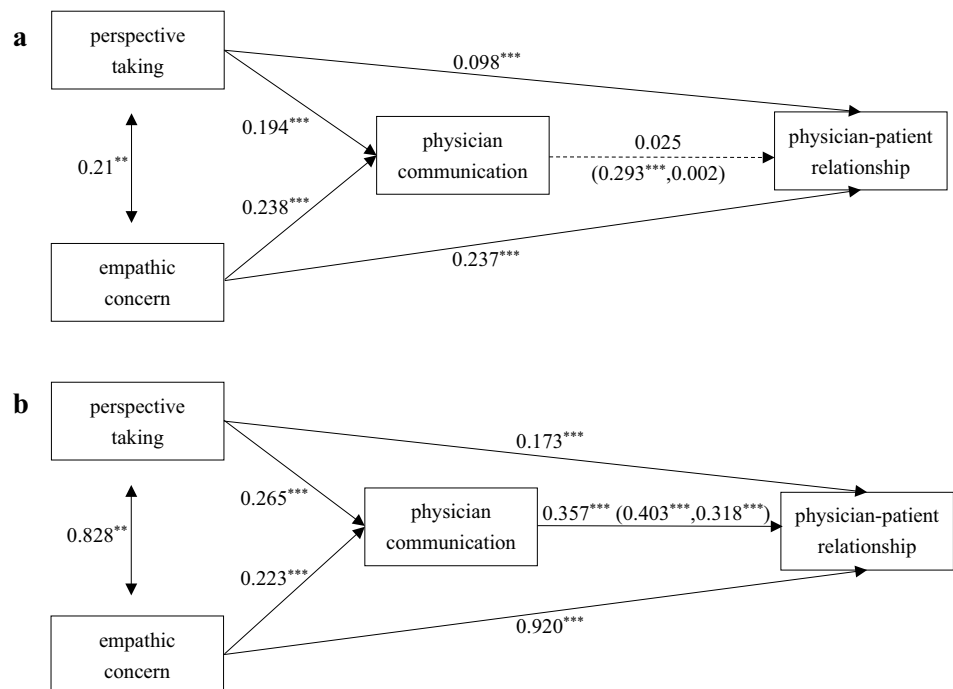
Table 3 Analysis of the mediating effects of physician communication

Participants	Indirect paths	Mediating effect size	Percentage of total effect explained by indirect effects (%)	95% CI
Physicians	Perspective-taking → physician communication → physician–patient relationship	0.06*	58.00	[0.029, 0.071]
	Empathic concern → physician communication → physician–patient relationship	0.001	0.395	[− 0.001, 0.013]
Patients	Perspective-taking → physician communication → physician–patient relationship	0.09*	61.30	[0.059, 0.121]
	Empathic concern → physician communication → physician–patient relationship	0.08*	34.35	[0.051, 0.109]

*$p < .05$

are shown in Table 3. As shown in Table 3, the patients' evaluation results suggested that perspective-taking and empathic concern effectively predicted physician communication and the physician–patient relationship and that physician communication mediated the relationship between perspective-taking and physician–patient relationship, as well as between empathic concern and physician–patient relationship.

Discussion

Our study is the first to examine the influence of physician empathy on the physician–patient relationship and its core mechanisms from the physicians' and patients' perspectives. In the first model, we found that the mediating effect of patients' evaluation of communication was significant between physician empathy and physician–patient relationship, while the mediating effect of physicians' evaluation of communication was not significant. A key finding was that the physicians' self-evaluation results of physician communication did not predict the physician–patient relationship, whereas the patients' other evaluation results of physician communication significantly predicted the physician–patient relationship, which suggested that the patient evaluation results of physician communication are effective predictors of the physician–patient relationship. To further examine the mechanisms underlying the physician–patient relationship, we developed the second structural equation model based on the binary component theory of empathy, with perspective-taking and empathic concern as predictor variables, physician communication as a mediator variable, and the physician–patient relationship as an outcome variable from the physicians' and patients' perspectives, respectively. First, we found that the correlation between perspective-taking and empathic concern was very low in the physicians' evaluation results ($r = .11$), whereas the correlation between perspective-taking and empathic concern

