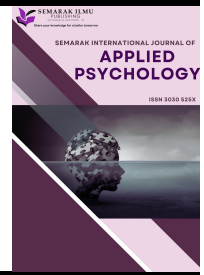




## Semarak International Journal of Applied Psychology

Journal homepage:  
<https://semarakilmu.my/index.php/sijap/index>  
ISSN: 3030-525X



# External Stimuli, Personal Factors, Psychological Cognition, Intention Engaging in Transformation of Medical Achievements among Medical Professionals in China: A Conceptual Framework

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### ARTICLE INFO

#### Article history:

Received 29 January 2024

Received in revised form 11 March 2024

Accepted 13 March 2024

Available online 17 April 2024

### ABSTRACT

As a highly populous country, China's healthcare system currently faces numerous challenges. Therefore, there is an urgent need for medical innovation and transformation of achievements to address these challenges. Meanwhile, as medical professionals play important roles in this process, the need for medical professionals engaging in medical innovation and transformation of achievements is more crucial than ever. Although the transformation of medical achievements has received considerable attention over the last decades in China, little attention has been devoted to investigating medical professionals and considering what factors influence their engagement with the transformation of medical achievements. This paper aims to provide a conceptual framework for understanding how external factors influence the medical professionals' engagement with the transformation of medical achievements. It also explores the process of evolution from external stimuli to psychological cognition and, ultimately, to the medical professionals' intention of transformation of medical achievements. Drawing on prior research, integrating stimulus-organism-response theory and theory of planned behavior, this study employs a deductive approach to establish a conceptual framework for explaining the process and relationship from external stimuli to individual cognition and then to the intention of engaging in the transformation of medical achievements among medical professionals. The external stimuli elicit salient beliefs of medical professionals. Additionally, personal factors moderate the relationship between external stimuli and salient beliefs. Subsequently, the salient beliefs contribute to the formation of individual psychological cognition. Finally, these psychological cognitive factors significantly influence the response (intentions) of medical professionals towards the transformation of medical achievements. Through the process, It is revealed that external stimuli can both positively and negatively affect medical professionals' intention engaging in the transformation of medical achievements. The study presents a comprehensive conceptual framework, which reveal the whole evolution process from medical professionals receiving external stimulation to their psychological cognitive changes, and finally forming their intention to engage in the transformation of medical achievements. And it paves the way for future research endeavors such as

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<http://doi.org/10.37934/sijap/1.1.2539b>

**Keywords:**

External stimuli; Individual factors;  
Psychological cognition; Intention;  
Transformation of medical  
achievements; medical professionals;  
Theory of Planned Behavior; stimulus-  
organism-response model

empirical validation of this framework or exploration of its applicability across diverse cultural and contexts. The study presents a comprehensive conceptual framework, which reveal the whole evolution process from medical professionals receiving external stimulation to their psychological cognitive changes, and finally forming their intention to engage in the transformation of medical achievements. And it paves the way for future research endeavors such as empirical validation of this framework or exploration of its applicability across diverse cultural and contexts.

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## 1. Introduction

The term of transformation of scientific and technological achievements is put forward by the Chinese government, Which is similar to these concepts proposed by scholars in other countries, such as technology transfer [1], commercialization of academic research [2], and academic entrepreneurship[3].The transformation of scientific and technological achievements highlights that research achievements are transformed into new technologies and new products, and then promote economic development and solve the current problems faced by society [4].

As a highly populous country, China's healthcare system currently faces numerous challenges, including the aging population, rising medical costs, growing demand for medical services, and the outbreak of infectious diseases. The transformation of medical achievements provides an effective way to deal with the current dilemmas and improve the level and efficiency of medical service in China [5-6]. Besides that, in China, the medical innovation and achievement, transformation are also the request of the strategy of building a scientific and technological power. Thus, it is of great significance to promote the development of transformation of medical achievements.

