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The Influence of Doctors' Psychological Capital and Doctor-Patient Communication on the Doctor-Patient Relationship: An Empirical Study in Guangzhou, China

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Doctor of Management

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ISCTE University Institute of Lisbon
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Florida International University

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SCHOOL**

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Abstract

Previous studies have found that there are many reasons for the disharmony of the doctor-patient relationship in China, including the factors of both doctors and patients, government factors, industry factors, social factors, etc. However, the impact of doctors' psychological capital and doctor-patient communication on doctor-patient relationship is the focus of this study.

This study investigated the level of doctors' psychological capital, how doctors' psychological capital affects doctor-patient communication, and how doctors' psychological capital and doctor-patient communication affect doctor-patient relationship. A questionnaire was collected and analyzed among 346 doctors working in 30 medical institutions in Guangzhou. The results showed that doctors' psychological capital and its dimensions had a positive predictive effect on doctor-patient communication and a positive impact on doctor-patient relationship. The results of this study will help to provide inspiration for hospital managers to improve the hospital management model and formulate health policies.

Keywords: psychological capital; doctor-patient communication; doctor-patient relationship; Guangzhou

JEL: J24; J28

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Resumo

A relação médico-paciente em contexto hospitalar tem merecido a atenção da comunidade académica havendo vários estudos que sugerem a importância de considerar factores de diversas ordem – médicos, pacientes, indústria, sociedade, etc. – na sua investigação. Neste estudo, o foco é colocado no capital psicológico dos médicos e na comunicação médico-paciente. Concretamente, investiga-se em que medida o capital psicológico dos médicos afeta a comunicação médico-paciente e como o capital psicológico dos médicos e a comunicação médico-paciente afetam a relação médico-paciente.

Foi realizado um inquérito por questionário, no qual se recolheu e analisou a informação facultada por 346 médicos, trabalhando em 30 instituições médicas, em Guangzhou. Os resultados mostram que o capital psicológico dos médicos e suas dimensões têm um efeito positivo na comunicação médico-paciente e um impacto igualmente positivo na relação médico-paciente. Os resultados deste estudo podem servir de inspiração para os gestores hospitalares no sentido de implementarem mudanças no modelo de gestão hospitalar e na formulação de políticas de saúde.

Palavras-chave: capital psicológico; comunicação médico-paciente; relação médico-paciente; Guangzhou

JEL: J24; J28

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摘 要

以往的研究发现，造成我国医患关系失谐的原因有很多种，包括医患双方因素、政府因素、行业因素、社会因素等。然而，医生的心理资本和医患沟通对医患关系的影响是本文研究的重点。

本研究对医生的心理资本水平状况、医生的心理资本如何影响医患沟通、医生的心理资本和医患沟通如何影响医患关系进行调查，对广州地区30家医疗机构工346名医生进行问卷收集、分析。结果表明，医生的心理资本及其各维度对医患沟通有正向预测作用，对医患关系有积极的正向影响作用。此次研究结果有助于为医院管理者在医院管理模式的改进和卫生政策的制定提供启示。

关键词：心理资本；医患沟通；医患关系；广州

JEL: J24; J28

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In the autumn of 2016, I got acquainted with Elder Martial Brother Huang Ximou and Elder Martial Sister Lin Weifang, and got to know the "Doctor of Management in Healthcare Program". I was very excited. The channel that I had always dreamed of studying upward appeared. I am grateful to Elder Martial Brother Ximou and Elder Martial Sister Weifang for their warm recommendations, let me immediately contact Ms. Xu Ruimin of the school project office and submit an application for admission. After the interview, at 4:22 p.m. on Tuesday, February 28, 2017, I received the admission notice from Iscte University Institute of Lisbon, Portugal. I joined the program with happy and excitement, and met 24 outstanding elite representatives from medical institutions across the country. As a student representative, I still remember my embarrassment of being nervous and excited when speaking in English, because I hardly slept the night before.

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List of Abbreviations

PsyCap	Psychological Capital
DPC	Doctor-patient Communication
DPR	Doctor-patient Relationship
PP	Positive Psychology
POB	Positive Organizational Behavior (POB)
PHO	Positive Health Organizations
JD-R Model	Job Demands-Resources
GLTC	Goodwill-Listening-Communication-Cooperation
EAP	Employee Assistance Program
OCBs	Organizational Citizenship Behaviors
QWL	Quality of Work Life

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Chapter 1: Introduction

1.1 Research background

1.1.1 General background

At present, the focus of medical services in medical institutions is shifting from the needs of hospitals to the needs of patients, providing comprehensive and systematic medical services to targeted patients through the analysis and research on the precise positioning of the needs of targeted groups and the comprehensive integration of medical resources. Under the strong guidance of government authorities and policies, the development of the medical services industry in China is shifting from a “seller’s market” to a “buyer’s market”. The advance of the multi-sited license policy of doctors and the strengthening of investment in technology of private medical institutions is gradually dissolving the technical barriers, thus leading to the gradual dismantlement of the monopoly of public medical institutions and the increasingly fierce competition in the medical industry.

To better compete in the medical industry, public medical institutions need to cater to the needs of the market, introduce marketing management and services, change the hospital service model, meet the needs of patients for medical services in all aspects, and establish a stable and mutually trusting doctor-patient relationship. Through the introduction of marketing management and brand management, public healthcare organizations can build their brand image and optimize the doctor-patient relationship. The “patient-centered” philosophy reflects the idea of “focusing on the needs of patients” in marketing management. With the incorporation of marketing services, public medical institutions can gradually move away from the outdated model of “prioritizing the needs of hospitals” and provide medical services to patients with sincerity, as well as attracting more of them with high-quality medical services and better the patient experience comprehensively. According to Maslow’s hierarchy of needs, along with the improvement of people’s material lives come the higher requirements for medical services, and the focus of their expectation from medical services has shifted from the physiological and security needs to the needs for love, belonging, and respect (Xie et al., 2020). The medical needs of the Chinese people are developing in a multidimensional and diversified direction.

With the reform of the health care system entering the critical stage, the practice of medical staff presents the “four-high” characteristics, that is, “high technology, high pressure, high risk and high burden” (Hu et al., 2016). Chinese doctors have to devote their time and energy to teaching and research in addition to their daily heavy clinical tasks. In March 2017, Ding Xiang Yuan (2017) launched the *Investigation on Doctors' Overwork*. The results showed that 64.1% of doctors in China had serious fatigue, and their physical condition was not optimistic. Only 19.2% of doctors thought their physical condition was good. According to the statistics in 2014, only 14.43% of doctors do not work overtime. Doctors in tertiary hospitals work 51.05 hours a week on average, and those in secondary hospitals work 51.13 hours a week on average. 68.5% of doctors have lunch breaks and meals less than 1 hour, and 32.2% of doctors have less than 30 minutes to have meals. As for paid annual leave, 75% of doctors said they had never enjoyed it. The sharp increase in the workload of doctors, often full load or even overload work, huge psychological pressure and other factors reduce the patience and willingness of doctors to actively communicate with patients (Hong & Du, 2019). A psychologist said: studies have shown that Chinese doctors have high work pressure and high suicide rate, which has become one of the unhealthiest occupations. Now some patients do not understand and distrust doctors, making this occupation one of the most dangerous occupations (Xiao & Cui, 2013). Additionally, doctors' satisfaction with their personal growth is low, and according to the results of regression analysis by Qin et al. (2015), personal growth satisfaction is one of the key reasons for job burnout and turnover intention. Personal growth and development, sense of achievement and work challenge are incentive factors. When the relationship quality of doctors is improved to achieve a harmonious relationship with themselves, team members, and overall working atmosphere, there will be a higher work efficiency, which plays a positive role in the improvement of organizational performance (Zhao & Li, 2020).

People's health is not only an important symbol of national prosperity, but also the common pursuit of the people. The CPC Central Committee and the State Council attach great importance to the construction of mental health services and social psychological service system. The Outline of the Thirteenth Five-year Plan for National Economic and Social Development (The Central People's Government of the People's Republic of China, 2016a) proposes to strengthen mental health services. Also, The Outline of the Healthy China 2030 Plan (The Central People's Government of the People's Republic of China, 2016b) requires strengthening the construction and standardized management of the mental health service system. The Mental Health Law of the People's Republic of China (Standing Committee of

the Chinese People's Congress, 2018) proposes to improve mental health and prevent mental disorders, thus improving the level of public mental health. Doctors should provide mental health guidance to patients under the requirements of diagnostic standards and treatment norms when carrying out disease diagnosis and treatment services. In April 2017, the National Health and Family Planning Commission, the Publicity Department of the CPC Central Committee, the Central Comprehensive Management Office, the Ministry of Civil Affairs and other 22 departments jointly issued the Guidance on Strengthening Mental Health Services (National Health and Family Planning Commission et al., 2016), which made it clear to strengthen the establishment of social work personnel team in mental health. Medicine, education, rehabilitation, social work, and other related majors should strengthen the teaching of psychological theory and the cultivation of practical skills, so as to promote the overall improvement of students' theoretical literacy and practical skills. Since the outbreak of novel coronavirus pneumonia, doctors have been fighting for the first line of epidemic prevention and control. They are under great labor intensity, high working pressure, high risk of infection, and heavy psychological burden. How to relieve their psychological pressure and do psychological counseling has become a key issue of the state.

At present, China's medical curriculum attaches importance to medical knowledge education and lacks humanistic education. How to inject the humanistic spirit and strengthen humanistic care in medical and nursing practice is of great practical significance (Xue, 2021). Hospitals mainly focus on clinical skill learning, and there are few courses in humanistic care education and doctor-patient communication skills (Song & Niu, 2020). Humanistic care is the bridge between doctors and patients. Doctors' caring for patients and humanistic care for patients is the primary condition for maintaining the harmonious and unified relationship between doctors and patients. However, in the process of medical services, doctors pay too much attention to the improvement of service technology level and ignore the due humanistic care. There is a lack of effective communication between doctors and patients, and doctors cannot think from the perspective of patients. Some doctors even pose knowledge arrogance and technical arrogance and are expressionless and quick when examining and treating patients. They cannot treat patients gently and carefully, and are indifferent to patients' pain, making patients feel disappointed. Limited by time, place and environment, patients often cannot fully express their main requirements and feel the humanistic care of doctors, which leads to dissatisfaction from patients and their families and the occurrence of doctor-patient conflicts. With the continuous improvement of people's economic and living standards, patients' awareness of safeguarding their rights is increasing and they claim higher

requirements. They think doctors should not only possess exquisite medical technology, but also give humanistic care in place. If patients' expectations cannot be met, there's the possibility for the occurrence of medical disputes (Zhao & Li, 2020).

The nine primary assessment indicators in the annual assessment of the hospital include cost control, expense management, patient satisfaction, complaints and disputes, workload, work efficiency, work quality and safety, research, and teaching (Liu et al., 2018). All assessment indicators are inseparable from the working state of doctors, and more assessment indicators need to be considered. Organizational performance includes individual performance, but is not the simple addition of individual performance. Organizational and individual goals play a guiding role in individual and organizational performance; effective self-incentives and organizational incentives highly motivate individuals and organizations at work, thereby improving individual and organizational performance; the internal and external environment, the employee qualities, and the nature of work also have a direct or indirect impact on individual and organizational performance (Li & Wang, 2016). The biggest influencing factor on individual performance is individual quality. Only when the employees demonstrate required abilities and qualities can they achieve good performance. Individual qualities include but are not limited to their knowledge, technical skills, cognitive ability, task proficiency, interpersonal skills, personality, and work experience (Li & Wang, 2016).

1.1.2 Doctor-patient conflicts in China

The doctor-patient relationship is an objectively-formed interactive relationship between doctors and patients in medical services, and social groups or individuals who are closely related to the interests of doctors and patients. "Doctor" refers to medical staff including doctors, nurses, drug inspectors and management personnel, and "patient" includes patients or their direct and indirect relatives, guardians, and their work departments and employers. The above identification incisively illustrates that the most essential connotation of the whole medicine is the relationship between doctors and patients. The full development of modern medicine further expands this concept. The "doctor" has expanded from medical staff only to all institutions and personnel participating in medical activities, and "patient" also from people seeking care to every social relationship related to them (Baidu Encyclopedia, 2016). The "doctor" in the Doctor-patient relationship in this thesis specifically refers to "doctors".

Inadequate and insufficient doctor-patient communication can easily lead to misunderstandings between doctors and patients. According to the statistics of the Chinese Medical Association and other relevant departments, there are tens of thousands of medical

dispute cases in China annually, among which more than 60% of the suits filed by patients are due to the failure of doctors to fulfill their duty of disclosure and the violation of patients' consent rights, and only about 30% are involved with medical accidents. Due to the excessive number of patients waiting for consultation in the treating process, doctors tend to be impatient when explaining the conditions and treatment measures to the patients, and often neglect the protection of patients' right to know, thus increasing patients' dissatisfaction and medical disputes (Qi, 2020).

In the ancient Spring and Autumn period and the Warring States period, the doctor-patient relationship appeared since the separation of doctors and witches and the emergence of doctors as an independent profession. Several preliminary characteristics of the doctor-patient relationship in the pre-Qin period can be drawn after analyzing relevant historical materials such as *Zuo Zhuan*, *Huangdi Neijing* and *Records of the Historian*. Firstly, people gradually eliminated their blind worship of gods in the Spring and Autumn period, when the separation of doctors and witches began and the doctor-patient relationship initially took shape. Secondly, medical theories and technologies were still immature. Doctors might take emotional care such as sympathy, comfort and psychological counseling to relieve patients' pain. Thirdly, doctors had not yet become an independent profession recognized by the society. The final solution to conflicts between doctors and patients depended on moral regulation rather than law with a series of ethical norms still in gestation. Fourthly, some doctors had recognized the limitations of medicine and would clearly inform patients to avoid excessive medical treatment and ask patients to comply with doctors' decisions, take care of their body and trust their doctors (Huang & Wang, 2019). Due to underdeveloped productivity and science and technology, however, medicine had not yet formed an independent scientific system. Traditional Chinese medicine doctors understood diseases directly through looking, listening, questioning, and feeling the pulse — four ways of diagnosis — without the help of instruments or equipment. When patients were eager to cure the disease and spontaneously told how they felt to doctors, they had basically entered the stage of empirical medicine, when the doctor-patient relationship was relatively stable owing to the directness and initiative between doctors and patients (Wang & Yang, 2007). Such good doctor-patient relationship had been developing steadily into the early 1980s, when the establishment of the People's Republic of China enabled every citizen's access to the public medical system, and people were highly satisfied with medical and health care services. Nevertheless, since 1980, China's medical and health system had gradually embarked on the road of market-oriented development. Medical reform had caused medicine to lose its commonwealth property.

Patients gradually developed a sense of distrust resulting from the pursuit of interests by doctors, and the doctor-patient relationship encountered a new crisis (He, 2015).

As shown in Figure 1.1, there were 22 incidents of assaulting doctors reported by the media in 2009, 20 in 2010, 21 in 2011, and 20 in 2012, all of which were stable at around 20, and after 2013, the number of incidents of assaulting doctors reported by the media began to increase, from 30 in 2013 to 62 in 2014, to 41 in 2015, 27 in 2016, 20 in 2017, and 32 in 2018, with incidents of assaulting doctors attracting widespread attention.

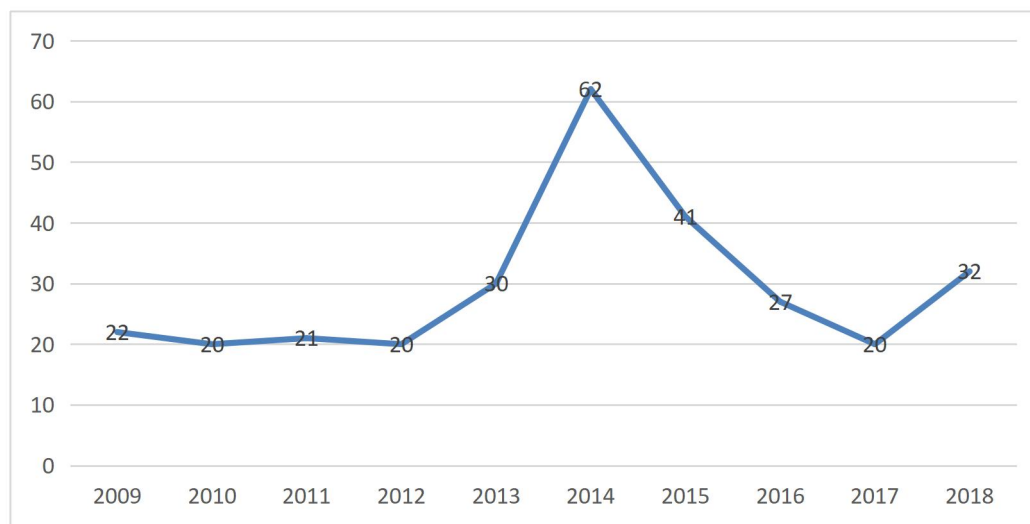


Figure 1.1 Number of Assaulting Doctors Incidents

Source: Li et al. (2019)

At present, negative media reports on doctor-patient conflicts and medical disputes are common: doctors are often abused, beaten, or even injured, and their physical and mental health and safety are threatened unprecedentedly (Tan et al., 2011). The internal factors of doctor-patient disputes are very complex. Biased media reports lead to public hostility towards the hospitals and doctors involved, aggravating and deteriorating the doctor-patient relationship (Jin, 2019). In order to pursue their economic benefits, some media conceal the truth of doctor-patient problems and make false reports, create gimmicks to meet the curiosity mentality of readers, deliberately distort doctor-patient events, or even fabricate false news, intensify doctor-patient conflicts, further widen the distance between doctors and patients, leading to more doctor-patient disputes (Zhang, 2020).

The doctor-patient conflicts not only have many adverse effects on the physical and mental health and personal safety of doctors, but also affects their work, emotion, and job stability. If doctors are less satisfied with their work, they might have the idea and behavior of leaving or even abandoning medical occupation. With more and more doctors leaving and changing posts, it has caused a heavy blow to the steady operation of the medical business. It

is necessary to study the doctor-patient relationship, doctor's job satisfaction and turnover intention from the perspective of doctor. At present, the research on job satisfaction and turnover reasons of enterprise employees at home and abroad starts early, with a wide range and many achievements. Due to the particularity of doctors' profession, their interpersonal relationship includes an important and sensitive relationship with external customers-patients, which requires them to pay more emotion and reach higher professional ethics requirements. Doctors should not be treated with conventional eyes and general rules (Mo et al., 2015; Zhang, 2011).

Since 2000, doctor-patient disputes have occurred frequently in China (Figure 1.1). In August 2000, a patient disfigured a doctor of the medical department of Wuhan Sixth Hospital by splashing acid; in September 2003, a pregnant nurse in Chengdu Second People's Hospital, Sichuan province, aborted after being beaten by families of a patient who was hospitalized in a cadre ward; in March 2012, a man rushed into the office of a doctor in the Department of Immunology of the 1st Affiliated Hospital of Harbin Medical University and committed an attack, resulting in one death and three injuries of doctors (Lai, 2022). A series of doctor-patient conflict gradually became the focus of social attention. The actual situation is probably more serious considering there are many events not been reported by the media. How to build a harmonious doctor-patient relationship has become an urgent social problem to be solved.

In an effort to protect the legitimate rights and interests of both doctors and patients, maintain medical order and ensure medical safety, the Party and the state have attached great importance to the issue of relevant laws and regulations. In April 22, 2014, the Supreme People's Court, the Supreme People's Procuratorate, the Ministry of Public Security, the Ministry of Justice and National Health and Family Planning Commission of China issued the Opinions of Punishing Illegal Acts and Crimes against Medical Staff in Accordance with Law and Maintaining the Normal Medical Order. In 2015, the Amendment IX to the Criminal Law of the People's Republic of China included "illegal acts targeting medical staff and institutions" in its scope of regulation. In 2018, the State Council promulgated Regulations on Prevention and Handling of Health Care Disputes, which promoted the prevention and resolution of medical disputes at the level of system, promoted the development of medical behavior in the direction of standardization, focused on building the harmonious doctor-patient relationship, and promoted the sound and sustainable development of the medical industry.

As shown in Figure 1.2, according to the 2019 National Report on the Big Data of Medical Damage Liability Dispute Cases (Medical Jurisprudence, 2020), there were 12,734

cases of medical disputes decided by the courts nationwide in 2017, 12,249 in 2018, and 18,112 in 2019, and after a slight decline in the number of medical damage liability disputes in 2018, 2019 showed a rebounding trend.

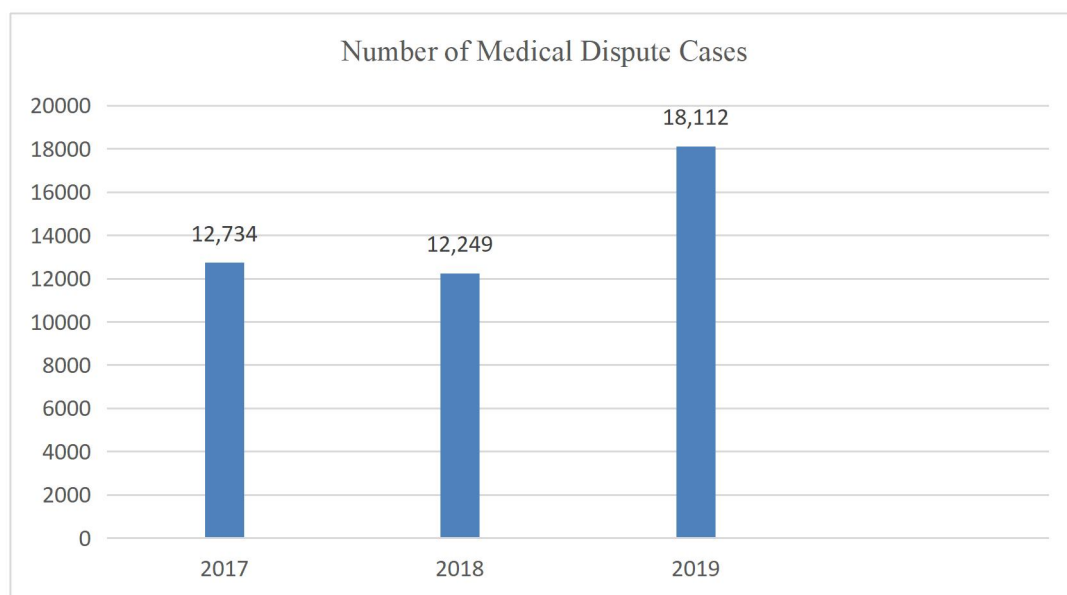


Figure 1.2 Number of Medical Dispute Cases Accepted by Courts from 2017 to 2019

Source: Medical Jurisprudence (2020)

Despite the laws and regulations, frequent medical disputes in China have led to the tension between doctors and patients. According to the data released by the National Health Commission of the PRC, there were about 115,000 medical disputes in medical institutions across China in 2014 (Zhao, 2015). According to Lu (2017), “Every year, in grade-A tertiary hospitals across the country, there are about 100 cases of medical disputes claiming for compensation, among which 20 or 30 cases are taken to court; in secondary hospitals, there are about 20 cases, among which 5 cases are taken to court; the amount of compensation in grade-A tertiary hospitals is generally about 1 million yuan every year. In addition, about 73.33% of hospitals have seen doctors being beaten, threatened, and abused by patients and their families.”

According to Cao (2016), the tension between doctors and patients in China has slowed down slightly in recent years, but the complexity has not decreased. An investigation conducted in 30 hospitals in five regions of China showed that patients’ satisfaction with hospital service quality is only 51.3%, that the satisfaction with hospital treatment effect is 56.92%, and that the satisfaction with the service attitude of doctors is only 44.76%. The survey shows that there is an evident correlation between the tense doctor-patient relationship and medical expenses.

In recent years, problems concerning inaccessible and expensive medical resources have been alleviated with the continuous promotion of the new medical reform, and a series of measures to benefit the people such as selling drugs with zero markup, the implementation and promotion of the tiered diagnosis ,treatment system and the family doctor contract system. But the conflict between doctors and patients is still tense. And the low overall social trust, unbalanced distribution of medical resources, too high expectations of patients, a lack of effective communication between doctors and patients and exorbitant medical expenses remain the difficulties in the resolution of doctor-patient disputes (Wang & Zhang, 2017). According to Xu's (2020) result, the causes of disharmonious doctor-patient relationship involve multiple aspects, but the lack of trust and poor or ineffective communication between doctors and patients aggravate the tension, conflicts, and psychological barriers between them.

1.1.3 Doctors-patient communication skills in China

Medical services are closely related to the happiness of every individual and family in the society, and also to the implementation of “Healthy China Action (2019-2030)” and the realization of the two centenary goals. A healthy population is a key symbol of a prosperous nation. Medical services are relevant to the well-being of every individual and family in society. Healthy China Action (2019-2030) (The Central People's Government of the People's Republic of China, 2019) takes “broad perspective of health” as the concept, adheres to the principle of putting prevention first and integrating prevention and treatment, focuses on the community level, regards reform and innovation as the power, attaches equal importance to traditional Chinese medicine (TCM) and western medicine, and integrates health into all policies. In response to major diseases and some prominent problems, it launches 15 major programs for key groups, with the concerted efforts of the government, society and individuals, to establish and improve the health education system, transform from “treatment-centered” to “health-centered”, and improve people’s health. Building a harmonious doctor-patient relationship is one of the important tasks in the reform of medical and health services. Effective doctor-patient communication is of positive significance for harmonious doctor-patient relationship, which can contribute to consensus, sympathy, psychological compatibility and mutual benefits. Doctor-patient communication, as an interdisciplinary subject with equal emphasis on theory and practice, is guided by the basic theories of medicine and humanities (e.g. psychology, ethics, and law.), and aims to cultivate medical talents with humanistic spirit and nobility in line with the modern medical model

(Wang & Ma, 2019). A good reputation through quality service and good communication skills are essential (Mao, 2020).

In ancient Chinese, “communication” means digging a trench to bring two rivers together, and it is defined in modern Chinese as the process of spreading information, thoughts and emotions between people. In English, the word has two connotations: “to be common” and “to share” (Makoul, 2001). Despite various definitions of “communication” by researchers in different historical periods, it always refers to the conveyance and response of thoughts and feelings between people and between groups for a shared emotional expression (Yang, 2003). Communication is an applied ability (Chen, 2017; Tan et al., 2018).

At present, there are a lot of problems in doctor-patient communication in China, such as the materialization of the doctor-patient relationship, credibility crisis, the lack of humanistic care and communication skills, and information asymmetry (Li & Zhang, 2005), and these factors cause poor doctor-patient communication. A study (Wang et al., 2012) found that the effectiveness of doctor-patient communication depends on many factors, among which insufficient time of communication, doctors’ poor communication skills, the neglected patients’ needs for communication, and patients’ lack of medical knowledge are the main factors for the outcomes of doctor-patient communication. The cultivation of doctor-patient communication ability of medical postgraduates, the future medical workers, has a direct impact on the occurrence of doctor-patient disputes (Sun et al., 2019).

Currently, the medical curriculum in China is set up in a way that emphasizes medical knowledge education and lacks humanities education. In junior colleges, there are few courses such as doctor-patient communication, of which the number of class hours is short, and the assessment system is unclear. The assessment is aimed at students memorizing relevant knowledge points and lacks relevant experience. Hospitals mainly focus on clinical skills learning, with fewer courses on humanistic care education and doctor-patient communication skills. Compared to the outpatient department, there is a significant improvement in the effectiveness of patient-doctor communication in the inpatient department. This is related to China’s national conditions, the contact between doctors and patients during hospitalization and the frequency of daily meetings between them (Song & Niu, 2020).

The medical industry system is rigid, in which the competition is increasingly fierce, and the service requirements of patients are rising. The reform of the medical and health care system has put doctors under great pressure and failed to receive sufficient humanistic care and affected the physical and mental health of doctors, resulting in a poor emotional state and lack of patience of doctors. Hospitals have many performance goals and focus more on the

management of direct medical business and technology and lack investment in organizational culture construction to promote the enthusiasm and initiative of doctors to maintain good communication with patients at all times. Doctors normally focus more on improving their professional knowledge than on fostering their comprehensive professional quality. Thus, their psychological quality should be further improved, because it has an impact on medical services to a certain extent. At present, doctors are plagued by the following problems in terms of their psychological quality. First, their interpersonal communication and emotional control skills need further improvement. Since medicine is a highly specialized discipline, a professional medical worker needs years of cultivation, including 5 years of undergraduate study and 10 years of postgraduate study. This period of school life is critical for medical workers, not only to develop their life values and outlook on the world and life, but to grow from an ignorant teenager to an independent social individual. However, studying in an ivory tower may somehow weaken their social skills, leading to a lack of interpersonal communication experience and skills. Hence, it is more likely for them to display lack of confidence, nervousness, anxiety or antagonism towards patients in communication, resulting in a less harmonious, equal and mutually-respected doctor-patient relationship (Wang & Yao, 2020). When doctors are confronted with demanding and overloaded work and pressure from family and society, those bad at psychological regulation and control are prone to negative psychological states, such as anxiety and irritation. These negative emotions will be reflected in their work and medical services, manifested by increasing conflicts with others, and impatience and indifference towards patients. This will undoubtedly aggravate patients' suffering, leading to intensified conflicts and disputes between doctors and patients. Second, doctors are not inclined to care for the patients in terms of psychological health. With the progress of society, the occurrence of diseases is no longer simply attributed to certain biological or environmental factors. Fast pace of life, increased work pressure, unhealthy lifestyles, and bad psychological states are also factors that induce diseases (Wang & Yao, 2020). Some doctors are not inclined to help maintain patients' psychological health. During medical service, they focus more on the pathological changes of the disease than on the patients' emotions, individual differences, social and family backgrounds. As they fail to analyze the causes of diseases from different perspectives, they are not able to provide enough attention to the anxiety and depression caused by the diseases, and hence to offer psychological guidance for the patients. Third, doctors are not well aware of their social values and do not have much satisfaction at work. For doctors, there are both demanding medical ethics and market-based value evaluation in the society. Doctors need to constantly

adjust themselves to deal with possible psychological conflicts. Some doctors do not understand clearly their social roles and are not well aware of their social values. Therefore, it is more likely for them to have a sense of self-denial, negative emotions, increased psychological pressure and unpleasantness at work. As a result, they cannot cope with heavy workload and stress. Some may even choose to leave their current positions. Doctors' lack of good psychological quality may easily cause tension in the doctor-patient relationship, not only undermining patients' recovery but also increasing their psychological pressure and even damaging their mental health (Wang & Yao, 2020).

Doctor-patient communication is one of the most vital aspects of clinical work in hospitals. It is not only the basis of medical quality, but also one of the fundamental skills for doctors. The smoothness of doctor-patient communication directly affects the establishment of doctor-patient relationship, with the latter directly linking to the patient's trust in healthcare professionals and the effectiveness of disease treatment (Tcimimi, 2013). As Hippocrates, the father of medicine, once said, "A doctor has three assets: words, drugs and a scalpel. A doctor's words, like his scalpel, can either save lives or hurt them". Since the 1980s, the medical model has been changing from "disease-centered" to "patient-centered" under the influence of a new medical model environment.

Compared with the current situation of mostly good doctor-patient communication in foreign countries, there are still serious problems in doctor-patient communication in China. In China's medical and health service industry, there are information asymmetries between doctors and patients, mainly professional information asymmetry and non-professional information asymmetry. Due to the highly specialized medical knowledge, doctors have a much higher degree of mastery and knowledge of disease than patients. And they tend to focus mainly on how to improve their own professional skills, ignoring the "art of communication" which is one of the three major skills of doctors, and lacking sufficient patience and communication with patients when facing high-intensity work every day. The doctors communicate and explain the patient's condition in a vague manner, do not pay attention to the patient's right to information, and do not inform the patient of the pathology in a timely manner; while the patient seeks medical treatment as a short-term need and does not have much energy to understand medical and health information. With limited medical knowledge, in the face of complex and diverse examination or treatment plans, patients do not know what treatment plan to choose, and thus follow the doctor's advice to make choices. The patient passively accepts the treatment plan and has high expectations for the cure effect of the disease, which sometimes exceeds the doctor's expectations and the actual condition. And

once the treatment is not effective, the patient will have a huge psychological gap and become dissatisfied (Wang et al., 2020). As doctors have the absolute information advantage in medical services, it is easy to create problems such as “induced demand” and “adverse selection”. On the other hand, the patient is overwhelmed by the choice of treatment options, resulting in a longer decision-making time and delayed decision-making, which can lead to irreversible consequences due to the high risk and effectiveness of medical services (Cui et al., 2020).

More and more attention is paid to building a harmonious doctor-patient relationship, in which the doctor assumes multiple roles such as managers, communicators, caregivers, spokespersons, protectors, and educators (Baidu Encyclopedia, 2016). In addition to their daily heavy clinical tasks, Chinese doctors also have to devote their time and energy to teaching and research tasks. In terms of the volume of consultations, doctors in European and American only need to deal with a dozen patients a day, while many doctors in China have to interview 50, 60, or even more patients every day, in which each patient can only be given five or six minutes of face-to-face consultation on average. How can the doctor-patient communication be sufficient in such a short time? Due to the overloaded work of doctors, their willingness and patience to take the initiative to communicate with patients have been reduced. The long-term shortage of doctors in China and the increasing number of patients have led to an increasing workload of doctors, who are often fully loaded or even overloaded. And the pressure they suffer from a large amount of clinical workload, research, teaching and performance measurement, makes them physically and mentally exhausted from time to time, resulting in their mental health level is not optimistic. A psychiatrist said: “studies have shown that doctors in China are already one of the unhealthiest professions with high work pressure and high suicide rate, and now some patients’ lack of understanding and distrust of doctors has made this profession one of the most dangerous (Xiao & Cui, 2013). The increasingly tense doctor-patient relationship has not only impacted the medical services market, but also increased the workload of doctors, resulting in a gradual loss of doctors. According to the doctor practice status surveyed by the media, 78% of doctors in China do not want their offspring to practice medicine (Zhang et al., 2018).

Hospital administrators should not only focus on improving medical skills and service quality, but also on adequate communication between doctors and patients to improve the patient’s experience of medical care and reduce misunderstandings and conflicts between doctors and patients. While improving their own “real skills” in diagnosing and treating diseases, doctors should also focus on improving the “soft power” of doctor-patient

communication, which can not only make patients and their families have full knowledge and understanding of the disease and cooperate with treatment, harmonize doctor-patient relationship, reduce doctor-patient conflicts, and also improve the happiness of work (Ling et al., 2018).

Doctors who perform well at work and exceed their responsibilities positively influence patients' perceptions of service quality and subsequent satisfaction (Haque et al., 2012). The dual component of this performance indicator is consistent with Nyhan and Marlowe's (1993) assertion that, in addition to defined in-role behavior, extra-role activities are the basis to determine service quality. A key factor in employee performance is related to their positive mental abilities (Kappagoda et al., 2014).

Doctors should not only have strong political qualities and profound professional qualities, but also strong psychological qualities and broad humanistic qualities. Informed, consent, freedom, no harm, and optimization are the most basic principles of medical ethics agreed by the international community, and people should view the doctor-patient relationship with gratitude (Baidu Encyclopedia, 2016). According to a study on the relationship between psychological capital and job performance by Huang et al. (2019) showed that psychological capital has a positive impact on individual job performance, and those with high psychological capital are able to respond to various problems in work and life in a timely and correct manner, improving job satisfaction and work efficiency. Effective development of the psychological capital of doctors is an effective way to improve job performance. Psychological capital is a psychological state that effectively promotes the realization of positive organizational behavior of individuals. The components of psychological capital can be divided into four parts: self-efficacy, hope, resilience, and optimism. Psychological capital can not only have a positive impact on individual work engagement, but can also act as a predictor of self-efficacy and hope for doctors' work engagement (Li, 2016). It can also help clinical doctors to make better use of positive psychological resources, effectively contribute to the alleviation of burnout and reduce the turnover intention, so as to improve their work motivation and dedication (Lv, 2019).

Psychological capital is a positive psychological state that individuals exhibit as they grow and develop, as evidenced by (1) confidence in facing challenging work (self-efficacy) and the ability to put forth the necessary effort to achieve success; (2) positive attributions for present and future success (optimism); (3) perseverance with goals and the ability to adjust the path to achieve them when necessary to succeed (hope); (4) ability to persevere, recover quickly and go beyond (resilience) when in adversity and troubled by problems in order to

succeed (Luthans et al., 2008).

1.2 Research dilemma and questions

1.2.1 Research dilemma

Doctor-patient communication is an interdisciplinary subject involving medicine, ethics, psychology, sociology, linguistics, and many other fields (Xia, 2020a). Doctors should learn and become proficient in medical psychology and ethics, and focus on relevant skills to facilitate effective communication. For instance, this requires them to listen attentively to the patients and their families, stand in their shoes, try to better understand them, and alleviate patient's misgivings with more communication and explanation. Shared decision making is at the core of building a harmonious doctor-patient relationship, and one effective way to solve or avoid conflicts between doctors and patients is to involve patients in the diagnosis and treatment of diseases (Zhao et al., 2020). Patients have the right to informed consent. On the premise of not causing patients' severe psychological changes, doctors should fully inform the patients of the relevant conditions and treatment options, involve the patients and their families in the decision of the treatment plan, obtain their understanding, and reach a consensus between doctor and patient. Moreover, doctors should be empathetic, make use of their communication skills, choose easy-to-understand language to communicate with their patients emotionally, try to avoid medical terms, so that the patients can fully understand the message conveyed by the medical personnel, enhance the effect of communication, relieve patients' anxiety, and strengthen patients' confidence to overcome their diseases (Gu, 2017).

In summary, by actively using ethics, psychology, and other knowledge and skills that can promote effective communication between medical personnel and patients and their families, doctors can not only obtain the cooperation of patients, grasp the authentic medical information to confirm the diagnosis, but also enhance the doctor-patient relationship, reduce the occurrence of medical disputes, and facilitate the rehabilitation of patients. Good doctor-patient communication is indispensable and conducive to the healthy development of medicine. Favorable doctor-patient communication is essential to the diagnosis and treatment of diseases, the psychological satisfaction of patients, the construction of modern medical ethics, and the reduction of medical disputes. Therefore, good and effective doctor-patient communication can strengthen the responsibility of medical personnel, improve the effectiveness of medical information, reduce doctor-patient conflicts, further promote the

improvement of diagnosis and treatment, and reduce medical risks (Qian et al., 2019).

The doctor-patient relationship has become a focus of public concern and good doctor-patient communication is regarded as one of the necessary skills for a medical student to become a qualified doctor. As the reserve force of the medical industry, medical students must pay equal attention to professional knowledge and communication skills, thereby effectively resolving clinical emergencies. As far as the current situation is concerned, medical students barely have any ability to communicate with patients in clinical practice, so it is urgent to establish and improve the training model for medical students to learn communication skills in clinical scenarios (Jin, 2019).

In the context of medical reform, it is essential to maintain a positive doctor-patient relationship through high-quality services and effective communication. However, doctors ten face great pressure, which may lead to the lack of basic humanistic care and patience, and ultimately lead to the neglect of basic communication skills. Given that psychological capital is a positive psychological resource that can help reduce stress and improve communication skills, it can play an important role in addressing this challenge.