was very high in the patients' evaluation results ($r = .83$). Second, the results of the path analysis of the physicians' evaluation showed that physician communication mediated significantly only between perspective-taking and the physician–patient relationship; however, the patients' evaluation results showed that physician communication mediated significantly between perspective-taking and the physician–patient relationship and between empathic concern and the physician–patient relationship. These results suggested that Chinese physicians and patients have different perspectives on the relationship between perspective-taking and empathic concern and the role of physician communication in empathic concern and the physician–patient relationship. Physicians believe that the correlation between perspective-taking and empathic concern is very low and that only perspective-taking affects physician communication and thus the physician–patient relationship. However, patients believe that the relationship between perspective-taking and empathic concern is very strong and that both affect physician communication and thus the physician–patient relationship.

Examining the direct effect of physician empathy on physician communication and the physician–patient relationship found that the physicians' evaluation results and patients' evaluation results showed that physician empathy significantly predicted physician communication and physician–patient relationship, and these results were consistent with previous studies using either physicians or patients as participants (Derksen et al., 2013; Garden, 2009; Larson & Yao, 2005). Since the main purpose of this study was to examine the core mechanisms by which physician empathy affects the physician–patient relationship based on the binary component theory of empathy, therefore we focused on the results of the perspective-taking and empathic concern findings and then we focused on the new results found here. Notably, this study revealed that the physicians' evaluation results of physician communication did not predict the physician–patient relationship,

whereas the patients' evaluation results of physician communication significantly predicted the physician–patient relationship. This suggests that the focus should be on patients' evaluations in a patient-centered medical model. Targeted improvement of physician communication skills through the patients' evaluation results is the key to facilitating the physician–patient relationship.

In physicians' view, perspective-taking and empathic concern significantly predicted the physician–patient relationship. Examining the mediating role of physician communication alone showed that physician communication mediated significantly between perspective-taking and the physician–patient relationship but did not mediate between empathic concern and the physician–patient relationship. The results suggested that, in physicians' view, perspective-taking was more important and had more impact on communication when compared with empathic concern, which in turn affected the physician–patient relationship. This result validated Hojat's (2002, 2009) view that physician empathy was most often a cognitive rather than an affective characteristic and was an understanding of the patients' experiences, concerns, and perspectives and the ability to communicate this understanding to patients. Many clinical studies have found that physician empathy has at least a cognitive component, which enables medical students to have the ability to understand patients' internal experiences and feelings (Kelm et al., 2014). In addition, we found that previous training of physicians' (medical students) empathy skills focused on cognitive empathy (Kelm et al., 2014; Stepien & Baernstein, 2006) and experiential learning approaches, such as role-playing allowed physicians (medical students) to better perceive, identify, and understand the patients' needs and experiences. We hypothesize that it is possible that the influence of previous perspectives and the findings of clinical studies, combined with the limited time physicians allocate to each patient, has led physicians to empathize with patients only at the cognitive level.

However, research in the medical field has found that in specific medical situations, physicians cannot accurately understand patients with only the cognitive component of empathy since they also need to accurately communicate their understanding of patients' needs to patients, which requires the involvement of the affective component of empathy to listen to and understand the patients' feelings and express their feelings in an appropriate manner to obtain feedback from the patients, thereby facilitating communication and cooperation between physicians and patients (Cano & Williams, 2010). In addition, previous research has found that empathy is a holistic process rooted in specific interpersonal interactions and that reducing it to an overemphasis on perspective-taking inevitably relies too heavily on the cognitive component and can neglect the importance of empathic concern (Williams & Stickley, 2010). These suggest that

empathic concern, a core component of affective empathy, is a very important factor in enhancing physician communication and the physician–patient relationship and that physician empathy requires the involvement of the cognitive and affective components.

To make our speculations more convincing, we analyzed the patients' evaluation results. The results showed that perspective-taking and empathic concern significantly predicted physician communication, as well as the physician–patient relationship and that physician communication mediated the relationship between perspective-taking and the physician–patient relationship, as well as empathic concern and physician–patient relationship. This suggests that, in patients' view, perspective-taking and empathic concern together influence physician communication. Our results further confirmed the importance of perspective-taking and empathic concern in physician communication and physician–patient relationship. Our findings are supported by the social relations Russian doll model theory of empathy, which suggested that activating the cognitive component of empathy makes individuals more capable of putting themselves in the other's shoes while activating the affective component of empathy makes individuals more capable of listening to and understanding the feelings of others and express them in an appropriate way to obtain feedback from the empathized. This process helps facilitate interpersonal communication and relationships between individuals and others (de Waal, 2008). Our results also extended the two-component theory of empathy (Davis, 1983; Gladstein, 1983), which holds cognitive empathy responsible for the understanding of another person's purpose and intentions and affective empathy responsible for the feeling of another person's emotional state. Only when the two are combined, in a state of co-existence, individuals can truly understand others and thus build interactive relationships (Decety & Jackson, 2006; Hein & Singer, 2008).