In particular, medical professionals play a key role on the process of transformation of medical achievements. They are not only the users of medical technologies and products and creator of medical achievements but also the primary driving force of medical achievements' transformation[5-6]. Accordingly, medical professionals should be actively translating their medical research into new technologies or products to advance the medical process. However, currently, few Chinese medical professionals positively engage in the transformation of medical achievements, and many of their research achievements are often ended in papers and research reports [5].

In order to better stimulate medical professionals' enthusiasm, Chinese governments and medical organizations have introduced a series of supportive policies to support and encourage and medical professionals to engage in the medical innovation and achievements' transformation, but the effects are not significant. At present, the transformation rate of medical achievements in China is low, which is far behind that of developed countries [5,7-8]. Therefore, there is a question: why are government and organizational policies not effectively motivating medical professionals? To answer this question, understanding how external factors influence medical professionals' intention toward the transformation of medical achievements is crucial.

Nevertheless, it is pity that little studies have been devoted to investigating medical professionals and exploring how the external factors affect their intention engaging in the transformation of medical achievements [9]. Most of previous studies focused on the macro-level policies and specific case studies of medical achievements' transformation. From the perspective of policy tools, the relevant laws and policies of medical achievements' transformation are reviewed and investigated, and shortcomings among them are pointed out [10-11]. Also, scholars have investigated and summarized practices and experience of the transformation of medical achievements in hospitals in China [12-13]. Besides that, the past studies also identified the conflicts of interests and stakeholder in the process of transforming medical achievements [14-15].

Therefore, it is of great value of establishing a framework to explore how external factors influence medical professionals' intention to engage in the transformation of medical achievements. By doing this, we can better understand how external factors influence medical professionals' intention toward the transformation of medical achievements, and it is also benefit for filling in the gaps of insufficient attention to medical professionals in the field of medical achievements' transformation.

Accordingly, the objective of this study is to develop an integrated conceptual framework for explaining how external stimuli affect medical professionals' engagement with the transformation of medical achievements through individual cognition, integrating the theory of planned behavior and the stimulus-organism- response theory, which will providing a unique theoretical perspective for future theoretical and empirical research in this realm. Furthermore, this study is also expected to provide implications for hospital managers and policymakers, who can improve and restructure the existing regulations and policies or laws to to encourage and support medical professionals to engage in the transformation of medical achievements.

## **2. Methodology**

Drawing on prior literature on the transformation of scientific and technological achievements, academic research commercialization, academic entrepreneurship, and technology transfer, combining the stimulus-organism-response theory and the theory of planned behavior, this study employs a deductive approach to establish a conceptual framework for explaining the process and relationship from external stimuli to individual cognition and then to the intention of engaging in the transformation of medical achievements among medical professionals. Governmental, societal, and organizational factors are considered as external stimuli. Behavior beliefs, normative beliefs, control beliefs, attitude, perceived behavioral control, and subjective norms serve as individual cognition. The intentions of medical professionals to engage in the transformation of medical achievements represent the final response.

Next, a questionnaire survey will be conducted among medical professionals in China based on the conceptual framework proposed in this study. Subsequently, statistical methods will be employed to analyze the collected data for verifying and adjusting this conceptual framework.

## **3. Theoretical Framework**

### **3.1 Theoretical Lenses**

#### **3.1.1 The Stimulus-Organism-Response Theory**

This theory was initially proposed by Mehrabian and Russell in 1974, including three components: stimulus, organism, and response. Within this framework, stimuli refer to external environment and information. The organism refers to the individual's emotional state or conditions triggered by external stimuli. Lastly, the response refers to a certain tendency or behavior driven by individual's emotional state or conditions [16-17]. This theory is widely used in explaining the whole process of how external stimuli influence consumers' ultimate purchase intent and behavior through their cognitive processes, which has emerged as a prevailing theoretical framework in the field of consumer behavior [18].

Therefore, in this study, we will explore how external stimuli impact medical professionals' ultimate response to the transformation of medical advancements through their cognitive processes, based on the stimulus-organism-response theory.