1.2.2 Research questions

The purpose of this study is to understand the relationship between the level of psychological capital of doctor and doctor-patient communication as well as doctor-patient relationship, to explore the effect of improving the level of psychological capital of doctor on doctor-patient communication, so as to improve patient satisfaction and promote the optimization of doctor-patient relationship. Moreover, to propose psychological interventions for hospitals from the perspective of psychological capital to care for the psychological health of doctor, so as to enhance the happiness of doctors and make it more easy and efficient for them to communicate with others.

Based on the previous assumptions, the following three research questions are raised:

- 1) What is the status of the psychological capital level of doctor?
- 2) How does psychological capital of doctor affect doctor-patient communication?
- 3) How is the doctor-patient relationship affected by the level of psychological capital of doctor and doctor-patient communication?

1.3 Research framework

The main tasks of the research are as follows: 1) describing the current situation of

doctor-patient communication and doctor-patient relationship in China, comment on doctor-patient relationship, doctor's pressure, doctor-patient communication, and psychological capital based on extensive literature review and grounded theory, and exploring its structure; 2) collecting data by means of a survey targeted at doctors; 3) reviewing the dimensions of psychological capital of doctors and their influence on doctor-patient relationship. The research framework of the study is presented in Figure 1.3.

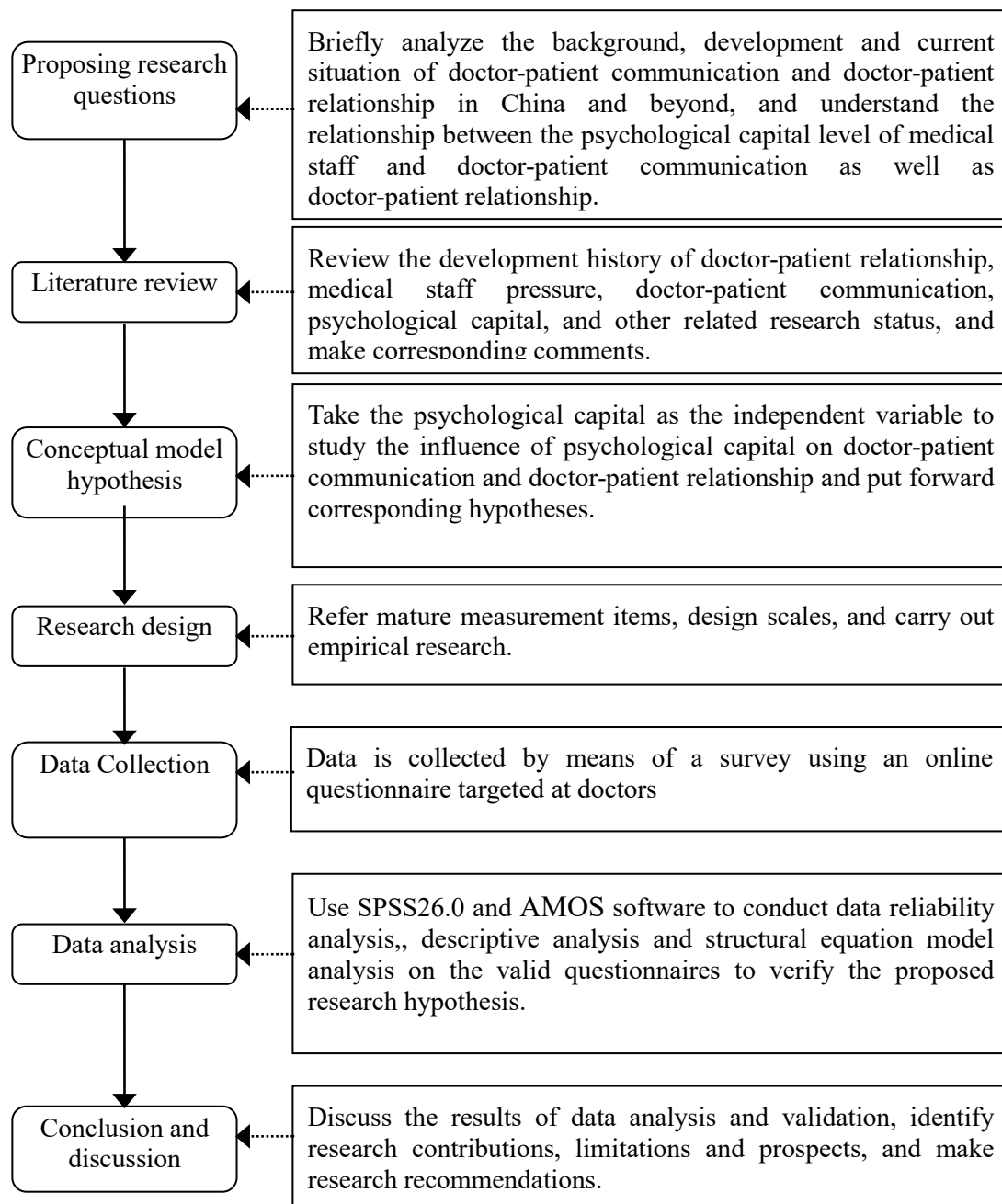


Figure 1.3 Research framework

This thesis includes the following chapters:

Chapter 1: Introduction. This chapter introduces the background of the study and sorts out the significance of this study. It briefly describes the development and status of the

doctor-patient relationship and doctor-patient communication in China. Then, presents the research dilemma and the research questions.

Chapter 2: Literature review. It reviews the relevant theories, concepts, and methods that can provide information about the progress of research on the relevance of psychological capital to doctor-patient communication and doctor-patient relationship, and finally clarifies the theoretical hypotheses and related models of this research based on the results of the literature review analysis.

Chapter 3: Research design and methods. In this chapter, the research object, data collection and organization, and statistical methods are described in detail.

Chapter 4: Results and discussion. This chapter presents the results of statistical analysis. The model to explain doctor-patient relationship is estimated. It provides answers to the initially proposed research questions based on the results of the study

Chapter 5: Results and discussion. This chapter introduces the results of statistical analysis. The model of estimating and explaining the doctor-patient relationship answers the initial research questions according to the research results.

Chapter 6: Conclusion. This chapter summarizes the main findings of the study, clarifies the practical implications of this study, points out the shortcomings, and proposes suggestions for building the psychological capital level of doctors.

Charter 2: Literature Review

2.1 Research on psychological capital

2.1.1 Positive psychology

Positive psychology refers to a trend of thought in psychology that study the positive aspects of human, such as strength and virtue, with established and effective experiments and measurement. Its significance lies in fully provoking people's optimism and positive attitudes to solve problems by themselves (Chen & Fan, 2021). The earliest advocate of positive psychology, American psychologist Seligman (2000), believes that "the aim of positive psychology is to help people achieve well-being by understanding and developing positive emotions, satisfaction and life purpose". He believes that well-being requires a happy, fulfilling and meaningful life (Dong, 2011). Positive psychology research is based on three aspects of well-being: positive emotional experience, positive personality traits and positive social organization system (Yan, 2018). Positive psychology advocates looking at everyone with an open and appreciative eye. It emphasizes that psychology should focus on studying the positive strength that every ordinary person has, including positive emotions and experiences, positive personality traits, and positive organizational systems (Seligman & Csikszentmihalyi, 2000). Positive psychology can be widely applied in clinical practice, family therapy, and character building (Zheng, 2013).

In the 1990s, under the leadership of Martin Seligman (2008), the former president of the American Psychological Association, various organizations in the society launched the positive psychology movement, which shifted the focus of psychology from negative emotions to people's positive qualities and traits, and was dedicated to the survival and development of human beings. Positive psychology highlights the research on people's positive emotions, qualities and psychological states. It aims to use scientific methods to discover those positive psychological factors and measures that can promote individuals to fully understand and develop their own potential, enhance personal well-being, and improve team and organizational performance. Affected by it, some psychology-related strands start to touch upon theoretical and applied research on positive psychology.

Psychologists have studied emotions for more than a century, but until recently, they have

focused primarily on negative emotions, especially depression, anger, and anxiety. In doing so, psychologists have inadvertently ignored research on positive emotions. There is a consensus among researchers on the role of negative emotions in our evolution as a species (Vázquez & Chaves, 2016). Fear, anger, and anxiety are like alarms, allowing us to react when faced with danger. They are a central part of the well-known “fight-or-flight response”. Interestingly, these negative emotions come along with distinct signs, such as changes in autonomic responses (e.g. blood pressure, sweating, and body temperature) (Fredrickson, 2003). One of the most important contributions of positive psychology is the emphasis and focus on the measurement of positive functions:

- (1) Positive subjective experiences (e.g. happiness, calm, vitality, taste, or flow).
- (2) Positive individual traits (e.g., character strengths, virtues, talents, or interests), which may be one of the most innovative areas of positive psychology.
- (3) Positive interpersonal relationships (e.g., love, trust, or friendship).
- (4) Positive institutions (home, school, or organization).

Positive psychology (PP), “a science of positive subjective experiences, positive personal traits, and positive institutions, aims to improve the quality of life and to prevent the pathologies that arise when life is barren and meaningless” (Ziyae et al., 2015). Positive psychology interventions, considered as self-help tools to increase subjective well-being and reduce depressive symptoms, are becoming increasingly popular (Rosalind et al., 2016). Positive psychology is not a mental “state” (e.g., mood) that does not change in a momentary situation, nor is it a fixed “trait” (e.g. personality trait, intelligence), but the resembling ability. Thus, it is malleable (Goertzen & Whitaker, 2015).

The application of positive psychology at workplace seems particularly suitable to current turbulent environment, where organizations and employees must constantly adapt in order to survive (Avey et al., 2011). However, the impact of positive psychology on workplace remains a neglected issue in “mainstream positive psychology”. The *Handbook of Positive Psychology* written by Lopez and Snyder (2003) has 55 chapters, only one of which is about the work field. However, the parallel development in the name of positive organizational behavior (POB) by Luthans (2002a, 2002b) and positive organizational scholarship (POS) by Cameron (2003) attempts to fill this gap. Positive psychology is a movement or trend of thought in psychology that studies what is good in life and why it is worth living. Psychology has always looked at potentially positive aspects (such as intelligence, talent, love, and altruism), but in many cases, these issues have been only used indirectly as a way to analyze the other side of the coin (such as mental retardation, disability, obedience, and emotional

vulnerability) and scholars are not really interested in the healthy or adaptable traits of these positive aspects (Vázquez & Chaves, 2016).

An Important conceptual contribution made by positive psychology has something to do with its efforts to define core characteristics of mental health more precisely. healthAn increasing number of people hold that well-being is a complex construct that is associated with optimal experience and functions. Despite several models and approaches, current mental health theory embraces two ancient philosophical orientations: hedonistic and eudaimonia components (Vázquez & Chaves, 2016). Subjective well-being includes positive affect (experiencing pleasant emotions and moods), low negative affect (experiencing unpleasant, sad emotions and moods), as well as “hedonic balance,” defined as the overall balance between positive and negative emotions. A high level of hedonic well-being does not mean the absence of negative emotions, and it means that negative emotions are still real, although they are less frequent and prominent than positive emotions (Fredrickson, 2013; Rabiee et al., 2016).

2.1.2 Organizational psychology and positive organizational behavior

Organizational psychology has become an independent branch of the discipline and widely applied since the 1960s. Organizational psychology is a science that studies the psychological activities and behavioral laws of people in the management process. It applies the theoretical principles and methods of psychology to organizational management. By exploring people’s psychology and behavior in an organization, it is possible to perform control and prediction, so as to mobilize people at work, develop their potential, improve production and work efficiency, improve interpersonal relationships and enhance organizational functions (Cai, 2018; Chen, 2009). Organizational psychology is a subject that uses various psychological factors, such as incentive, attitude, and motivation, to create a psychological environment that enables members of the organization to give full play to their potential and better serve specific common organizational goals (Chen, 2009).

Organizational behavior is originated from the “Hawthorne Study” by Mayo et al. (2006). Individual-based positive organizational behavior research and application are micro-level. The “Hawthorne Experiment” shows that employee motivation has a proportional relationship with job performance, so the practice of positive organizational behavior needs to take into account both people and organizations for the connection and expression of organizational outcomes. Positive organizational behavior studies positively oriented human resource strengths and psychological capacities that can be measured, developed, applied and

effectively managed for performance improvement (Luthans et al., 2008).

The factors in positive organizational behavior are highly consistent with those in positive psychology, such as self-confidence, hope, optimism, well-being, and resilience. These are valuable psychological capital for organizations, which directly affect employees' behaviors, attitudes, efficiency and performance (Xiong, 2019). In 2001, Luthans (2002a) put forward Positive Organizational Behavior (POB) through reflection on traditional organizational behavior and the application of positive psychology with his colleagues. Based on the application of positive psychology, POB uses a new perspective to study the positive aspects of organizational behavior. Luthans believes that POB needs to discover and unearth the human resource strengths and employees' psychological abilities in the organization that can be measured, developed and applied for performance improvement. These positive factors include self-efficacy, hope, optimism, subjective well-being and resilience (Lu, 2014; Luthans, 2002a).

Although Luthans (2002a) gave a definition of positive organizational behavior and there are many theoretical elaborations on this concept, researchers have not reached a consensus on its connotation. POB research focuses more on the factors that can affect employees' positive organizational behavior than on the concept itself. Under this circumstance, Pan (2009) made a pioneering step to study the employees of production-oriented enterprises. He defined employee positive organizational behavior as one that enhances or promotes the normal functioning of an organization and can lead to individual and organizational performance improvement.

Because of the novelty of this concept, there is a paucity of accounts on positive organizational behavior. The existing research mainly discusses positive organizational behavior from the following three aspects:

(1) The internal structure of positive organizational behavior. Pan (2009) empirical research on the employees of production-oriented enterprises found that the internal structure of positive organizational behavior is composed of six factors: input behavior, responsible behavior, active behavior, innovative behavior, helping behavior and harmony-seeking behavior.

(2) Influencing factors of positive organizational behavior. For example, at the individual level, researchers on positive traits hold that employees with positive traits are more likely to exhibit positive organizational behavior and lead to high performance; researchers on the five main personality traits believe that employees' sense of responsibility, interpersonal relationships, and emotional involvement in work are the influencing factors of positive

organizational behavior (Ozer & Benet-Martínez, 2006). Zhang and Nie (2011) pointed out that employees with extroverted personality are more likely to exhibit positive organizational behavior. At the organizational level, Liu (2012) empirical research on service-oriented enterprises found that organizational justice, organizational belonging, organizational support, organizational self-esteem, and organizational image determine employees' positive organizational behavior in service-oriented enterprises. Person-job fit is positively correlated to employees' positive organizational behavior, while work stress and work-family conflict show a negative correlation. Work-family conflict plays a mediating role in work stress, person-job fit and positive organizational behavior (Zhang & Nie, 2011).

(3) The result of positive organizational behavior. Current research mainly concludes through theoretical deduction that employees' positive organizational behavior improves enterprise performance (Feng & Gao, 2012; Hou & Ling, 2006; Liu, 2014), contributing to a positive organizational culture (Liu & He, 2009).

Positive organizational behavior emerged under the influence of positive psychology. Its theory and research focus on people's positive strengths and psychological abilities, rather than on translating traditional organizational behavior or transforming the negative behavior to the positive one. The emergence of positive organizational behavior allows companies to further strengthen employee training in corporate management for better performance (Zhang, 2019). Compared with traditional organizational behavior, positive organizational behavior stresses employees' subjective feelings (Guo, 2019). Employee research helps us understand how to motivate employees from material or spiritual perspectives to display their passion and creativity, so that there will be higher work efficiency (Hu, 2020). POB addresses such issues as how to resolve internal conflicts, overcome job burnout, eliminate negative emotions and the impact, and motivate the marginalized groups in the organization. By stimulating the subjective consciousness and inner potential of the members, it is possible to optimize the human resource management of the organization (Wang, 2020). Therefore, positive organizational behavior is of great significance in management (Guo, 2019).

2.1.3 Definition of psychological capital

The concept of Psychological Capital, deriving from Positive Psychology, was first introduced in the 21st century when the American psychologists defined it as "an individual's positive psychological state of development" (Luthans et al., 2008).

Sweetman and Luthans (2010) proposed that with the growing popularity of evidence-based management, the process of understanding employees' commitment has

become critical to modern organizations. Many researchers, primarily Luthans and Youssef (2007), constructed psychological capital as a product of positive organizational behavior, and suggested that the psychological competencies of human resources can be measured, developed, and effectively managed. This approach stems from the positive psychology theory proposed by Peterson and Seligman (2004). The concept of psychological capital has been defined, including four positive psychological resources: self-efficacy, optimism, hope, and resilience (Luthans et al., 2007; Luthans et al., 2008; Luthans & Jensen, 2005). Luthans et al. (2008) suggested that the second-order factors of psychological capital may represent the common variance that connect the above four constructs (i.e., common mechanism). A comprehensive definition of psychological capital is “a positive psychological development state of individuals”. Its characteristics are as follows: (1) having confidence to take on responsibilities and make efforts to complete challenging tasks (self-efficacy); (2) making positive attributions about present and future success (optimism); (3) sticking to one’s goals and changing the path to them when necessary so as to achieve success (hope); (4) preserving, recovering, and even moving forward to achieve success when plagued by problems and adversity (resilience)” (Luthans et al., 2008).

With the rapid development of science and technology, the world economy now features the trend of integration and globalization. In the fierce market competition, how to win the “talent war” is the biggest challenge faced by various organizations. Currently, the traditional theory of human capital and human resource management on social capital can no longer hold a strength for employees and companies in a “hyper-competitive” environment. Instead, the psychological resources of employees are the key for organizations to gain competitive advantage. The studies of Zhang (2013) have shown that the high performance of organizations is mainly based on employees’ psychological capital, such as excellent psychological quality, good mental state, and positive work attitude. In human resource management, the establishment of a positive spiritual contract between enterprises and employees, along with the improvement of employees’ performance and satisfaction, requires managers to adopt an employee-centered method, ensure their positive psychology, create a good working environment, help shape their healthy personality, and develop employees’ potential emotional experience. In this way, employees’ initiative is fully affirmed and brought to play, and they can obtain a sense of well-being at work. Based on Positive Psychology, Luthans et al. (2008) introduced the concepts of Positive Organizational Behavior and Psychological Capital and extended the concept of Psychological Capital to the field of organization and management, arguing that psychological capital is a positive mental

state that can change employees' positive organizational behavior during their growth and development.

Psychological capital has become a kind of prominent organizational behavioral construct and has been associated with positive attitudes such as satisfaction (Avey et al., 2011), subjective performance (Avey et al., 2011) and feelings of empowerment (Avey et al., 2008), self-perceptions of competence and growth (Avey et al., 2008), and mental health (Avey et al., 2011), as well as positive behaviors such as objective performance (Avey et al., 2010), and citizenship behavior (Avey et al., 2011). Psychological capital is negatively correlated with such work attitudes as cynicism, stress and anxiety, and turnover intention (Choi & Lee, 2014). Furthermore, psychological capital has negative correlation with negative behaviors at workplace, such as counterproductive work behavior (Avey et al., 2010) and abnormal behaviors (Avey et al., 2011).

Sweetman and Luthans (2010) considered psychological capital as a resource that increases awareness and sensitivity to employees' own resources, organizational dimensions, and work-related outcomes. As shown in Figure 2.1, numerous studies have shown that psychological capital has a positive impact on employees' job attitudes, including innovative performance (Abbas & Raja, 2015), employee benefit (Avey et al., 2010), trust of the organization (Luthans et al., 2005), job satisfaction and performance (Larson & Luthans, 2006; Luthans & Youssef, 2007) and commitment of the organization (Larson & Luthans, 2006; Luthans & Jensen, 2005), perceived trust (Norman, 2010), performance at the workplace (Luthans et al., 2008), creativity (Rego et al., 2011), turnover intention (Karatepe & Karadas, 2014), performance and behavior (Gooty et al., 2009), supporting atmosphere (Luthans et al., 2008), burnout and bad emotion (Cheung et al., 2011), trust on management (Clapp-Smith et al., 2009), innovative behaviors (Jafri, 2012), performance and life quality (Nguyen & Nguyen, 2012), stress, job seeking, and turnover intention (Avey et al., 2009).

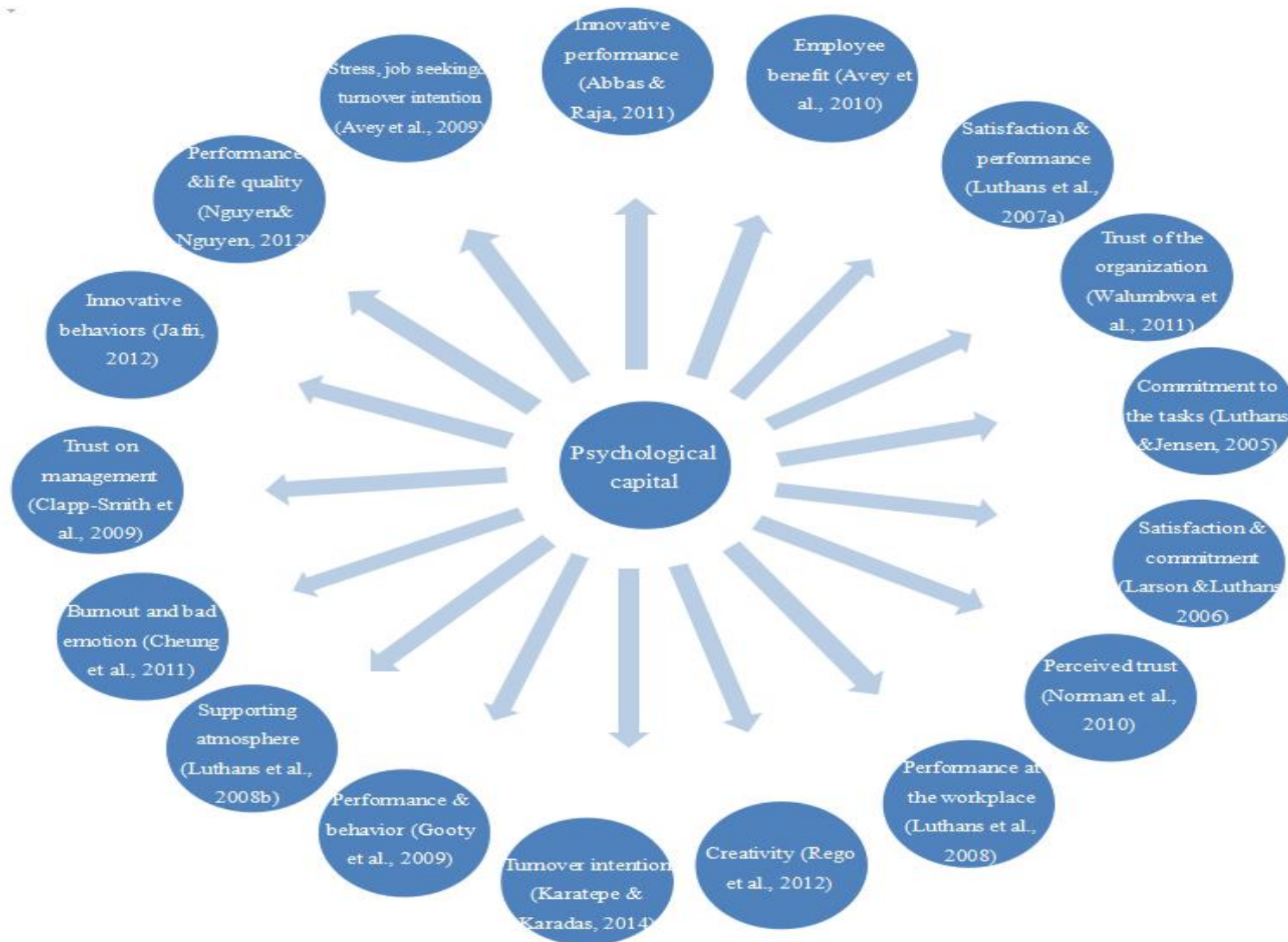


Figure 2.1 Previous empirical studies related to psychological capital

Source: Paek et al. (2015)

Findings demonstrated that psychological capital has a significant impact on work activities, innovation, subjective well-being and emotional intelligence in hospitals and medical centers in Mazandaran province. Psychological capital influence innovation most. The state-like nature of psychological capital makes it useful for human resource development in medical institutions. Its basic constituent part makes it particularly suitable to promote the initiative, independent thinking and positive change in a transient political, economic and social environment (Rabiee et al., 2016).

Facing the rapid development of the economy and society, and the increasingly competitive environment, enterprises need to constantly transform, upgrade, and reposition themselves. As for employees, they must deal with various performance appraisals, job rotations, and mergers and reforms. The increasingly high evaluation standards, strict assessment requirements, and sophisticated skill demands also put employees under greater pressure. Meanwhile, some jobs feature heavy workload, long periodicity, repetitive work content, and limited social circle. Plus, there are other causes for employees' mental problems: a) worry on promotion and performance appraisal, b) pressure caused by poor career development channels, c) single work environment, d) difficulty of transformation and innovation. The resulting mental issues are as follows: a) decrease in career self-efficacy, b) reduction in career expectation, c) severe job burnout, d) deepening career anxiety. Exposure to a long-term heavy workload will have a negative impact on employees' psychological health, which in the long run will not only cause damage to individuals, but also hinder the development of enterprises and lay hidden dangers for their transformation. Therefore, enterprises should give full consideration to the nature and characteristics of employees' work, pay attention to and strengthen mental health education, help improve employees' psychological capital, and enhance their psychological regulation and adaptability (Guan & He, 2019).

2.1.4 Structural dimensions of psychological capital

As Maltz et al. (2003) pointed out, the success measurement of organizations is an ongoing challenge that requires different assessment methods, with both monetary and non-monetary criteria taken into account. The same method is used in measuring all kinds of capital. In other words, the concept of capital is no longer limited to the monetary/financial context (the previously dominant approach), but now extends to a more distinguishing understanding (Anheier et al., 1995). Based on this development, it is argued that companies need to assess different forms of capital, such as human resources, culture, society or reputation, so as to

achieve success and sustainability. However, researchers suggested that these methods cannot measure another key aspect, namely individual psychology, attitude and strength identified through factors such as motivation, job involvement, job satisfaction, and affective commitment (Avey et al., 2009; Luthans et al., 2008). Since existing paradigms did not properly merge these employee assets, some scholars promoted the development of psychological capital as a construct which consists of four dimensions: self-efficacy, hope, optimism, and resilience (Luthans & Youssef, 2007; Nelson & Cooper, 2007).

Self-efficacy. Self-efficacy refers to employees' beliefs about their ability to mobilize motivation, cognitive resources, and actions to complete a given task effectively (Stajkovic & Luthans, 1998). Employees with high self-efficacy will take on responsibilities and choose challenging tasks, as well as striving to meet others' expectations. They may also work harder and more wisely, and perform tasks with stronger motivation. Relevant findings from self-efficacy of doctors suggest that there is a positive correlation between self-efficacy and job performance (Van Hooft et al., 2016).

Hope. Hope is defined as having a sense of success, and people with hope will adopt goal-oriented behavior to achieve success (Snyder et al., 1991). People with hope will continue to believe that there is always another way under any circumstances (Snyder, 1994). Because of a strong willpower, they will creatively perform tasks and explore all possible ways to achieve their goals (Larson & Luthans, 2006). For medical workers, hope is associated with high quality nursing, which enables them to provide comfortable, effective, and efficient services to patients (Youssef & Luthans, 2007). There is a positive correlation between employees' hope and job performance (Luthans et al., 2007; Luthans et al., 2008).

Optimism. Optimism reflects a person's positive outlook on outcomes or positive attributions of events (Luthans et al., 2007). Optimistic employees are always confident about the present and future and will do their best to help the organization achieve its goals. Since the adversity in the workplace is common, doctors need to be highly optimistic in order to motivate themselves and those around them (Luthans et al., 2008). There is a positive correlation between doctors' optimism and job performance (Luthans et al., 2008).

Resilience. Resilience refers to one's ability to recover from difficulties and is usually found in people who find meaning in their lives and need to improvise and adapt (Luthans & Youssef, 2004). Resilient employees are able to generate new ideas, adapt to changes and combat negative situations, which will ultimately improve their job performance (Cetin & Basim, 2012). Resilience will help individuals become more flexible to adapt to different situations (Coutu, 2002). It has been found that there is a positive correlation between

resilience and extra-role citizenship behavior (Hyo & Hye, 2015). Resilience and job performance is also positively correlated (Luthans et al., 2007).

2.1.5 Correlates of psychological capital

Psychological capital is an aggregate that includes cognitive, emotional, social, and higher-level positive psychological competencies. Currently, the four psychological competencies - self-efficacy, hope, optimism, and resilience - which are formally incorporated into the concept of psychological capital by Luthans (2008), are all positive psychological states that can be measured, developed, and managed. They are associated with employees' job performance (Zhang, 2008). Investing in developing, and managing psychological capital will have a positive impact on performance and attitudinal outcomes (Luthans et al., 2008). The research results of Zhou (2011) indicated that psychological capital has a significant positive impact on employees' task performance and contextual performance. The higher the level of employees' psychological capital is, the better the effect of work is, and the higher the level of contextual performance is.

The research results of Zhao (2016) showed that there is a significant positive correlation between psychological capital and interpersonal relationship of vocational students, and psychological capital can predict interpersonal relationship.

Leon et al. (2016) suggested that training psychological capital can help employees effectively cope with the pressure at work, reduce burnout and improve quality of service.

Change is often a source of anxiety. Developing an individual's psychological capital capabilities can provide him or her with meaningful confidence and other psychological tools to effectively lead organizational evolution. The training and development programs employed by many organizations tend to focus on improving the knowledge and skills of employees to meet current or future job demands. Given the rapid growth of psychological capital and its relationship with positive organizational outcomes, organizations should seriously consider incorporating strategies aimed at improving employees' positive organizational behavior (Rabiee et al., 2016).

The results of empirical studies by Zhou (2011), Ju (2019), and Wu et al. (2019) showed that psychological capital is significantly positively correlated with perceived doctor-patient relationship, job satisfaction, job involvement, and job performance, and significantly negatively correlated with job burnout and turnover intention. Doctors with higher levels of psychological capital have higher levels of perceived doctor-patient relationship, job satisfaction, job engagement, and job performance, and lower levels of job burnout and

turnover intention. Psychological capital has the greatest impact on job performance, followed by the perceived doctor-patient relationship, which partially mediated the positive impact of psychological capital on job performance. The development of psychological capital can help improve the harmony of perceived doctor-patient relationship and improve job performance of doctors. Job burnout has the most significant effect on turnover intention, followed by job satisfaction, psychological capital, and perceived doctor-patient relationship, among which psychological capital has significant effects on job satisfaction, job burnout, and perceived doctor-patient relationship. The development of psychological capital can help improve doctors' job satisfaction, alleviate job burnout, and thus reduce turnover intention.

Empirical studies on psychological capital in developed countries such as the United States showed that psychological capital plays an important role in motivating performance (Luthans et al., 2008; Luthans et al., 2008). According to the research by Luthans and Youssef (2004), psychological capital is related to good work outcomes, such as in-role performance, citizenship behavior, job satisfaction, commitment and devotion, which provides empirical evidence for the relationship between psychological capital and job performance.

In the diagnosis and treatment work, psychological capital generally promotes doctors' ability to innovate when performing tasks, and innovative skills in turn facilitate their work performance (Lee & Kim, 2012). Medical work has always been physically and emotionally demanding (Bogossian et al., 2014). In such challenging environment, doctors need a high level of psychological capital to perform well and succeed. Based on the work of Avey et al. (2008), nurses need to have confidence (self-efficacy) in order to undertake and thrive in challenging tasks. Besides, they should have positive expectations for the present and future success (optimism), as well as stick to a goal and put in efforts toward it when necessary to ensure success (hope). When plagued by problems and adversity, they need the ability to maintain, bounce back and even surpass victory (resilience).

Self-efficacy is positively associated with doctors' performance, which is consistent with previous findings (Salanova et al., 2011; Van Hooft et al., 2016). Similarly, in line with previous research, hope has a positive effect on performance (Luthans et al., 2008). Likewise, the positive impact of optimism on doctors' performance is also confirmed by Luthans et al. (2008).

In order to increase the level of hope, Luthans and Youssef (2004) recommend setting specific and challenging goals, formulating contingency plans to achieve goals, and redefining goals when necessary to avoid false hope. A supportive work environment characterized by educational support and peer cohesion may also contribute to a higher level of hope (Gillespie

et al., 2007).

In economics, resources that can be used for material production and create revenue are called capital. Material capital is also called non-human capital, which is material resources manifested in quantity and quality. Human capital is composed of knowledge, ability, skills, and others that are formed in the human body through investment. It can be materialized in goods and services and increase their effect, thus obtaining the value of revenue (Wang, 2001). Social capital refers to the relational resources built through relationships, networking and friends, which can enhance the efficiency of society by promoting cooperative behaviors (Robert, 2001). In both human capital and social capital, employees' mental health is not mentioned. Thus, at first glance, empirical evidence bore out that psychological capital affects an individual's job satisfaction and work engagement (Nasurdin et al., 2018). Psychological capital is a kind of positive psychological state, which is directly related to employees' work attitudes and behaviors. It describes employees' confidence in the future, hope, optimistic attributing style, and their resilience in the face of difficulties. Similar to human capital and social capital, psychological capital can be acquired and developed through development. What can fulfill the potential ability of organizations to reach high performance is human capital and social capital, and employees' psychological capital is the tool to turn potential into reality. Therefore, psychological capital goes beyond human capital and social capital. It focuses on the question of "what kind of person are you" and "what kind of person are you becoming", including the transition from the actual self to the possible self.

Based on previous literature on the relationship between psychological capital and performance, individuals with higher psychological capital appear to be able to successfully deliver high-quality services because they think they possess the necessary skills (self-efficacy) and success (optimism) to accomplish tasks. Thus, these cognitive schemas will allow them to make the necessary effort (self-efficacy), steer their actions (hope), and persist (resilience) in successfully delivering high-quality services. For example, empirical evidence suggests a key mediating mechanism by which an individual's abilities (such as self-efficacy belief) and cognitive abilities (such as emotional intelligence) are effectively demonstrated in a wide range of tasks that require specific social abilities (Joseph & Newman, 2010; Stajkovic & Luthans, 1998); But a meta-analysis by Sitzmann and Yeo (2013) yielded contradictory results (Nasurdin et al., 2018).

Research indicated that psychological capital has a significant impact on work activities, innovation, subjective well-being, and emotional intelligence in hospitals and medical centers. Both psychological capital and organizational commitment are significantly related to job

burnout.

Good positive psychological capital is an important manifestation of an individual's physical and mental health (Lai et al., 2015), and can affect the way individuals respond to environmental changes and events (Song & Chen, 2015). Psychological capital is a kind of significant positive psychological state and psychological capability of an individual, the core of excellent psychological qualities, and the psychological source that promotes personal growth and development. Like human capital and social capital, it is exploitable. Individuals can improve their psychological capital and enhance their core competitiveness through targeted development and training. Psychological capital mainly includes four parts: self-efficacy, an individual's subjective evaluation of self-competence; hope, positive expectations for achieving goals, and willingness to work hard to achieve goals; optimism, the ability to adopt positive attributing methods; resilience, the ability to persevere in adversity, to be combative and creative in taking circuitous route to get success (Zhao, 2016). With the increasingly fierce economic and social competition, the mental health of doctors who have been under the heavy pressure of overloaded work for a long time is not optimistic. In the long run, it will not only do harm to individuals, but may also get in the way of the construction and development of hospitals, which may pose hidden dangers to the harmonious doctor-patient relationship.

The finding that psychological capital has a negative effect on job burnout is consistent with previous studies (Luo & He, 2010; Luthans & Youssef, 2004). According to the Conservation of Resources (COR) Theory, job burnout is caused by either a lack of resources to meet job demands, or an imbalance between individual effort and compensation (Hobfoll et al., 1990). Understandably, psychological capital is an important human resource that can prevent job burnout. As a composite concept, psychological capital has different dimensions that are also significantly correlated with job burnout. Optimistic individuals are less likely to experience burnout because they tend to attribute positive events, are able to interpret work events positively, have positive attitudes, and can cope with different types of occupational stress more easily (Chang et al., 2000; Riolli & Savicki, 2003). Resilience is an individual's ability to actively adapt to adversity. Individuals with greater resilience are more likely to recover from setbacks and failures. This adaptability can significantly help individuals resist fatigue and emotional exhaustion caused by occupational stress (Jackson et al., 2007). Hope is the process of thinking about goals, the means to achieve them, and the motivations to achieve them. Research demonstrates that individuals who have more hope generally have clear job goals, can formulate realistic plans of action to achieve their goals, and make efforts to reach

them; therefore, they are less likely to experience the negative effects of burnout (Sherwin et al., 1992; Snyder, 1995). Since psychological capital is a general concept including self-efficacy, optimism, resilience, and hope. Nurses with greater psychological capital naturally suffer a lower level of burnout. This finding showed the importance of nurses developing confidence and positive coping styles at work and training them to deal with stressful events. If nurses are hopeful about their work, have an optimistic attitude, and have high endurance and adaptability, they suffer minimal physical, emotional, and psychological losses and are less prone to face job burnout (Peng et al., 2013).

Psychological capital has a positive influence on work engagement. Sweetman and Luthans (2010) proposed a conceptual model linking psychological capital to work engagement through positive emotions, which is part of the JD-R model (Bakker & Demerouti, 2007; Schaufeli & Bakker, 2004). They argued that psychological capital has a direct, state-like relationship with work engagement and should not be viewed as mood or the fluctuation or transient shift in mood (anger or joy). Recent research suggested that there may be different antecedents of work engagement. For example, Slatten (2011) chose role benefits, job autonomy, and strategic attention, while Li et al. (2012) focused on communication between managers and employees, as well as consistency in human resource management. Furthermore, Karatepe linked work engagement with high-performance work practices (Karatepe, 2013a) or perceptions of organizational politics (Karatepe, 2013b). Psychological capital is an important driver and directly affects work-related outcomes. Based on the view of psychological capital as a personal resource, and building on the research, COR theory (Hobfoll, 1989, 2001; Karatepe & Olugbade, 2009) stated suggests that as a result of research in the field of positive psychology and the school of positive organization, positive psychology is reflected in the field of organization, especially positive organizational behavior. The term psychological capital was coined (Luthans et al., 2005). "Psychological capital" is a term that is a combination of skills, such as self-efficacy, hope, optimism, and resilience, that is open to improvement, and means more than the combination of skills mentioned above (Aliyev & Tunc, 2015). Positive psychology is not a branch of psychology, nor is it a new paradigm or discipline. It's not even a new science. Simply put, psychology concentrates its interest on analyzing what is good in life from birth to death (Seligman & Csikszentmihalyi, 2000), and to incorporate this goal, positive psychology uses or should use methodological tools and conceptual framework the same as standard psychology research (Sheldon et al., 2011). The concept of positive psychology faithfully reflects the dominant spirit of American culture, which is the need of "positive thinking" for happiness, health, and wisdom, which is

succinctly called “the tyranny of American positive attitudes” by Held (2004). Seligman and Csikszentmihalyi (2000) proposed that POB focuses on positive emotions, especially confidence, responsibility/self-efficacy, hope, optimism, subjective well-being, happiness, and emotional intelligence. Positive psychology intervention is defined as: (1) be concerned with positive topics, (2) operate through positive mechanisms or target positive outcome variables, and (3) aim to promote health rather than repair weakness (Vázquez & Chaves, 2016).