Based on the results of this study, the construction of a harmonious physician–patient relationship should be carried out in conjunction with the physicians' and patients' evaluations of physician empathy and physician communication. First, to improve physician–patient relationship from the physicians' perspective, we should focus on the ability of perspective-taking in the communication process and improve physician communication through the improvement of the ability of perspective-taking, such as role-playing (Armstrong, 2001; Green, 2002; Smith et al., 2020), and subsequently promote the physician–patient relationship. Second, to improve the physician–patient relationship from the patients' perspective, we should focus on both physicians' perspective-taking and empathic concern abilities through more enriching methods, such as face-to-face training, role-playing, and simulation games (Bas-Sarmiento et al., 2020; Smith et al., 2020). These trainings should include providing

explanations of treatment, providing non-specific empathic responses, such as expressing understanding and nonverbal behaviors to improve the physicians' communication skills based on their empathic abilities, thus promoting the physician–patient relationship.

There were some shortcomings to this study. First, this study was investigated before the COVID-19 pandemic and has not yet investigated the feelings of the physicians and patients about physician empathy, physician communication, and physician–patient relationship after the COVID-19 pandemic. The world experienced the COVID-19 pandemic in 2020 and China successfully fought it and in the process of fighting the COVID-19 pandemic, Chinese physicians fought bravely and established a very positive image in the minds of patients and the general public (Zhou et al., 2021), which may cause patients to re-evaluate physicians and their competence. Therefore, future research needs to examine the changes in the physician–patient relationship in China after the COVID-19 pandemic and thus compare physician empathy, physician communication, and physician–patient relationship before and after the COVID-19 pandemic. Second, the variables in this study were all self-reported by the participants and were highly subjective, especially in the evaluation of the physicians' competence, which was particularly susceptible to the emotional state of the physicians and patients at the time. Future research should include a more comprehensive and objective examination of the impact of physician communication and empathy skills on the physician–patient relationship after controlling for these potential confounding factors. Lastly, we used structural equation modeling to explore physician empathy, physician communication, and the relationship between the physician–patient relationship from the physicians' and patients' perspectives in this study. SEM has some advantages in the description of multivariate relationships; however, it only reflects a potential correlation that we constructed based on existing conditions and cross-sectional data, which cannot determine the causal relationships between these variables. Future research can examine the causal relationships between these variables through longitudinal studies.

Conclusion

Physician empathy was a significant predictor of physician communication and physician–patient relationship among physicians and patients. For physicians, only perspective-taking influenced the physician–patient relationship. For patients, physician communication mediated the relationship between physician empathy and the physician–patient relationship and the physician's perspective-taking and empathic concern affect physician communication, which in turn affects the physician–patient relationship. In other words, physician communication mediates between perspective-taking and physician–patient relationship, as well as empathic concern and physician–patient relationship. These findings provide important scientific evidence constructing a harmonious physician–patient relationship, developing physicians' communication skills, and enhancing physician empathy. Our results suggest that the evaluation of physician communication should focus on the patients' perspectives to build a harmonious physician–patient relationship. Moreover, focusing on empathic concern to enhance physician empathy will make physician communication effective and efficient, which ultimately facilitates the physician–patient relationship.

Declarations

Conflict of interest Yanjiao Wang, Qing Wu, Yao Wang, and Pei Wang declare that they do not have conflict of interest.

Ethical Approval This study was approved by the local ethics committee of Shanghai Normal University and was conducted in accordance with the Declaration of Helsinki (2013).

Human and Animal Rights and Informed Consent Statement All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals, performed by any of the authors.

Consent to Participate All participants were informed before the investigation began. All methods were carried out in accordance with relevant guidelines and regulations.

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