### *3.1.2 The Theory of Planned Behavior*

The theory of planned behavior was proposed by Ajzen [19], based on the theory of reasoned action. In the theory of planned behavior, intention is regarded as the direct influencing factor of a given behavior, and attitudes towards behavior, subjective norms as well as perceived behavioral control are described as antecedents of behavioral intention. Additionally, it is considered that behavioral beliefs, normative beliefs, and control beliefs play a significant role in determining attitudes, subjective norms, and perceived behavioral control. The theory of planned behavior has been widely used to investigate the influencing factors of university researchers engaging in research commercialization and academic entrepreneurship [20–22], which can provide some theoretical references for this study.

Therefore, the combination of theory of planned behavior and stimulus-organism-response theory can provide a holistic theoretical view for exploring how external stimuli affect medical professionals' intentions toward the transformation of medical achievements via their cognition (salient belief and attitudes, subjective norms as well as perceived behavioral control).

## *3.2 Relevant Factors*

### *3.2.1 External stimuli*

According to the stimulus-organism-response theory, external stimulus refer to the external environmental factors that can affect individual emotional state and psychological cognition [16-18]. In the fields of academic entrepreneurship, research commercialization and transformation of scientific and technological achievements, governmental factors (policies, laws) [5,7,23], organizational factors (organizational support policy, technology transfer office, organizational resources) [20-21,24], as well as social factors (social values, role models) [3,6,25] are often mentioned as important external influences on researchers' intentions.

Accordingly, this study regards those external factors as external stimuli that may affect medical professionals' intention engaging in the transformation of medical achievements.

### *3.2.2 Organism cognition*

According to stimulus-organism-response theory, organism cognition refers to the emotional and psychological state of an individual caused by external stimulus [17-18]. However, describing cognition solely as an individual psychological or emotional state is too simplistic and does not facilitate a thorough understanding of the cognitive changes that occur when individuals are influenced by external stimuli.

Therefore, this study integrates the theory of planned behavior and stimulus-organism-response theory to explore how medical professionals undergo psychological changes when exposed to external stimuli. The cognitive aspects of the organism include behavioral beliefs, normative beliefs, control beliefs, attitudes, subjective norms, and perceived behavioral control.

### *3.2.3 Response*

According to stimulus-organism-response theory, response refers to an individual's final reaction towards the external stimulus [18]. And the final response involves certain intention [16-17] or behavior [26-27]. Many existing studies on academic entrepreneurship and the transformation of scientific and technological achievements consider researchers' intention to engage in academic

entrepreneurship or transform scientific and technological achievements as their response when they are influenced by external factors [28-29]. According to the theory of planned behavior, intentions are defined as a reliable predictor of an individual's inclination to engage in a specific behavior. The stronger intention to perform certain behavior, the likelihood of its actual execution is the higher [19].

Thus, this study pays more attention to the medical professionals' intention engaging in the transformation of medical achievements and considers it as medical professionals' ultimate response when they are influenced by external stimulus.

#### *3.2.4 Personal factors*

Some of existing studies have found that gender and previous experience also have influences on researchers' psychological cognition and intention to engage in academic entrepreneurship or the transformation of scientific and technological achievements [3,21]. However, few studies have investigated the moderating effect of gender and previous experience on the relationship between external factors and researchers' psychological cognition in terms of their engagement in the transformation of scientific and technological achievements.

Thus, this study draw on the research framework from Wu *et al.*, [30], regarding gender and previous experience as moderator variables between external stimulus and medical professionals' psychological cognition engaging in transformation of medical achievements.

### *3.3 External Stimulus and Salient Beliefs*

According to the theory of planned behavior, people may hold many beliefs about any given behavior, while they focus on some salient beliefs in a given time and environment. These salient beliefs can be divided into three main categories: behavioral beliefs, normative beliefs, and control beliefs, which are considered to be antecedents of attitudes, subjective norms, and perceived behavioral control [19]. Behavioral belief refers to an individual's view of the outcome of a certain behavior, that is, their belief about what kind of benefits or costs they will incur by performing a certain behavior [19]. Normative belief refers to an individual's view of the expectation or support degree of other important people or groups around him to engage in a certain behavior [19]. Control belief refers to an individual's views of the factors that hinder or promote the execution of a specific behavior, specifically their belief in the level of control they possess when performing certain behavior [19].