Psychological capital can not only have a positive impact on individual work engagement, but also act as a self-efficacy and hope predictor of doctors' work engagement (Li, 2016). Doctors with a higher level of psychological capital are more devoted to work, more responsible, and respond more resolutely to adversity. They have a stronger sense of identification with the team, more harmonious interpersonal relationships, and a greater willingness to contribute to the organization. Therefore, such doctors have greater organizational commitment (Larson & Luthans, 2006; Zhong, 2007). Related researches on the positive relationship between psychological capital and job performance (Nasurdin et al., 2018) demonstrated that nurses who are a major component of hospital setting must be able to show exceptional performance, as excellent performance leads to high service quality and subsequent patient satisfaction. It is recommended that healthcare organizations should vigorously develop and manage the self-efficacy, hope, optimism, and resilience of their nursing staff to achieve outstanding performance outcomes. Longitudinal studies found that psychological capital is associated with the increases in overall well-being and work well-being over time (Latham et al., 2013; Williams et al., 2015). Analysis showed that psychological capital is a significant predictor of mental health and other desirable employee attitudes, such as job satisfaction (Avey et al., 2011). Wegge et al. (2006) pointed out that stronger team identification was associated with a lower level of emotional exhaustion and cynicism and a higher level of personal achievement. There is a significant correlation between organizational commitment and psychological capital and job burnout, which is consistent with previous research results. This study mainly explores the moderating role of organizational commitment in the relationship between psychological capital and job burnout. As an attitude toward an organization, organizational commitment refers to the basis of whether an individual is willing to stay in the organization. Employees with higher level of psychological capital are more committed to their tasks, more responsible, and respond more resolutely to adversity. They have a stronger sense of identification with the team, more harmonious interpersonal relationships, and a greater willingness to contribute to the organization. We believe that individuals with greater psychological capital are more willing

to make contributions to the organization and have a stronger sense of identification with the team. As a result, they can receive various support from the organization and have higher occupational well-being (Peng et al., 2013).

Studies demonstrated that doctors who often work overtime have poorer mental health, and significantly higher level of anxiety, depression and sleep disorders than those in other occupations, which further increases the workload and emotional imbalance of doctors, and reduces the willingness of doctors to communicate with patients during work. Job burnout is a state of mental and physical exhaustion due to long hours of heavy work and stress. In 1974, the American psychiatrist Freudenberger (1974) first proposed the concept of “job burnout” to describe physical, mental and emotional states, such as fatigue, reduced work contact, and declining sense of achievement. Experienced individuals working in the human services industry suffer it due to long hours of work, heavy workload, and excessive work intensity. Maslach and Leiter (1997) further defined “job burnout” as an individual’s chronic stress response to prolonged exposure to emotional and interpersonal stressors at work, including emotional exhaustion, loss of personality, and reduced personal fulfillment. Emotional burnout means feelings of extreme emotional exhaustion and a lack of enthusiasm and energy for work. Depersonalization refers to deliberately maintaining a distance between self and work, and displaying negative, indifferent, cynical attitudes and emotions toward others at work. Decreased personal fulfillment is manifested in lower self-esteem and more negative evaluation of work, as well as the inability to experience happiness, satisfaction, and work-related fulfillment. From a constitutive perspective, job burnout consists of emotional experience and cognition. If a person is not passionate about his or her work, has bad interpersonal relationships at work, and cannot find a sense of self-worth in his or her work, then he or she will not experience joy at work. Therefore, we argue that job burnout can be used as a relatively strong negative measure of employees’ occupational well-being, and that improving employees’ occupational happiness requires decreasing job burnout (Peng et al., 2013).

Some studies also confirmed the negative relationship between psychological capital and job burnout in jobs such as school teachers (Seligman & Csikszentmihalyi, 2000), bank employees (Li et al., 2015) or nurses (Ding et al., 2015); this indicates that possessing these psychological resources can help employees tolerate stress, or protect them from suffering chronic stress or burnout when they face demands at work. Positive Health Organizations (PHO) have their origins in the relationship movement, which proposed that (a) satisfied employees are more productive than others (“happy productive worker hypothesis” (Wright et

al., 2007), and (b) a kind of psychology focusing on building organizations that promote employee development and improve the quality of life should be established (positive psychology (Seligman & Csikszentmihalyi, 2000)). For example, the ability of teams to openly discuss disagreements and constructively manage conflicts can prevent negative environment and enhance positive social interactions, so that employees' well-being and performance are improved. PHOs are organizations that can not only prevent or successfully manage negative environment and group dynamics, but also increase positive social interactions to improve employees' well-being and performance. We put emphasis on the role of workplace conflict, which is inherent in social interaction and is also one of the most important sources of stress at workplace. In fact, Keenan and Newton (1985), by using an open-ended approach, found that interpersonal conflict was one of the most common sources of stress in samples of young engineers. Also at the individual level, Spector and Jex (1998) conducted a meta-analysis, concluding that interpersonal conflict at work is associated with negative personal outcomes such as frustration, anxiety and depression. Likewise, recent cross-sectional studies and diary studies have shown that interpersonal conflict can be considered a work stressor that results in a high level of stress and is associated with stress-related outcomes (stress), such as anxiety, emotional exhaustion, or psychosomatic disorders (Dijkstra et al., 2011; Dijkstra et al., 2009; Meier et al., 2014). However, these studies are conducted at the individual level, but interpersonal conflict is usually a group process that affects an entire team or unit (intra-team conflict). In fact, in current organizations, autonomous work groups that provide high-quality products and services are the most common way to design work, because collaboration often yields better results than individual efforts (Deutsch et al., 2000). Furthermore, these studies rarely consider nature-based group conflict typologies (Jehn, 1997; Jehn & Mannix, 2001) : (a) task-related conflict(TC), a conflict between individuals' differing perceptions of interrelated task content, usually involving differences in perspectives, ideas, and opinions; (b) relationship conflict (RC), or a perception conflict of interpersonal incompatibility, often including gossip and disagreement in personal beliefs; (c) process conflict (PC), or a conflict over how tasks should be accomplished, often involving disagreements in procedures, protocols, and guidelines. Based on this typology and considering group-level conflict, recent meta-analyses have highlighted that such intragroup conflicts result in different consequences (De Dreu & Weingart, 2003; De Wit et al., 2012): while relationship conflict and process conflict are negatively related to individual and group outcomes (well-being and performance), task conflict can be productive in specific situations, depending on how the group conceives of the

conflict and handles it. That is to say, conflict manages climate or shared beliefs of employees, disagreements can be discussed, and conflicts within teams are usually well and fairly managed (Einarsen et al., 2016). For example, relationship and intra-process conflict can impair the quality of service provided by employees because it deteriorates the emotional climate (Gamero et al., 2008) and service climate of the team (Benítez et al., 2012; Leon-Perez et al., 2016).

Psychological capital and its various dimensions have positive effects on doctors' job performance and attitudes. For example, Avey et al. (2006) found that four dimensions of psychological capital, namely self-efficacy, optimism, resilience, and hope, were negatively related to doctors' absenteeism and turnover intentions. By conducting an empirical study on the relationship between psychological capital and job performance of 422 Chinese doctors, Luthans et al. (2005) found that the three positive psychological states, hope, optimism, and resilience are positively related to managers' evaluation of Chinese doctors' work. Besides, there is a stronger positive correlation between psychological capital and job performance, and psychological capital is also positively correlated with employee' performance-based pay. Luthans et al. (2003) held that psychological capital plays a key role in the development of job burnout, and can effectively reduce the degree of job burnout. Taking Chinese doctors as the research object, Luo and He (2010) found preliminary evidence for the preventive effect of psychological capital on job burnout.

According to the research results of Yao et al. (2022), psychological capital is negatively correlated with occupational pressure and positively correlated with coping approaches. When facing occupational pressure, doctor will first activate their psychological capital, and then activate the coping mechanism through psychological capital. Positive psychological capital contributes to reducing job burnout and helps doctors strengthen their belief in achieving goals.

The research of Thanh (2021) showed that psychological capital has a positive impact on doctors' job satisfaction and job performance; the influence of doctors' job satisfaction on their job performance is positive and of statistical significance. Job satisfaction also plays a mediating role in the positive relationship between doctors' psychological capital and job performance, and provides relevant suggestions for managers to improve doctors' work performance by enhancing doctors' psychological capital and job satisfaction.

There is also a significant correlation between psychological capital and organizational commitment. Luthans and Jensen (2005) demonstrated a strong positive relationship between psychological capital and nurses' assessment of commitment to the hospital's mission, values,

and goals. In a study of 74 employees, Larson and Luthans (2006) stated a significant positive correlation between psychological capital, job satisfaction, and organizational commitment. Zhong (2007) studied the effect of psychological capital on job performance and organizational commitment in the context of Chinese culture, and found that after controlling for gender and age, the three positive psychological states of hope, optimism and resilience all have a positive impact on employees' job performance, organizational commitment, and organizational citizenship.

Psychological capital is significantly negatively correlated with each dimension of job burnout. The higher the psychological capital, the lower the degree of burnout. To effectively reduce the job burnout of doctors, their psychological capital should be improved while work pressure of doctors should be reduced. Psychological capital is relatively stable for individuals, and hospitals can increase their psychological capital by improving doctors' resilience and self-efficacy, thereby reducing their job burnout (Ma & Xu, 2021).

According to the findings of Jia et al. (2021), the psychological capital level of doctors is positively correlated with their job competency. Namely, the higher the psychological capital level, the better the job competency. Psychological capital is a positive psychological state, which can motivate the positive behavior of doctors to complete their tasks. A higher level of psychological capital could enable doctors to maintain an optimistic working attitude and acute thinking at work, which is conducive to the development of clinical thinking ability and promotes their professional growth. Doctors with a relatively high level of psychological capital are able to cope with work stress with a positive and optimistic mindset. They will try to find solutions when encountering difficulties. With a higher level of job satisfaction, it would be easier for them to adapt to the workplace and become competent in their work. In this way, they would be more willing to stay in the hospital.

Liang et al. (2021) found that doctors' psychological capital positively affects their job performance through empirical research. Hospitals can explore ways to guide doctors to improve their job performance from the perspective of enhancing their positive psychological capital. They can also encourage doctors to develop a positive and optimistic attitude towards work as a way to promote their confidence in completing tasks. When doctors are struck and frustrated at work, hospitals could provide encouragement to help them get out of failure quickly, so that the hospital and doctors can grow and achieve improved performance. At the same time, doctors work for the hospital for the purpose of obtaining the corresponding wages and welfare in the organization, in the hope of earning respect in the hospital in the process of realizing their self-worth. Therefore, according to the psychological characteristics of doctors,

hospitals need to advocate the concept of win-win cooperation and create a positive atmosphere of organizational trust, so as to have an increased level of trust in the hospital and job performance. To sum up, only when doctors have a positive psychological state and a sense of trust and identity in the hospital can they improve their ability to cope with stress and challenges. Hospitals can effectively cultivate and retain excellent doctors and improve the organizational performance of individuals and hospitals.

Studies have shown that positive professional self-identity helps enhance doctors' job satisfaction and reduce negative employment status and turnover intention, which plays an important role in stabilizing the medical team. Psychological capital is a positive psychological quality exhibited by individuals during their growth and development and plays a partial mediating role in stress perception and professional self-identity. It is conducive to improving the professional self-identity of doctors to cultivate their positive and high-level psychological capital. Therefore, hospitals can develop intervention strategies from two aspects: effective stress relief and enhancement of psychological capital, so as to improve doctors' professional self-identity and stabilize the medical team, which is of great significance for the development of hospitals (Li et al., 2021).

Doctors with good health tend to have higher level of psychological capital. Doctors in poor physical conditions have difficulty adapting to and carrying out intense and demanding tasks, while a high-intensity workload will further lead to poor physical condition. In such a vicious circle, doctors will accumulate negative emotions continuously and gradually reduce their psychological capital level.

Quality of Work Life (QWL) is proven to be very important and affects different aspects of employees and organizations (Efraty et al., 1991). Therefore, improving the QWL of employees has always been one of the most desirable and useful tools for creating mutual benefits for employees and employers across industries. This study contributes to the research on this topic by considering the effects of psychological capital and burnout on the QWL of Vietnamese employees. Specifically, the SEM results based on a data-set collected from 302 employees indicate that psychological capital is negatively correlated with burnout. This result not only parallels the proposed hypothesis, but also remains consistent with the existing research by Ding et al. (2015). Employees with higher level of hope, self-efficacy, resilience, and optimism are less likely to experience symptoms of burnout. More importantly, psychological capital can effectively influence the process of burnout, which develops gradually through three stages from exhaustion to depersonalization, and finally to lack of efficacy. Therefore, employees and the organization itself can identify and treat burnout

syndrome in a timely manner by enhancing psychological capital. Another finding of this study is similar to the result of previous research (Nguyen et al., 2014; Nguyen & Nguyen, 2012): psychological capital is positively correlated with QWL. However, while previous research only focused on one type of employees, such as marketers or a business sector primarily in the healthcare industry, the sample of this study includes employees at different specializations and job levels, which brings a broader context to the findings and makes them more generalizable. These results contribute to the inclusion of job burnout and QWL in the research stream of psychological capital outcome, clearly illustrating the impact and importance of psychological capital in management and organizational behavior. In addition, this study confirms the negative relationship between job burnout and QWL. QWL can be enhanced by reducing personal burnout (Nguyen & Ngo, 2021).

Given the same psychological capital of employees, higher level of QWL is more likely to be achieved in state-owned enterprises. This is contrary to the previous findings of Lyons et al. (2006), who concluded that organizational characteristics have a limited effect on psychological capital and that private employees seem to have higher psychological capital than public employees. There is a smaller negative impact of psychological capital on burnout in state-owned enterprises. Thus, it is the differences in the working environment of these two types of enterprises that create different criteria for achieving QWL. Employees in public enterprises are usually those who seek job stability, reasonable wages, and the satisfaction of basic human needs. Clark and Senik (2006) reveal that the significant difference between these two types of enterprises is based on job security for two reasons. First, there is little chance of losing a job because employees are usually legally protected by long-term contracts unless they commit a crime. Second, it is easier to go bankrupt in the private sector compared to the public sector. As a result, they can easily achieve a QWL compared to those working in the private sector, where more creativity and stress are required. By contrast, employees find few such guarantees in the private sector. In order to keep their current positions, they also usually have to work longer hours in a more competitive environment. Therefore, the context of private organizations exerts a greater impact on the relationship between psychological capital and burnout (Nguyen & Ngo, 2021).

The results of the multi-group analysis indicate that the demographic characteristics of employees do not alter the relationship between psychological capital, QWL, and job burnout. Interestingly, these findings are inconsistent with Bonanno's (2004) findings, which concludes that men tend to show greater resilience. Moreover, these findings contradict the claim that women may be more prone to emotional exhaustion than men, but men tend to be less

individual than women (Nguyen & Ngo, 2021).

These disputes can be explained from two aspects: economy and culture. In developing economies like Vietnam, where the income level is still much lower than that in developed countries, people are reluctant to express their unique personal characteristics (inherited from gender or age) in the workplace. People are more prone to put aside their personal needs and work hard to complete their assigned tasks. Employees in Asian countries such as Vietnam also tend to voluntarily follow the instructions of their supervisors and managers. Thus, demographic characteristics do not moderate the relationship between psychological capital, QWL, and burnout (Nguyen & Ngo, 2021).

It is noteworthy that the analysis in this study emphasizes the mediating effect of burnout in the relationship between psychological capital and QWL. However, when the direct effect of psychological capital on QWL remains significant ($\beta = 0.765$, $t\text{-stat} = 6.234$), burnout only plays a partial mediating role. This finding suggests that managers in private enterprises could consider making greater use of employees' existing psychological capital to directly reduce employee burnout, thus improving their QWL (Nguyen & Ngo, 2021).

Doctors are prone to suffer from fatigue in a state of long working hours, strong work intensity and heavy work stress for a long time. And the conflict between family and work can easily lead to varying degrees of anxiety, decreased job satisfaction, and burnout among doctors (Guan & He, 2019).

When a person's psychological capital level is high, then he is fully confident, hopeful for the future, willing to accept social communication, optimistic face difficulties and adversity, perseverance, success, less trouble in interpersonal communication; when he has a harmonious interpersonal relationship, will be more optimistic, confident, hopeful, more resilient in difficulties, psychological capital level will be higher (Zhao, 2016).

From Tang (2021) research found that the psychological capital has a positive impact on doctor behavior, and related to the doctor's work performance, work stability, Sun (2016), Gu (2018), Guo (2016) study the same conclusion, psychological capital has significant positive impact on work input, doctors if there is a positive and positive psychological state, can compare into work.

The research results of Guo (2020) suggested that psychological capital has a significant positive effect on job performance. The higher the level of psychological capital is, the better employees' job performance is. Lv et al. (2021) proposed that psychological capital has a significant positive impact on job performance. Employees with high psychological capital mean that they are full of hope and confidence in life and work, and are optimistic and

resilient about difficulties and setbacks. They have high working efficiency and be able to complete work tasks smoothly. The research results of Liu et al. (2021) show that psychological capital has a positive impact on employees' job performance to a certain extent. By taking targeted measures to intervene and improve employees' psychological capital, their job performance can be enhanced.

The research results of Jin et al. (2021) show that for doctors in operating room with high levels of challenging and obstructive occupational stress, with the improvement of psychological capital, the pressure of challenging job has a stronger negative impact on job burnout, and the pressure of obstructive job has a weaker positive impact on job burnout, which promote doctors to have higher psychological capital and work with a positive attitude. It is conducive to reducing job burnout.

Psychological capital is based on positive organizational behavior, while positive organizational behavior is based on positive psychology proposed by Peterson and Seligman (2004). Therefore, the concept of psychological capital and measurement of different behavioral states are ultimately related to employees' performance (Luthans et al., 2008).

Bakker and Demerouti's (2007, 2008) Job Demands-Resources (JD-R) model proposed that job resources (such as personal psychological resources) can enhance employee engagement, and thus have a positive impact on job-related outcomes. Personality-related constructs, job involvement and job-related results are investigated as a whole. Job involvement and psychological capital are taken as antecedents, while job satisfaction and emotional organizational commitment are taken as results, which are measured as components of employee morale. Both are considered to be highly related to the achievement of positive job results and also very important. It is believed that psychological capital, job engagement and employee morale are sufficiently and significantly correlated (Paek et al., 2015).

Hobfoll (2001) also suggested that resources tend to generate each other since one may possess one major type of resource that is linked with or can replace others. For example, when a role is demanding, job resources like social support are linked to, or may even replace, personal resources such as self-efficacy or optimism. Hobfoll (2001) calls this linkage and interplay "resource caravans". Acquiring increasing amounts thus creates such "resource caravans", leading to positive outcomes. This notion is connected to the JD-R model proposed by Bakker and Demerouti (2007, 2008). This divides job characteristics into two general categories: job-related demands and resources (Bakker & Demerouti, 2007, 2008; Bakker & Leiter, 2010). Job-related demands are the physical, psychological, social, or organizational aspects of a job that require sustained physical, cognitive, or emotional effort or skills. They

include work pressure and emotional, mental or physical demands. Job-related resources can be separated into the physical, psychological, social or organizational aspects of job autonomy, performance feedback, or social support; and personal resources, which are a psychological state of development related to optimism, hope or resilience (Bakker & Demerouti, 2007, 2008). These personal resources are called psychological capital.

Job resources play a salient role in initiating a motivational process that leads to employee work engagement and in turn enhances job performance (Bakker & Demerouti, 2007, 2008). Job resources can function as intrinsic motivators and extrinsic motivators. As intrinsic motivators, job resources, such as support from colleagues or supervisors, satisfy the basic human needs and foster the growth and development employees; as extrinsic motivators, they promote the well-being of employees, in order to boost their efforts to fulfill their job requirements (Paek et al., 2015).

In terms of research on psychological capital, creativity, innovation performance, and innovative behavior, Zhang (2013) found that there are significant differences about creativity among employees with different levels of psychological capital. Resilience in psychological capital has a positive and significant impact on creative thinking, and plays a significant moderating role in the impact on creative results. Li (2014) discovered that college students' psychological capital is significantly positively correlated with their creativity. In the environment under high level of stress, the decline extent of the students with high level of psychological capital is significantly lower than that of the students with low level of it. Ni (2014) took Qian Xuesen as the target of study and found that Qian's psychological capital and its dimensions has significantly positive effects on innovation performance. Besides, the state attached importance to the regulating effect between psychological capital and innovation performance. Chang (2014) concluded that the dimensions of psychological capital, such as self-efficacy, hope, resilience and optimism, have significantly positive effects on employees' innovative behavior. Xu (2015) concluded that psychological capital has a significant positive impact on the generation and execution of innovative behavior, and contextual and innovative psychological capital have significant positive impacts on employees' innovative behavior. Although task-oriented psychological capital and learning-oriented psychological capital have significant positive relationships with innovative behavior, the influence is not significant. Xu et al. (2016) took the study of Chinese Nobel Laureate Tu Youyou and deemed that psychological capital and its dimensions are positively correlated with innovation performance, and it has positive significance for innovation performance. Wang (2018) proposed that psychological capital and its four dimensions are

significantly positively correlated with employee creativity. Tang (2021) found that psychological capital and its four dimensions have a significant positive impact on employees' innovative behavior. Jin (2021) thought that the psychological capital of knowledge workers and its sub-dimensions, transactional psychological capital and relational psychological capital, have positive effects on innovative behavior.

In terms of research on psychological capital and job performance, work engagement, job burnout and emotional labor, Si et al. (2019) drew that emotional labor can predict work engagement, while psychological capital is a moderating variable between the real performance dimension of emotional labor and work engagement. Individuals with high psychological capital can maintain stable and high work engagement even when their real performance score is low. Xia (2019) found that the higher doctors' psychological capital is, the lower their job burnout is and the higher their job performance is. Starting from the four dimensions of psychological capital, understanding the status quo of doctors' psychological level and taking targeted measures to reduce their job burnout can improve their job performance. Wu et al. (2021) found that taking positive measures to improve psychological capital can reduce job burnout. Yuan et al. (2021) found that good psychological capital has a protective effect on mental vulnerability and can buffer the adverse effects of non-adaptive cognitive emotional adjustment strategies on mental vulnerability. Shen et al. (2021) found that psychological capital of doctors in the emergency department is closely related to sense of occupational mission and job burnout. Psychological capital plays a partial intermediary role between sense of occupational mission and job burnout, and improving the level of psychological capital can help improve sense of occupational mission and reduce job burnout.

In terms of related researches on psychological capital and job satisfaction, organizational commitment, intention of turnover and absenteeism, Wu et al. (2017) suggested that psychological capital and its two dimensions of hope and optimism have a significant positive impact on job satisfaction and a significant negative impact on turnover intention. The improvement of medical staff's psychological capital plays an important role in improving job satisfaction and reducing turnover intention. Liu (2018) proposed that the psychological capital of doctors of operating room and its various dimensions are negatively correlated with job burnout and turnover intention, which is consistent with the research results of Weng et al. (2017). Ozturk and Karatepe (2019) proposed and tested the research model that trust in organization, as psychological capital, affects employees' intention to leave work early and to be late for work, and absenteeism, and suggested that trust in organization is a full mediator between psychological capital and the aforesaid nonattendance intentions and absenteeism.

The research results of Huang et al. (2019) show that people with high psychological capital can timely and correctly deal with various problems in work and life, and improve job satisfaction and work efficiency. Zou et al. (2020) found that psychological capital has no direct impact on turnover intention, but could indirectly reduce doctors' turnover intention through the intermediary role of organizational commitment and job burnout. Cui et al. (2020) concluded that psychological capital is negatively correlated with job burnout and turnover intention. Emotional exhaustion in job burnout could positively predict turnover intention, and psychological capital is a full mediator in the relationship between emotional exhaustion and turnover intention. He et al. (2021) suggested that psychological capital plays an intermediary role in the influence of perceived professional benefits on retention intention, and when psychological capital is low, the willingness to remain employed in hospital is poor.

In terms of studies on psychological capital, organizational support, organizational trust, perceived trust, and employee benefit, Duan (2014) proposed that employees' psychological capital has a significant positive impact on organizational trust and employees' voice behavior, and plays a partial intermediary role between the two. Xu et al. (2017) found that leader's psychological capital is positively related to employees' psychological capital and creativity respectively. Employees' psychological capital mediates the relationship between leader's psychological capital and employees' creativity, and leader's psychological capital has a significant positive prediction effect on team trust. Moreover, team trust moderates the relationship between employees' psychological capital and creativity. Harun (2019) indicated that positive psychological capital moderates the relationship between organizational trust and organizational citizenship behaviors (OCBs) in such a manner that the relationship is stronger when positive psychological capital is high. Yang et al. (2019) suggested that the negative attitude of grassroots employees makes employees feel unfamiliar, passive and unhappy. Due to the influence of personal psychological capital, grassroots employees are prone to negative emotions, resulting in weak welfare perception and incentive effects, subsequently low enthusiasm and sense of responsibility for work, low employee satisfaction and well-being. Li et al. (2021) found that the two dimensions of psychological capital, self-efficacy and hope, play a partially mediating role in the relationship between perceived organizational support and job satisfaction, and psychological capital has a positive predictive effect on perceived organizational support and job satisfaction of doctors.

In terms of research on psychological capital and workplace performance, quality of work life, and OCBs, Zhong et al. (2014) noticed that employees' psychological capital is positively correlated with OCBs, and it could predict OCBs well. Enterprises could improve employees'

positive OCBs by cultivating and developing their psychological capital. Liu et al. (2015) suggested that there is a significant positive correlation between the psychological capital of preschool teachers and the quality of work life. When the level of psychological capital of teachers is high, the quality of work life is generally better. The dimensions of psychological capital can predict the quality of work life. Zeng et al. (2017) concluded that the psychological capital of teachers at primary and secondary school has a significant positive predictive effect on quality of life. On the one hand, psychological capital directly affects the improvement of quality of life, and on the other hand, it plays an indirect role through work engagement. Wang (2018) found that both psychological capital and the quality of work life of teachers at junior middle school can all affect their work engagement. The higher psychological capital is, the higher the work engagement is, and the better the quality of work life is. Hu et al. (2019) proposed that psychological capital of medical staff has an independent and unique effect on OCBs, and the two dimensions, optimism and resilience, have significant predictive effects on OCBs, indicating that psychological capital, such as optimism and resilience, significantly affects OCBs of doctors. Jin et al. (2022) indicated that psychological capital has direct positive effects on doctors' OCBs. Doctors' OCBs is at a relatively good level and is positively correlated with psychological capital. Administrators should take targeted measures to improve the level of doctors' psychological capital, encourage them to show more OCBs, and further improve the quality of health care.

In terms of psychological capital and symptoms of stress, job-hunting behavior and turnover intention, the research results of Li et al. (2014) showed that doctors with a high level of psychological capital are more persistent in completing their job tasks, have a positive attitude in the face of emergencies or thorny problems, and could adopt positive coping methods to relieve pressure and reduce response to pressure. Wei et al. (2015) also found that the integration of the four elements of psychological capital can stimulate individuals' morale, fully mobilize physical and mental resources and interpersonal relationships, thus improving the ability to cope with situational setbacks, relieving compassion fatigue and maintaining a good mental health state. Xu et al. (2021) concluded that psychological capital partially mediates the relationship between perceived stress and work engagement. As a positive variable, psychological capital inhibits the negative impact of negative factors on individuals to a certain extent, thus changing individuals' attitude and engagement towards work. The research results of Zhang et al. (2022) indicated that psychological capital is negatively correlated with response to pressure, and it can negatively predict response to pressure. The higher the level of medical staff's psychological capital is, the lower the response to pressure

is. This is consistent with the results of previous studies by Zhang et al. (2013) and Zhao (2017).

It has been demonstrated that psychological capital is a more accurate predictor of relevant outcomes than its independent components (Luthans et al., 2005; Luthans et al., 2008). This has been confirmed by several studies that tested various component-outcome combinations (Luthans et al., 2007; Luthans et al., 2005; Stajkovic & Luthans, 1998). Since the introduction and conceptualization of psychological capital, empirical studies have analyzed its role as a significant predictor or mediator of various work-related outcomes. Psychological capital is associated with behavioral and psychological factors as well as entrepreneurial, managerial, and economic outcomes. In all these studies, psychological capital has been proved to either have a significant positive correlation with outcomes or be able to reduce negative effects (Paek et al., 2015).

To sum up, the development of psychological capital is useful in improving job satisfaction, harmony of perceived doctor-patient relationship, and job performance, and in reducing job burnout and turnover intention of doctors. Doctors can develop the four dimensions of psychological capital in a targeted manner (Luthans et al., 2008), so as to enhance their psychological capital. As a result, their job satisfaction, job involvement, job performance and motivation can be improved, job burnout and turnover intention can be reduced, and a stable work team can be obtained (Wu et al., 2019).

2.2 Doctor-patient relationship

2.2.1 Evolution and historical milestones

The doctor-patient relationship is defined as “a mutually agreed relationship in which the patient seeks the help of the doctor knowingly and the doctor accepts the patient knowingly” (Chipidza et al., 2015). The core of the doctor-patient relationship is a fiduciary relationship in which doctors agree to respect the patient’s autonomy, confidentiality, explain the treatment plan, obtain informed consent, provide the highest standard of care, and promise not to abandon the patient without giving the patient enough time to find a new doctor. However, such a contract definition cannot describe the huge and profound relationship between doctors and patients.

The doctor-patient relationship has experienced changes in various periods. In the past 20 years, the doctor-patient relationship has mainly occurred between patients seeking help and

doctors, and doctors' decisions have been silently observed by patients. In this paternalistic doctor-patient relationship, doctors use their skills to choose the necessary interventions and treatments that are most likely to restore patients' health or reduce their pain. Any information provided to the patient is chosen to encourage the patient to agree with the doctors' decision, and the description of asymmetric or unbalanced interaction between the doctor and the patient is always challenged. It was suggested that patients should play a more active, autonomous, and patient-centered role and advocate reducing doctor leadership. This method is described as "patient-centered" and "seeing diseases through patients' eyes", which has become the leading model in today's clinical practice.

A patient is a person who is both worried and hopeful and seeks relief, help, and trust. The importance of intimacy between patients and doctors can be overemphasized because in most cases, accurate diagnosis and effective treatment directly depend on the quality of this relationship (Hellín, 2002).

Twenty years ago, the term "relationship" refers neither to structure nor function, but to the image of two interacting systems or human activities. The surface and internal quality of this unique doctor-patient relationship make two people who didn't know each other feel comfortable in different degrees of intimacy. Over time, the relationship may evolve to allow patients to communicate highly personal and private matters in a safe and constructive environment. Figure 2.2 presents the timeline showing the evolution of doctor-patient relationship.

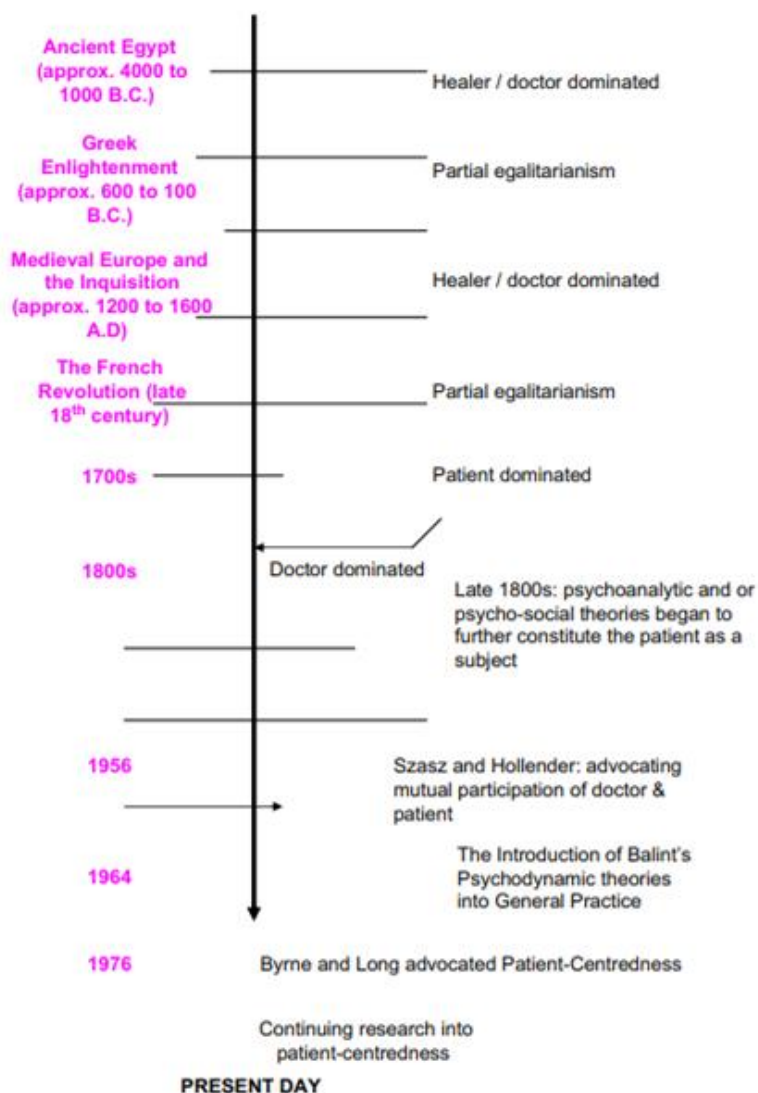


Figure 2.2 Timeline showing the evolution of doctor-patient relationship

Source: Kaba and Sooriakumaran (2007).

Ancient Egypt

Edelstein (2017) proposed that the doctor-patient relationship evolved from the priest-suppliant relationship, thus retaining the ideology of a parent-figure to manipulate events on behalf of the patient.

Man has attempted to master nature by means of magic and mysticism, theology and rationality, and through fears of helplessness, sickness and death. Healers were as much magicians and priests as they were doctors, and magic was an integral part of care. Treatment was largely limited to external and visible disorders, such as fractures. Psychiatric disorders, which were regarded as internal disorders, presented certain observational difficulties in the face of a naive, culturally unsophisticated approach to medicine.

It therefore seems likely that in ancient Egyptian medicine the activity-passivity type of relationship existed and that this relationship was unaltered. Neither the social circumstances

nor the technological advances were such as to require a change within this relationship.

Greek enlightenment

The Greeks developed a system of medicine based on an empirical-rational approach, such that they relied ever more on naturalistic observation, enhanced by practical trial and error experience, abandoning magical and religious justifications of human bodily dysfunction. They were also among the first nations to evolve towards a democratic form of social organization, and consequently established equality among the electorate. Thus guidance-cooperation and to a lesser degree mutual-participation were the distinguishing patterns of the doctor-patient relationship.

The Hippocratic Oath established a code of ethics for the doctor, whilst also providing a “Bill of Rights” for the patient. The rules codifying the doctor’s prescribed attitude towards his patient (Singer, 2000): “The regimen I adopt shall be for the benefit of my patients according to my ability and judgment, and not for their hurt or for wrong. Whatsoever house I enter, there will I go for the benefit of the sick, refraining from all wrongdoing or corruption, and especially from any seduction, of male or female, of bond free. Whatsoever things I see or hear concerning the life of men, in my attendance on the sick or even apart there from, which ought not be noised abroad, I will keep silence thereon, counting such things to be as sacred secrets.”. This oath provides a higher degree of humanism in dealing with the needs, well-being, and interests of people when compared to previous codes of conduct. In this, the Hippocratic Oath raised medical ethics above the self-interests of class and status.

Medieval Europe and Inquisition

The restoration of religious and supernatural world beliefs, following the demise of the Roman Empire, and concluding in the Crusades and witch-hunts throughout the middle-ages, led to the deterioration, weakening and regression of the doctor-patient relationship throughout medieval Europe.

The magico-religious beliefs personified in the Old and New Testaments were revived and became widely accepted. The doctor, filled with magical powers, was in a glorious, high-ranking position in society and his patients were regarded as helpless infants, analogous to the activity-passivity model.

The French Revolution

Through the initiation of the Renaissance encouraged by the emerging Protestantism, man’s search for liberalism, equality, dignity and empirical science began once again. There are marked illustrations of the effects of the dominant socio-political events (such as the successful Protestant protests against the unimpeded might of the Roman Catholic Church,

the removal of English dominance from America, and the momentous social struggle of the French revolution) on medical attitudes, actions and thus behaviors during this time. The events that led to the French revolution brought an end to an era in which the mentally ill and socially underprivileged were incarcerated in dungeons (Szasz & Hollender, 1956). This exemplifies the change in the doctor-patient relationship from an activity-passivity approach to a guidance-cooperation model.

1700: the beginning of patient dominance

“The relationship between the doctor and patient has a very pronounced association with the model of illness that dominates at any given time” (Jewson, 1976). During the 18th Century the symptom was the illness. Doctors were few and their patients mainly upper class and aristocratic. This status disparity ensured the supremacy or dominance of the patient and doctors had to compete with each other in order to please the patient. The model of illness that developed was one based on the interpretation of the patients’ individual symptoms. The doctor found it less necessary to examine the patient but rather more important to be attentive to their needs and experiences manifest in the form of their symptoms. This symptom-based model of illness ensured the preservation of patient dominance throughout this period (Kaba & Sooriakumaran, 2007).

During the late 18th Century hospitals emerged as places to treat patients who were underprivileged. Doctors now found themselves providing medical treatment for those who were traditionally regarded as more passive. The hospital became the cornerstone of medical care and along with the rapid growth in microbiological knowledge and surgical skills during this time, a new medicine developed that focused not on the symptom, but rather on the accurate diagnosis of a pathological lesion inside the body-the biomedical model of illness. This new theory suggested that the symptom was no longer the illness, but instead acted as a unique indicator for the presence or absence of a particular pathology. This new model required the examination of the patient’s body and the expert clinical and anatomical knowledge possessed by the doctor to formulate a diagnosis, and thus the patient became dependent. The relationship was between a dominant doctor and a passive patient, i.e., an activity-passivity (paternalistic) model (Kaba & Sooriakumaran, 2007).

Hippocrates considered it an ethical requirement to follow the “criterion of beneficence” as well as the principle “*primum non nocere*” (“not to hurt”) which has become a core principle of medical ethics within the doctor-patient relationship. Szasz (1956) and Hellín (2002) regarded paternalism as hardline beneficence, analogous to the parent-infant relationship, in which the infant is wholly dependent on the parent for decision-making.

At the end of the 19th century, the psychoanalytic and psychosocial theory put forward by Sigmund (2004) began to further treat patient as a person. This treatment model means that it is very important to listen carefully to the views of patients in terms of doctor-patient relationship. Doctor's interest in patients enables them to develop real communication relationships and reintroduce patients as active participants into medical counseling. This early therapeutic intervention paved the way for the widespread implementation of mutual participation between doctors and patients (Balint, 1957; Szasz & Hollender, 1956), which eventually led to the birth of patient-centered medicine.

Doctors are aware of the patients' personality: "the patient is not just an object, but a person who needs enlightenment and comfort" (Balint, 1957; Szasz & Hollender, 1956). It is considered that disease is not only a physiological phenomenon, but also a social psychological phenomenon. Balint (1957) encouraged the unique emotional relationship between doctors and patients formed through multiple interactions, which is itself a key part of the treatment and diagnosis process. He proposed the concept of "doctor is the drug" emphasizes the dynamic nature of doctor-patient relationship and insisted that "the most powerful treatment tool a doctor has is himself".

In a groundbreaking article published in 1956, Szasz and Hollender (1956) outlined three basic modes to approach the doctor-patient relationship:

(1) The active-passive mode is completely paternalistic in nature. It is based on doctors' treatment of patients, who are regarded as inanimate objects. This mode may be appropriate in emergencies when patients may lose consciousness or treatment delays may cause irreparable harm.