#### *3.3.1 Governmental factors (policies and laws) and salient beliefs*

In recent years, China has issued a series of policies and laws that focus on providing financial support, economic incentives, and building platforms of medical achievements' transformation to facilitate medical professionals when they engage in the transformation of medical achievements [10-11]. However, it is important to acknowledge that there are deficiencies in existing policies and laws of the transformation of medical achievements, which should be taken into consideration [31-32]. Obtaining economic benefits is an important motivation for researchers to engage in the transformation of scientific and technological achievements [3]. Therefore, this study assumes that the government's economic incentive policy can stimulate medical professionals' belief in gaining economic benefits by engaging in the transformation of medical achievements.

Funding, tax support and the establishment of transfer service platforms can facilitate medical professionals to engage in the transformation of medical achievements, thereby reducing their time and energy costs [32]. Accordingly, it can be assumed that policies related to financial support, tax incentives, and the establishment of transfer platforms could enable medical professionals to generate behavioral beliefs of reducing time and energy costs. Conversely, the imperfect policy and legal system of the transformation of medical achievements [5] may cause medical professionals to have the behavioral beliefs that they will bear legal risks and pay extra energy and time costs about engaging in the transformation of medical achievements.

The government's policies and laws play a normative and guiding role, reflecting the expectations and requirements of governments for medical professionals to engage in the transformation of medical achievements. Therefore, this study assumes that these policies and laws can stimulate normative beliefs that they should engage in the transformation of medical achievements among medical professionals.

The clarity and support of government policies will impact medical professionals' perception and judgment, regarding their engaging in the transformation of medical advancements, which in turn affects their confidence [5,32]. Thus, these policies and laws of financial and tax support and the establishment of transfer service platform will enhance medical professionals' cognition of convenience to engage in the transformation of medical achievements, and prompt them to develop the strong control beliefs. Conversely, the imperfections in the legal and policy system will enhance medical professionals' awareness of the uncertainties and obstacles associated with engaging in transformation of medical achievements, thereby diminishing strength of control belief of medical professionals. Thus, the following proposition is proposed.

P1: Governmental factors (policies and laws) and significantly affect medical professionals' salient beliefs (behavioral beliefs, normative beliefs, and control beliefs) of engaging in the transformation of medical achievements

### *3.3.2 Organizational factors and salient beliefs*

In China, the organizational factors influencing medical professionals' engagement in the transformation of medical achievements encompass the organizational policies, the technology transfer offices and organizational resources [5,9].

The economic incentive policies of organization can stimulate the economic motivation of researchers to engage in the transformation of scientific and technological achievements [33]. The technology transfer offices and the organizational resources can enhance researchers' abilities and improve their efficiencies to engage in the transformation of scientific and technological advancements and reduce their costs [5,9]. Thus, this study assumes that organizational support and awarding policies, the technology transfer offices and organizational resources can stimulate medical professionals' behavior beliefs of obtaining economic benefits, reducing costs and improving personal ability.

In addition, organizations formulate policies to support and reward the transformation of medical achievements, establish technology transfer institutions, and provide resource support, which reflect the organization's requirements and expectations for medical professionals to engage in the transformation of medical achievements. Accordingly, this study assumes that these organizational factors will lead medical professionals to develop the normative belief that they should actively engage in the transformation of medical achievements.

The organization's policies, resource support, and technology transfer institutions can greatly facilitate medical professionals to engage in the transformation of medical achievements [5,9], which

can weaken their perception of obstacles to engaging in the transformation of medical achievements and increase the strength of their control beliefs. Thus, the following proposition is proposed.