(2) In the guidance and cooperation mode, it is believed that although the patient is ill, he has consciousness, feeling, and desire. The patient may feel anxiety and pain and seek help. The patient is ready and willing to "cooperate" and put the doctor in a position of power. Therefore, doctors guide and expect patients to cooperate and obey without a doubt.

(3) The mode of mutual participation (also advocated by Balint (1957)) is based on equal partnership between doctors and patients. Patients are seen as experts in their life experiences and goals, and their participation is essential to the design of treatment. The role of the doctor is to elicit and help achieve the patients' goals. This mode requires both sides to have equal power, interdependence and engage in activities that are equally satisfactory to both sides. The management of chronic diseases is a good example. Therefore, this mode provides patients with a greater sense of responsibility, which is characterized by a high degree of empathy and is usually related to friendship and partnership and the teaching of medical advice from

experts. The satisfaction of a doctor comes not from power or control over others, but from his unique service to mankind (Hellín, 2002).

Patient centeredness

Since the 1970's there has been a large number of literature advocating patient-centered medical care methods. Patient-centered medicine proposes that "one of the basic qualities of clinicians is the interest in human nature" (Hellín, 2002). As put forward by Mead and Bower (2000), the concept of patient-centered medicine can be described and explained through the following five key dimensions: (a) biopsychosocial perspective, (b) "Patient as human", (c) sharing power and responsibility, (d) therapeutic alliance, and (e) "Doctor as human".

Biopsychosocial perspective: Stewart and others (1995) asserted that a patient-centered approach requires "a willingness to participate in all the difficulties that patients bring to doctors, not just biomedical problems." In addition, these authors believe that health promotion is an important part of patient-centered medicine.

"Patient as human": a biopsychosocial perspective alone is not sufficient to fully understand the patient's disease experience, depending on his or her specific "biography" (Armstrong, 1979). In order to understand the disease and alleviate the patient's pain, doctors must first understand the personal significance of the disease to the patient. According to Balint (1957): "understanding the complaints made by patients and the symptoms and signs found by doctors is not only in terms of disease, but also as an expression of the patient's unique personality, conflicts and problems." Therefore, in order to understand the patient's performance and provide effective management, doctors should strive to understand the patient as a unique personality in their unique environment.

Sharing power and responsibility: Mead and Bower (2000) advocated the use of democratic and equal doctor-patient relationship, which is fundamentally different from the paternalistic attention envisaged by Parsons (1991). The society advocates the transformation of doctor-patient relationship from a "guidance and cooperation" mode to "mutual participation" (Szasz & Hollender, 1956) to share power and responsibility with patients. Byrne and Long (1977) believed that patient-centered medical services reflect the recognition of patients' needs and preferences, which is characterized by encouraging patients to express ideas, listen, reflect, and provide cooperation.

Therapeutic alliance: based on the development of psychotherapy around the concept of the therapeutic alliance, patient-centered medicine ensures that the personal relationship between doctors and patients is paid more attention. Rogers (2004) supports this view. He predicts that the empathy, consistency, and unconditional positive attention attitude of core

therapists are necessary to affect the treatment changes of clients. Also, Roth and Fonagy (1996) emphasized the importance of all aspects of the doctor-patient relationship, including (a) patient's perception of the relevance and effectiveness of the intervention provided, (b) consistency of treatment objectives, and (c) cognitive and emotional components, such as the personal bond between doctors and patients, and doctors' care, sensitivity, and compassion for patients (Squier, 1990). Therefore, a friendly and compassionate attitude may increase the possibility of patients adhering to treatment. On the contrary, the negative emotional reactions of either party (such as anger and resentment) may complicate medical judgment (leading to the wrong diagnosis) or lead to the patient's absence from treatment. A common understanding of treatment goals and requirements is essential for any treatment, whether physiological or psychotherapy (Mead & Bower, 2000).

“Doctor as human”: Balint (1993) described biomedical models as “one-man medicine”, because doctors are not considered in a satisfactory clinical description. In contrast, patient-centered medicine is “two-person medicine”, so doctors are an integral part of any such description: “doctors and patients have been interacting and cannot be considered alone” (Balint, 1993). Sensitivity and insight into both reactions can be used for therapeutic purposes (Mead & Bower, 2000). Balint (1957) described how the doctor's emotion caused by specific patient performance can be used as an aid for further management (“anti-empathy”).

Figure 2.3 shows the factors that affect the patient-centered medical treatment. The core of the model is the doctor-patient relationship expressed in the form of bilateral behavior interaction. The doctors' tendency to be patient-centered will change over time, and some dimensions, namely patients as people and doctors as people, need to be developed with a lot of time between doctors and patients.

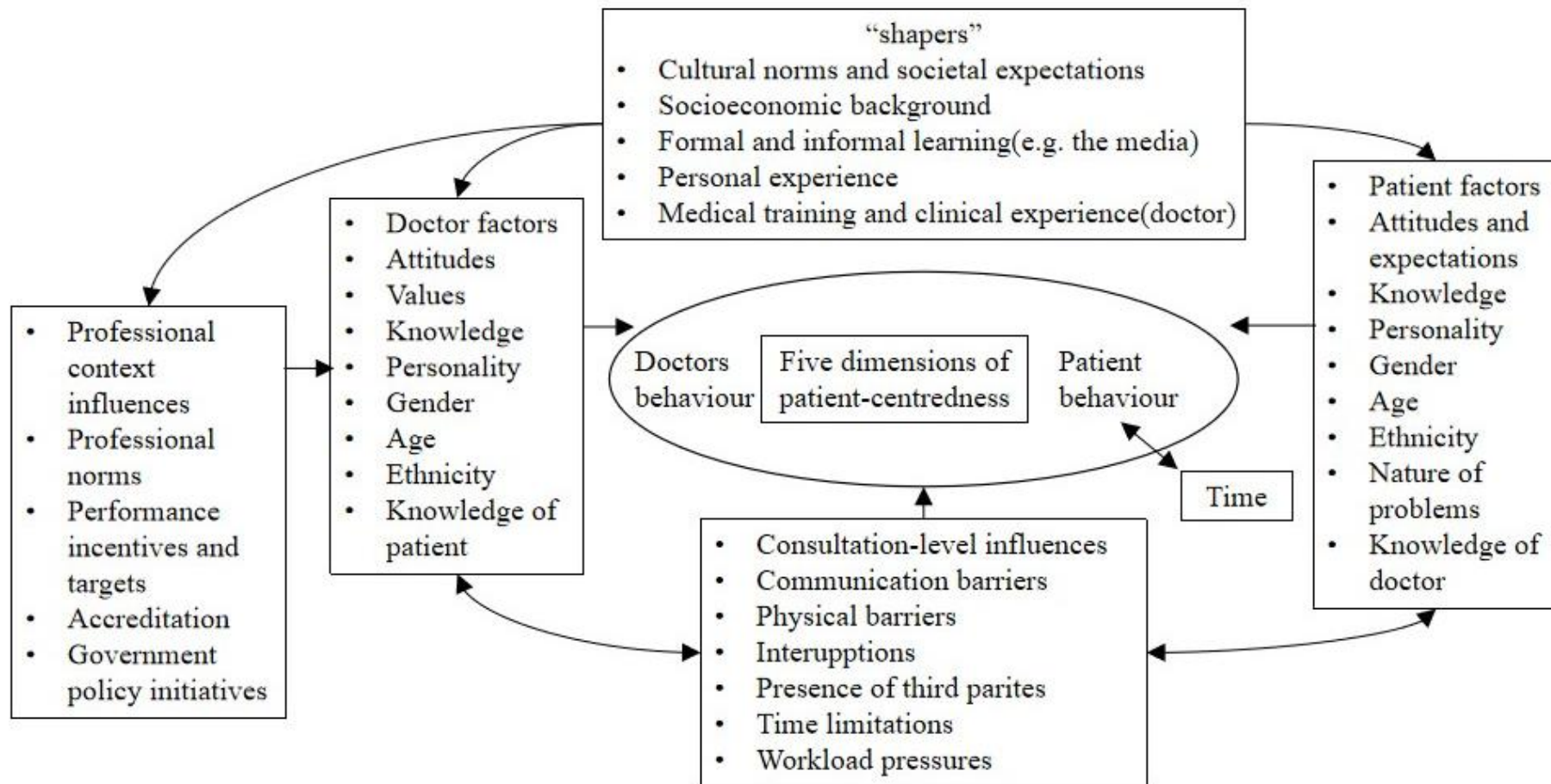


Figure 2.3 Patient-centered model

Source: Mead and Bower (2000)

The model expresses mostly the doctor-patient relationship in Western civilization. The doctor-patient relationship in India and China, the two oldest civilizations, has remained far more constant than in Western societies. A paternalistic approach still dominates, and doctors have a high status in society (Scully & Wilson, 2006). Another difference between Eastern and Western societies is that litigation rates of doctors are far lower in the former civilizations compared to the continually escalating negligence claims in the UK, Australia, and particularly, the USA. For example, claims in the UK have risen 15-fold since April 1995. As a consequence, the doctor-patient relationship is subject to mutual distrust of high level, patients seek advice from other parties, and the doctor-patient relationship tends to develop into an adversarial relationship. Previously, patients were often considered too ignorant to make decisions on their own behalf. Thus, doctors felt comfortable in making decisions on behalf of their patients. Later on, the distance between the doctor and patient widened. Little social mingling remained, and the doctor-patient relationship became impersonal and remote. The extent of this impersonality has varied, with doctors being more aloof in earlier times as a result of the status placed on them by patients (Kaba & Sooriakumaran, 2007).

In the 1960s, the study on doctor-patient relationship began to gradually attract the attention of Western scholars. Scholars have focused on issues of defining the roles and conditions of both doctors and patients, establishing a development mechanism for both parties, and maintaining a good relationship between them (Metcalf, 2009). In 1970, a famous theory known as “Knowledge Gap Theory” was developed by Professor Tichenor after a large number of case studies. In the 1990s, the doctor-patient relationship was first included in the nursing ethics textbooks, which gradually became an indispensable part of the teaching. Responsibility system nursing was first implemented in the United States, which encourages doctors to ensure the interests of patients and to put interactions with patients at the first place (Hu et al., 2008). A service concept in clinical nursing care, SEQCIR, is strongly promoted by many medical institutions in the United States. In many foreign hospitals, the relationship between doctors and patients is harmonious and doctors’ sympathy is vividly reflected in the process of treating patients.

Another contemporary effect on the doctor-patient relationship has been the exponential growth in the use of the Internet by patients. This has meant that patients often have access to more specialized information, and this has facilitated the patient-centered approach to health care that predominates today. While better patient education has obvious advantages for the doctor-patient relationship, information on the Internet might not always be accurate and reliable (Mason & Laurie, 2006). This poses a new challenge for the medical professional: the

challenge of revising any misinformation the patient has found for him-or her-self (Kaba & Sooriakumaran, 2007).

However, today there is a new alliance between the doctor and patient, based on cooperation rather than confrontation, in which the doctor must “understand the patient as a unique human being” (Balint, 1969). Thus, patient-centered care has replaced a one-sided, doctor-dominated relationship in which the exercise of power distorts the decision-making process for both parties. Such an alliance must consider not only the application of technical knowledge, but also the exchange of information to assist the patient to understand, control and cope with negative emotions and anxiety. Doctors must assume the responsibility of both a technical expert and a supportive interpersonal role. Mutual participation, respect and shared decision-making. Therefore, maximizing understanding is a prerequisite for more equal participation. Balint (1969) argued that the patient not the illness should be the primary focus of medicine, and therefore the primary objective of the doctor is to listen to the patient in order to identify what the “real” problem actually is, instead of simply focusing on the signs and symptoms of the illness. Shared decision-making between the doctor and patient will determine the most appropriate and best course of action for an individual patient. The doctor in this patient-centered model is ideally placed to bridge the gap between the world of medicine and patients’ personal experiences and needs (Kaba & Sooriakumaran, 2007).

2.3 Doctor-patient communication

2.3.1 Communication: a differentiating skill

Doctor-patient communication is a way of diagnosis and treatment with humanistic care, which is widely reinforced in clinical practice. Through non-verbal communication, body language and verbal communication, doctor-patient communication provides patients with a comfortable, satisfactory and good diagnosis and treatment environment, which can prompt patients to establish friendship with doctors in the first place. It helps patients reduce psychological pressure and improve treatment confidence with positive language and attitude, which effectively prompts patients to actively cooperate with treatment and enhance treatment motivation (Y. Wang, 2020).

Doctor-patient communication means that doctors take patients as the center. With the purpose of promoting patients’ recovery, doctors try to meet their reasonable needs during the process of medical treatment and conduct various effective information exchanges with them.

Studies have shown that good doctor-patient communication helps doctors to obtain more accurate and complete information about patients. A more targeted and scientific treatment plan for patients will be developed to facilitate their recovery, thus improving their satisfaction and trust. During the doctor-patient interview, some patients do not give a detailed account of their actual condition. Doctors also fudge during the questioning process and provide a single treatment plan, failing to provide multiple treatment options for patients and their families. There is also a lack of communication on the consequences of poor post-operative outcome and serious complications. Records like “communication without record” or “information without signature” on the medical case documents make patients know nothing or feel confused about the treatment plan, which violates the patients and their families’ right to know and choose. Therefore, high expectations from patients of the treatment results will be generated. Once the treatment turns out to be ineffective, medical disputes arise immediately (J. Xu, 2020).

The education of doctor-patient communication skills plays a significant role in medical schools around the world. As was once pointed out by the Fukuoka Declaration of the World Federation for Medical Education, all doctors must study communication and interpersonal skills, and the lack of empathy (putting oneself in someone else’s shoes) should be seen as a sign of incompetence as much as inadequate techniques (Z. Liu, 2020). From a macroscopic perspective, the doctor-patient relationship in all major countries in the world, such as the UK, the US, France, Germany, and Japan, demonstrates the same characteristics: despite the existence of some medical disputes, litigations, and accidents, the doctor-patient relationship, which is mainly characterized by harmony and smoothness, has not become a prominent social problem, hence the relatively harmonious state of their doctor-patient relationship. Foreign doctors and patients tend to put more emphasis on doctor-patient communication and have accumulated a wealth of experience. For instance, in addition to having the training of doctor-patient communication skills in schools in the US, people have established special patient communication centers to help doctors provide targeted medical services for patients. In the United Kingdom, hospitals have arranged for some personnel that specialize in doctor-patient communication, namely social workers. They possess considerable professional medical experience and communication skills, and often check in with the doctors. In the case that the patient has doubt or does not understand the medical service, the social worker will immediately communicate with them or inform their relatives to make an explanation (Teimimi, 2013).

Proficient communication skills are indispensable to becoming a doctor abroad. Western

medical schools offer a series of courses on doctor-patient communication to focus on training clinical medical students in relevant skills. American medical schools consider it essential for medical students to have a good command of doctor-patient communication skills; in 1987, the British Medical Association added an assessment of doctors' communication skills as part of the Medical Licensing Assessment. There are four characteristics of doctor-patient communication skills training in foreign medical schools: setting goals for communication skills development; offering special courses on doctor-patient communication training; using different teaching methods; and assessing communication skills (Yan et al., 2019).

There are strict health care policies and regulations and a comprehensive health care service system in the US, and the American doctors can participate in the formulation of national health care policies and regulations. The results of clinical nursing research can fill in the blanks of national health policy and be widely disseminated as scientific knowledge. A U.S. citizen poll shows that the general public in the U.S. is highly satisfied with hospital care (Henderson, 2003). There is easy and pleasant communication between doctors and patients with wonderful effect. Medical nursing education abroad has long focused its teaching on cultivating students' humanistic and interpersonal communication skills, and has implemented a combination of teaching and clinical practice. It lays emphasis on exercising students' communication skills and encouraging them to take the initiative to establish good relationships with patients (Guo, 2018).

Research on doctor-patient communication and relatedness in China started later and has been given slightly less attention than that in foreign countries. With the changes in the new era, the medical paradigm is also changing, and these factors have led to changes in the overall doctor-patient model (Q. Wang, 2014). With the continuous development of medical career in recent years, doctor-patient communication has received attention from many aspects, including scholars, hospital administrators, clinical staff, and even patients themselves have joined the concern team. Research on doctor-patient communication has gradually become a hotspot for academic research at the present time.

According to the relevant literature (Wang, 2013), there are deficiencies in doctor-patient communication in the current clinical process. For instance, there is more technical communication between doctors and patients, but less non-technical communication, and since the communication between doctors and patients is too professional, patients and their families are often in a passive state of acceptance and do not have a deep understanding. Besides, due to a lack of communication skills between doctors and patients, poor communication attitude and short communication time, patients tend to sign the document

without understanding and only formally acknowledge the results of doctor-patient communication. Also, some doctors are impatient and show low willingness to initiate communication, they are thus unable to effectively conduct communicate with patients. A number of medical institutions do not implement a strict system of communication between doctors and patients. Various complex reasons account for the above situation, including the busy business of medical institutions in China, the quality of Chinese doctors, the current medical management system in China, and the lack of awareness about the importance of doctor-patient communication. Some scholars studied the complaints of a tertiary grade A hospital and found that the department of obstetrics and gynecology, orthopedics, and thoracic surgery (the emergency department was not regarded as a separate department) got a great number of complaints from patients, which accounted for nearly 40% of the total complaints. The reasons lie in the complex conditions and the large number of patients treated in the three departments, and the lack of effective communication between doctors and patients makes it difficult to resolve doctor-patient conflicts (Xia, 2020b).

Doctors' communication and interpersonal skills include information gathering to enable accurate diagnosis, proper counseling, treatment guidance, and develop caring relationships with patients (Br Dart et al., 2005; Duffy et al., 2004; van Zanten et al., 2007). These are core clinical skills in medical practice, with the ultimate goal of achieving optimal outcomes and patient satisfaction. This goal is critical to the effective delivery of healthcare services (Brinkman et al., 2007; Herndon & Pollick, 2002) . The ultimate goal of any doctor-patient communication is to improve patients' health conditions and provide medical care (Duffy et al., 2004). Research on doctor-patient communication has shown that even though many doctors consider their communication with patients to be adequate or even excellent, patients remain dissatisfied (M. A. Stewart, 1995) . Doctors often overestimate their communication skills. Tongue et al. (2005) reported that 75% of the plastic surgeons surveyed rated their communication with patients as satisfactory, but only 21% of the patients reported satisfactory communication with their surgeons. Patient surveys always show that patients want better communication with doctors (Duffy et al., 2004) . The medical model has recently evolved from a paternalistic one to an individualistic one. Information exchange is the dominant communication mode, and the health consumer movement has led to the ongoing shared decision-making and patient-centered communication modes (Arora, 2003; Herndon & Pollick, 2002; Kindler et al., 2005; Middleton et al., 2006; Sawyer & Aroni, 2003). Effective doctor-patient communication is a core clinical function, the core and art of medicine, and the central component of medical service (Arora, 2003; Roter, 1983; M. A. Stewart, 1995). The

three main goals of current doctor-patient communication are to build good interpersonal relationships, to facilitate information exchange, and to involve patients in decision-making (Arora, 2003; Br Dart et al., 2005; Lee et al., 2002; Platt & Keating, 2007).

2.3.2 Correlates of doctor-patient communication

Doctors with various professional and technical titles have different doctor-patient communication. Among them, the higher the doctor's title, the lower the level of his or her doctor-patient communication ability. For doctors, both clinical work and medical education exert considerable influence on improving their doctor-patient communication ability. Doctors should pay close attention to doctor-patient communication, and develop their doctor-patient communication skills throughout the clinical practice (Cai et al., 2021).

The findings of Sun et al. (2019) is the current occurrence of doctor-patient miscommunication. Some medical students have noticed the impact of factors such as the lack of doctor-patient communication skills for doctors, lack of patient-specific measures, and failure to recognize the differences in the health literacy between doctors and patients on doctor-patient communication. Future education on doctor-patient communication skills for medical students should improve their awareness of the factor of Party B and medical students should learn to adopt different communication styles and skills depending on the patient's health literacy.

Effective doctor-patient communication depends on the doctor's "bedside manner", which patients perceive as a primary indicator of the doctor's overall competence (Hall et al., 1981). Research has shown a correlation between a sense of control and pain tolerance, recovery from disease, tumor growth inhibition, and daily functions (Greenfield et al., 1988; Greenfield et al., 1985; Roter, 1983). It is also reported that enhanced psychological adjustment leads to improved mental health (Debra et al., 2002; Herndon & Pollick, 2002; Peter & Carolyn, 2002; Roter, 1983; Stewart et al., 2000). There are many barriers to a sound doctor-patient communication, including anxiety and fear on patients' part, and excessive workload, fear of litigation, fear of physical or verbal abuse, and unrealistic patient expectations on doctors' part (Fentiman, 2007).

The main duty of a doctor is to receive patients, clarify the diagnosis of the disease, formulate treatment plans and judge the prognosis, while the main duty of a nurse is to implement the doctor's advice, do a good job in publicity and education, pay attention to the safety of patients during hospitalization, understand the patients' understanding of the disease and follow-up nursing after discharge. Their common feature is to serve patients and face

patients directly. As is often pointed out, “Give priority to nursing care and use treatment as a supporting approach.” Although this sentence is not very accurate, it reflects the important position and role of nursing. We can review the literature on nurse-patient communication. According to Shang’s research (2019), pediatric nurses who have a better use of communication skills during clinical care can significantly reduce the occurrence of nurse-patient disputes, improve the satisfaction of children and their families, and improve nursing quality (Liu et al., 2016). Zhao (2019) pointed out that to adapt to the requirements of nursing under the new medical model, contemporary nurses should keep forging ahead and improve their self-cultivation to have good communication skills and properly handle various interpersonal relationships in nursing. Huang (2021) proposed that language communication and psychological nursing can improve the clinical symptoms of anxiety patients and their quality of life. Communication with patience and professional language can narrow the distance between nurses and patients, making them more compatible with clinical treatment and nursing.

A healthy body, stable emotions, and a positive and optimistic attitude help nurses maintain elevated, which is conducive to the establishment of good interpersonal relationships and high work efficiency (S. Zhao, 2019). An open-minded and cheerful personality can often bring laughter and humor to others, making it easier for us to get along with others and maintain a good relationship with patients, doctors and other nursing staff; it is conducive to higher nursing work efficiency and faster patient rehabilitation (S. Zhao, 2019). Communication is a complex process that requires wisdom. Communication is mainly carried out through verbal and non-verbal means (e.g. appearance and facial expressions) . Whether nurses can communicate effectively with patients depends on their good interpersonal and communication skills. In nursing, it is necessary to develop communication skills for nurses. With good verbal and non-verbal communication skills, nurses can infuse “humanistic care” into their daily work. Good communication between nurses and patients can enhance patients and their families’ understanding of, respect for and trust in nursing work, mobilize them in medical care, and reduce patients’ social and psychological problems. Hence, there will be fewer disputes between nurses and patients. As nurses, they should master good nurse-patient communication skills, and provide patients with targeted nursing services based on their physical, psychological, spiritual and cultural conditions, so as to maximize their satisfaction of nursing needs (Chen, 2017). Effective communication between nurses and patients can help patients recover with smooth diagnosis and treatment. Good interpersonal skills also contribute to effective communication between doctors and nurses, and among nurses, which

is conducive to nursing work (S. Zhao, 2019).

Research has found that interpersonal trust has a significantly positive correlation with nurse-patient communication. This means that with more interpersonal trust, the communication will be more effective. Interpersonal trust has two dimensions: general trust and special trust. General trust is trust in people with whom one has no direct relationship; special trust is trust in peers or other family members (Ying et al., 2019).

Interpersonal self-efficacy has a positive correlation with nurse-patient communication skills. Especially in unfamiliar or embarrassing situations, people tend to be more hesitant, conservative and irrational, so that their communication will inevitably become self-centered and passive (Ying et al., 2019). Individuals with more interpersonal trust show positive attitudes and emotions toward the situations. Nurses of this kind are confident that they can communicate well with patients. Even in the face of communication barriers, they tend to adopt flexible approaches to understand patients' views and are confident to come up with solutions to the conflict. Interpersonal self-efficacy plays a mediating role between interpersonal trust and nurse-patient communication (Ying et al., 2019). Nursing students with stronger self-efficacy take work and study more seriously, and are more confident to complete their nursing studies and successfully become qualified nurses (Yang et al., 2018).

The total score of intern nurse clinical communication skills and the five dimensions (establishing harmonious relationship, listening attentively, confirming patient problems, transmitting effective information, and verifying feelings) has a positive correlation with self-efficacy. This indicates that the stronger the interns' self-efficacy is, the better the clinical communication will be (Xie et al., 2016) found that individuals with stronger self-efficacy will be more serious about their study and work, and more confident and persistent in completing their work. As we are advocating improving patients' satisfaction with medical service, nursing interns' clinical communication skills play an indispensable role in establishing a good nurse-patient relationship (Chen & Chen, 2019).

Communication is a service in clinical nursing. Good communication can enhance patients' trust in nurses, reduce disputes and conflicts, so as to build a harmonious nurse-patient relationship (Dang, 2019; Zhang et al., 2017).

As the society and medical models evolves, doctors are required not only to perform basic operations, but also to perform psychological interventions and communicate with patients. A good doctor-patient relationship is the premise for smooth clinical work (Su, 2016; Zhang, 2015).

Nonviolent communication (NVC), also known as "love language" or "giraffe language",

was proposed by American scholar Dr. Marshall (2018). There are four elements for NVC: observation, feeling, need and request. Nonviolent communication encourages sincere expression of oneself and attentive listening, and avoids harm and confrontation caused by improper communication, such as accusations, ridicule, preaching, and subjective assumptions (Wang et al., 2014). NVC can foster empathic communication, as well as improve conflict resolution and interpersonal skills (Nosek & Durán, 2017; Wacker & Dziobek, 2018). At present, “nonviolent communication” has been explored and applied in hospitals, schools, public security organs, journal submissions and other communication scenarios (Chen & Liu, 2017; Liu, 2020; Wu et al., 2016; Zhang et al., 2017). When others do not understand what one expresses, he/she should clearly state his/her expectations. When communicating with patients, it is necessary to understand clearly patients’ expectations of treatment, which is more conducive to establishing collaborative interpersonal relationships and improving treatment compliance. Dr. Marshall (2018) believes that listening helps understand and accept others. In non-violent communication, listening to others means setting aside one’s own ideas and assumptions and putting himself/herself into others’ shoes. When doctors listen to patients’ thoughts and receive their information, patients will realize that they are understood and respected. “Nonviolent communication” is achieved through a change in language, but it is all about attentive listening, active communication, and respect for patients’ needs in order to establish a friendly relationship with patients (Cao et al., 2022).

When the medical environments are closed, or when there are many medical instruments and equipment, or a strict management system, patients often suffer from bad emotions, such as anxiety, fear, and depression (Kawada, 2016). The persistence of bad emotions affects the treatment and prognosis of the disease (Shi et al., 2019). Healthcare workers help patients get rid of bad emotions through effective communication, while establishing a harmonious doctor-patient relationship. Research has shown that communication failure leads to violent behaviors, and China’s healthcare workers are not sufficiently trained on their communication skills (Tucker et al., 2015). NVC provides an effective way to change others’ cognitive perceptions, emotions, and mindsets through communication, enabling patients to engage in diagnosis and care cooperatively (Fernandes & Horta, 2018). NVC is used in the medical field to facilitate communication and cooperation between healthcare workers and patients, and plays an important role in improving treatment (Lee et al., 1998). Understanding patients’ feelings and needs and allowing them to express make them feel comfortable, so that their body functions will be enhanced (Wang et al., 2014) with less anxiety and depression. NVC can help patients face calmly, actively deal with their own diseases, improve their confidence

in overcoming the disease, provoke positive emotions, and improve the prognosis of cardiovascular disease (Cao et al., 2022).

Effective nurse-patient communication can improve their relationship. Li (2018) found that improving emotional management can avoid medical harm to patients. Xiang (2020) indicated that using non-violent communication skills can improve patient satisfaction and reduce complaints. Nosek and Duran (2017) argued that fostering empathy and improving interpersonal skills enable nurses to come up with better solutions to nurse-patient conflict, thereby improving the relationship (Zhao, 2018). Problems can be solved through effective communication, which promotes mutual understanding and respect (Cao et al., 2022).

Humanistic care and communication in outpatient nursing can help patients overcome negative feelings, reduce their complaints, and improve their satisfaction with nursing services (Zhang, 2021).

Medical workers should talk with patients with a gentle tone and a moderate volume. They should treat patients kindly, ask them about their feelings, encourage and praise them more often (Chen & Jin, 2019). They should answer patients' questions in plain language, and tell their family members and friends to care more about patients. They should talk with patients in an encouraging way, in order to enhance their confidence in receiving treatment. During the examination, it is necessary to talk with patients to understand their thoughts passionately, patiently and understandingly. Besides, they should inform patients of precautions and other medical information patiently before and after the examination. Verbal communication and psychological guidance can alleviate patients' clinical symptoms and improve their quality of life. They can also bring closer medical workers and patients and improve the quality of medical services. Verbal communication and psychological guidance can alleviate the clinical symptoms of patients with anxiety disorders and improve their quality of life. Patient and professional communication brings closer doctors and patients. It is beneficial to adopt a people-centered approach to educating patients with anxiety disorders on their diseases, so that they can engage in clinical treatment and care more cooperatively, and this will contribute to their speedy recovery (Huang, 2021).

Doctor-patient communication is not only a process of knowledge exchange related to clinical diagnosis and treatment, but also a process of psychological exchange, mutual recognition and dependence. Good doctor-patient communication should be carried out in the entire process of clinical diagnosis and treatment (Chen, 2015).

According to Wang's (2013) report, there is currently insufficient doctor-patient communication in the clinical process: doctors tend to provide technical and specialized

information for patients, which is rather difficult for patients to understand; doctors with bad communication skills express negative attitudes and engage only in short conversations, so that many patients have no choice but to sign without completely digesting what the doctors have said; some doctors are not willing to communicate with patients patiently. Most medical institutions do not have a strict doctor-patient communication system. The reasons for the abovementioned situations are complicated. But they have something to do with the vigorous business of medical institutions, the quality of medical staff, and the current medical management system in China. Most medical staff have insufficient understanding of the importance of doctor-patient communication.

During doctor-patient face-to-face consultation, some patients do not explain their conditions in detail; neither do doctors go into details during inquiry. Doctors only provide a limited number of treatment options rather than various plans for patients and their families to choose from. Doctors do not inform much of the post-treatment consequences such as adverse effects and serious complications. However, there are no written records of the discussions, neither is the signature of the doctor, which leads to patients' lack of understanding or misunderstanding. This violates the rights of the patient and his family to know and to choose what suits them. Normally, they have a high expectation of treatment outcome. But once the treatment effect is less satisfactory, medical disputes will arise (J. Xu, 2020).

There are many factors that affect the doctor-patient relationship such as social factors, the level of patients' awareness of safeguarding their rights, the understanding and care of medical workers for patients, the ability of communication with each other, and the medical technology level of medical personnel. Jin (2019) found that "doctors' humanistic care for patients and doctor-patient communication ability" are important factors affecting doctor-patient relationship, while doctors' medical technology level is not the main factor causing the tension between doctors and patients.

In the process of medical service, the impact of doctor-patient communication on doctor-patient relationship and how to strengthen doctor-patient communication are significant factors to promote the cultivation of harmonious doctor-patient relationship and the further development of a harmonious society. Studies have shown that poor communication between doctors and patients is the main cause of medical disputes (N. Hu, 2020). According to the results of the national survey on the employment status of medical workers in 2017, about 80% of medical staff said that the current doctor-patient relationship in China was tense. In terms of the causes of the tense doctor-patient relationship, 89.8% of medical staff believed that "poor doctor-patient communication" was the main reason (Guo et

al., 2021). In 2018, the State Council issued the Regulations on Prevention and Handling of Health Care Disputes, Article 17 of which clearly stipulates that medical institutions should establish and improve the doctor-patient communication mechanism and strengthen the prevention of medical disputes, reflecting the role and importance of doctor-patient communication in the prevention of medical disputes (Gao et al., 2020).

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Charter 3: Research Design and Methods

3.1 Research model

The factors influencing doctor-patient relationship include social factors, patient awareness, medical staff's understanding and consideration for patients, mutual communication ability, health workers' medical technology level and other elements.

In the survey conducted by Jin (2019), it was found that “doctors’ humanistic care for patients and doctor-patient communication skill” were one of the important factors affecting the doctor-patient relationship. Doctor-patient communication, with general characteristics of interpersonal communication, is the most essential process of information exchange between doctors and their patients throughout the medical process. Due to the special professional relationship between doctors and patients, the essence of doctor-patient communication is helpful and therapeutic communication. Doctor’s occupational emotion, professional knowledge and skills have an influence on the communication effect to a large extent (Xu, 2006). Studies conducted by Tian et al. (2007) put forward that good doctor-patient communication can improve patient compliance, which has been showed by data that satisfaction can be promoted 8.7% on the original basis. Effective communication between doctors and nurses is beneficial to the recovery of patients, because close cooperation between doctors and nurses throughout the medical process is needed for patient (S. Zhao, 2019).

Psychological capital is a positive psychological state manifested by an individual in the process of growth and development. Specifically, it shows that one: (1) has the confidence and is able to make necessary efforts to succeed in the face of challenging work (self-efficacy); (2) has a positive attribution for present and future success (optimism); (3) perseveres in the goal, and adjusts the way to achieve the goal when necessary (hope); (4) is able to persevere, quickly recover and transcend to achieve success when faced with adversity and troubled by problems (resilience) (Luthans et al., 2008). Psychological capital not only plays a positive role in individual work engagement, but also can predict the doctors’ self-efficacy and hope (Li, 2016). Good positive psychological capital is a significant manifestation of individual physical and mental health (Lai et al., 2015). It can also effect coping style to environmental changes and events for individuals (Song & Chen, 2015). According to the study of Guo

(2012) , there is a positive correlation between psychological capital and communication satisfaction. Enterprises can play a long-term role in improving employee performance and enhancing competitive advantage by investing and developing psychological capital (Zhang, 2015). When doctors have high positive psychological capital, they will also perform the good communication ability. The optimistic dimension of positive psychological capital is highly correlated with basic language communication capacity, which also indicates that most optimists have strong language communication competence. Strengthening positive mental health education for doctors contributes to improving communication ability of doctors and upgrading the development of medical services. Start from promoting the positive psychological capital of doctors, hospital managers can guide doctors to receive mental health education, improve the level of positive psychological capital of them, thereby affecting their coping styles of events and further elevating their communication skill (Ju, 2019).

Figure 3.1 exhibits the research model. Psychological capital construction is a substantial component of the general individual enthusiasm elements, which conforms to the standard of positive behavior criteria for positive mental state performance. Therefore, we hypothesize:

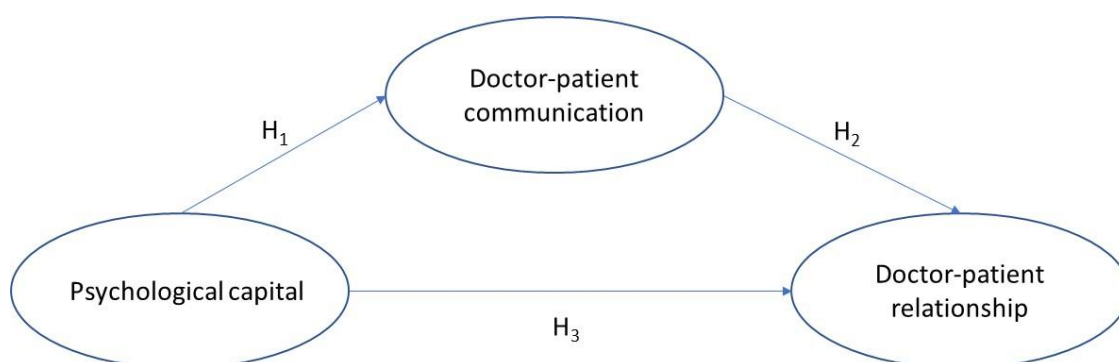


Figure 3.1 Research model

H1: The psychological capital level of doctors has a positive impact on doctor-patient communication.

Effective doctor-patient communication contributes positively to harmonious doctor-patient relationship, which can forge consensus between doctors and patients, produce emotional resonance, increase psychological correspondence and obtain shared interests. Thus, we hypothesize:

H2: Doctor-patient communication has a positive impact on doctor-patient relationship.

If the psychological capital level of doctors is enhanced, it will have a positive impact on individuals. High level of psychological capital will positively affect the emotional self-state, and the harmony of self-relationship. Thus, we hypothesize:

H3: The level of psychological capital of doctors has a positive impact on doctor-patient

relationship.

3.2 Target population

The target population of this study are doctors in medical and health institutions at all levels in Guangzhou, aged 20 or older, with the necessary professional qualification as a doctor, and currently working in the medical profession. According to the Bulletin of the Seventh National Census of Guangdong Province (Guangdong Provincial Bureau of Statistics, 2021) released in May 2021, the resident population of Guangzhou exceeded 18 million.

The Briefing on Health Resources and Medical Services in Guangzhou in 2020 (Guangzhou Municipal Health Commission, 2021) released by the Guangzhou Municipal Health and Health Commission in April 2021 showed that by the end of 2020, the number of medical and health institutions in the city was 5,550, including 55 tertiary hospitals, 95 secondary hospitals, 334 community health service institutions, and 1,529 outpatient clinics; the number of employees in the city's medical and health institutions was 214,600, with health technicians accounting for 177,800, of which 62,300 were practicing (assistant) doctors and 82,500 were registered nurses, with a ratio of 1:1.32 between doctors and nurses.

According to occupational categories, clinical, Chinese medicine, dental, public health, respectively, accounted for 68.32%, 17.13%, 10.15%, 4.40% of the total number of doctors.

3.3 Sample selection

In this study, medical institutions at all levels in Guangzhou were selected through convenience sampling and working relationships. Hospital administrators were explained the purpose of the study and the content of the questionnaire, and were asked for their support and consent to organize doctor participation. Ultimately, nearly 30 medical institutions agreed to allow 346 doctors to complete the questionnaires.

3.4 Questionnaire design and data collection

The questionnaire for this study was distributed from May to July 2022 to collect information about personal characteristics of doctors, levels of psychological capital, doctor-patient communication skill, and doctor-patient relationship.

Due to the impact of COVID-19, the survey was conducted online. After confirming the consent of the administrators of the research institutions through several contacts in person and by phone from December 2021 to April 2022, an electronic questionnaire explaining the purpose of the study was sent to doctors who volunteered to participate in this study from May to July 2022 through a questionnaire link (<https://www.wjx.cn/>) and a detailed textual explanation, and at the same time WeChat, telephone, and email were provided for consultations. To thank the research participants for their support of this questionnaire, the author provided spiritual care, physical and psychological care to the doctors who filled out the complete questionnaire, such as the gift of the book *Reconstruction of Life*, cancer screening service, and psychological online counseling. In order to ensure the authenticity and reliability of the study, the questionnaire was filled out anonymously. To ensure validity and completeness, each question in the electronic questionnaire was set as a mandatory question.

According to the theoretical model, the key constructs in this study are psychological capital, doctor-patient communication, and doctor-patient relationship. The questionnaire consisted of four sections:

- (1) Level of psychological capital.
- (2) Doctor-patient communication skill.
- (3) Doctor-patient relationship.
- (4) Demographic information.