P2: Organizational factors significantly affect medical professionals' salient beliefs (behavioral beliefs, normative beliefs, and control beliefs) of engaging in the transformation of medical achievements

### *3.3.3 Social factors and salient beliefs*

In this study, the social factors refer to social values and role models. In China, social values have an important impact on researchers, and some researchers engage in the transformation of scientific and technological achievements for the purpose of benefiting the society and improving their personal status as well as reputation [34]. Thus, this study assumes that the social background that urgently needs the transformation of medical achievements can motivate medical professionals to generate the behavioral belief of improving personal reputation as well as benefiting social, and develop the normative belief that society need them to engage in the transformation of medical achievements.

However, there is also another social value that medical professionals should focus on medical services rather than engaging in the transformation of medical achievements [5]. As a result, this social value may cause medical professionals to develop a normative belief that they should not engage in the transformation of medical achievements.

In addition, studies have also found that role models can bring motivation for researchers to engage in the transformation of scientific and technological achievements, and the successful experience of role models will stimulate the self-efficacy of researchers to engage in the transformation of scientific and technological achievements, thereby strengthening their willingness to engage in the transformation of scientific and technological achievements [5,35]. Therefore, this study assumes that successful role models will improve the self-efficacy of medical professionals and enhance their control beliefs. Thus, the following proposition is proposed.

P3: Social factors significantly affect medical professionals' salient beliefs (behavioral beliefs, normative beliefs, and control beliefs) of engaging in the transformation of medical achievements

### *3.4 Personal Factors Mediate the Relationship between External Stimuli and Salient beliefs*

In this study, personal factors mainly refer to gender and individual previous experience, including past educational and commercial experience involving the transformation of scientific and technological achievements.

#### *3.4.1 The moderating effect of gender*

Many of existing studies found that males are more willing to engage in academic entrepreneurship or the transformation of scientific and technological achievements than females [3]. Existing studies have also found that, compared with men, women exhibited lower self-efficacy when it comes to academic entrepreneurship, and their ability to acquire necessary social resources of academic entrepreneurship is also inferior to that of men [36-38]. Therefore, this study assumes that when stimulated by governmental, organizational and social factors, male medical professionals have stronger control beliefs than female medical professionals, in terms of engaging in the transformation of medical achievements.

Due to the different social positioning of women and men, women are more inclined to focus their energy and time on family, while it is different for men. In addition, compared with men, women

are less ambitious and adventurous, which results in women's less interest in engaging in academic entrepreneurship [36-38]. Therefore, this study assumes that when stimulated by governmental, organizational and social factors, male medical professionals have more positive behavioral beliefs and normative beliefs than female medical professionals in engaging in the transformation of medical achievements. Thus, the following proposition is proposed.

P4: Gender can moderate the relationship between external stimulus and salient beliefs

#### *3.4.2 The moderating effect of previous experience*

Studies have found that previous educational and commercial experiences can enhance researchers' knowledge, skills, and self-efficacy in engaging in the transformation of scientific and technological achievements. In addition, previous experience can help researchers accumulate and acquire the resources needed to engage in the transformation of scientific and technological achievements [21,39-41].

Therefore, this study assumes that experienced medical professionals could generate stronger control beliefs and more positive behavioral beliefs when faced with external stimuli than inexperienced medical professionals. At the same time, because medical professionals' previous experience has enhanced their knowledge and ability, as well as accumulated the necessary resources, they are more likely to be expected by both organizations and individuals around them to engage in the transformation of medical achievements. Therefore, this study assumes that experienced medical professionals are inclined to develop stronger normative beliefs than inexperienced medical professionals. Thus, the following proposition is proposed.

P5: Previous experience can moderate the relationship between external stimulus and salient beliefs

### *3.5 Salient Beliefs and Attitudes, Subjective Norms, Perceived Behavioral Control*

#### *3.5.1 Behavioral beliefs and attitude*

According to the theory of planned behavior, salient behavioral beliefs are the antecedents of attitudes. Salient behavioral beliefs that are expected to bring desirable consequences will prompt individuals to form favorable attitudes, while salient behavioral beliefs that are expected to bring undesirable consequences will cause people to form unfavorable attitudes [19].