Psychological capital, doctor-patient communication, and doctor-patient relationship scale dimensions, item numbers, scores, and scoring tendencies are shown in Table 3.1. The specific definitions, measurement tools, and measurement methods are as follows:

Table 3.1 Scale description of psychological capital, doctor-patient communication, and doctor-patient relationship

Scale and author	Dimensions	Items	Scores	Scoring tendencies
Psychological capital Luthans et al., (2008)	4	24	1-6	The higher the score, the higher the level of psychological capital
Doctor-patient communication Makoul (2001)	5	25	0-1	The higher the score, the better the doctor-patient communication ability
Doctor-patient relationship	1	8	1-6	The higher the score, the worse the relationship

relationship
Yang (2011)

doctor-patient relationship

The psychological capital scale (PCQ-24) has a total of 24 items, and its four dimensions are self-efficacy (1-6), hope (7-12), resilience (13-18) and optimism (19-24). The specific items are shown in Table 3.2. This scale uses Likert 6-point scoring ranging from “1-strongly disagree” to “6-strongly agree” (1-6 points), of which 13, 20, and 23 are reverse scoring (marked with R). The higher the score is, the higher the psychological capital will be.

Table 3.2 Psychological capital items

Dimensions	Codes	Items
Self-efficacy	PsyCap1	1. I believe I can analyze long-term problems and find solutions.
	PsyCap2	2. When meeting with managers, I am confident in stating what is within my scope of work.
	PsyCap3	3. I believe I have contributed to discussion of company strategy.
	PsyCap4	4. In the context of my work, I believe I can help set goals/purposes.
	PsyCap5	5. I believe I can connect with people outside the company (e.g. suppliers, customers) and discuss issues.
Hope	PsyCap6	6. I believe I can present information to a group of colleagues.
	PsyCap7	7. If I find myself stuck at work, I can think of many ways to get out.
	PsyCap8	8. At present, I am full of energy to accomplish my work goals.
	PsyCap9	9. There are many solutions to any problem.
Resilience	PsyCap10	10. Right now, I consider myself quite successful at work.
	PsyCap11	11. I can think of many ways to achieve my current work goals.
	PsyCap12	12. Currently, I am achieving the work goals I have set for myself.
	PsyCap13	13. When encountering setbacks at work, I have a hard time recovering from them and moving on (R).
	PsyCap14	14. At work, I will solve the problems I encounter anyway.
	PsyCap15	15. If I have to do it at work, I can also challenge myself to it independently.
	PsyCap16	16. I'm usually comfortable with stress at work.
Optimism	PsyCap17	17. Because I have experienced many hardships in the past, I am now able to survive the difficult times at work.
	PsyCap18	18. In my current job, I feel like I can handle a lot of things at the same time.
	PsyCap19	19. At work, when faced with uncertainty, I usually hope for the best.
	PsyCap20	20. If something can go wrong, even if I work wisely, it will go wrong (R).
	PsyCap21	21. I always see the bright side of things in my work.
	PsyCap22	22. I am optimistic about what will happen to my work in the future.
	PsyCap23	23. In my current job, things never go the way I hoped (R).
	PsyCap24	24. When working, I always believe that "behind the darkness is the light, so don't be pessimistic".

Source: Luthans et al. (2008)

The first part of the questionnaire included questions on psychological capital. Psychological capital is a measurable positive attitude. In this study, psychological capital items (PCQ-24) were compiled by Luthans et al. and translated by Li (2008). The psychological capital scale revised in 2007 has been verified and used by a large number of researchers and has good reliability and validity. Wu et al. (2017) studied the effect of psychological capital on job satisfaction and turnover intention of medical personnel.

The second part of the questionnaire involved doctor-patient communication. Doctor-patient communication skills evaluation scale – SEGUE scale – was developed by Makoul (2001) in 2001 to evaluate the teaching and training effects of medical communication skills (Chen et al., 2019). The scale includes doctor-patient communication content and communication skills, which contains five dimensions of preparations (1-5), information collection (6-15), information giving (16-19), understanding patients (20-23), and ending of inquiry (24-25), with a total of 25 items. See Table 3.3 for details.

Table 3.3 Doctor-patient communication skill evaluation scale (SEGUE scale)

Dimensions	Codes	Items
Preparations	DPC1	1. Address the patient politely.
	DPC2	2. Explain the reasons for the inquiry (understand the situation, further diagnose and treat, and report to the superior doctor).
	DPC3	3. Introduce the process of inquiry and physical examination (such as the content and sequence of inquiry).
	DPC4	4. Establish personal trust relationship (such as introducing yourself appropriately and discussing subjects other than current diseases).
	DPC5	5. Protect the patient's privacy (such as closing the door) and respect the patient's right of choice and privacy.
	DPC6	6. Ask the patient to share the views on health problems and/or disease progression.
	DPC7	7. Systematically inquire about the physical and physiological factors affecting the disease.
	DPC8	8. Systematically inquire about the social, psychological and emotional factors affecting the disease (such as living standards, social relations and life pressure).
Information collection	DPC9	9. Discuss the previous treatment with the patient (such as self-care measures, recent visits and other medical services previously received).
	DPC10	10. Discuss with the patient the current impact of the disease on life (such as the quality of life).
	DPC11	11. Discuss healthy lifestyle/disease prevention measures with the patient (such as risk factors for the disease).
	DPC12	12. Avoid leading/imperative questions.
	DPC13	13. Give the patient time and opportunity to speak (for example, do not interrupt the patient easily)/no awkward pause.
	DPC14	14. Listen attentively (such as facing the patient, using positive language and nonverbal feedback).
	DPC15	15. Verify/clarify the acquired information (such as retelling and asking for specific quantity).
	DPC16	16. Explain the theoretical basis of diagnostic operation (such as physical examination and laboratory examination).
Information giving	DPC17	17. Tell the patient about his or her current physical condition (such as the results of physical examination and laboratory examination, and the results of anatomical abnormalities/diagnosis).
	DPC18	18. Encourage the patient to ask questions and verify his/her own understanding, and comfort and encourage the patient.
	DPC19	19. Make appropriate adjustments (speed and volume) according to the patient's understanding ability (such as avoid using/explaining technical terms).
Understanding of patients	DPC20	20. Acknowledge the patient's efforts, achievements, and difficulties to overcome (such as appreciating the patient's cooperation).
	DPC21	21. Observe the patient's hints/tacit cooperation.
	DPC22	22. Express care, concern and empathy to make the patient feel warm and build confidence.
	DPC23	23. Always maintain a respectful tone.
Ending of inquiry	DPC24	24. Ask the patient if there are any other questions to explore.
	DPC25	25. Further explain the next diagnosis and treatment plan.

Sources: Makoul (2001)

In the process of communication, the content item of communication will be given points once it occurs, and no points will be given if it does not occur. The score range is 0-25 points. The higher the score is, the better the doctor-patient communication ability will be. Studies have shown that the doctor-patient communication skill evaluation scale (SEGUE scale) has shown good applicability and high reliability and validity. In recent years, it has been used as a third-party evaluation scale with high reliability and widely used in the evaluation of doctor-patient communication (Zhao et al., 2019).

The third part of the questionnaire is about doctor-patient relationship. The DPR8 (eight items) of Yang (2011), a translated and revised version of DPR10(ten items) developed by Hahn et al. (1996). There is a total of eight items. The questionnaire takes doctors as subjects and measures the doctor-patient relationship perceived by doctors. It has good reliability and validity, and is currently widely used in China. The specific items are shown in Table 3.4.

Table 3.4 Doctor-patient relationship items

Codes	Items
DPR1	1. After seeing the patient today, whether you are looking forward to your next meeting with the patient (R).
DPR2	2. Whether some patients are found to be depressed.
DPR3	3. Whether there is a patient who wants to control your diagnosis and treatment decisions.
DPR4	4. Whether you have been annoyed or frustrated by the patient's vague complaints and complaints.
DPR5	5. Whether your patients are prone to self-abandonment.
DPR6	6. Whether you have ever secretly hoped that a patient would not come back.
DPR7	7. Whether you have found it a waste of time to care for your patients.
DPR8	8. Whether you have difficulty communicating with your patients.

Source: Yang (2011)

This questionnaire is scored on a Likert 6-point scale (based on degree, 1: not at all 6: very much), where entry 1 is reverse scored. Higher scores on the questionnaire indicate poorer doctor-patient relationships as perceived by the doctor.

The fourth section included questions on gender, length of service, weekly working hours, age, educational background, marital status, physical condition, professional title, type of unit, nature of operation, hospital level, type of department, type of specialist departments, and monthly income. See Table 3.5 for details.

Table 3.5 Sociodemographic characteristics and work conditions of the respondents

Items	Options
Gender	Male; Female
Age	20-29 years old; 30-39 years old; 40-49 years old; 50 years old and above
Education	Technical secondary school and below; Junior college; Undergraduate; Master; Doctor
Marital status	Married; Unmarried; Others (e.g. divorced or separated, widowed)

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Monthly income(Yuans)	8000 and below; 8001-14000; 14001-20000; 20001 and above
Length of service	1 year and below; 1-5 years; 6-10 years; 11-15 years; 16-20 years; 21 years and above
Working hours per week	40 hours and below; 41-50 hours; 51-60 hours; 61 hours and above
Physical health	Healthy; Fair; Poor
Professional and technical titles	Elementary; Intermediate; Deputy high-level; High-level; No title
Organization type	General hospitals; Specialty hospitals; Primary medical institutions (including health centers, community health services agencies and clinics); Professional public health institutions (including Centers for Disease Control and Prevention, control institutions for specialized disease , maternal and child health care organization)
Business nature	Non-profit; For-profit
Hospital level	Primary; Secondary; Tertiary; Primary medical institutions; Not rated
Specialist departments	Pediatrics; Otolaryngology; Rheumatology; Gynecology; Orthopedics; Respiratory Medicine; Psychiatry; Urology; Neurosurgery; Endocrinology; Dermatology; Mammary Gland; Neurology; Physical Examination; Gastroenterology; Cardiovascular Medicine; Thoracic Surgery; Hematology; Traditional Chinese Medicine; Oncology; Emergency Medicine; Others

3.5 Data analysis

IBM-SPSS 26 and AMOS are the software used to conduct the statistical data analysis.

3.5.1 Descriptive analysis

Descriptive analysis is the first step in the data analysis of social surveys, the initial collation and summarization of a large amount of data and information obtained from the survey, in order to find out the intrinsic patterns of these data - concentration trends and dispersion trends. The one-factor analysis is performed mainly with the help of various statistics expressed in the data, such as frequencies, means and percentages.

3.5.2 Confirmatory factor analysis

Confirmatory factor analysis (CFA) is a statistical analysis of data collected from social surveys. It tests whether the relationship between a factor and the corresponding measure term conforms to the theoretical relationship designed by the researcher. CFA is often tested by structural equation modeling. In actual scientific research, the process of CFA is also the process of testing the measurement model. The reliability analysis of the survey scale was conducted by confirmatory factor analysis, and the specific indicators involved were the Cronbach's alpha coefficient, and others.

When conducting the CFA, the Cronbach's alpha coefficient is used to test and determine

the reliability of the survey scale. Cronbach's alpha coefficient assumes a value between 0 and 1, and the closer to 1, the higher the reliability of the scale. When the coefficient is less than 0.6, it indicates that the internal consistency of the scale is insufficient; when the coefficient reaches 0.8 or 0.9, it indicates that the reliability of the scale is very high.

CR (combined reliability) is used for convergent validity analysis. Convergent validity refers to the degree of similarity in measurement results when different measures are used to measure the same characteristic, which means that different measures should converge together in the measurement of the same characteristic. Convergent validity means that items with the same underlying characteristic (construct) will fall on the same common factor by the test.

3.5.3 Structural equation model

Structural equation modeling (SEM) is a multivariate statistical technique that incorporates factor analysis and path analysis. Its strength lies in the quantitative study of multivariate interactions. In the last three decades, SEM has been used extensively in the social and behavioral sciences, and in recent years it has been gradually applied in marketing research.

Path analysis first requires the initial assumption of the interrelationship of the variables in the model based on professional knowledge, and this relationship can be drawn as a clear path analysis diagram. Subsequently more than one multiple linear regression equation are fitted according to the number of dependent variables assumed in the path analysis diagram, so the path analysis model is composed of a set of linear equations. The path analysis model describes the interrelationships between variables including not only direct but also indirect associations.

The summary tables of the model regression (path) coefficient demonstrate the influence of the relationship between variables.

AMOS is used to model the structural equations, estimate and test the path coefficients, and use the model fit indices to determine how well the actual data structure fits the theoretical structure. The criteria for judging the relevant fit indices are shown in Table 3.6.

Table 3.6 Model fit indices and critical reference values for SEM

Structure fitting indices	Codes	Critical value
Ratio of Chi-square to degrees of freedom	CMIN/DF	<3.0~5.0
Root mean square error of approximation	RMSEA	<0.050~0.080
Normed fit index	NFI	>0.90
Relative fitness index	RFI	>0.90

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Incremental fit index	IFI	>0.90
Tacker-lewis index	TLI	>0.90
Comparative fit index	CFI	>0.90
Parsimonious normed fit index	PNFI	>0.50

Chapter 4: Results

4.1 Characteristics of the doctors

The respondents to this study were 346 doctors from all levels of health care institutions in Guangzhou: 165 doctors were from tertiary hospitals, 72 doctors from secondary hospitals, 48 doctors from primary hospitals, and 61 doctors from unrated hospitals. The sociodemographic profile and working characteristics are as follows.

4.1.1 Personal characteristics of the doctors

The samples included 160 male doctors and 186 female doctors, which made the proportion of the female doctors over 50% in the samples of this survey.

In terms of age distribution, 36.7% of the doctors were between 30 and 39 years old. Of the 346 doctors, 53.2% were undergraduates; 75.1% were married; and 76.6% were in good health. Details are shown in Table 4.1.

Table 4.1 Personal characteristics of the doctors

Category	Group	N	%
Gender	Male	160	46.243
	Female	186	53.757
Age	20-29	61	17.630
	30-39	127	36.705
	40-49	97	28.0035
	≥ 50	61	17.630
Educational background	Special secondary school graduate or below	6	1.734
	Junior college graduate	59	17.052
	Undergraduate	184	53.179
	Master	72	20.809
	Doctor	25	7.225
Marital status	Married	260	75.145
	Unmarried	72	20.809
	Other (e.g. divorced or separated, widowed)	14	4.046
Physical condition	Healthy	265	76.590
	Average	79	22.832
	Unhealthy	2	0.578

4.1.2 Work conditions and income of the doctors

The survey showed that of the 346 doctors, 62.7% had obtained titles of junior and intermediate doctor (32.37% were intermediate doctors and 30.35% were junior doctors); 77.8% had worked for 6 years or more; 80.6 % worked for more than 41 hours per week; 53.2% worked in general hospitals; 85.8% worked in non-profit medical institutions; 47.69% worked in tertiary hospitals; 75.14% worked in non-surgical departments; and 70.6% earned less than 14,000 yuan per month. Details are shown in Table 4.2.

Table 4.2 Work conditions and income of the doctors

Category	Group	N	%
Professional and technical title	Junior doctor	105	30.347
	Intermediate doctor	112	32.370
	Associate professor of treatment	65	18.786
	Professor of treatment	36	10.405
	Without professional title	28	8.092
Working age	≤ 1 year	15	4.335
	1-5 years	62	17.919
	6-10 years	63	18.208
	11-15 years	58	16.763
	16-20 years	37	10.694
Weekly working hours	≥ 21 years	111	32.081
	≤ 40 hours	67	19.364
	41-50 hours	143	41.329
	51-60 hours	81	23.410
	≥ 61 hours	55	15.896
Work institution	General hospital	184	53.179
	Specialized hospital	48	13.873
	Primary health care institutions ^(a)	87	25.145
	Public health institutions ^(b)	27	7.803
Nature of operation	Non-profit	297	85.838
	For-profit	49	14.162
Hospital level	Primary	48	13.873
	Secondary	72	20.809
	Tertiary	165	47.688
	Unrated	61	17.630
Specialist departments	Pediatrics	19	5.491
	Otolaryngology	3	0.867
	Rheumatology	2	0.578
	Gynecology	12	3.468
	Orthopedics	22	6.358
	Respiratory Medicine	6	1.734
	Psychiatry	15	4.335
	Urology	11	3.179
	Neurosurgery	2	0.578
	Endocrinology	9	2.601
	Dermatology	5	1.445
	Mammary Gland	2	0.578
	Neurology	14	4.046
	Physical Examination	6	1.734

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	Gastroenterology	7	2.023
	Cardiovascular Medicine	7	2.023
	Thoracic Surgery	2	0.578
	Hematology	7	2.023
	Traditional Chinese Medicine	12	3.468
	Oncology	4	1.156
	Emergency Medicine	9	2.601
	Others	170	49.133
Monthly income	≤ 8,000	95	27.457
	8,001-14,000	149	43.064
	14,001-20,000	64	18.497
	≥ 20,001	38	10.983

^(a) Including health centers, community health service institutions, outpatient departments, and others.

^(b) Including centers for diseases control and prevention, centers for the prevention and control of specialized diseases, maternal and child healthcare institutions, and others.

4.2 Descriptive analysis

4.2.1 Descriptive statistics of the doctors' psychological capital, doctor-patient communication, and doctor-patient relationship

The mean value and standard deviation are used to describe the obtained statistics with the assistance of descriptive analysis. It can be seen from Table 4.3 that on the whole, the psychological capital of doctors is at a high level, with an average value of 4.5786; the doctor-patient communication ability is great, with an average value of 0.9692; the doctor-patient relationship is relatively harmonious, with an average value of 3.1582, which, to a certain extent, shows that the higher the level of psychological capital of enterprises, the lower the contradiction between doctors and patients. As for the subdivided dimensions, self-efficacy of doctors' psychological capital is at the highest level, with an average of 4.8714, followed by hope, with an average of 4.6662, both of which are higher than the overall level of psychological capital, while resilience and optimism are lower than the overall level of psychological capital, so that they are the key dimensions to improve in doctors' psychological capital. Then, collecting information and ending consultation are lower than the overall level of doctor-patient communication ability, with averages of 0.9645 and 0.9581 respectively, which shows that there are still some deficiencies in doctor-patient communication in the early collection of information and late feedback. In addition, the standard deviations of doctors' psychological capital, doctor-patient communication and doctor-patient relationship are small, and there is no outlier, which can be used for later empirical analysis. (Answer to the first question: what is the level of psychological capital of

doctors?)

Table 4.3 Statistical results of the doctors' psychological capital, doctor-patient communication, and doctor-patient relationship

Scale	Code	Entry	N	Mean	SD
Psychological capital	PsyCap	24	346	4.579	0.689
Self-efficacy	PsyCap_E	6	346	4.871	0.739
Hope	PsyCap_H	6	346	4.666	0.852
Resilience	PsyCap_R	6	346	4.431	0.743
Optimism	PsyCap_O	6	346	4.346	0.738
Doctor-patient communication	DPC	25	346	0.969	0.084
Preparation	DPC I	5	346	0.970	0.108
Collecting information	DPC II	10	346	0.965	0.096
Giving information	DPC III	4	346	0.975	0.105
Understanding patients	DPC IV	4	346	0.980	0.093
Ending consultation	DPC V	2	346	0.958	0.158
Doctor-patient relationship	DPR	8	346	3.158	0.804

4.2.2 Description of psychological capital score

A six-point Likert-type scale was used to measure psychological capital. As shown in Figure 4.1, the item with highest score (5.08) is “I believe I can state information to a group of colleagues” while the item “When I encounter setbacks at work, it is difficult for me to recover and move on” has the lowest score (3.08). The descriptive analysis describes the overall situation of the statistics by mean values, and from Figure 4.1 it can be seen that the standard deviation of the indicators is not significant, indicating that there are no outliers in the current data. The specific data list is shown in Annex B, Table b.10.

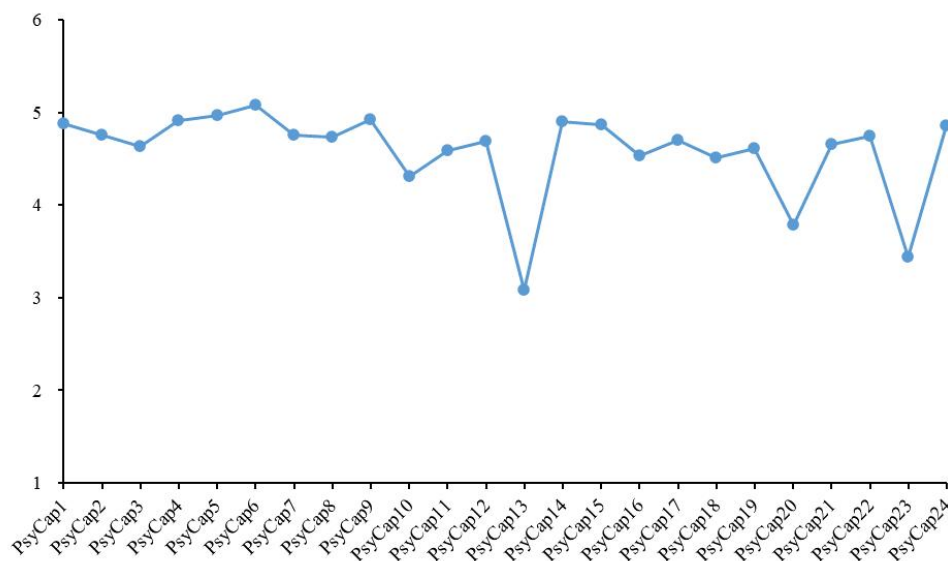


Figure 4.1 Mean value of doctors' psychological capital items

4.2.3 Description of scores on doctor-patient communication ability evaluation

The items of the doctor-patient communication scale are measured as 1-yes/0-no. As shown in Figure 4.2, there are several items with mean score of 0.99 (e.g., “Address the patients politely” and “Explain the reasons for the consultation”). The item with lowest score (0.90) is “Gain the patients' trust in you (e.g., introducing yourself properly and discussing topics other than current diseases)”. The specific data list is shown in Annex B, Table b.11.

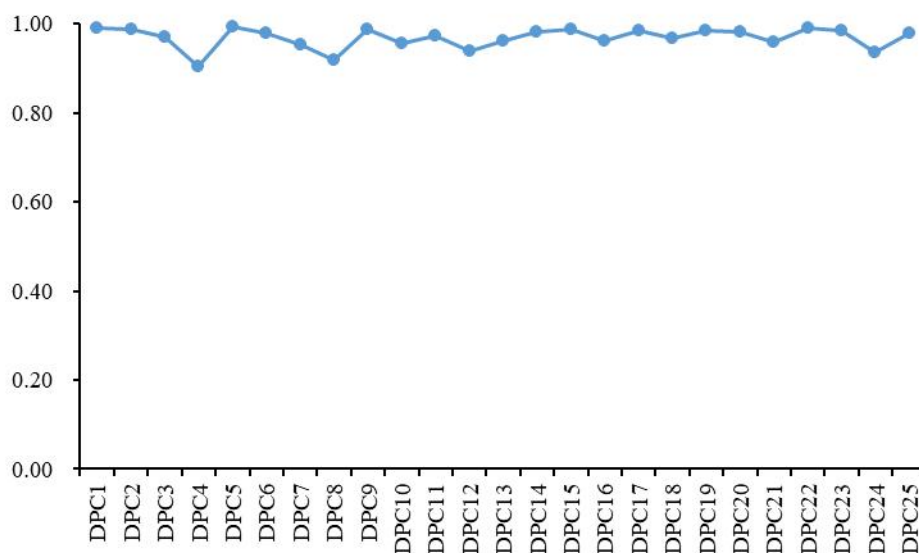


Figure 4.2 Mean value of doctor-patient communication ability items (scale)

4.2.4 Description of scores on the scale of doctor-patient relationship

A six-point Likert-type scale was used to measure doctor-patient relationship. As shown in Figure 4.3, the item “After seeing the patients today, you look forward to the next meeting with them” has the highest score (4.30) while “You find it a waste of time to take care of your patients” has the lowest score (2.13). The specific data list is shown in Annex B, Table b.12.

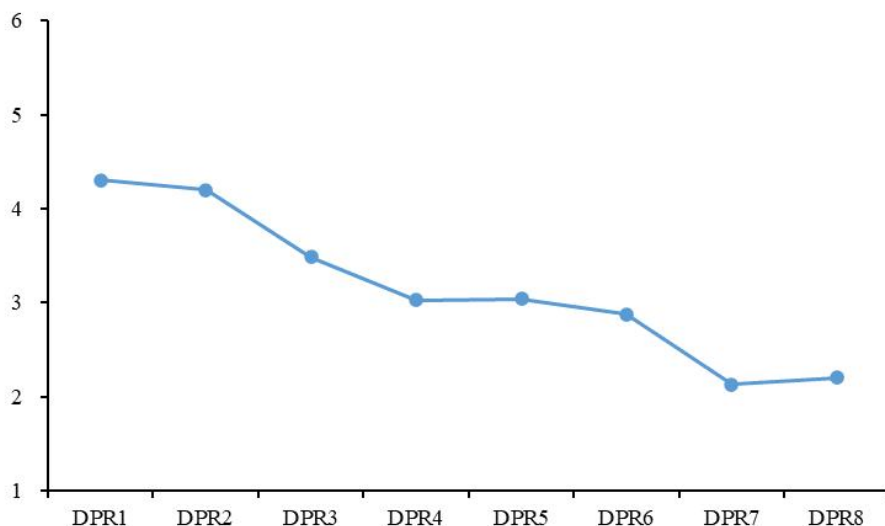


Figure 4.3 Mean value of doctor-patient relationship items

4.3 Reliability analysis

4.3.1 Reliability analysis of psychological capital scale

The reliability test has been conducted. According to the results, the Cronbach's α of the dimension between psychological capital and self-efficiency was 0.885. The Cronbach's α of the dimension between psychological capital and hope was 0.919. The Cronbach's α of the dimension between psychological capital and resilience was 0.794. The Cronbach's α of the dimension between psychological capital and optimism was 0.728. The results have indicated that the scale has high reliability in general. Table 4.4 shows the confirmatory factor analysis result of the psychological capital scale, in which a total of four factors corresponding to the combined CR values are greater than 0.7. The specific data are shown in Table 4.4.

Table 4.4 Results of confirmatory factor analysis of the psychological capital scale

Factor	Measurement item	<i>p-value</i>	Standard load factor	Deleted α coefficient	Cronbach's α coefficient
Psychological capital-self-efficacy	PsyCap1	-	0.777	0.862	0.885
	PsyCap2	0.000	0.827	0.854	

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	PsyCap3	0.000	0.732	0.874	
	PsyCap4	0.000	0.828	0.855	
	PsyCap5	0.000	0.663	0.875	
	PsyCap6	0.000	0.707	0.871	
	PsyCap7	-	0.815	0.904	
	PsyCap8	0.000	0.799	0.906	
Psychological capital-hope	PsyCap9	0.000	0.717	0.917	0.919
	PsyCap10	0.000	0.822	0.903	
	PsyCap11	0.000	0.89	0.892	
	PsyCap12	0.000	0.831	0.902	
	PsyCap13	-	0.064	0.909	
	PsyCap14	0.247	0.844	0.736	
Psychological capital-resilience	PsyCap15	0.247	0.837	0.734	0.794
	PsyCap16	0.247	0.824	0.728	
	PsyCap17	0.247	0.835	0.719	
	PsyCap18	0.247	0.798	0.717	
	PsyCap19	-	0.673	0.655	
	PsyCap20	0.074	0.1	0.752	
Psychological capital-optimism	PsyCap21	0.000	0.831	0.655	0.728
	PsyCap22	0.000	0.888	0.657	
	PsyCap23	0.080	0.098	0.757	
	PsyCap24	0.000	0.857	0.662	

4.3.2 Reliability analysis of the doctor-patient communication scale

Through the reliability testing, we found that the Cronbach's alpha coefficient for the dimension between the doctor-patient communication and preparatory work was 0.817; the Cronbach's alpha coefficient for the dimension between the doctor-patient communication and information gathering was 0.818; the Cronbach's alpha coefficient for the dimension between the doctor-patient communication and information giving was 0.817; the Cronbach's alpha coefficient for the dimension between the doctor-patient communication and understanding the patients was 0.815; and the Cronbach's alpha coefficient for the dimension between the doctor-patient communication and ending the consultation dimension was 0.817. This indicates the overall high reliability of the scale. Table 4.5 shows the results of the Cronbach's alpha coefficient for the doctor-patient communication scale. The specific data are presented in Table 4.5.

Table 4.5 Results of confirmatory factor analysis for the doctor-patient communication scale

Factor (Latent Variable)	Measurement Item (Explicit Variable)	<i>p</i>	Standard Load Factor	Chronbach's α if item deleted	Cronbach α Coefficient
Doctor-patient communication and preparatory work	DPC1	-	0.564	0.818	0.817
	DPC2	0.000	0.383	0.819	
	DPC3	0	0.597	0.815	
	DPC4	0	0.402	0.813	
	DPC5	0	0.534	0.818	

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Doctor-patient communication and information gathering	DPC6	-	0.384	0.818	0.818
	DPC7	0	0.276	0.818	
	DPC8	0	0.338	0.817	
	DPC9	0	0.459	0.814	
	DPC10	0	0.417	0.813	
	DPC11	0	0.491	0.826	
	DPC12	0.001	0.209	0.815	
	DPC13	0	0.459	0.818	
Doctor-patient communication ability and information giving	DPC14	0	0.341	0.819	0.817
	DPC15	0	0.326	0.82	
	DPC16	-	0.465	0.814	
	DPC17	0	0.427	0.818	
	DPC18	0	0.368	0.815	
	DPC19	0	0.318	0.819	
Doctor-patient communication ability and understanding the patient	DPC20	-	0.486	0.815	0.815
	DPC21	0	0.388	0.814	
	DPC22	0	0.502	0.812	
	DPC23	0	0.281	0.82	
Doctor-patient communication ability and ending the consultation	DPC24	-	0.506	0.816	0.817
	DPC25	0	0.562	0.818	

4.3.3 Reliability analysis of the doctor-patient relationship scale

A reliability test was conducted for the doctor-patient relationship scale and the Cronbach's alpha coefficient for the dimension of the doctor-patient relationship was 0.783, indicating the overall high reliability of the scale. Table 4.6 shows the results of the Cronbach's alpha coefficient for the doctor-patient relationship scale.

Table 4.6 Results of the confirmatory factor analysis of the doctor-patient relationship scale

Factor (Latent Variable)	Measurement Item (Explicit Variable)	<i>p-value</i>	Standard Load Factor	Chronbach's α if item deleted	Cronbach α Coefficient
Doctor-patient Relationship	DPR1	-	0.067	0.83	0.783
	DPR2	0.255	-0.452	0.758	
	DPR3	0.254	-0.526	0.752	
	DPR4	0.252	-0.783	0.727	
	DPR5	0.253	-0.56	0.746	
	DPR6	0.252	-0.735	0.742	
	DPR7	0.252	-0.713	0.747	
	DPR8	0.252	-0.717	0.749	

4.4 Model estimation

Based on the purpose of this study, a research model among psychological capital, doctor-patient communication and doctor-patient relationship (in Figure 3.1) was constructed. In order to test H2 (How does doctors' psychological capital affect doctor-patient communication?) and H3 (How does the level of psychological capital of doctor-patient communication affect doctor-patient relationship?) presented in section 3.1, structural equation modeling was constructed to obtain estimation results through a standardized scheme.

The structural equation model was fitted through the AMOS 26.0 software developed by IBM. The test level is $\alpha=0.05$. According to previous studies, if measurement models follow the t-law ($df \geq 0$), they can be identified. In this study, the factor approach is fixed at 1, and the residuals of "Psychological Capital" are fixed at 0. The model adopted is the Maximum Likelihood (ML) method. The structural equation model is fitted with the factor loadings and path coefficients, and the indicators of the initial model fit show that the model closely matches the study data with $GFI > 0.95$, $CFI > 0.95$, $TLI > 0.95$, and $RMSEA < 0.05$. The optimal model is obtained by continuously adjusting the model and fitting it again until all path coefficients are statistically significant. The indicators of the model suggest a good model fit with $GFI=1.000$, $CFI=1.013$, $TLI=1.054$, and $RMSEA=0.000$. The model estimation results are shown in Figure 4.4.

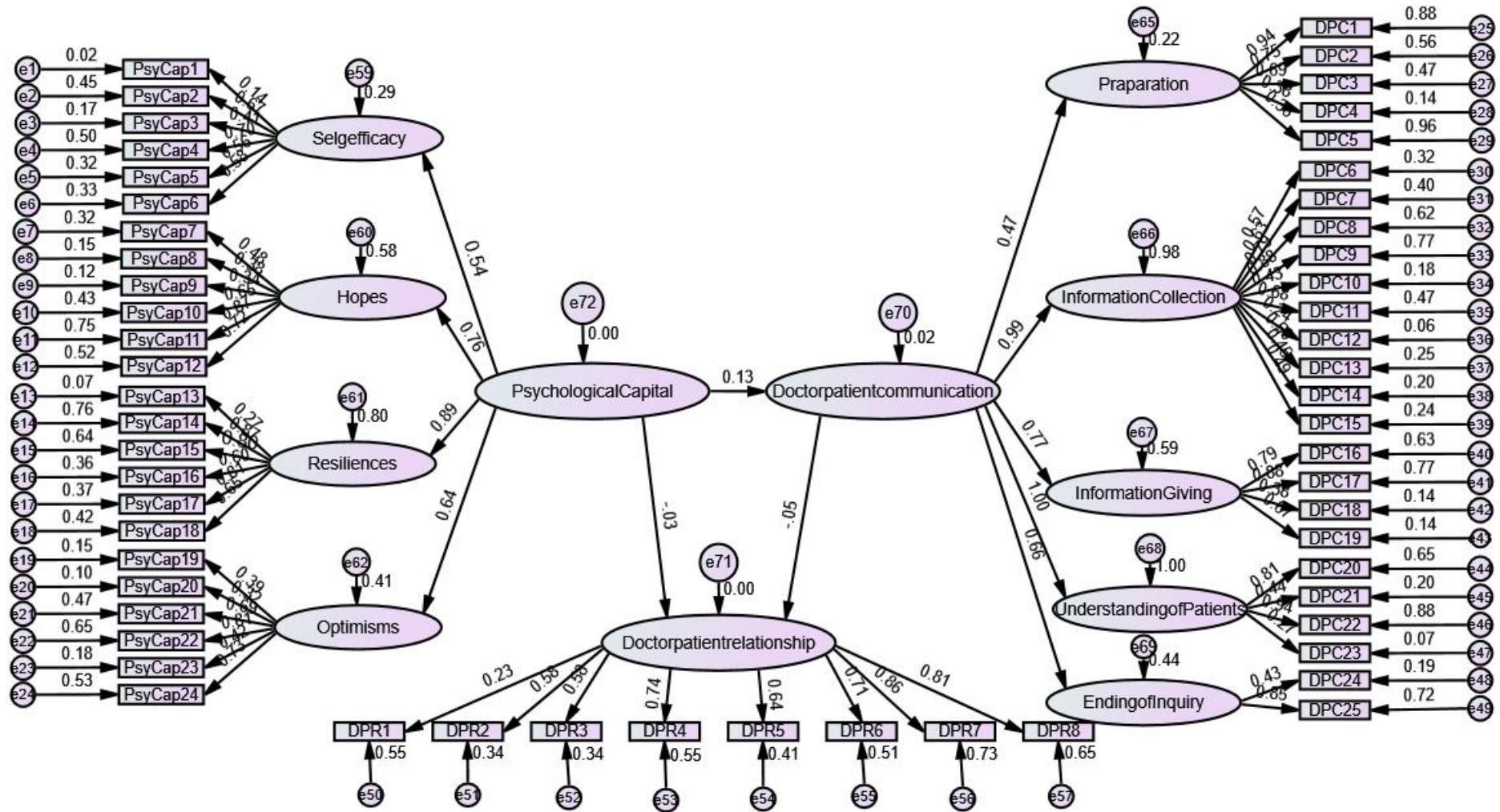


Figure 4.4 Path diagram for the structural equation modeling

Note: the squares represent the observed variables and the ovals represent the potential latent variables.

In Figure 4.4, the squares represent Observed Variables, and the ovals represent Latent Variables; the two variables connected by one-way straight arrows indicate the assumption of a causal relationship, with the arrows pointing from the causal variable to the outcome variable. The parameters on the one-way straight arrows indicate the path coefficients of the influence level between latent variables or the factor loadings of latent variables on their observed variables. Among latent variables, psychological capital is an exogenous variable corresponding to four secondary latent variables, namely, self-efficacy, hope, resilience, and optimism, which correspond to four observed exogenous variables, including PsyCap1-PsyCap6, PsyCap7-PsyCap12, PsyCap12-PsyCap18, and PsyCap19-PsyCap24. e_1 - e_{24} are the error terms of these 24 observed exogenous variables, and e_{59} - e_{62} are the error terms of the secondary latent variables. The aforementioned variables constitute the measurement model of psychological capital. The doctor-patient relationship is a latent endogenous variable, and the error terms of the 8 observed endogenous variables, namely, DPR1-DPR8, are e_{50} - e_{57} , which constitute the measurement model of the doctor-patient relationship. The Doctor--patient communication ability is a latent mediating variable, which corresponds to 5 secondary latent variables, i.e., preparation stage, information collection, information giving, understanding the patient, and ending the consultation. The 5 secondary latent variables correspond to 5 observed exogenous variables, including DPC1-DPC5, DPC6-DPC15, DPC16-DPC19, DPC20-DPC23, and DPC24-DPC25. The error terms of secondary latent variables consist of e_{65} - e_{69} , and e_{25} - e_{49} , which are the error terms of 25 observed exogenous variables. The aforementioned 5 observed exogenous variables and the error terms of 25 observed exogenous variables constitute the measurement model of doctor-patient communication ability. Thus the structural model contains psychological capital, doctor-patient communication ability, and doctor-patient relationship, while e_{70} - e_{72} are the error terms of the structural model.

The measurement model in the Figure 4.4 shows that the factor loadings of psychological capital on the four secondary variables of self-efficacy, hope, resilience, and optimism are 0.54, 0.76, 0.89, and 0.64, respectively, indicating that resilience has the greatest weight in measuring psychological capital. In addition, in the measurement model of self-efficacy, the factor loadings of self-efficacy on PsyCap1 are 0.14, on PsyCap2 are 0.67, on PsyCap3 are 0.41, on PsyCap4 are 0.70, on PsyCap5 are 0.56, and on PsyCap6 are 0.58. In the measurement model of hope, there are factor loadings of 0.48 for PsyCap7, 0.38 for PsyCap8, 0.34 for PsyCap9, 0.65 for PsyCap10, 0.87 for PsyCap11, and 0.72 for PsyCap12. In the measurement model of resilience, the factor loadings of resilience on PsyCap13 are 0.27, on

PsyCap14 are 0.87, on PsyCap15 are 0.80, on PsyCap16 are 0.60, on PsyCap17 are 0.81, and on PsyCap18 are 0.65. In the measurement model of optimism, optimism has factor loadings of 0.39 on PsyCap19, 0.32 on PsyCap20, 0.69 on PsyCap21, 0.81 on PsyCap22, 0.42 on PsyCap23, and 0.73 on PsyCap24.