Based on the above analysis, medical professionals may develop behavioral beliefs of gaining economic benefits, reducing time and energy costs, achieving personal growth, improving their reputation and social status, and contributing to society when they are influenced by external stimulus. These desirable behavioral beliefs can promote medical professionals to form a positive attitude towards the transformation of medical achievements. Conversely, Due to imperfect policies, laws, and insufficient organizational support, medical professionals may hold the behavioral belief of increasing costs and taking risks. Consequently, they develop an unfavorable attitude towards engaging in the transformation of medical achievements. Thus, the following proposition is proposed.

P6: Salient behavioral beliefs can significantly affect medical professionals' attitudes of engaging in the transformation of medical achievements.

#### *3.5.2 Normative beliefs and subjective norms*

Salient normative beliefs are antecedents of subjective norms[19]. Based on the above analysis, the requirements and support of the government and medical organizations, as well as social expectations, prompt medical professionals to develop a normative belief that they are expected to



engage in the transformation of medical achievements. Thus, these normative beliefs may lead medical professionals to from the awareness of pressures from governments, organizations, and society to engage in the transformation of medical achievements.

On the contrary, influenced by the social value that medical professionals should focus mainly on medical services rather than the transformation of medical achievements, medical professionals may also form normative beliefs that they should not engage in the transformation of medical achievements, which will lead to the formation of their perceived pressure that society does not expect medical professionals to engage in the transformation of medical achievements. Thus, the following proposition is proposed.

P7: Salient normative beliefs can significantly affect medical professionals' subjective norms of engaging in the transformation of medical achievements

### *3.5.3 Control beliefs and perceived behavior control*

The salient control beliefs are the basis for the formation of perceived behavior control. The stronger the control beliefs, the higher the perceived behavior control.[19].The supports from governments and organizations can greatly facilitate medical professionals to engage in the transformation of medical achievements, and the social role models can improve the self-efficacy of medical professionals, which will stimulate medical professionals to develop the strong control beliefs in engaging in the transformation of medical achievements. Thus, these strong control beliefs will greatly improve medical professionals' cognition of the convenience and controllability of engaging in the transformation of medical achievements, and then form strong perceived behavioral control.

However, imperfect policies and laws, as well as insufficient organizational support, also contribute to medical professionals' perception of uncertainty and incapability. This leads to the formation of weak control beliefs and consequently results in low perceived behavior control for engaging in the transformation of medical achievements among medical professionals. Thus, the following proposition is proposed.

P8: Salient control beliefs can significantly affect medical professionals' perceived behavior control of engaging in the transformation of medical achievements

### *3.6 Attitude, Subjective Norm, Perceived Behavioral Control and Behavioral Intention*

According to the theory of planned behavior, attitudes, subjective norms and perceived behavioral control are the important antecedents of behavioral intention, which positively affect behavioral intention [19]. In the field of academic entrepreneurship or scientific and technological achievements transformation, some empirical research results also proved the relationships mentioned by the theory of planned behavior [20-22,39,42].

Therefore, this study assumes that medical professionals' attitudes is positively associated with their intention to engage in the transformation of medical achievements. In other words, the favorable attitude formed by desirable behavioral beliefs positively affects medical professionals' intention engaging in the transformation of medical achievements, while the unfavorable attitude formed by undesirable behavioral beliefs negatively affects their intention. Thus, the following proposition is proposed.

P9: Medical professionals' attitudes significantly affect their intention to engage in the transformation of medical achievements

In addition, this study also believes that medical professionals' subjective norms for the transformation of medical achievements are positively correlated with their intention engaging in the transformation of medical achievements. In other words, the subjective norms that medical professionals are awareness of the expectations and pressures for engaging in the transformation of medical achievements positively affect their intention engaging in the transformation of medical achievements, while the subjective norm that medical professionals perceived that some people does not support them to participate in the transformation of medical achievements negatively affects their intention. Thus, the following proposition is proposed.

P10: Medical professionals' subjective norms significantly affect their intention to engage in the transformation of medical achievements.