The factor loadings of doctor-patient communication on the five secondary variables, namely, preparation stage, information collection, information giving, understanding the patient, and ending the consultation, are 0.47, 0.99, 0.77, 1.00, and 0.66, respectively, indicating that the weights of information collection and understanding the patient are relatively high in measuring psychological capital. In addition, in the measurement model of the preparation stage, the factor loadings of preparation stage on DPC1 are 0.94, on DPC2 are 0.75, on DPC3 are 0.69, on DPC4 are 0.38, and on DPC5 are 0.36. In the measurement model of information collection, the factor loadings of information collection on DPC6 are 0.57, 0.63 for DPC7, 0.79 for DPC8, 0.86 for DPC9, 0.43 for DPC10, 0.68 for DPC11, 0.24 for DPC12, 0.50 for DPC13, 0.45 for DPC14, and 0.49 for DPC15. In the measurement model of information giving, the factor loadings of information giving on DPC16 are 0.79, on DPC17 are 0.88, on DPC18 are 0.38, and on DPC19 are 0.67. In the measurement model of understanding patient, the factor loadings for understanding the patient are 0.81 for DPC20, 0.44 for DPC21, 0.94 for DPC22, and 0.27 for DPC23. In the measurement model of ending the consultation, the factor loadings of ending the consultation are 0.43 for DPC24, and 0.85 for DPC25.

In the measurement model of doctor-patient relationship, the path coefficients of doctor-patient relationship are 0.23 for DPR1, 0.58 for DPR2, 0.58 for DPR3, 0.74 for DPR4, 0.64 for DPR5, 0.71 for DPR6, 0.86 for DPR7, and 0.81 for DPR8.

As shown in the structural model in Figure 4.4, the three different path coefficient estimates of psychological capital on doctor-patient communication competence, doctor-patient relationship, and doctor-patient communication competence on doctor-patient relationship are statistically significant ($p < 0.001$). In the impact of doctor-patient communication competence on doctor-patient relationship, the standardized path coefficient value is $-0.028 < 0$, and the path shows a significance level of 0.01 ($z = -3.998$, ($p < 0.001$)), thus indicating that doctor-patient communication competence have a significant negative impact on doctor-patient relationship. The standardized path coefficient value for the effect of psychological capital on doctor-patient relationship is $-0.260 < 0$, and this path shows a significance level of 0.01 ($z = -3.356$, ($p < 0.001$)), thus indicating that psychological capital has a significant negative effect on doctor-patient relationship. In terms of the effect of

psychological capital on doctor-patient communication ability, the standardized path coefficient value is $0.127 > 0$, and this path shows a significance level of 0.01 ($z=2.234$, ($p < 0.001$)), thus indicating that psychological capital has a significant positive effect on doctor-patient communication ability. As we predicted in the hypothesis, we found that psychological capital influences the doctor-patient relationship and that doctor-patient communication competence plays a moderating role in the doctor-patient relationship. Above data list is shown in Annex B, Tables b.16 and b.17.

As can be seen in Table 4.7, the standardized path coefficient for the relation DPC and DPR is -0.047 ($p < 0.001$). This means that a significant effect exists of doctor-patient communication on the doctor-patient relationship. Specifically, a higher doctor-patient communication ability affects positively the doctor-patient relationship (we recall that DPR is reversed coded, i.e., lower scores means better doctor-patient relationship).

The standardized path coefficient value for the effect of psychological capital on the doctor-patient relationship was -0.028 ($p < 0.001$), indicating a significant and positive effect of psychological capital on the doctor-patient relationship, i.e., doctors with higher levels of psychological capital have a better. doctor-patient relationship. (we recall that DPR is reversed coded, i.e., lower scores means better doctor-patient relationship).

The standardized path coefficient value for the effect of psychological capital on doctor-patient communication ability was 0.127 ($p < 0.001$), suggesting that higher levels of psychological capital have a significant positive effect on doctor-patient communication ability.

Table 4.7 Estimates and test values for structural equation model paths

Relation		Non-standardized path coefficient	SE	z (CR Value)	p-value	Standardized path coefficient
PsyCap	→ DPR	-0.256	0.064	-3.998	0.000	-0.028
DPC	→ DPR	-0.260	0.078	-3.356	0.000	-0.047
PsyCap	→ DPC	0.120	0.396	2.209	0.001	0.127

Note: PsyCap - Psychological Capital; DPC - Doctor-patient Communication; DPR - Doctor-patient Relationship.

To sum up, the three different path coefficient estimates of psychological capital on doctor-patient communication ability, path coefficient of doctor-patient relationship, and path coefficient of doctor-patient communication ability on doctor-patient relationship were all statistically significant ($p < 0.001$). It can thus be concluded that research hypotheses are all supported.

As can be seen in Table 4.8, the direct effect of psychological capital on the doctor-patient relationship shows an effect size of -0.028 , the coefficient of the effect of

doctor-patient communication ability on the doctor-patient relationship is -0.047, and the coefficient of the effect of psychological capital on doctor-patient communication ability is 0.127; in the indirect effect table, the indirect effect of doctor-patient communication ability on the psychological capital and the doctor-patient relationship has a coefficient $a*b$ of -0.006. Finally, the total effect of psychological capital on the doctor-patient relationship (-0.034) is equal to the direct effect (-0.028) plus the indirect effect (-0.006), and the intermediary effect accounts for 17.65%. This indicates that doctor-patient communication ability plays a partially intermediary role in the influence of psychological capital on the doctor-patient relationship.

Table 4.8 Standardized direct and indirect effects of psychological capital and doctor-patient communication on the doctor-patient relationship

	c			a*b	c'		
	Total Effect	a	b	Intermediary Effect Size	Direct Effect Size	Test Conclusion	Percentage of Effect
Psychological Capital=>Doctor-patient Communication =>Doctor-patient Relationship	-0.034 **	0.127 *	-0.047 **	-0.006	-0.028 **	Partially Intermediary	17.65%

Note: a-the impact of psychological capital on doctor-patient communication; b-the impact of doctor-patient communication on the doctor-patient relationship

To sum up, the three hypotheses noted in this study are all satisfied, as detailed in Table 4.9.

Table 4.9 Results of hypothesis testing

Hypothesis	Content	Result
H1	The level of psychological capital of doctors has a positive impact on doctor-patient communication.	Supported
H2	Doctor-patient communication has a positive impact on doctor-patient relationship.	Supported
H3	The level of psychological capital of doctors has a positive impact on doctor-patient relationship.	Supported

Chapter 5: Discussion

This chapter discusses the research results, including: (1) the status quo of doctors' psychological capital; (2) the status quo of doctor-patient communication; (3) the status quo of doctor-patient relationship perceived by doctors; (4) the influence between doctors' psychological capital, doctor-patient communication and doctor-patient relationship; (5) research contributions; (6) research limitations and prospects.

In view of the diversification of the survey doctors, we have specially selected various levels and types of medical institutions, including general hospitals, specialized hospitals, grass-roots medical institutions, professional public health institutions, non-profit and for-profit institutions, covering representative medical institutions in Guangzhou. During the investigation, we communicated with the hospital administrator many times to clarify the importance of the study, the investigation method and the content, so as to ensure the participation and quality of the sample. We selected the respondents by random sampling, with a total of 346 doctors participating in the survey, including pediatrics, otorhinolaryngology, gynecology, orthopedics, respiratory medicine, emergency, psychiatry, urology, endocrinology, dermatology, breast surgery, neurology, neurosurgery, physical examination, digestive medicine, cardiovascular medicine, thoracic surgery, hematology, traditional Chinese medicine Clinicians in more than 20 specialties, including the Department of Oncology and other departments. These doctors come from different medical institutions and departments, which helps to increase diversity in the sample .

5.1 The status quo of doctors' psychological capital

In 2004, Luthans et al. (2003, 2004) proposed the concept of psychological capital within the framework of positive psychology and positive organizational behavior, defining psychological capital as “the positive psychological state manifested in the growth and development of an individual”, including four core elements of self-efficacy, optimism, resilience and hope. Self-efficacy refers to the confidence to be able to perform tasks, the ability to cope with challenges, and the will to succeed. Optimistic individuals attribute positive events and maintain a positive attitude towards the present and the future. Resilience is the ability to quickly recover from adversity, setbacks, and failures, and even to change and

grow. Hope is a kind of positive motivational state that helps achieve predetermined goals in various ways (Peng et al., 2013).

Good positive psychological capital is an important reflection of an individual's physical and mental health (Lai et al., 2015), and can affect the way individuals respond to environmental changes and events (Song & Chen, 2015). Individuals with a high level of psychological capital are able to see work in a positive light, respond to problems with optimism, and actively find ways to solve problems. They can recover from bad emotions and states in time, not be overwhelmed by setbacks, as well as actively devote themselves to work and life. Besides, they will be positive, optimistic and proactive in communicating and interacting with others with confidence thus resulting in better interpersonal relationship. On the contrary, individuals with low psychological capital are prone to complain and view their own situation pessimistically. When encountering problems, they will not take the initiative to seek solutions. It is difficult for them to recover from setbacks, which not only affects their personal life and work, but also causes a lack of communication with others and poor interpersonal relationships.

In this research, the psychological capital of doctors is at a high level, with an average value of 4.5786(mean=4.5786), which is consistent with the results of researches by He et al. (2021), Wu et al. (2021), Shen et al. (2021), and Li et al. (2021). The reason may be that the survey objects are mainly doctors in grade-A tertiary hospitals. These excellent doctors, who stand out from fierce competition, have relatively good psychological endurance and adaptability, so their psychological capital is at a higher level. However, these doctors tend to have high self-imposed demand, and are under high stress situations for a long time, which can accumulate and increase the psychological load. Therefore, their mental health deserves our attention.

The research results of Ju (2019) concluded that doctors' positive psychological capital is positively correlated with their communication ability. When doctors have high positive psychological capital, they will also have better communication ability.

The outbreak of COVID-19 is characterized by sudden, unpredictable, strong influence, wide harm and long duration. Since January 31, 2020, when the World Health Organization (WHO) declared it a public health event of international concern, the world has paid close attention to it. At the early stage of the epidemic, many medical personnel took the risk of being infected and invested in the prevention and treatment of the epidemic, bearing great pressure, so their mental health problems should not be ignored. With the aggravation of the COVID-19, the first level response to public health emergencies has been launched all over

the country, and designated hospitals for COVID-19 pneumonia have been identified. During this period, the common cold and fever were mixed with COVID-19, leading to panic and anxiety of different degrees among the people. Front-line doctors are facing increasing pressure, need to work for a long time, and bear high risk of infection. Therefore, they have different levels of psychological stress reactions (Pu et al., 2021).

Although the research object of this study is the overall group of doctors rather than the specific front-line group of COVID-19, in general, the research results are not affected by the special situation of COVID-19.

In the highly competitive social environment, doctors' high-intensity work environment will undoubtedly increase psychological pressure. If this state continues for a long time, it will not only have a negative impact on the physical and mental health of doctors, but also may limit the construction and development of hospitals and lay hidden dangers in the doctor-patient relationship. According to the research results of Zhang Yingying et al. (2022), psychological capital is negatively correlated with stress response. A high level of psychological capital can predict the response to low pressure. The higher the level of psychological capital of doctors, the stronger their ability to respond to pressure. In this study, we found that doctors have a high level of psychological capital, so they can effectively cope with pressure, and are not affected by the special situation of COVID-19.

According to the results of this thesis, in the segmentation dimension, the self-efficacy dimension in psychological capital has the highest level, followed by the hope dimension, with both higher than the overall level of psychological capital, while the resilience and optimism dimensions are lower than the overall level of psychological capital. This conclusion is consistent with Wang's (2020) survey results, in which the overall psychological capital of doctors is at an upper-middle level, the mean value of the self-efficacy dimension is the highest, the mean value of the resilience dimension is the lowest, and the four dimensions are ranked as self-efficacy, hope, optimism and resilience according to the score level. The results of Shen et al. (2019) also showed that doctors' psychological capital is at an upper-middle level, with the highest score in the self-efficacy dimension and the lowest score in the optimistic dimension. The results of Bian et al. (2016) showed that the overall level of psychological capital of doctors is at an upper-middle level, among which self-efficacy scores are high and optimism scores are low. The research results of Xu et al. (2014) showed that the psychological capital score level of doctors is at the middle and upper level, and that the overall level of psychological capital is good, which is consistent with the research results of Luo (2010) and Zhao (2012). The scores of each dimension vary, among which the

self-efficacy dimension scores the highest, the optimism dimension scores the lowest, and the development level of psychological capital is uneven. The results of Pu et al. (2018) showed that doctors' scores in self-efficacy and hope dimensions are higher than the average level of psychological capital, and that the scores of resilience and optimism are the lowest and lower than the average level of psychological capital. According to the survey results of Yu et al. (2015), the self-efficacy score of doctors is relatively high, which may be due to the fact that the survey subjects are clinical front-line doctors. Among them, young doctors with generally high education account for the majority. Young doctors are highly motivated, and have the confidence and willingness to make the necessary efforts to achieve success in the face of challenging work. The survey results of Gong et al. (2015) showed that the psychological capital of doctors is at an upper-middle level, but among all dimensions, the score of optimism is relatively low, which may be due to the fact that most of the respondents are relatively young, and their professional skills, psychological quality, emergency response ability and interpersonal coordination are not mature enough. The results of Zhou et al. (2018) showed that doctors' psychological capital is generally at a medium level, and in each dimension, the level of self-efficacy is the highest, the level of hope and optimism is second, and the level of resilience is the lowest. The survey results of Gao et al. (2020) showed that doctors' self-efficacy scores are the highest among the four dimensions, optimism scores the lowest among the four dimensions, and hope and resilience dimensions are in a medium position. The findings of He et al. (2020) showed that among the four dimensions of psychological capital, doctors have the highest level of self-efficacy and lower levels of resilience.

According to the results of a psychological capital survey conducted by Shen et al. (2021) among 208 emergency doctors in four grade-A tertiary hospitals in Shanghai from March to July 2020, the psychological capital of the surveyed doctors is at an upper-middle level, with good psychological capital and a tendency toward a psychological state. However, since the emergency department is characterized by fast-paced work, high labor intensity, heavy responsibility, and extreme mental stress, doctors are subject to some negative emotions in the process of diagnosis and treatment, resulting in a lower level of resilience and hope. Li et al. (2021) conducted a survey on 1,354 doctors in 2020, which showed that the psychological capital of doctors was at a medium level, and they were mainly optimistic. With the development of higher education, the educational level of doctors has been gradually improved, so that their self-regulation ability, and the level of psychological capital have been continuously enhanced.

5.2 Current status of doctor-patient communication ability

According to the research results, doctors have a high level of doctor-patient communication (mean = 0.9692) and their doctor-patient communication ability still need to be improved, which is relatively consistent with the results of the study conducted by Zhao et al. (2019) on the survey of the current level of doctor-patient communication skills of doctors in outpatient clinics. As the dimensions of the scale are analyzed, the low scores in the dimensions of collecting information and ending the consultation reflect the lack of attention and skills of doctors in these areas. The preparation stage, as the beginning of the consultation, determines the first impression of the patient. The effective implementation of the preparation stage is conducive to laying a solid foundation for the subsequent consultation. At present, most doctors go straight into the consultation process without adequate preparation. The information collection stage reflects whether the consultation process is meticulous and comprehensive, which plays a direct role in the judgment and the treatment effect of the disease. According to the data of this study, the existing problem in the information collection stage is that doctors focus only on the collection of the patient's etiology during the consultation and neglect the influence of their psychological factors on the disease. The information-giving and patient-understanding stages are the two most important dimensions of "patient-centeredness". The results show that most doctors do not give information back to patients in the first instance.

According to Wu's (2021) research results, most doctors have a low self-evaluation of doctor-patient communication skills of "discussing treatment plans with patients (family members)", and are weak in feedback communication with patients. Due to young doctors' shallow qualifications, lack of experience, and weak professional knowledge, it is easy for them to ignore patients' psychology and desire to participate in diagnosis and treatment. And lack of technical communication, such as discussing treatment plans, will eventually lead to poor doctor-patient communication. Li (2017) came to the following conclusions on the research on the current situation of doctor-patient communication ability: in the information collection stage, patients have no right to speak, and the content of doctor-patient communication is only carried out around "diseases"; in the process of information collection, doctors do not give patients the opportunity to speak, mostly using the method of questions and answers to collect patients' disease-related information, so patients cannot tell their views on diseases or health; at the end of the communication stage, doctors cannot explain the treatment plan, and it ends in a simple way, so patients have words that cannot be said and

they are very doubtful. The study of Cai et al. (2021) found that there are deficiencies in the communication between doctors and patients. In the process of information collection, because doctors pay more attention to the improvement of their clinical skills in the clinic, they only consider the needs of their own medical history collection when consulting or physical examination, and ignore the observation and research of patients' psychological factors to a certain extent. Yang et al. (2018) found that doctors only stop at the disease itself in information collection, and the impact of the disease on the patient's life involves less, so it can be said that doctors lack emotional care and psychological comfort for patients.

During doctor-patient face-to-face consultation, some patients do not explain their conditions in detail; neither do doctors go into details during inquiry. Doctors only provide a limited number of treatment options rather than various plans for patients and their families to choose from. Doctors do not inform much of the post-treatment consequences such as adverse effects and serious complications. However, there are no written records of the discussions, neither is the signature of the doctor, which leads to patients' lack of understanding or misunderstanding. This violates the rights of the patient and his family to know and to choose what suits them. Normally, they have a high expectation of treatment outcome. But once the treatment effect is less satisfactory, medical disputes will arise (J. Xu, 2020).

5.3 Status of doctor-patient relationship perceived by doctors

According to the data research results, the degree of doctor-patient relationship perceived by doctors is close to the medium level (mean=3.1582). This result shows that bad doctor-patient relationship does exist. After investigation, this study found that the degree of bad doctor-patient relationship generally perceived by doctors is at a moderate level, with an average of 3.1582, which indicates that bad doctor-patient relationship does exist, and the harmonious performance of doctor-patient relationship during the COVID-19 epidemic did not affect the investigation results. In the past, some false reports in the media exaggerated the extent of the unhealthy doctor-patient relationship. Therefore, the government, social subjects and medical institutions should put the construction of harmonious doctor-patient relationship in a strategic position and actively create a better environment.

Harmonious doctor-patient relationship is an internal requirement of a harmonious society and an external manifestation of the coordinated development of medical and health care, which also is a prerequisite for improving the treatment and the health of the people. At the Two Sessions (the National People's Congress and the Chinese People's Political Consultative

Conference) in 2014, “to build a harmonious doctor-patient relationship” was written into the Government Work Report for the first time (Gao & Li, 2014). On March 5, 2017, Premier Li Keqiang stated in the Government Work Report that it is important to protect and mobilize doctors’ motivation and build a harmonious doctor-patient relationship. Not only does the construction of a harmonious doctor-patient relationship have a significant role for both doctors and patients or the medical activities, but it also has a positive effect on the construction of a harmonious socialist society as a whole . It was proposed at the 19th National Congress of the Communist Party of China that socialism with Chinese characteristics has entered a new era. The principal contradiction facing Chinese society is that between unbalanced and inadequate development and the people’s ever-growing needs for a better life. People are no longer satisfied with the solution of “problems concerning inaccessible and expensive medical resources”, but are more concerned about the service experience, medical effect and results during the medical services. People have endless demand for health services. Because of the large population in China, the current medical service is difficult to meet people’s needs. Thus, conflicts tend to arise between doctors and patients (Ling et al., 2018).

Szasz and Hollender (1956) define three basic models of doctor-patient relationship: active and passive, directed cooperation, and mutual involvement. The doctor-patient relationship has been defined as “a consensual relationship in which the patient knowingly seeks the doctor's assistance and in which the doctor knowingly accepts the person as a patient” (Chipidza et al., 2015). At its core, the doctor-patient relationship represents a fiduciary relationship in which, by entering into the relationship, the doctor agrees to respect the patient’s autonomy, maintain confidentiality, explain treatment options, obtain informed consent, provide the highest standard of care, and commit not to abandon the patient without giving him or her adequate time to find a new doctor. However, such a contractual definition fails to portray the immense and profound nature of the doctor-patient relationship. The doctor-patient relationship is an essential part of the quality of the doctor’s consultation, which can change the health outcome of patients. Doctors must be aware of when this relationship is challenged or fails. If this happens, doctors should recognize the cause of the relationship breakdown timely and implement plans to improve medical care (Chipidza et al., 2015).

After the outbreak of the COVID-19 in 2020, the doctor-patient relationship was very harmonious. For example, in the shelter hospital, doctors and patients encouraged each other, and doctors became heroes. Some people believe that the epidemic provides an opportunity

for reconciliation, and the doctor-patient relationship will become a community of shared destiny. Others believe that with the normalization and eventual disappearance of the epidemic, the doctor-patient relationship will return to the original tense and contradictory state, or even worse. Although the epidemic provides an opportunity to reconcile the doctor-patient relationship, the "SARS" epidemic in history is also sufficient to prove that although the doctor-patient relationship can maintain harmony during the epidemic, in the decade after the epidemic, the doctor-patient relationship has become the focus of social attention and contradiction (Xiang et al., 2022).

5.4 The impact of doctors' psychological capital on doctor-patient communication and doctor-patient relationship

According to the data in this research, as shown in the structural model in Figure 4.1, the three different path coefficient estimates of psychological capital on doctor-patient communication competence, doctor-patient relationship, and doctor-patient communication competence on doctor-patient relationship are statistically significant ($p < 0.001$). In the impact of doctor-patient communication competence on doctor-patient relationship, the standardized path coefficient value is $-0.047 < 0$, and the path shows a significance level of 0.01 ($z = -3.356$, ($p < 0.001$)), thus indicating that doctor-patient communication competence have a significant negative impact on doctor-patient relationship. The standardized path coefficient value for the effect of psychological capital on doctor-patient relationship is $-0.028 < 0$, and this path shows a significance level of 0.01 ($z = -3.998$, ($p < 0.001$)), thus indicating that psychological capital has a significant negative effect on doctor-patient relationship. In terms of the effect of psychological capital on doctor-patient communication ability, the standardized path coefficient value is $0.127 > 0$, and this path shows a significance level of 0.01 ($z = 2.209$, ($p < 0.001$)), thus indicating that psychological capital has a significant positive effect on doctor-patient communication ability. As we predicted in the hypothesis, we found that psychological capital influences the doctor-patient relationship and that doctor-patient communication competence plays a moderating role in the doctor-patient relationship.

There is a two-by-two significant correlation between psychological capital, doctor-patient communication and doctor-patient relationship. The higher the psychological capital of doctors, the better the doctor-patient communication. The lower the score of doctor-patient relationship, the better the perceived doctor-patient relationship. Psychological capital plays a positive role in doctor-patient communication and doctor-patient relationship.

Therefore, psychological capital, as a positive resource of individuals, enables doctors to actively mobilize their positive resources to cope with the changing work environment, thus promoting doctor-patient communication and doctor-patient relationship.

Mao (2012) finds that self-efficacy in psychological capital is positively correlated with interpersonal relationships among college students, which has a good predictive effect on interpersonal relationships. Lu (2013) finds that psychological capital and its dimensions are positively correlated with interpersonal communication ability in a survey of 294 college students, and the regression analysis shows that psychological capital a clear boost to interpersonal communication ability.

5.4.1 Doctors' psychological capital level and doctor-patient communication

According to the data in this research, the analysis indicates that the standardized path coefficient value for the effect of psychological capital on the doctor-patient communication was $0.127(p < 0.001)$, the level of psychological capital of doctors is positively correlated with doctor-patient communication, and psychological capital positively predicts positively the doctor-patient communication. Doctors with higher level of psychological capital have better doctor-patient communication. The optimistic dimension of positive psychological capital is highly correlated with the basic verbal communication ability, which indicates that most optimists have strong verbal communication ability.

Positive psychological capital is an important manifestation of an individual's physical and mental health, which can influence the way an individual responds to environmental changes and events. To strengthen the construction of doctors' psychological capital can help improve doctor-patient communication (Ju, 2019). With the transformation of the medical model, medical care has gradually shifted to meeting the physical, psychological, social and cultural needs of patients. As an important group of people providing medical services to patients, the doctor-patient communication ability not only helps to maintain a good doctor-patient relationship, but also plays an important role in the process of treatment and rehabilitation. Communication has become one of the indispensable elements of the ability of doctors. Effective doctor-patient communication helps to form a good doctor-patient relationship and the positive psychological capital is conducive to the communication ability of clinicians. According to a study by Ju (2019), the optimistic dimension of positive psychological capital is highly correlated with basic verbal communication ability, and most optimists have strong verbal communication ability. The research by Guo (2012) finds that there is a positive correlation between psychological capital and communication satisfaction.

By investing and developing psychological capital, enterprises can play a long-term role in enhancing employees' performance and their competitive advantage (Zhang, 2015). It can help improve doctors' communication ability by strengthening their positive mental health education, which has a positive impact on the development of doctor-patient communication. From improving doctors' positive psychological capital, hospital administrators can guide them to receive mental health education to enhance their positive psychological capital, which in turn influences their way of responding to events and further improves their communication ability (Ju, 2019).

Interpersonal self-efficacy has a positive correlation with nurse-patient communication skills. Especially in unfamiliar or embarrassing situations, people tend to be more hesitant, conservative and irrational, so that their communication will inevitably become self-centered and passive (Ying et al., 2019). Individuals with more interpersonal trust show positive attitudes and emotions toward the situations. Nurses of this kind are confident that they can communicate well with patients. Even in the face of communication barriers, they tend to adopt flexible approaches to understand patients' views and are confident to come up with solutions to the conflict. Interpersonal self-efficacy plays a mediating role between interpersonal trust and nurse-patient communication (Ying et al., 2019).

5.4.2 Influence of doctor-patient communication on doctor-patient relationship

According to the data in this research, the standardized path coefficient for the relation DPC and DPR is -0.047 ($p < 0.001$). The doctor-patient communication ability of doctors is negatively correlated with the doctor-patient relationship. The better the doctor-patient communication, the lower the doctor-patient relationship score and the better the perceived doctor-patient relationship. Doctor-patient communication is very important in the doctor-patient relationship. Doctor-patient communication is not only a prerequisite for doctors to complete treatment and ensure the quality of medical services, but also allows patients to fully and systematically understand the limitations and risks of medical technology. Therefore, good doctor-patient communication can be realized when treatment fails to achieve the expected results and thus doctor-patient disputes can be reduced. Doctor-patient communication is also conducive to relieving patients' psychological pressure and improving treatment effects. Strengthening doctor-patient communication helps bridge them closer to each other. Doctors are obliged to explain the treatment process to patients, and patients have the obligation to cooperate with doctors to complete the treatment. Good communication and cooperation can create a harmonious doctor-patient relationship as well as a good atmosphere

for treatment to improve the quality of medical services. Good communication is the basic condition to ensure that both doctors and patients can fulfill their obligations respectively, which is also an important way to bridge them closer together. It facilitates better diagnosis and treatment of patients' diseases to strengthen doctor-patient communication. Through communication with patients, doctors can grasp detailed information about patients' diseases, so as to make better diagnosis and treatment. It can effectively reduce improper medical practices by strengthening the doctor-patient communication. Some symptoms that patients regard as unimportant may be the breakthrough of disease diagnosis and treatment. Those special conditions are best known to patients. Without timely communication, doctors may not be able to check out some conditions, for example, the history of drug allergy. After communication for in-depth understanding of allergy history, improper medication can be effectively avoided. Strengthening doctor-patient communication is in line with the needs of medical development. Modern medical model is patient-centered with an equal doctor-patient relationship. Good two-way communication can make patients trust doctors, so that patients can better cooperate with treatment and obtain the best clinical results. At present, there are certain barriers to doctor-patient communication in China and the quality of medical services needs to be improved. Establishing a good doctor-patient relationship requires doctors to strengthen communication with patients and fully recognize the importance of doctor-patient communication in building a harmonious doctor-patient relationship (Li, 2020).

Effective doctor-patient communication is of positive significance for the harmonious doctor-patient relationship, which can facilitate the formation of consensus between doctors and patients, emotional resonance, psychological compatibility and benefit sharing. Xu et al. (2018) finds that strengthening doctor-patient communication is an effective way to establish a harmonious doctor-patient relationship. The study by Song (2018) shows that a harmonious doctor-patient relationship has a positive impact on hospitals, doctors, and patients, as well as being an important factor in maintaining social stability. It can eliminate unnecessary misunderstandings and ensure patient treatment compliance by cultivating communication skills, which has application value for both disease control rate and medical environment and deserves attention and promotion. The research by Ren et al. (2021) indicates that the implementation of a holistic doctor-patient communication approach can build a harmonious doctor-patient relationship and improve patients' satisfaction with doctors, perceptions of professional knowledge, which has high application value.

As people's cultural level is getting higher and higher, a single medical model can no longer meet the needs of patients. Patients not only value their clinical effects in the treatment,

but also take more factors into consideration, such as medical costs, prognosis results, and the level of care services. If conflicts arise between patients and doctors during this process, it is easy to cause medical disputes. Not only is it detrimental to the patient's own disease, but it also affects the reputation of the hospital. In doctor-patient communication, good communication can effectively reduce doctor-patient disputes. How to do well in doctor-patient communication is an issue that the medical field needs to value. In the course of doctor-patient communication, doctors and patients and their families differ in knowledge background, professional field, and medical knowledge, thus making doctors and patients and their families have different understanding and ideas in the process of communication. When doctors use professional terms that may seem straightforward to them, patients and their families might have difficulty in understanding these terms, thus misunderstanding the doctors. In this case, patients will unconsciously select information matching their own experience for preferential processing from the self-schema established by their personal experience during the process of communication, resulting in an attention bias. For example, patients with a good mindset will think that they get a mild disease and they can get clinical effects if they follow the doctor's advice; But patients with a poor mindset will be pessimistic and cannot accept expensive medical costs in the treatment of oral diseases. There is a greater possibility of doctor-patient conflicts if complications arise subsequently. In conclusion, comprehensive doctor-patient communication can alleviate the doctor-patient relationship in department of stomatology, which has a high application value to improve patient satisfaction and awareness (Ren et al., 2021).

In recent years, the number of doctor-patient disputes has been on a sharp rise, even escalating into medical disputes. According to the China Health Statistical Yearbook, the total number of doctor-patient disputes in China had reached 3,933 by the end of 2016; A survey by the Chinese Medical Doctor Association finds that the average number of medical disputes in domestic hospitals is as high as 27 times/year. The main reason can be attributed to the poor doctor-patient communication. Academician Zhong Nanshan has also pointed out that more than half of the doctor-patient disputes and medical incidents handled by the Chinese Medical Doctor Association are caused by the lack of doctor-patient communication. A statistical analysis of medical disputes that occurred in a tertiary grade A hospital in Guangzhou from 2014 to 2016 shows that nearly half of them are caused by human factors. The frequent occurrence of medical disputes in medical institutions can cause damage to patients and doctors themselves, which also has a negative impact on society. Efficient doctor-patient communication is an effective way to solve medical disputes and incidents, which also is an

inevitable result of medical development in the new era. It can be seen that doctor-patient communication is of great importance to improve doctor-patient relationship, promote patient recovery and reduce medical disputes. In the current medical environment with a tense doctor-patient relationship, it can help reduce doctor-patient disputes by enhancing doctor-patient communication (Zhu et al., 2021).

The research results of Qi (2021) show that doctor-patient communication helps to improve doctor-patient relationship. It is an important way to improve doctor-patient relationship by strengthening doctor-patient communication and carrying out regular and in-depth doctor-patient communication. Therefore, hospitals should strengthen the status of doctor-patient communication, provide favorable conditions for doctor-patient communication in all aspects, such as time, platform, personnel and facilities, so that frequent doctor-patient communication can be conducted. The communication ability and skills of doctors should be improved to guarantee the effect of doctor-patient communication. The doctor-patient relationship is a key issue in the current society. Poor doctor-patient communication is the key to the generation of doctor-patient disputes and the formation of good doctor-patient relationship. Good communication ability is very important in the medical treatment (G. Li, 2021).

In medical treatment, doctors should adhere to the principle of “patient-centered” communication. The study concludes that doctors’ emotional support and instrumental communication have a significant impact on patient satisfaction in communication. Especially, the emotional support from doctors has an evident impact on patient satisfaction. However, doctors often neglect to communicate with their patients. They prefer to regard it as their duty to give them the best technical care and neglect the importance of improving their communication skills to build a quick rapport with their patients. When the patient is seated, the doctor expresses his kindness and concern to the patient by raising his head, smiling, saying the patient’s name and other ways, so that the patient feels valued and respected and enhances his or her willingness to communicate. Second, doctors obtain the information about the disease and the patient’s psychological needs in an appropriate manner. Doctors collect relevant information about disease from patients by inquiry and observation and regard it as a basis for disease diagnosis. More importantly, doctors also need to assess the patient’s true thoughts and psychological needs through observation and patient information collection. Moreover, through verbal communication and non-verbal communication such as eye encouragement, smiling, physical contact, and slowing down speech, doctors show empathy and express understanding of the patient’s mood and behavior, so that the patient feels cared,

respected and recognized. Finally, patients are encouraged and supported to participate in treatment. In doctor-patient communication, doctors should not be in a dominant position by virtue of their authority, disease knowledge and information advantages. For example, the doctor controls and dominates the timing, content and rhythm of the talk, while the patient can only passively accept this process. On the contrary, doctors should support and encourage patients to participate in the diagnosis process. Doctors should respect the patient's diagnosis results and the opinions and suggestions given by the diagnosis and treatment plan, re-discuss with the patient in order to reach a consensus, and determine the diagnosis and treatment plan (Chen & Liang, 2021).

Doctor-patient communication is a scientific treatment method which can maximize patient satisfaction. It also combines the doctor's work experience and the patient's actual condition to develop a reasonable treatment plan. Doctor-patient communication reflects the modern medical concept, with the patient as the core, which lays a solid foundation for the establishment of a good doctor-patient relationship. According to the results of Wang's research, the satisfaction of patients in the observation group is 96%, which is higher than 84% in the control group, and the difference in the results is statistically significant ($p < 0.001$), which illustrates the effectiveness of the model (Zhou et al., 2019).

The research by Wang (2020) shows that a good doctor-patient relationship can be a good way to help patients relieve themselves from their bad mood and improve their cooperation with the treatment. Communication skills are the basis for forming a good doctor-patient relationship. Doctors can expect to establish a good doctor-patient relationship and thus reduce the incidence of doctor-patient disputes by taking the initiative to understand patients' disease and their physical recovery after treatment and helping them solve problems timely.

The factors that cause medical disputes to arise not only lie in the medical system, but also lie in doctors themselves. Studies have shown that many medical disputes arise from the negligence of doctors. As hospitals are more or less responsible for any medical disputes, the quality of medical services must be taken seriously. Medical services should be people-oriented. In this context, doctors ought to be strict with themselves, keep all kinds of rules, regulations and requirements in mind, constantly improve their professional quality, and be well-behaved, polite, and friendly. In recent years, the doctor-patient relationship has become increasingly tense, thus becoming the focus of society. About 80% of medical disputes result from information asymmetry, while some doctors lacking good skills in communication can easily lead to medical disputes. To build a harmonious doctor-patient relationship, it is necessary to strengthen doctor-patient communication, so as to reduce

medical disputes. Patients who receive medical treatment in hospital need to be respected and cared for. They are eager to be treated politely and kindly and receive professional medical services. Different family backgrounds, education levels, and economic statuses should be taken into consideration. As respect is the basis of doctor-patient communication, it is necessary to respect the rights of patients and treat each of them equally. For example, doctors should extend an enthusiastic attitude towards all patients from different professions in the same ward rather than treat them differently. A patient-oriented concept should be followed, so that patients feel respected. At the same time, in the process of doctor-patient communication, the medical staff should fully understand the patients' choices, respect their privacy, and free them from discomfort feeling. The basic ethics of clinical medicine includes informed consent, optimization, beneficence, and non-maleficence. Doctors should respect patients' right to know and inform them of medical risks. Despite their poor understanding of medical knowledge, most patients need to make decisions about medical treatment and have the right to choose, and doctors need to respect their personal choices. At present, the medical disputes in many medical institutions mainly stem from their failure to respect the patient's right to know or the absence of a contract which is replaced by only oral notification. The doctor should give a comprehensive explanation of the patient's condition, treatment, cost, and informed consent so that the patient can have a clear idea and make the right choice. In cases of risky surgery, medical staff need to actively communicate with patients, so that they can have an accurate understanding of the effect of surgical treatment and complications. It's worth noting that the effect of the operation should not be overstated, nor should patients be given insufficient explanation about the complications, which will lead to patients' complaints due to the surgical complications.

Research shows that by strengthening doctor-patient communication, patients' acceptance of clinical treatment can be improved, so as to reduce medical disputes (Liu, 2019).

The key to alleviating the increasingly worsening doctor-patient relationship in society is to adopt an effective way of doctor-patient communication, which is conducive to building a good doctor-patient relationship and promoting the transformation of the current medical diagnosis and treatment model from the "traditional biomedical" one to the "socio-psycho-biological" mixed one. Due to various factors, many medical colleges and universities in China have paid insufficient attention to doctor-patient communication education for a long time, and thus a considerable number of doctors have not paid enough attention to this field (Wu et al., 2019).

As two subjects in the process of diagnosis and treatment, doctors and patients will inevitably have various problems and disputes. With the development of society and the intervention of various factors in the medical process, the doctor-patient relationship has become more complex and sensitive. On the one hand, doctors instinctively protect themselves in order to avoid possible conflicts, so they will provide a rather conservative treatment regimen. On the other hand, patients highly distrust the treatment plan proposed by doctors and do not cooperate with them for normal medical care. The action of both parties would be detrimental to the development of diagnosis and treatment activities and further deepen the contradiction between them. A survey of doctor-patient conflict found that the proportion of problems caused by doctor-patient communication was much higher than that caused by mistakes at the technical level and diagnosis and treatment practices. Besides, many patients are not satisfied with the diagnosis and treatment process because of the lack of compassionate care and reasonable communication from their doctors. Therefore, effective communication is a skill that doctors must master in their medical work. According to Su's (2019) research, effective doctor-patient communication can significantly improve the doctor-patient relationship, and thus medical workers should master communication skills to reduce medical disputes and improve the doctor-patient relationship.

Communication can help increase trust and understanding between people and build good relationships. For hospital outpatients, such communication is an important factor in increasing patient trust and improving the doctor-patient relationship. In clinical work, doctors should talk with patients in different ways according to their education and understanding level of patients; be enthusiastic, and patient; actively care for patients, closely observe their condition, timely explain the situation to patients, and effectively communicate with them and their families; relieve their anxiety, and reduce disputes and contradictions. Doctors must always recognize the importance of doctor-patient communication skills, pay close attention to what they say and do, and integrate relevant skills into their communication with patients. In order to ensure the quality of doctor-patient communication, doctors must be patient-centered and always committed to promoting the physical and mental health of patients. According to the research, the implementation of good doctor-patient communication skills is effective in improving doctors' service attitudes and the quality of doctor-patient communication, raising the cognitive level of patients to disease knowledge, increasing patients' compliance, reducing medical disputes and the incidence of adverse events, and enhancing patient satisfaction (Zhang et al., 2019).

Taking patients as the center and developing good doctor-patient communication is a new service model and way of thinking formed by hospitals to adapt to the reform of the socialist market economy system. The frequent violence against medical staff in recent years shows that while people need a good medical environment, medical resources and in-service doctors are in short. This imbalance requires the reflection of both doctors and patients, and hospitals should unite with patients and their families to jointly build a participatory doctor-patient communication model. Starting with good doctor-patient communication, we should create a better medical environment for society (Wu et al., 2018).

The shared decision-making model emphasized informed consent and patient participation. It is an assisted process in which doctors and patients share clinical and empirical information to make the most appropriate clinical decision when considering decisions about treatment, screening, or prevention of health conditions. In this process, doctors fully respect the wishes and values of patients and their families and give them the right to make their own choices. Full communication between doctors and patients and understanding of each other's wishes can help increase the satisfaction of both sides and prevent medical disputes to a certain extent. Shared decision-making has very high requirements for doctor-patient communication, as it requires doctors to inform patients with straightforward language about their diseases, prognosis, treatment choices, and the consequences of treatment, and also needs patients to comprehensively consider their conditions (physiological, psychological, social, and other factors). This process also requires mutual trust of both sides and the empathy of doctors (Liu et al., 2021).

In China, doctors' lack of communication skills is still one of the important factors causing doctor-patient disputes. Many problems need to be improved. When patients share their feelings, doctors tend to lack patience and fail to listen and respond actively. Doctors are not in a good position to understand their patients before doctor-patient communication, and communication is not able to play its proper role. There is an information imbalance in the doctor-patient relationship. Doctors' bad manners easily bring negative emotions to patients and young doctors pay more attention to medical technology and communication instead of doctor-patient communication.

Effective doctor-patient communication is the premise of good patient care. In view of the existing problems in doctor-patient communication in China, the following measures are suggested by drawing on the skills and humanistic care shown in doctor-patient communication in foreign oncology departments: In the stage of diagnosis and notification, doctors should adopt clear diagnosis and notification methods and effectively improve their

informing skills with BBN training; in the pre-treatment stage, doctors should provide sufficient information to patients, use the shared decision-making model, and improve the participation of patients and their families in decision-making; in the treatment stage, the doctors should clearly identify the psychological needs of the patients, and identify and deal with their negative emotions through the three-stage conceptual model; in the post-treatment stage, doctors should actively respond to patients' information needs, choose appropriate communication media or design doctor-patient communication software to improve the effect of doctor-patient communication, and strengthen the communication with patients. All in all, emotional, psychological, and information needs account for the main needs of patients, and the lack of satisfaction of these needs is the main contradiction in doctor-patient communication. In clinical practice, doctors should analyze specific problems and take corresponding ways to improve the quality of doctor-patient communication, so as to promote the harmony of the doctor-patient relationship (Quan & Zhou, 2021).

The GLTC (goodwill-listening-communication-cooperation) model of doctor-patient communication can improve the quality of medical services and patients' medical experience. The model requires doctors to take humanistic care as the guidance, fully respect and show care for patients in the process of treatment and nursing in order to establish a harmonious and good doctor-patient relationship, and through the communication process, doctors give patients targeted psychological support, which helps improve patients' treatment confidence and improve the prognosis (Wang et al., 2021).

“To cure sometimes, to relieve often, to comfort always.” This is a constant reminder for doctors to hold humanistic care and pay attention to doctor-patient communication. Being good at doctor-patient communication is a basic skill for doctors, for it can ease the doctor-patient relationship and increase the trust between doctors and patients (Li et al., 2021).

Effective doctor-patient communication lays the foundation for the smooth development of a doctor-patient relationship, which is essential not only for correct medical diagnosis, but also to ensure adherence to treatment and patient satisfaction. Doctors all around the world face barriers when communicating in a patient's native language, which complicates the process and can sometimes be a precursor to hospital violence. For doctors, learning the native language of the region where they work can help facilitate doctor-patient communication, and meanwhile, they should actively listen to patients, which can help them narrow language gaps. Doctors must recognize the value of effective communication with

patients and invest time and effort in improving their verbal and non-verbal communication skills (Ranjan et al., 2020).

Studies have found that a focused, patient-centered, hybrid communication seminar improves doctors' communication skills and confidence, which in turn increases patients' satisfaction and reduces complaints related to miscommunication (Su et al., 2020).

According to the results of the survey, the doctor-patient communication skills of both general outpatient and specialist outpatient doctors need to be improved. SEGUE scale is helpful to understand the status of the doctor-patient communication skills of different outpatient doctors, so as to conduct targeted training as early as possible to improve their humanistic ability (Zheng, 2020).

History and foreign experience show that actively increasing empathy training can effectively improve the communication ability of medical students, and training medical talents with exquisite skills and sound personality will help realize a win-win situation between doctors and patients and even the harmony and stability of the whole society (Qu et al., 2020).

In clinical work, in addition to dealing with high-load clinical work, doctors also need to properly handle the increasingly tense doctor-patient relationship. Surveys show that 80% of doctors' main pressure in clinical work is due to the doctor-patient relationship. Considering that, good doctor-patient communication is of much importance in the process of diagnosis and treatment. For doctors working on the clinical front line, the requirements in this field are also gradually increasing. In addition to cultivating professional skills, non-professional skills such as doctor-patient communication skills also need to be strengthened. Through enhancing doctor-patient communication skills, on the one hand, unnecessary medical disputes can be avoided; on the other hand, doctors can also improve the sense of achievement and sense of belonging in clinical work, which helps them carry out clinical work well, develop themselves in the harmonious and stable environment, and also bring more comfortable and warm treatment experience for the patient. In this way, doctors and patients can create and enjoy mutual benefits (Gong et al., 2020).

At present, frequent medical disputes and severe doctor-patient contradictions have harmed the harmonious doctor-patient relationship. Although the reasons for the tension in the doctor-patient relationship vary, according to the empirical analysis, the lack of effective communication between the doctors and patients makes it difficult for doctors to treat patients from the perspective of medical humanistic care, which to a certain extent promotes frequent medical disputes. As medical students will be soon engaged in this sector, their

communication ability is directly related to the harmony of the doctor-patient relationship. Therefore, medical schools should strengthen communication ability education for them to improve doctor-patient communication ability. Besides, with the progress of medical diagnostic technology, patients should be informed of advanced diagnostic technology. Doctors fail to reasonably explain advanced diagnostic techniques to patients, which results in the one-sided view of many patients about the development of diagnostic techniques. Thus, patients tend to feel skeptical about it, which also affects the doctor-patient relationship. It is thus clear that the development of medical science and technology requires medical students not only to learn the latest medical skills but also to have strong communication skills, so as to make the doctor-patient relationship harmonious and orderly. In the 19th Communist Party of China National Congress, it was noted that to we should strengthen the general practitioner team, which means cultivating general practitioners is an important goal of modern medical education. Medical humanities concern is part of the general practitioners' comprehensive quality, which can be told by their communication skills. In addition, doctor-patient communication plays an important role in general practice education, and training a qualified general practitioner includes improving doctor-patient communication skills. In a word, enhancing effective doctor-patient communication will promote the harmonious relationship between the two sides, and will also help realize the goal of medical education, and promote the development of a harmonious society (Li & Wang, 2020).

In sum, the cultivation of doctor-patient communication ability still has a long way to go. Good doctor-patient communication ability includes not only a solid theoretical foundation, flexible communication skills, and timely emotional control, but also long-term experience. We should face up to the problems existing in doctor-patient communication at the present stage, analyze the reasons, solve the problems from many aspects, and provide a guarantee for building and maintaining a good doctor-patient relationship. Effective doctor-patient communication help alleviate the tense doctor-patient relationship, reduces medical disputes, promotes the realization of physio-psycho-social medical model of modern medicine to some extent, and alleviates the tense current situation of medical contradictions in the new era (Mao et al., 2020).

5.4.3 The doctor's psychological capital and the doctor-patient relationship

According to the data in this research, the standardized path coefficient value for the effect of psychological capital on the doctor-patient relationship was -0.028 ($p < 0.001$), The doctor's psychological capital has a positive impact on the doctor-patient relationship, and

psychological capital negatively predicts the doctor-patient relationship. The higher the doctor-patient relationship score, the worse the doctor-patient relationship perceived. A lower doctor's psychological capital and bad perception of the doctor-patient relationship will cause unstable psychological condition, thus further affecting the daily work. Therefore, the negative impact of psychological capital will be directly reflected in the daily work, which will have a negative impact on the doctor-patient relationship. Enhancing the doctor's psychological capital is conducive to building a harmonious doctor-patient relationship.

For employees, psychological capital will stimulate their creativity and innovation, enhance their autonomous motivation, and explore solutions. Employees with more psychological capital can actively influence others' opinions and establish good interpersonal relationships through positive interaction and contact with their colleagues. When solving problems, employees with psychological capital can relieve stress (Avey et al., 2009), and meet the ever-changing demands of work and better complete their work through their resources and abilities (Homayoun & Mona, 2019). It is worth noting that employees with a large amount of psychological capital are of high self-efficacy, are more likely to believe in interpersonal communication and gain the trust of the organization and colleagues, thus obtaining more social resources (Wu et al., 2013). Rich psychological capital enables employees to achieve their goals, establish social networks, communicate and interact with colleagues, and form a friendly relationship network (Thompson, 2005). The positive emotions of employees also affect their accumulation of social resources (Alexander et al., 2018); In the face of difficulties, they can remain optimistic and seek solutions to problems, so as to gain the recognition of the organization and colleagues, and form and increase their social capital (Luo et al., 2021).

In the context of private hospitals in Malaysia, a study by Haque et al. (2012) shows that the quality of medical services has a positive and direct impact on patient satisfaction. According to the investigation on psychological capital and interpersonal relationship (Lu, 2013; Mao, 2012; Xiao et al., 2013), there is a significant positive correlation between the overall psychological capital and its sub dimensions and interpersonal relationship, which has a significant predictive effect on interpersonal relationship and a significant promotion effect on interpersonal communication ability. The research by Yuan and others (2017) shows that the doctor's psychological capital is positively related to the doctor-patient relationship in a significant way, and psychological capital plays a positive role in promoting the doctor-patient relationship. Hospital managers attach great importance to improving doctor's psychological capital, which is conducive to establishing a trust relationship between doctors

and patients. The research of Yang et al. (2017) shows that 70.9% of doctors with high psychological capital choose harmony in the cognition of doctor-patient harmony, 79.1% choose doctors as those who play a leading role in shaping good doctor-patient relationship, 75.1% choose human relations in the positioning of doctors and patients, and 75.1% choose respect and care in the attitude of doctor, which are significantly higher than those with low psychological capital (50%, 54.3%, 54.3% and 52%). High psychological capital is helpful to train medical graduates in a normalized way and clarify their cognition of doctor-patient relationship. The research of Zhang (2018) shows that the higher the doctor's psychological capital, the better the doctor-patient relationship, and their psychological capital has a predictive effect on their doctor-patient relationship. According to the research by Zhang (2019), the doctor's psychological capital has a significant impact on the doctor-patient relationship, which can be promoted through the improvement of their psychological capital.. To sum up, there is a strong positive correlation between psychological capital and interpersonal relationship, and it has a significant predictive effect on interpersonal relationship and a significant promotion effect on interpersonal communication ability.

Chapter 6: Conclusions and Recommendations

6.1 Research conclusion

Through the research on the relationship among doctor's psychological capital, doctor-patient communication and doctor-patient relationship, we reach the following conclusions:

There is a strong correlation between doctor's psychological capital and doctor-patient communication and doctor-patient relationship, and psychological capital and its dimensions have a positive predictive effect on doctor-patient communication and a positive predictive effect on doctor-patient relationship.

Therefore, according to the mechanism of psychological capital, doctor-patient communication and doctor-patient relationship, the quality of doctor-patient communication can be improved on the basis of promoting doctor's psychological capital, thus optimizing the quality of doctor-patient relationship.

This study shows that psychological capital plays a significant role in promoting doctor-patient communication with positive psychological states, such as self-efficacy, hope, resilience and optimism. Meanwhile, psychological capital has long been regarded as the third largest capital alongside human capital and social capital, playing an irreplaceable role in the professional field. Therefore, it is necessary to strengthen the construction of doctor's psychological capital, build a communication platform for multi-level and multi-dimensional emotion, cognition and work to help doctor improve their psychological capital, encourage them to face patients with a more positive attitude, and promote effective doctor-patient communication, so as to improve the doctor-patient relationship.

The improvement of doctor's psychological capital plays an important role in promoting quality of doctor-patient communication and doctor-patient relationship. For personal development and organizational construction, the cultivation of their psychological capital should be valued. In hospital construction, it is necessary to create a people-oriented cultural atmosphere and integrate confidence, optimism, resilience and hope into the construction of hospital culture. As the performer of the medical and health industry at the grassroots level, the physical and mental health of the front-line doctors is particularly important.

6.2 Research contributions

The contributions based on the study are as follows:

At present, most studies in the literature focus on the psychological capital of enterprise employees and nurses, or the impact of doctor-patient communication of doctors on the doctor-patient relationship, and this study has made new contributions on this basis. This study explored how psychological capital affects the doctor-patient relationship through doctor-patient communication, and how to improve the communication ability and quality of doctor-patient relationship by adjusting the level of psychological capital of doctors. These findings provide new intervention ways for medical institution managers and doctors to improve doctor-patient communication and doctor-patient relationship, and help enhance doctors' work enthusiasm and vitality under high pressure working environment. In addition, we also put forward the direction and ways to actively adjust the psychological state to help doctors improve their professional well-being.

This study analyzes the psychological capital of 346 doctors, explores the strategies to improve the psychological capital, and makes positive contributions to the improvement of the psychological capital. Meanwhile, this study enriches the literature research on the influence of psychological capital on doctor-patient communication and doctor-patient relationship with the help of research models and certain sample size surveys.

It allows people of the same occupation to understand the correlation among doctor's psychological capital and doctor-patient communication and doctor-patient relationship, confirm that doctor's psychological capital has a significant impact on doctor-patient communication and doctor-patient relationship, and further understand the internal relationship among psychological capital, doctor-patient communication and doctor-patient relationship.

The structural equation model of psychological capital, doctor-patient communication and doctor-patient relationship is constructed; It is found that psychological capital has a positive impact on doctor-patient communication and doctor-patient relationship, while doctor-patient communication has a positive impact on doctor-patient relationship;

At present, there are few courses and training in the field of humanistic care and medical communication, and medical education has not paid enough attention to this aspect. This study has proved that doctor-patient communication has a significant impact on the doctor-patient relationship, which requires more attention of industry managers, and effective intervention in improving the humanistic care communication ability of doctors, so as to

optimize the quality of doctor-patient relationship by improving the doctor-patient communication ability.

For hospital managers, the above results provide insight into improving hospital management model and formulating health policy.

6.3 Limitations and prospects

(1) This study explores the impact of doctor's psychological capital on doctor-patient communication and doctor-patient relationship. It is only a cross-sectional study of the relationship between various factors, further in-depth research can be carried out in the future.

(2) Only 346 doctors in Guangzhou which cannot represent the situation of doctor in all regions of China.

(3) Against the backdrop of the COVID-19 pandemic, the research method we adopt in the study is mainly the questionnaire survey, which should be further combined with qualitative research and experimental research.

(4) This study uses structural equation modeling path to analyze the data. Generally, in a study, psychometric tests will be conducted twice to avoid the impact of individual psychological fluctuations on the research results. However, due to the impact of the COVID-19, this study was unable to conduct a second psychological measurement test, so there were some limitations.

6.4 Recommendations

Psychological capital refers to people's positive emotional state. For individual development and organizational construction, it is necessary to pay attention to the cultivation of doctor's psychological capital. In hospital culture construction, it is necessary to create a people-oriented cultural atmosphere and integrate confidence, optimism, resilience and hope into the construction of hospital culture.

Psychological capital refers to an individual's positive psychological state of development in the stage of growth and development, which is characterized by stability, persistence, exploit ability and measurability which has attracted many scholars at home and abroad to explore the intermediary effect and try to change the objective variable through intervention or developing psychological capital. In this research, based on the impact of doctors's psychological capital on doctor-patient communication and doctor-patient relationship, it is

concluded that there is a correlation between doctor's psychological capital and doctor-patient communication and doctor-patient relationship. By improving doctor's psychological capital, it affects effect of doctor-patient communication, thereby improving patient satisfaction and optimizing doctor-patient relationship (Liu, 2018).

Based on the conclusions of this study, the following suggestions are put forward for the training of doctors in the future:

(1) Strengthening the construction of doctor's psychological capital. Especially the guidance and training for the improvement of resilience and optimism.

(2) Strengthening the improvement of doctor-patient communication ability. Especially the training and improvement of efficient communication skills when listening to patients' demands and ending the consultation and feedback.

(3) Strengthening the construction of hospital organization and stimulating doctors' to work actively. Especially in how to more effectively stimulate the enthusiasm and initiative of doctors.

In conclusion, this study puts forward suggestions on improving doctor's psychological capital from the following aspects.

6.4.1 Strengthening the construction of doctor's psychological capital

Psychological capital plays an important role in promoting doctor's enthusiasm, accumulating psychological wealth and promoting the growth of organizational performance. With psychological capital as the focus, establishing a doctor-centered EAP (Employee Assistance Program) mechanism, taking effective measures to improve doctor's psychological capital and relieve professional pressure, and practically improving doctor's professional psychological status will help improve doctor-patient communication and promote the construction of harmonious relations.

In recent years, various enterprises have paid more and more attention to the development of psychological capital of enterprise employees. In 2007, China Mobile Communications Corporation took the lead in implementing the Employee Assistance Program (EAP) in its Guangdong company, aiming to solve the psychological and behavioral problems of employees in the enterprise, provide psychological counseling for employees with psychological problems, or relieve the pressure of employees with excessive pressure. Three years later, that is, in 2010, according to the actual psychological needs of employees, the company launched a new type of psychological capital appreciation (PCA) program for employees, and invited Fred Luthans, an international renowned positive psychologist, to

conduct in-depth exchanges with employees. The psychological capital appreciation program is a kind of help service mode for internal employees rising in recent years. It develops the psychological capital of employees by holding a series of psychological capital lectures, salons and publicity meeting, or conducting relevant training, so as to increase the value of their psychological capital. It contains rich and varied contents of psychological capital development, and spiral development of employees' psychological capital is carried out according to the four dimensions of psychological capital and combined with the ten elements. Employee psychological capital appreciation (PCA) can be seen as an extension of employee assistance program (EAP). EAP is more inclined to solve the existing psychological problems of employees, while PCA pays great attention to the self-development and potential development of each employee from the perspective of the long-term happiness, striving to make each employee happier, healthier and more efficient. In addition, PCA also pays attention to the organizational atmosphere of enterprises and teams, which has a positive effect on the improvement of organizational performance (Liu, 2018).

This new way of psychological capital development provides a new idea for the hospital to develop the doctor's psychological capital. The hospital can learn from the psychological capital appreciation program of enterprises and set up a series of activities for doctors, such as a series of training and salons for hospital staff, establishment of mental health files, and opening of personal counseling hotlines, to guide doctors to actively improve their psychological capital and accept self-development with an open and positive attitude, and to make them more active in their work (Liu, 2018). Multi-level psychological capital training is carried out in combination with the hospital culture, such as lectures, audio-visual technology, discussion and case study, role play, interactive groups, network training and self-study.

The improvement of doctor's psychological capital plays an important role in improving job satisfaction and reducing turnover intention. Psychological capital refers to people's positive emotional state. For individual development and organization construction, it is necessary to pay attention to the cultivation of doctor's psychological capital. Psychological capital directly affects job performance, and job burnout is the direct factor that leads to turnover intention. Psychological capital has a significant impact on job satisfaction, job burnout and harmony of doctor-patient relationship. It can be seen that psychological capital offers a new direction for optimizing the management of doctors. Developing psychological capital helps to improve the job satisfaction of doctors, the perceived harmony of doctor-patient relationship and job performance, and reduce job burnout and turnover intention. On this basis, relevant countermeasures and suggestions to develop the medical

team's psychological capital are put forward. Psychological capital can be developed through the intervention of highly-centralized, and short online training and be enhanced by ongoing organizational support. According to the results of the correlation analysis between doctors' psychological capital and job burnout by Wu et al. (2021), it is common for doctors to suffer from different degrees of job burnout, and attention should be paid to the psychological state of nursing staff. Doctors' psychological capital and job burnout should be given clinical attention, and there is an obvious correlation between the two. Active measures can be taken to reduce job burnout and improve psychological capital in combination with the actual situation of the department.

As an important part of the general individual's positive psychological elements, psychological capital conforms to the expression of positive psychological state of organization's positive behavior standard. Psychological capital has far exceeded human capital and social capital and can be used for scientific and targeted investment and development to effectively improve individual competitive advantage. Active training, positive energy given to doctors can effectively maintain and improve psychological capital. Intervened by different levels of training, the psychological capital scores of junior, intermediate and senior professional doctors, such as higher scores for self-efficacy, hope, resilience and optimism, so as to improve the quality of medical service. Therefore, in the face of the current new situation of medical service, combined with the psychological capital analysis of doctors with different professional titles, the hierarchical target psychological capital training is used to intervene to significantly improve the psychological capital score and the quality of medical service, which plays an important role in medical service management (Lv, 2019). Based on the results of this study, it also means that the psychological capital of doctors can strengthen the use of hierarchical target psychological capital training interventions, further improving the treatment effectiveness of doctors.

6.4.1.1 Improving doctor's self-efficacy

There are multiple ways to improve self-efficacy. The best way to enhance confidence is to experience success. To cultivate doctor's efficacy in a certain task, so that he or she can experience success again and again in the course of completing the task, which helps to enhance confidence and improve self-efficacy and the sense of success. The hospital should actively create opportunities for doctors to do what they are best at, enable them to experience success in the process, and create conditions for doctors to succeed through training and career planning. However, in the real situation, due to the environment, organization and other

reasons, there are few opportunities for every doctor to experience success. Whenever situation does not permit experiencing success, we can also learn selectively by imitating other's successful actions, observing their success and failure experiences. In addition, self-efficacy can also be improved through positive feedback and physiological adjustment and psychological states (Zhang, 2008).

First, establishing the relationship between personal work objectives and work significance. Second, designing the methods to achieve the goals by combining the personal ability and knowledge structure, refining the experience and skills needed to achieve the goals, and helping doctors better understand their own value, as well as the perception of experience and ability growth after completing the goals each time. This frequent successful experience can imply and strengthen doctor's self-confidence. When doctors have mastered the skills or abilities required to complete a certain job, they will gradually strengthen their sense of self-efficacy and increase their efforts and enthusiasm for work. Improve the corresponding training, so that the what they trained for can be applied in the work, and then make this successful experience applicable in more situations, so that doctors is in a better position to develop interest in more knowledge, skills and abilities, thus entering a beneficial circle system (Cai, 2019).

But in most cases, not every doctor gets enough opportunities to learn or experience. Alternative learning, role models and imitation are required to enhance self-efficacy. According to the normal distribution of demographics, it can be found that most employees have similar demographic characteristics, which is a good condition for alternative learning. When doctors find that other doctors who are similar to themselves (such as age, study or working experience) are successful in a certain job, they tend to show greater confidence to complete the job and achieve success. The more similarities they share, the stronger this self-confidence would be. Therefore, it is necessary to set an example among doctors with the same professional title or in the same period, and speak highly of and promote the example effect to encourage other doctors. Each of them will observe and imitate the cognitive logic and behavior of the role model, thereby enhancing their self-efficacy (Cai, 2019).

Build a sense of collective self-efficacy and actively encourage every doctor. In an organizational atmosphere full of high self-efficacy, we are in a better position to improve our self-efficacy. Doctors believe that "they can do it themselves", as the organization can do it, and they can do it as a member of the organization. Encourage doctors to express their opinions and give them positive feedback, so that doctors can find a sense of achievement and value (Cai, 2019).

The improvement of self-efficacy can enhance the individual's belief, comprehension and positive subjective feelings about the behavior activities to be completed. Self-efficacy exists not only in work but also in daily life. Therefore, doctors should be gathered to share their life, help them find their own value in life, and build self-confidence to deal with the difficulties in life. On the one hand, it is suggested that doctors should not only complete some work independently, but also encourage their cooperation and give a helping hand to their colleagues and friends. Friendship and good emotional experience can serve as an effective resource to increase individual self-confidence. It can be said that improving self-efficacy can create a good belief foundation for doctor's psychological capital (Cai, 2019).

6.4.1.2 Improving doctor's hope

According to its concept, hope is affected by goals, paths and motivations. Therefore, the hospital should help doctors set reasonable, challenging and clear personal goals, and make full use of these goals to enhance the motivation of doctors (Luthans et al., 2008). In addition, doctors should be allowed to develop multiple paths to achieve these goals, identify what obstacles they need to overcome, and formulate corresponding plans to overcome them. And the reward mechanism should be made use of effectively, incentive methods should be effectively adopted according to the talents and advantages of each person, so as to improve the psychological level of doctors through a series of measures (Zhang, 2008).

Vague corporate goals and personal goals are not sufficient to support individuals' high-level hope for the future. Clear and flexible goals help to develop individuals' hope thinking. Therefore, it is necessary to set reasonable performance assessment goals. The performance management in a hospital should be goal-oriented, and performance goals should be set according to the SMART principle. The assessment indicators should be specific, measurable and close to the actual situation of hospital staff. The organizational goals and personal goals should be distinguished or combined according to the actual situation. For example, when encountering long-term or difficult goals, doctors should be guided to actively divide the goals into stage goals which might be easier to achieve, so that they can feel a sense of achievement for different stages. Specific goal guidance and advance and management of difficulties can reduce the work pressure of doctors caused by emergencies. This is conducive to improving doctors' self-efficacy and optimism, and further improving the level of hope. Employees have a clear understanding and planning of goals, and can even overcome difficulties step by step (Liu, 2018).

More target rewards should be set, and each employee who effectively sets goal, makes

contributions, controls internally and regulates himself should be rewarded. This kind of reward can be diversified. For example, doctors who help to solve difficulties in the hospital, dare to bear greater pressure and actively innovate can be rewarded for their efforts, so that they can feel that every positive action will bring rewards and enhance their hopes for the future. In addition, sufficient organizational support should also be given when it comes to rewarding positive actions and small goals. Besides material support such as funds and resources, there are also non-material support, such as the commitment, encouragement and guidance of leaders, which will help improve the level of hope for doctors. For doctors who lack organizational support, the higher the level of hope, the stronger their negative perception will be. Therefore, managers who provide more organizational support are indispensable factors to improve doctors' sense of hope. Meanwhile, the selection criteria must be clear in the process of promoting doctors, and getting promoted should not come at the expense of workplace networks or office politics (Cai, 2019).

Optimized and rational job matching can also increase the level of hope for doctors. Doctors are more likely to show high performance, make progress at work in a relatively smooth way, and consume less psychological resources when working in an appropriate position. Interactive and experiential training will be provided to fully tap their potential, so that they can continue to experience success in suitable posts and become proactive. Doctors with high level of hope are characterized by internal control. In other words, they believe in their ability to get their own future under control. To enable doctors to maintain good perception, the hospital should thus help them to reinforce the firm belief of controlling the future (Cai, 2019).

6.4.1.3 Improving doctor's optimism

Optimism, a characteristic of both trait and state, is relatively stable and can be developed. The level of optimism for doctors can be developed and enhanced through changing the pessimistic explanatory style and promoting the optimistic explanatory style. Snyder (1994) listed three strategies for developing realistic optimism in the workplace: (1) Embracing the past. Encourage employees to adopt a problem-oriented coping style to deal with controllable factors in the workplace, and let them make favorable judgments and view uncontrollable factors in the situation from the best possible perspective. (2) Cherishing the present. However bad the situation may seem, encourage employees to see and enjoy the positive aspects in any situation. (3) Seeking opportunities for the future. Encourage employees to learn to cherish the present, focus on the future and seize all possible opportunities (Luthans

et al., 2008; Zhang, 2008).

Optimism serves as an explanatory style and an attributional style. Different people have different explanatory styles for the same event. Individuals with a pessimistic mindset will show a negative attitude even in the face of positive events. It is necessary to provide doctors with training in reflecting on the events and reconstructing their values. Self-reflection training can cultivate their ability to sort out events logically, analyze their own value and potential, and change the perspective of thinking. It can be divided into the following four steps:

Step 1: First, think about the most impressive positive events in the recent period, such as the achievement of the performance, the praise of the leaders, the cooperation among colleagues, and the good news in the family. Then, describe the subjective feelings of the whole event in detail, including the three stages of “before”, “during” and “after” the event, and evaluate the subjective feelings of these three stages. List what can be controlled by yourself, and figure out the methods to adopt if it is controllable; If not, find out the uncontrollable factors, and finally evaluate the impact of this event on yourself.

Step 2: First, think back on the most impressive negative events in the recent period, such as poor performance, criticism from leaders, conflicts among colleagues and quarrels with family members. Then, describe the impact of this negative event on yourself, and try to objectively evaluate your subjective feelings. Find out in detail the causes of this event, which are can be controlled by yourself, and figure out the methods to adopt if it is controllable; If not, find out the uncontrollable factors, and finally evaluate the impact of this event on yourself.

Step 3: First, list the controllable and uncontrollable factors in step 1 and step 2 to help yourself understand and recognize your habitual attributional style. Then, in the uncontrollable factors, analyze in detail whether other methods can be adopted for control or intervention. If possible, list the specific methods.

Step 4: Assume a longer-term goal and development, and try to shift the negative impact of negative events towards the positive direction. First, apply the method of transforming uncontrollable factors into controllable factors in reality according to Step 3. Second, view the current negative events with dialectical thinking, and try to find out the side of the negative events that can have a positive impact on the future. For example, small mistakes made at present can avoid bigger mistakes in the future; The conflicts among colleagues can become the basis for mutual understanding in the future; Family quarrels are caused by mutual concern among family members.

Repeat the above four steps to improve the level of optimism (Cai, 2019).

6.4.1.4 Improving doctor's resilience

Resilience is a dynamic, extensible and developable psychological ability. In 2022, Master and Reed proposed three strategies of developing workplace resilience (Luthans et al., 2008): (1) Focusing on resilience assets. Let every doctor be fully aware of his own personal assets, such as skills, experience and interpersonal relationships. (2) Strategy to focus on hazard factors. Hazard factors of resilience are obstacles that will be encountered during the process of realistic goals. Doctors should learn to avoid these hazard factors to ensure the smooth realization of goals. (3) Strategy to focus on process. Enable every doctor to realize his or her thoughts and feelings in the face of adversity, and take effective coping mechanisms to cultivate their resilience to face setbacks and solve difficulties (Zhang, 2008).

Resilience in psychological capital goes beyond the traditional definition of resilience. From the perspective of positive psychology, resilience not only refers to the ability to quickly return to a normal state under bad circumstances, but also includes the ability to quickly adapt to the environment and surpass oneself in extremely challenging events. It can be said that resilience in psychological capital is a very competitive psychological asset. The resilience level of doctors can be achieved from three aspects (Cai, 2019).

(1) Focusing on doctors' resilience assets

In the working environment, resilience assets include skills, knowledge, ability, interpersonal relationship, self-regulation ability and many factors such as self-efficacy, hope and optimism in psychological capital. The explicit skills, knowledge and abilities can be improved through traditional human resources training; Privacy such as personal relationships, self-regulation ability, self-efficacy, hope and optimism can be improved through interactive communication, trust building, positive feedback, cognitive remodeling, goal design and process experience (Cai, 2019).

(2) Focusing on the hazard factors of doctors' resilience

The hazard factors affecting doctors' resilience mainly include behaviors harmful to health (such as smoking and alcohol abuse), low education level and overload work pressure, which tend to make doctors fall into negative emotions on a frequent basis. Although these hazard factors do not mean the lack of resilience itself, their impact on resilience is unavoidable. In addition, the damaged belief is a very important hazard factor. For example, when an individual realizes the lack of certain ability or finds it impossible to perform a certain task, the feeling of being helplessness that he or she acquires in this case is a major

damage to resilience. Therefore, in order to avoid these elements that harm resilience, first of all, it is necessary to make doctors maintain sufficient faith in the goal or vision at all times, and make them firmly believe that the goal can be achieved; Second, good health should be maintained and bad habits should be improved to effectively relieve stress and create more positive emotional experiences (Cai, 2019).

(3) Focusing on the improvement of doctors' resilience

In order to enable doctors to fully manage their resilience assets and unremittingly overcome the hazard factors affecting resilience, the most important one is to use the process of self-cognition and self-regulation. The establishment of self-cognition and self-regulation system is the key to enhance the resilience of doctors. Doctors are not in a position to avoid some objective shortcomings and pressure in the external environment. For example, their own resilience assets are needed to offset family background, inborn physical conditions, lower education level and greater life and work pressure. Therefore, when the resilience assets of doctors are relatively scarce, it is likely that they will be unable to recover due to too many hazard factors of resilience at present and fall into a continuous downturn. Therefore, it is necessary to ensure an efficient self-regulation mechanism and constantly optimize the level of self-cognition in order to quickly recover to a stable level in adversity. Similarly, when doctors set higher goals for themselves and try challenging tasks, they will encounter greater frustration even on the premise that they do not lack resilient assets. As trying challenging tasks is an intrinsic choice motivation, although this behavior can not be easily given up, it is still easier to fail than those things that have to be done. Therefore, finding appropriate self-regulation methods and making good use of them can enable doctors to maintain full psychological flexibility and help them successfully improve and challenge themselves (Cai, 2019).

6.4.2 Strengthening the improvement of doctor-patient communication ability

According to the different reasons for the damaged relationship between doctors and patients, the corresponding suggestions and solutions are put forward. When doctors and patients lack trust, understanding and care due to language barriers, different scenarios and corresponding solutions are set up. Due to patients' lack of trust in doctors, when patients believe that doctors lack care for them (Weech-Maldonado et al., 2003), doctors are less likely to share important medical information (Ferguson & Candib, 2002), resulting in impaired trust in the doctor-patient relationship. In order to solve this problem, doctors need to communicate in a language that patients can easily accept. In terms of understanding, it may be difficult for

doctors and patients to understand each other due to the information imbalance between the two sides. To solve this problem, doctors are advised to use skilled and trained interpreters to provide accurate medical professional explanations to patients, thus improving patients' understanding of medical information. Some doctors may be so immersed in medical research that they are less concerned with expressing sympathy for their patients, so it is difficult to establish a harmonious doctor-patient relationship (Ferguson & Candib, 2002; Meeuwesen et al., 2006). In response to this situation, hospitals need to encourage doctors to show more empathy to patients. In view of the fact that cultural barriers lead to impaired trust, understanding, and respect between doctors and patients, some patients may not trust Western medicine, believing that doctors do not understand patients' health goals. Doctors are advised to use interpreters who act as cultural ambassadors and language translators as much as possible, and use models such as Kleiman's (1978) 8-question framework to elicit patients' explanations. Doctors are encouraged to participate in global health initiatives (Alex et al., 2010). In terms of respecting patients, doctors may exercise their own judgment about patients seeking complementary or alternative therapies. Doctors are suggested to acknowledge and adopt traditional practices whenever possible (Astin et al., 1998; Gordon et al., 1998; Wang et al., 2003). When understanding and respect are impaired due to the final decision-making power, patients believe that they may know their own condition better than doctors and know the best treatment, and the doctor-patient relationship is damaged due to conflicting decisions on treatment methods. In this case, it is recommended that doctors adopt a doctor-patient participatory model (Szasz & Hollender, 1956) to understand and respect patients' decisions.

The doctor-patient communication ability is negatively related to the doctor-patient relationship. When the doctor-patient communication is better, the doctor-patient relationship score is lower, and the perceived doctor-patient relationship is better. In the doctor-patient relationship, doctor-patient communication is very important. Doctor-patient communication is not only the premise of whether doctors can successfully make a diagnosis and give treatment and ensure the quality of medical services, but also allows patients to comprehensively and systematically understand the limitations and risks of medical technology, so that when diagnosis and treatment fail to achieve the expected effect, they can better communicate and reduce doctor-patient disputes; It is also helpful to relieve the psychological pressure of patients and improve the diagnosis and treatment effect. Improving doctor-patient communication helps to bring doctors and patients closer to each other, as doctors bears the obligation to explain the treatment process to patients and patients, in turn, have a duty to cooperate with doctors for diagnosis and treatment. Good communication and

cooperation can create a harmonious for doctor-patient relationship, diagnosis and treatment, and improve the quality of medical services. Good communication is the basic condition to ensure that both doctors and patients can fulfill their respective obligations, and it is also an important way to bring doctors and patients closer to each other. Strengthening doctor-patient communication is conducive to better diagnosis and treatment of patients. Through communication with patients, doctors can master the patient's disease information in detail for better diagnosis and treatment. Strengthening communication between doctors and patients can effectively reduce the occurrence of improper medical actions. What some patients consider to be unimportant discomfort may be a breakthrough in the diagnosis and treatment of the disease, while those specific conditions are best known to the patients themselves. If doctors and patients fail to communicate with each other in time, the doctors may not be able to detect the diseases. For example, inappropriate use of drugs can be effectively avoided through communication and in-depth understanding of allergy history. Strengthening doctor-patient communication is more in line with the needs of medical development. Modern medical models are patient-centered, and the doctor-patient relationship is also in an equal position. Good two-way communication enables patients to trust doctors, so as to better cooperate with diagnosis and treatment and obtain the best clinical effect. Currently, there are certain obstacles in doctor-patient communication in China, and the quality of medical service needs to be improved. To establish a good doctor-patient relationship, doctors need to strengthen communication with patients and fully understand the importance of doctor-patient communication in building a harmonious doctor-patient relationship (Li, 2020).

Doctors should talk with patients with a gentle tone and a moderate volume. They should treat patients kindly, ask them about their feelings, encourage and praise them more often (Chen & Jin, 2019). They should answer patients' questions in plain language, and tell their family members and friends to care more about patients. They should talk with patients in an encouraging way, in order to enhance their confidence in receiving treatment. During the examination, it is necessary to talk with patients to understand their thoughts passionately, patiently and understandingly. Besides, they should inform patients of precautions and other medical information patiently before and after the examination. Verbal communication and psychological guidance can alleviate patients' clinical symptoms and improve their quality of life. They can also bring closer medical workers and patients and improve the quality of medical services (Huang, 2021).

It is recommended that doctors should learn about the doctor-patient communication ability since they pursued studies in medical schools. It is necessary learn from the experience

of other countries in terms of communication skills training, regard the communication with patients as a discipline, and establish an integrated training system for doctor-patient communication ability from undergraduate education to continuing education, so as to improve the current doctor-patient communication (Shen & Sun, 2017).

6.4.3 Strengthening the construction of hospital organization and stimulating doctors' to work actively

6.4.3.1 Career planning

The human resources management department of the hospital formulates short-term, medium-term and long-term career plans for doctors, helps doctors establish feasible career plans that meet their own interests, and enables doctors to have a clear understanding and direction of efforts for the future. The establishment of career planning can enhance the hope of doctors and enhance their optimism. They can always be grateful in the work and treat problems with a tolerant attitude, thus forming a healthy and positive psychological state (Liu, 2018).

6.4.3.2 Enhancing group awareness

First, the hospital designs the competency model of each position from the perspective of its own actual needs, which should not only ensure the short-term demand of the hospital for human resources, but also take into account the medium and long-term development planning of the hospital; Second, taking departments or offices as units, team building activities should be regularly organized, activity funds should be set up, team building training should be organized, to improve the organizational atmosphere; Finally, cross office exchanges and activities based on previous team activities can not only enhance mutual exchanges between offices, but also benefit the harmonious development of the hospital (Liu, 2018).

6.4.3.3 Innovative design of hospital performance assessment standard system

With the progress and rapid development of social economy, the traditional performance assessment system has been difficult to meet the needs of the current hospital performance assessment standards. The hospital needs to continuously establish and improve the hospital performance assessment standards to provide guarantees for improving the medical quality and service and strengthening medical safety. Under the new medical reform policy, the innovative design of the hospital performance assessment standard system is very important. It is necessary to clarify the performance assessment standards, especially in how to more

effectively stimulate the enthusiasm and initiative of doctors (Yuan, 2018). The regular assessment of doctor's psychological capital can also be used as one of the indicators of doctor's performance assessment. It is recommended that the improvement of psychological capital and doctor-patient communication ability should be included in the continuing education system, and the doctors who need to be improved should be adjusted and intervened in a timely manner through training, so as to promote the doctors' team to maintain a continuous and spontaneous positive psychological capital, establish a good and positive team atmosphere, train doctors to maintain a positive and optimistic thinking mode, achieve the formation of a self-motivated system, and create a harmonious relationship field.

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Annex A: Questionnaire

Dear Sir/Madam,

Thank you for taking time out of your busy schedule to participate in this survey!

The purpose of this questionnaire is to learn the basic information and opinions of medical staff (doctors). There is no right or wrong answer to each question. Please fill in the questionnaire according to your actual situation. The questionnaire does not require signature and is not targeted at any organization or individual. The information obtained is only for academic research and is strictly confidential. Please feel free to fill in the questionnaire. In order to ensure the validity of the data, please do not leave any question unanswered. Thank you for your support and assistance!

Part 1: Psychological capital level

Here are some sentences that describe how you might view yourself now. Please use the scale below to express how much you agree or disagree with these descriptions.

1=Strongly disagree

2=Disagree

3=Mildly disagree

4=Mildly agree

5=Agree

6=Strongly Agree

1. I believe I can analyze long-term problems and find solutions.
2. When meeting with managers, I am confident in stating what is within my scope of work.
3. I believe I have contributed to discussion of company strategy.
4. In the context of my work, I believe I can help set goals/purposes.
5. I believe I can connect with people outside the company (e.g. suppliers, customers) and discuss issues.
6. I believe I can present information to a group of colleagues.
7. If I find myself stuck at work, I can think of many ways to get out.
8. At present, I am full of energy to accomplish my work goals.
9. There are many solutions to any problem.

10. At present, I consider myself quite successful at work.
11. I can think of many ways to achieve my current work goals.
12. Currently, I am achieving the work goals I have set for myself.
13. When encountering setbacks at work, I have a hard time recovering from them and moving on (R).
14. At work, I will solve the problems I encounter anyway.
15. If I have to do it at work, I can also challenge myself to it independently.
16. I'm usually comfortable with stress at work.
17. Because I have experienced many hardships in the past, I am now able to get through the difficult times at work.
18. In my current job, I feel like I can handle a lot of things at the same time.
19. At work, when faced with uncertainty, I usually hope for the best.
20. If something can go wrong, even if I work wisely, it will go wrong (R).
21. I always see the bright side of things in my work.
22. I am optimistic about what will happen to my work in the future.
23. In my current job, things never go the way I hoped (R).
24. When working, I always believe that "behind the darkness is the light, so don't be pessimistic".

Part 2: Doctor-patient communication ability

The following are some statements that describe your communication with the patient. Please choose "Yes" or "No" according to the actual situation.

Doctor-patient communication skill evaluation scale (SEGUE scale)

Preparations	Yes	No
1. Address the patient politely.		
2. Explain reasons for the inquiry (understand the situation, further diagnose and treat, and report to the superior physician).		
3. Introduce the process of inquiry and physical examination (such as the content and sequence of inquiry).		
4. Establish personal trust relationship (such as introducing yourself appropriately and discussing subjects other than current diseases).		
5. Protect the patient's privacy (such as closing the door) and respect the patient's right of choice and privacy.		
Information collection	Unable to answer	Yes No
6. Ask the patient to share their views on health problems and/or disease progression.		
7. Systematically inquire about the physical and physiological factors affecting the disease.		
8. Systematically inquire about the social, psychological and emotional factors affecting the disease (such as living standards, social relations and life		

pressure).

9. Discuss the previous treatment with the patient (such as self-care measures, recent visits and other medical services previously received).

10. Discuss with the patient the current impact of the disease on life (such as the quality of life).

11. Discuss healthy lifestyle/disease prevention measures with the patient (such as risk factors for the disease).

12. Avoid leading/imperative questions.

13. Give the patient time and opportunity to speak (for example, do not interrupt the patient)/no awkward pause.

14. Listen attentively (such as facing the patient, using positive language and nonverbal feedback).

15. Verify/clarify the acquired information (such as retelling and asking for specific quantity).

Information giving

Unable to
answer

Yes

No

16. Explain the theoretical basis of diagnostic operation (such as physical examination and laboratory examination).

17. Tell the patient about his or her current physical condition (such as the results of physical examination and laboratory examination, and the results of anatomical abnormalities/diagnosis).

18. Encourage the patient to ask questions and verify his/her own understanding, and comfort and encourage the patient.

19. Make appropriate adjustments (speed and volume) according to the patient's understanding ability (such as avoid using/explaining technical terms).

Understanding of patients

Unable to
answer

Yes

No

20. Acknowledge the patient's efforts, achievements, and difficulties to overcome (such as appreciating the patient's cooperation).

21. Observe the patient's hints/tacit cooperation.

22. Express care, concern and empathy to make the patient feel warm and build confidence.

23. Always maintain a respectful tone.

Ending of inquiry

Yes

No

24. Ask the patient if there are any other questions to explore.

25. Further explain the next diagnosis and treatment plan.

Part 3: Doctor-patient relationship

Doctor-patient relationship questionnaire (please compare the following description with your real feeling in the current job, select the most suitable option for your situation, and mark the corresponding score, 1=completely disagree, 2=disagree, 3=a little agree, 4=generally agree, 5=agree, 6=strongly agree. Each question only need to fill in one answer; please do not fill in multiple answers. If you feel a little vague about some questions, don't bother thinking about them, just fill in with your first impression.)

(Source: Liu Qinqin. Research on the Relationship between Medical Staff Perceived Doctor-Patient Relationship, Psychological Capital and Work Engagement)

Item	Questions	Score
1	After seeing the patient today, are you looking forward to your next meeting with the patient?	

The Influence of Doctors' Psychological Capital and Doctor-Patient Communication on Doctor-Patient Relationship

-
- | | |
|---|---|
| 2 | Do you find any patient in depression? |
| 3 | Is there any patient who wants to control your diagnosis and treatment decisions? |
| 4 | Have you been annoyed or frustrated by the patient's vague complaints and complaints? |
| 5 | Are your patients prone to self-abandonment? |
| 6 | Have you ever secretly hoped that one of your patients would not come back? |
| 7 | Have you found it a waste of time to care for your patients? |
| 8 | Do you have difficulty communicating with your patients? |
-

Part 4: Basic information

1. Gender: Male; Female
2. Length of service: 1 year and below ; 1-5 years; 6-10 years; 11-15 years; 16-20 years; 21 years and above
3. Working hours per week: 40 hours and below; 41-50 hours; 51-60 hours; 61 hours and above
4. Age: 20-29 years old; 30-39 years old; 40-49 years old; 50 years old and above
5. Education background: Technical secondary school and below; Junior college; Undergraduate; Master; Doctor
6. Marital status: Married; Unmarried; Others (e.g. divorced or separated, widowed)
7. Physical condition: Healthy; Fair; Poor
8. Professional and technical titles: Elementary; Intermediate; Deputy high-level; High-level; No title
9. Unit type: general hospital, specialized hospital, primary medical institutions (including health centers, community health service institutions, outpatient clinics, etc.), professional public health institutions (including disease prevention and control centers, specialized disease prevention and control institutions, maternal and child health institutions, etc.)
10. Nature of business: Non-profit, Profitability
11. Hospital level: Primary; Secondary; Tertiary; Primary medical institutions; Not rated
12. Specialist departments: Pediatrics; Otolaryngology; Rheumatology; Gynecology; Orthopedics; Respiratory Medicine; Psychiatry; Urology; Neurosurgery; Endocrinology; Dermatology; Mammary Gland; Neurology; Physical Examination; Gastroenterology; Cardiovascular Medicine; Thoracic Surgery; Hematology; Traditional Chinese Medicine; Oncology; Emergency Medicine; Others
13. Income: 8000 and below; 8001-14000; 14001-20000; 20001 and above

Questionnaire accomplished!

Thank you for your cooperation and assistance, wish you success in your work!

Annex B: Chart

Table b.1(3.1) Scale description of psychological capital, doctor-patient communication, and doctor-patient relationship

Scale and author	Dimensions	Items	Scores	Scoring tendencies
Psychological capital (Luthans et al. 2007)	4	24	1-6	The higher the score, the higher the level of psychological capital
Doctor-patient communication Makoul (2001)	5	25	0-1	The higher the score, the better the doctor-patient communication ability
Doctor-patient relationship Yang Hui (2011)	1	8	1-6	The higher the score, the worse the doctor-patient relationship

Table b.2(3.2) Psychological capital items

Dimensions	Codes	Items
Self-efficacy	PsyCap1	1. I believe I can analyze long-term problems and find solutions.
	PsyCap2	2. When meeting with managers, I am confident in stating what is within my scope of work.
	PsyCap3	3. I believe I have contributed to discussion of company strategy.
	PsyCap4	4. In the context of my work, I believe I can help set goals/purposes.
	PsyCap5	5. I believe I can connect with people outside the company (e.g. suppliers, customers) and discuss issues.
Hope	PsyCap6	6. I believe I can present information to a group of colleagues.
	PsyCap7	7. If I find myself stuck at work, I can think of many ways to get out.
	PsyCap8	8. At present, I am full of energy to accomplish my work goals.
	PsyCap9	9. There are many solutions to any problem.
Resilience	PsyCap10	10. Right now, I consider myself quite successful at work.
	PsyCap11	11. I can think of many ways to achieve my current work goals.
	PsyCap12	12. Currently, I am achieving the work goals I have set for myself.
	PsyCap13	13. When encountering setbacks at work, I have a hard time recovering from them and moving on (R).
	PsyCap14	14. At work, I will solve the problems I encounter anyway.
	PsyCap15	15. If I have to do it at work, I can also challenge myself to it independently.
	PsyCap16	16. I'm usually comfortable with stress at work.
Optimism	PsyCap17	17. Because I have experienced many hardships in the past, I am now able to survive the difficult times at work.
	PsyCap18	18. In my current job, I feel like I can handle a lot of things at the same time.
	PsyCap19	19. At work, when faced with uncertainty, I usually hope for the best.
	PsyCap20	20. If something can go wrong, even if I work wisely, it will go wrong (R).
	PsyCap21	21. I always see the bright side of things in my work.
	PsyCap22	22. I am optimistic about what will happen to my work in the future.
	PsyCap23	23. In my current job, things never go the way I hoped (R).
	PsyCap24	24. When working, I always believe that "behind the darkness is the light, so don't be pessimistic".

Source: Luthans et al. (2007)

Table b.3(3.3) Doctor-patient communication skill evaluation scale (SEGUE scale)

Dimensions	Codes	Items
Preparations	DPC1	1. Address the patient politely.
	DPC2	2. Explain the reasons for the inquiry (understand the situation, further diagnose and treat, and report to the superior doctor).
	DPC3	3. Introduce the process of inquiry and physical examination (such as the content and sequence of inquiry).
	DPC4	4. Establish personal trust relationship (such as introducing yourself appropriately and discussing subjects other than current diseases).
	DPC5	5. Protect the patient's privacy (such as closing the door) and respect the patient's right of choice and privacy.
Information	DPC6	6. Ask the patient to share the views on health problems and/or disease progression.

collection	DPC7	7. Systematically inquire about the physical and physiological factors affecting the disease.
	DPC8	8. Systematically inquire about the social, psychological and emotional factors affecting the disease (such as living standards, social relations and life pressure).
	DPC9	9. Discuss the previous treatment with the patient (such as self-care measures, recent visits and other medical services previously received).
	DPC10	10. Discuss with the patient the current impact of the disease on life (such as the quality of life).
	DPC11	11. Discuss healthy lifestyle/disease prevention measures with the patient (such as risk factors for the disease).
	DPC12	12. Avoid leading/imperative questions.
	DPC13	13. Give the patient time and opportunity to speak (for example, do not interrupt the patient easily)/no awkward pause.
	DPC14	14. Listen attentively (such as facing the patient, using positive language and nonverbal feedback).
	DPC15	15. Verify/clarify the acquired information (such as retelling and asking for specific quantity).
	DPC16	16. Explain the theoretical basis of diagnostic operation (such as physical examination and laboratory examination).
Information giving	DPC17	17. Tell the patient about his or her current physical condition (such as the results of physical examination and laboratory examination, and the results of anatomical abnormalities/diagnosis).
	DPC18	18. Encourage the patient to ask questions and verify his/her own understanding, and comfort and encourage the patient.
	DPC19	19. Make appropriate adjustments (speed and volume) according to the patient's understanding ability (such as avoid using/explaining technical terms).
Understanding of patients	DPC20	20. Acknowledge the patient's efforts, achievements, and difficulties to overcome (such as appreciating the patient's cooperation).
	DPC21	21. Observe the patient's hints/tacit cooperation.
	DPC22	22. Express care, concern and empathy to make the patient feel warm and build confidence.
Ending of inquiry	DPC23	23. Always maintain a respectful tone.
	DPC24	24. Ask the patient if there are any other questions to explore.
	DPC25	25. Further explain the next diagnosis and treatment plan.

Sources: Makoul (2001)

Table b.4(3.4) Doctor-patient relationship items

Codes	Items
DPR1	1. After seeing the patient today, whether you are looking forward to your next meeting with the patient (R).
DPR2	2. Whether some patients are found to be depressed.
DPR3	3. Whether there is a patient who wants to control your diagnosis and treatment decisions.
DPR4	4. Whether you have been annoyed or frustrated by the patient's vague complaints and complaints.
DPR5	5. Whether your patients are prone to self-abandonment.
DPR6	6. Whether you have ever secretly hoped that a patient would not come back.
DPR7	7. Whether you have found it a waste of time to care for your patients.
DPR8	8. Whether you have difficulty communicating with your patients.

Source: Yang (2011)

Table b.5(3.5) Sociodemographic characteristics and work conditions of the respondents

Items	Options
Gender	Male; Female
Age	20-29 years old; 30-39 years old; 40-49 years old; 50 years old and above
Education	Technical secondary school and below; Junior college; Undergraduate; Master; Doctor
Marital status	Married; Unmarried; Others (e.g. divorced or separated, widowed)
Monthly income(Yuans)	8000 and below; 8001-14000; 14001-20000; 20001 and above
Length of service	1 year and below; 1-5 years; 6-10 years; 11-15 years; 16-20 years; 21 years and above
Working hours per week	40 hours and below; 41-50 hours; 51-60 hours; 61 hours and above
Physical health	Healthy; Fair; Poor
Professional and technical titles	Elementary; Intermediate; Deputy high-level; High-level; No title
Organization type	General hospitals; Specialty hospitals; Primary medical institutions (including health centers, community health services agencies and clinics); Professional public health institutions (including Centers for Disease Control and Prevention, control institutions for specialized disease , maternal and child health care organization)
Business nature	Non-profit; For-profit
Hospital level	Primary; Secondary; Tertiary; Primary medical institutions; Not rated
Specialist departments	Pediatrics; Otolaryngology; Rheumatology; Gynecology; Orthopedics; Respiratory Medicine; Psychiatry; Urology; Neurosurgery; Endocrinology; Dermatology; Mammary Gland; Neurology; Physical Examination; Gastroenterology; Cardiovascular Medicine; Thoracic Surgery; Hematology; Traditional Chinese Medicine; Oncology; Emergency Medicine; Others

Table b.6(3.1) Model fit indices and critical reference values for SEM

Structure fitting indices	Codes	Critical value
Ratio of Chi-square to degrees of freedom	CMIN/DF	<3.0~5.0
Root mean square error of approximation	RMSEA	<0.050~0.080
Normed fit index	NFI	>0.90
Relative fitness index	RFI	>0.90
Incremental fit index	IFI	>0.90
Tacker-lewis index	TLI	>0.90

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Comparative fit index		CFI	>0.90
Parsimonious normed fit index		PNFI	>0.50

Table b.7(4.1) Personal characteristics of the doctors

Category		Group	N	%
Gender		Male	160	46.243
		Female	186	53.757
Age		20-29	61	17.630
		30-39	127	36.705
		40-49	97	28.0035
		≥ 50	61	17.630
Educational background	Special secondary school graduate or below		6	1.734
		Junior college graduate	59	17.052
		Undergraduate	184	53.179
		Master	72	20.809
Marital status		Doctor	25	7.225
		Married	260	75.145
		Unmarried	72	20.809
		Other (e.g. divorced or separated, widowed)	14	4.046
Physical condition		Healthy	265	76.590
		Average	79	22.832
		Unhealthy	2	0.578

Table b.8(4.2) Work conditions and income of the doctors

Category		Group	N	%		
Professional and technical title		Junior doctor	105	30.347		
		Intermediate doctor	112	32.370		
		Associate professor of treatment	65	18.786		
		Professor of treatment	36	10.405		
		Without professional title	28	8.092		
Working age		≤ 1 year	15	4.335		
		1-5 years	62	17.919		
		6-10 years	63	18.208		
		11-15 years	58	16.763		
		16-20 years	37	10.694		
		≥ 21 years	111	32.081		
		Weekly working hours	≤ 40 hours	67	19.364	
		41-50 hours	143	41.329		
Weekly working hours		51-60 hours	81	23.410		
		≥ 60 hours	55	15.896		
		Work institution		General hospital	184	53.179
				Specialized hospital	48	13.873
Primary health care institutions ^(a)	87			25.145		
Public health institutions ^(b)	27			7.803		
Nature of operation		Non-profit	297	85.838		
		For-profit	49	14.162		
Hospital level		Primary	48	13.873		
		Secondary	72	20.809		
		Tertiary	165	47.688		
		Unrated	61	17.630		
		Specialist departments		Pediatrics	19	5.491
Otolaryngology	3			0.867		
Rheumatology	2			0.578		

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	Gynecology	12	3.468
	Orthopedics	22	6.358
	Respiratory Medicine	6	1.734
	Psychiatry	15	4.335
	Urology	11	3.179
	Neurosurgery	2	0.578
	Endocrinology	9	2.601
	Dermatology	5	1.445
	Mammary Gland	2	0.578
	Neurology	14	4.046
	Physical Examination	6	1.734
	Gastroenterology	7	2.023
	Cardiovascular Medicine	7	2.023
	Thoracic Surgery	2	0.578
	Hematology	7	2.023
	Traditional Chinese Medicine	12	3.468
	Oncology	4	1.156
	Emergency Medicine	9	2.601
	Others	170	49.133
Monthly income	≤ 8,000	95	27.457
	8,001-14,000	149	43.064
	14,001-20,000	64	18.497
	≥ 20,001	38	10.983

^(a) Including health centers, community health service institutions, outpatient departments, and others.

^(b) Including centers for diseases control and prevention, centers for the prevention and control of specialized diseases, maternal and child healthcare institutions, and others.

Table b.9(4.3) Statistical results of the doctors' psychological capital, doctor-patient communication, and doctor-patient relationship

Scale	Code	Entry	N	Mean	SD
Psychological capital	PsyCap	24	346	4.579	0.689
Self-efficacy	PsyCap_E	6	346	4.871	0.739
Hope	PsyCap_H	6	346	4.666	0.852
Resilience	PsyCap_R	6	346	4.431	0.743
Optimism	PsyCap_O	6	346	4.346	0.738
Doctor-patient communication	DPC	25	346	0.969	0.084
Preparation	DPC I	5	346	0.970	0.108
Collecting information	DPC II	10	346	0.965	0.096
Giving information	DPC III	4	346	0.975	0.105
Understanding patients	DPC IV	4	346	0.980	0.093
Ending consultation	DPC V	2	346	0.958	0.158
Doctor-patient relationship	DPR	8	346	3.158	0.804

Table b.10(Figure4.1) Scale of doctors' psychological capital

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Indicator	Code	MV	SD
1. I believe I can analyze the long-term problems and find the solutions.	PsyCap1	4.88	0.88
2. When meeting with the management members, I am confident in stating things within my duty.	PsyCap2	4.76	0.92
3. I believe I have contributed to the discussion about the hospital's development strategies.	PsyCap3	4.63	1.07
4. Within my duty, I believe I can help set goals/objectives.	PsyCap4	4.91	0.84
5. I believe I can contact people who are not working in the hospital (e.g., patients and their family members, and the others) and discuss with them.	PsyCap5	4.96	0.94
6. I believe I can state information to a group of colleagues.	PsyCap6	5.08	0.73
7. If I find myself in trouble at work, I can think out a lot of ways to get out of trouble.	PsyCap7	4.75	0.93
8. At present, I am energetic in achieving my goals at work.	PsyCap8	4.74	1.03
9. There are many solutions to every problem.	PsyCap9	4.92	0.93
10. At present, I consider myself to be quite successful at work.	PsyCap10	4.30	1.08
11. I can come up with many ways to achieve my current goals at work.	PsyCap11	4.59	0.98
12. At present, I am achieving the goals at work I set for myself.	PsyCap12	4.69	0.94
13. When I encounter setbacks at work, it is difficult for me to recover and move on.	PsyCap13	3.08	1.44
14. At work, I will solve the problems that I encounter.	PsyCap14	4.90	0.77
15. At work, if I am forced do something, I can still respond independently.	PsyCap15	4.87	0.79
16. I usually deal with the pressure at work calmly.	PsyCap16	4.53	1.02
17. Because I have went through many ordeals before, I can now survive the difficult times at work.	PsyCap17	4.70	0.97
18. In my current work, I feel that I can handle many things at the same time.	PsyCap18	4.51	1.08
19. At work, I usually look forward to the best results when there is uncertainty.	PsyCap19	4.61	1.03
20. If something is bound to go wrong, even if I handle it wisely, it will still go wrong.	PsyCap20	3.78	1.33
21. I always look at the bright side of my work.	PsyCap21	4.65	1.04
22. I am optimistic about what will happen in my future work.	PsyCap22	4.74	0.97
23. In my current work, things have never developed as I hoped.	PsyCap23	3.44	1.37
24. At work, I always believe that there is light behind the dark, so we should not be pessimistic.	PsyCap24	4.86	0.87
Overall	PsyCap	4.5786	0.6888

Table b.11(Figure4.2) Scale of doctor-patient communication ability evaluation (SEGUE scale)

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Indicator	Code	Mean	SD
1. Address the patients politely.	DPC1	0.99	0.09
2. Explain the reasons for the consultation (understanding the situation for further diagnosis and treatment, and report to the superior doctors).	DPC2	0.99	0.11
3. Introduce the process of the consultation and physical examination (e.g., the content and sequence of the consultation).	DPC3	0.97	0.17
4. Gain the patients' trust in you (e.g., introducing yourself properly and discussing topics other than current diseases).	DPC4	0.90	0.29
5. Protect the patients' privacy (e.g., closing the door), and respect the patient's choice and privacy.	DPC5	0.99	0.08
6. Let the patients talk about their views on their health problems and/or the development of the diseases.	DPC6	0.98	0.14
7. Inquire about the physical and physiological factors affecting the diseases systematically.	DPC7	0.95	0.21
8. Inquire about the social, psychological and emotional factors affecting the diseases (e.g., standard of living, social relations and stress) systematically.	DPC8	0.92	0.27
9. Discuss the past treatment (e.g., self-care measures, recent visits, and other medical services previously received) with the patient.	DPC9	0.99	0.11
10. Discuss the impact of current diseases on life (e.g., the quality of life) with the patients.	DPC10	0.96	0.20
11. Discuss healthy lifestyle/ disease prevention measures (e.g., the risk factors for the diseases) with the patients.	DPC11	0.97	0.16
12. Avoid suggestive/ imperative questions.	DPC12	0.94	0.24
13. Give the patient time and opportunity to speak (e.g., not interrupting them) and avoid awkward pause.	DPC13	0.96	0.19
14. Listen attentively (e.g., facing patients, using affirmative language and giving non-verbal feedback, and others.).	DPC14	0.98	0.13
15. Verify/ clarify the information received (e.g., retelling and inquiring the specific quantities).	DPC15	0.99	0.11
16. Explain the theoretical basis of the diagnosis actions (e.g., physical examination and laboratory examination).	DPC16	0.96	0.19
17. Inform the patients of their current physical condition (e.g., the results of the physical examination and laboratory examination, and the findings of anatomical abnormalities/ diagnosis).	DPC17	0.99	0.12
18. Encourage the patients to ask questions so as to verify their understanding, comfort and encourage them.	DPC18	0.97	0.18
19. Adjust the expression (speed and volume) according to the patients' comprehension abilities (e.g., avoiding using/ interpreting professional terms).	DPC19	0.99	0.12
20. Acknowledge the patients' efforts, achievements and the difficulties to overcome (e.g.,	DPC20	0.98	0.13

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thanking the patients for their cooperation).			
21. Observe the patients' implication so as to get tacit cooperation.	DPC21	0.96	0.20
22. Express care, concern and empathy, so as to make the patients feel warm and help them establish confidence.	DPC22	0.99	0.09
23. Always maintain a respectful tone.	DPC23	0.99	0.12
24. Ask the patients if there are other issues to be discussed.	DPC24	0.94	0.24
25. Further explain the subsequent diagnosis and treatment.	DPC25	0.98	0.14
Overall	DPC	0.9692	0.0841

Table b.12(Figure4.3) Scale of doctor-patient relationship

Indicator	Code	Mean	SD
1. After seeing the patients today, you look forward to the next meeting with them (R).	DPR1	4.30	1.24
2. You found that some patients were depressed.	DPR2	4.20	1.19
3. Some patients want to control your diagnoses and treatment decisions of the diseases.	DPR3	3.49	1.36
4. You are annoyed or depressed by the patients' vague complaints and whining.	DPR4	3.03	1.34
5. You found that some patients had the tendency to give up on themselves.	DPR5	3.04	1.27
6. You have secretly hoped that a certain patient would not come again.	DPR6	2.88	1.53
7. You find it a waste of time to take care of your patients.	DPR7	2.13	1.13
8. You have difficulty communicating with your patients.	DPR8	2.20	1.10
Overall	DPR	3.1582	0.8036

Table b.13(4.4) Results of confirmatory factor analysis of the psychological capital scale

Factor	Measurement item	p-value	Standard load factor	Deleted α coefficient	Cronbach's α coefficient
Psychological capital-self-efficacy	PsyCap1	-	0.777	0.862	0.885
	PsyCap2	0.000	0.827	0.854	
	PsyCap3	0.000	0.732	0.874	
	PsyCap4	0.000	0.828	0.855	
	PsyCap5	0.000	0.663	0.875	
	PsyCap6	0.000	0.707	0.871	
	PsyCap7	-	0.815	0.904	
Psychological capital-hope	PsyCap8	0.000	0.799	0.906	0.919
	PsyCap9	0.000	0.717	0.917	
	PsyCap10	0.000	0.822	0.903	
	PsyCap11	0.000	0.89	0.892	
	PsyCap12	0.000	0.831	0.902	
Psychological	PsyCap13	-	0.064	0.909	0.794

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capital-resilience	PsyCap14	0.247	0.844	0.736	0.728
	PsyCap15	0.247	0.837	0.734	
	PsyCap16	0.247	0.824	0.728	
	PsyCap17	0.247	0.835	0.719	
	PsyCap18	0.247	0.798	0.717	
	PsyCap19	-	0.673	0.655	
	PsyCap20	0.074	0.1	0.752	
	PsyCap21	0.000	0.831	0.655	
	PsyCap22	0.000	0.888	0.657	
	PsyCap23	0.080	0.098	0.757	
Psychological capital-optimism	PsyCap24	0.000	0.857	0.662	

Table b.13(4.5) Scale of doctor-patient communication ability evaluation (SEGUE scale)

Factor(Subactive variables)	Measurement item(development variable)	p	Standard load coefficient(Std. Estimate)	The α coefficient of the item deleted	Cronbach α coefficient
Doctor-Patient communication skills-preparation	DPC1	-	0.564	0.818	0.817
	DPC2	0.000	0.383	0.819	
	DPC3	0.000	0.597	0.815	
	DPC4	0.000	0.402	0.813	
	DPC5	0.000	0.534	0.818	
	DPC6	-	0.384	0.818	
Doctor-Patient communication skills-to gather information	DPC7	0.000	0.276	0.818	0.818
	DPC8	0.000	0.338	0.817	
	DPC9	0.000	0.459	0.814	
	DPC10	0.000	0.417	0.813	
	DPC11	0.000	0.491	0.826	
	DPC12	0.001	0.209	0.815	
	DPC13	0.000	0.459	0.818	
	DPC14	0.000	0.341	0.819	
Doctor-patient communication	DPC15	0.000	0.326	0.82	0.817
	DPC16	-	0.465	0.814	

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skills-information giving	DPC17	0.000	0.427	0.818	0.815
	DPC18	0.000	0.368	0.815	
	DPC19	0.000	0.318	0.819	
	DPC20	-	0.486	0.815	
Doctor-patient communication skills-Understanding the patient	DPC21	0.000	0.388	0.814	0.817
	DPC22	0.000	0.502	0.812	
	DPC23	0.000	0.281	0.82	
Doctor-patient communication skills-End the consultation	DPC24	-	0.506	0.816	0.817
	DPC25	0.000	0.562	0.818	

Table b.13(4.6) Results of the confirmatory factor analysis of the doctor-patient relationship scale

Factor (Latent Variable)	Measurement Item (Explicit Variable)	p-value	Standard Load Factor	Chronbach's α if item deleted	Cronbach α Coefficient
Doctor-patient Relationship	DPR1	-	0.067	0.83	0.783
	DPR2	0.255	-0.452	0.758	
	DPR3	0.254	-0.526	0.752	
	DPR4	0.252	-0.783	0.727	
	DPR5	0.253	-0.56	0.746	
	DPR6	0.252	-0.735	0.742	
	DPR7	0.252	-0.713	0.747	
	DPR8	0.252	-0.717	0.749	

Table b.14(Figure 4.4) Data of structural equation model(SEM)

X	→	Y	Non-standardized path coefficients	SE	z (CR Value)	p	Standardized path coefficient
PsychologicalCapital	→	Doctorpatientcommunication	0.120	0.396	2.209	0.001	0.127
PsychologicalCapital	→	Selfefficacy	1.000				0.541
PsychologicalCapital	→	Hopes	7.514	1.217	6.175	***	0.758
PsychologicalCapital	→	Resiliences	1.228	0.774	1.587	0.112	0.886
PsychologicalCapital	→	Opimisms	6.157	1.054	5.842	***	
PsychologicalCapital	→	Doctopatientrelationship	-0.265	0.064	-3.998	***	-0.028
Doctorpatientcommunication	→	Prepatation	1.000				0.472
Doctorpatientcommunication	→	InformationCollction	1.244	0.154	8.052	***	0.993
Doctorpatientcommunication	→	InformationGiviing	2.150	0.221	9.732	***	0.768
Doctorpatientcommunication	→	Understandingof	1.521	0.155	9.808	***	0.997

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ation		Patients					
Doctorpatientcommunic ation	→	EndingofInquiry	2.007	0.263	7.632	***	0.658
Doctorpatientcommunic ation	→	Doctopatientrela tionship	-0.260	0.078	-3.998	***	-0.047
Selfefficacy	→	PsyCap1	1.000				0.147
Selfefficacy	→	PsyCap2	6.690	1.093	6.121	***	0.669
Selfefficacy	→	PsyCap3	6.889	1.152	5.982	***	0.406
Selfefficacy	→	PsyCap4	6.271	1.020	6.148	***	0.695
Selfefficacy	→	PsyCap5	5.738	0.971	5.912	***	0.562
Selfefficacy	→	PsyCap6	4.616	0.773	5.969	***	0.584
Hopes	→	PsyCap7	1.000				0.481
Hopes	→	PsyCap8	1.088	0.056	19.367	***	0.382
Hopes	→	PsyCap9	0.902	0.053	17.080	***	0.345
Hopes	→	PsyCap10	1.168	0.058	20.089	***	0.646
Hopes	→	PsyCap11	1.125	0.050	22.294	***	0.869
Hopes	→	PsyCap12	1.030	0.050	20.611	***	0.716
Resiliences	→	PsyCap13	1.000				0.268
Resiliences	→	PsyCap14	5.118	3.125	1.638	0.101	0.874
Resiliences	→	PsyCap15	5.164	3.153	1.638	0.102	0.802
Resiliences	→	PsyCap16	6.653	4.063	1.637	0.102	0.598
Resiliences	→	PsyCap17	6.329	3.865	1.637	0.102	0.807
Resiliences	→	PsyCap18	6.741	4.118	1.637	0.102	0.653
Opimisms	→	PsyCap19	1.000				0.394
Opimisms	→	PsyCap20	0.217	0.106	2.041	0.041	0.318
Opimisms	→	PsyCap21	1.272	0.090	14.184	***	0.687
Opimisms	→	PsyCap22	1.282	0.085	15.095	***	0.806
Opimisms	→	PsyCap23	0.236	0.110	2.151	0.031	0.423
Opimisms	→	PsyCap24	1.076	0.075	14.305	***	0.727
Prepatation	→	DPC1	1.000				0.936
Prepatation	→	DPC2	0.927	0.053	17.442	***	0.752
Prepatation	→	DPC3	1.076	0.092	11.649	***	0.687
Prepatation	→	DPC4	0.981	0.175	5.611	***	0.379
Prepatation	→	DPC5	0.856	0.033	25.670	***	0.364
InformationCollection	→	DPC6	1.000				0.567
InformationCollection	→	DPC7	0.767	0.176	4.354	***	0.627
InformationCollection	→	DPC8	1.861	0.264	7.062	***	0.791
InformationCollection	→	DPC9	1.012	0.119	8.527	***	0.859
InformationCollection	→	DPC10	1.430	0.199	7.195	***	0.427
InformationCollection	→	DPC11	1.417	0.171	8.263	***	0.684
InformationCollection	→	DPC12	0.889	0.201	4.425	***	0.243
InformationCollection	→	DPC13	1.426	0.190	7.495	***	0.498
InformationCollection	→	DPC14	0.983	0.131	7.513	***	0.447
InformationCollection	→	DPC15	0.691	0.101	6.808	***	0.493
InformationGiving	→	DPC16	1.000				0.786
InformationGiving	→	DPC17	0.604	0.059	10.319	***	0.876
InformationGiving	→	DPC18	0.788	0.084	9.344	***	0.382
InformationGiving	→	DPC19	0.401	0.055	7.240	***	0.673
UnderstandingofPatients	→	DPC20	1.000				0.805

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UnderstandingofPatients	→	DPC21	1.482	0.146	10.168	***	0.437
UnderstandingofPatients	→	DPC22	0.904	0.074	12.262	***	0.936
UnderstandingofPatients	→	DPC23	0.482	0.081	5.955	***	0.274
EndingofInquiry	→	DPC24	1.000				0.432
EndingofInquiry	→	DPC25	0.641	0.086	7.489	***	0.843
Doctopatientsrelationship	→	DPR1	1.000				0.227
Doctopatientsrelationship	→	DPR2	9.810	2.451	4.002	***	0.582
Doctopatientsrelationship	→	DPR3	13.130	3.161	4.153	***	0.578
Doctopatientsrelationship	→	DPR4	19.431	4.390	4.427	***	0.736
Doctopatientsrelationship	→	DPR5	12.952	3.080	4.205	***	0.642
Doctopatientsrelationship	→	DPR6	21.016	4.777	4.399	***	0.708
Doctopatientsrelationship	→	DPR7	15.000	3.426	4.379	***	0.856
Doctopatientsrelationship	→	DPR8	14.644	3.342	4.381	***	0.809

Table b.15(Figure 4.4) Error

Residual error	Estimate	S.E.	C.R.	Plabel	Coefficient
e1	0.638	0.049	13.113	***	0.023
e2	0.236	0.023	10.296	***	0.171
e3	0.498	0.042	11.726	***	0.502
e4	0.169	0.018	9.647	***	0.322
e5	0.437	0.036	12.024	***	0.332
e6	0.234	0.020	11.793	***	0.234
e7	0.250	0.021	11.649	***	0.226
e8	0.335	0.028	11.825	***	0.145
e9	0.356	0.029	12.291	***	0.121
e10	0.334	0.029	11.617	***	0.431
e11	0.190	0.018	10.633	***	0.753
e12	0.233	0.020	11.440	***	0.524
e13	2.063	0.157	13.128	***	0.067
e14	0.152	0.014	11.009	***	0.755
e15	0.166	0.015	11.157	***	0.636
e16	0.290	0.026	11.260	***	0.357
e17	0.266	0.024	11.286	***	0.373
e18	0.387	0.033	11.698	***	0.416
e19	0.578	0.047	12.394	***	0.154
e20	1.733	0.132	13.122	***	0.011
e21	0.298	0.028	10.741	***	0.468
e22	0.146	0.018	8.146	***	0.648
e23	1.838	0.140	13.121	***	0.179
e24	0.197	0.019	10.546	***	0.428
e25	0.002	0.000	8.508	***	0.875
e26	0.006	0.000	11.882	***	0.561
e27	0.020	0.002	12.695	***	0.472
e28	0.080	0.006	13.044	***	0.138
e29	0.001	0.000	4.918	***	0.964
e30	0.015	0.001	12.702	***	0.320
e31	0.042	0.003	13.044	***	0.401
e32	0.059	0.005	12.746	***	0.623

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e33	0.007	0.001	12.065	***	0.773
e34	0.033	0.003	12.715	***	0.175
e35	0.017	0.001	12.278	***	0.474
e36	0.054	0.004	13.040	***	0.063
e37	0.027	0.002	12.631	***	0.253
e38	0.013	0.001	12.626	***	0.204
e39	0.009	0.001	12.798	***	0.244
e40	0.022	0.002	11.172	***	0.628
e41	0.009	0.001	11.455	***	0.768
e42	0.022	0.002	12.041	***	0.135
e43	0.012	0.001	12.661	***	0.142
e44	0.011	0.001	12.317	***	0.651
e45	0.026	0.002	12.375	***	0.198
e46	0.004	0.000	10.284	***	0.876
e47	0.013	0.001	13.017	***	0.071
e48	0.044	0.004	10.565	***	0.194
e49	0.013	0.001	9.303	***	0.724
e50	1.542	0.117	13.130	***	0.047
e51	1.133	0.090	12.604	***	0.343
e52	1.357	0.110	12.340	***	0.335
e53	0.684	0.071	9.625	***	0.553
e54	1.113	0.091	12.190	***	0.412
e55	1.045	0.100	10.448	***	0.506
e56	0.628	0.058	10.864	***	0.733
e57	0.586	0.054	10.813	***	0.654
e59	0.003	0.001	2.856	0.004	0.286
e60	0.033	0.010	3.166	0.002	0.582
e61	0.001	0.002	0.808	0.419	0.801
e62	0.091	0.016	5.621	***	0.407
e65	0.005	0.001	9.646	***	0.224
e66	0.000	0.000	-0.111	0.911	0.984
e67	0.001	0.001	1.499	0.134	0.591
e68	-0.001	0.000	-1.751	0.080	0.996
e69	0.005	0.002	1.921	0.055	0.437
e70	0.003	0.001	5.841	***	0.022
e71	0.003	0.001	2.197	0.028	0.000
e72	0.010	0.003	3.090	0.002	0.000