Finally, this study also assumes that the perceived behavioral control is positively correlated with their intention to engage in the transformation of medical achievements. In other words, the strong perceived behavioral control of medical professionals positively affects their intention to engage in the transformation of medical achievements, while the weak perceived behavioral control of medical professionals negatively affects their intention to engage in the transformation of medical achievements. Thus, the following proposition is proposed.

P11: Medical professionals' perceived behavioral control significantly affects their intention to engage in the transformation of medical achievements.

#### **4. Result**

Based on the theoretical framework, a conceptual framework containing propositions mentioned above is proposed in this part, as shown in Figure 1. In this conceptual framework, governmental, social, and organizational factors make up external stimuli; The cognitive processes is from salient beliefs (behavioral beliefs, normative beliefs, and controlling beliefs) to attitude, perceived behavioral control, and subjective norms; Personal factors (gender and previous experience) act as regulators between external stimuli and internal cognition; Intentions represent the final response.

Supported by relevant literature, this study assumes that medical professionals develop behavioral beliefs of obtaining economic benefits, promoting personal development, improving personal social status and benefiting society under the stimulation of government, organization and social factors(P1), and two opposite normative beliefs are generated: medical professionals are expected to engage in the transformation of medical achievements and medical professionals are not expected to engage in the transformation of medical achievements (P2) .

In addition, the support of the government and organizations, as well as the guidance of role models, stimulate the medical professionals to generate a strong control belief in engaging in the transformation of medical achievements, while the imperfect policies and laws prompt the medical professionals to have a weak control beliefs (P3).

According to related studies, this study believes that gender, previous experience can mediate the relationship between external stimuli and salient beliefs (P4,P5). Compared with female medical professionals, male medical professionals were more likely to have positive salient behavioral beliefs, strong salient normative beliefs and control beliefs when exposed to external stimuli. Similarly, compared with Inexperienced medical professionals, medical professionals with relevant experience were more likely to have positive salient behavioral beliefs, strong salient normative beliefs and control beliefs when exposed to external stimuli.

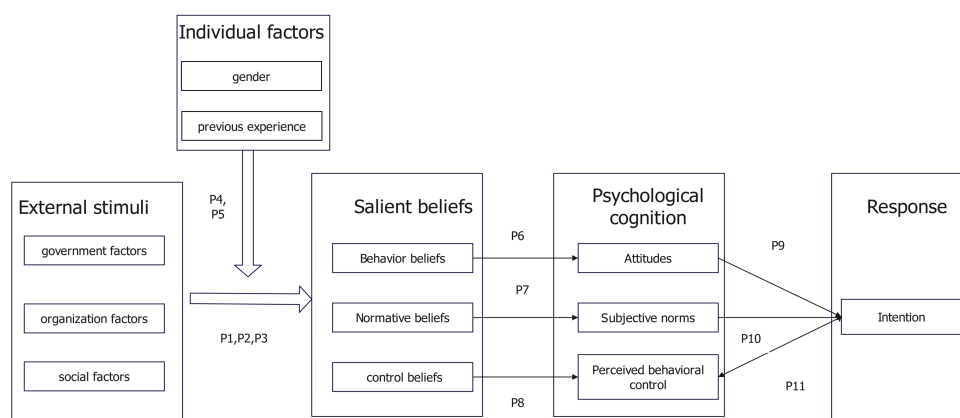
Furthermore, according to the theory of planned behavior [19], this study believes that behavioral beliefs significantly affect attitudes (P6), those behavioral beliefs with desirable consequences (gaining economic benefits, reducing time and energy costs, achieving personal

growth, improving their reputation and social status, and contributing to society) contribute to the formation of favorable attitudes toward the transformation of medical achievements among medical professionals, and those behavioral beliefs with undesirable consequences (increasing costs and taking risks) lead to their unfavorable attitudes toward the transformation of medical achievements.

In this study, it is assumed that the normative belief is related to the formation of subjective norms (P7). In other words, the normative belief that medical professionals are expected to engage in the transformation of medical achievements contribute to the development of positive subjective norms for their engagement in the transformation of medical achievements. On the contrary, the normative beliefs that medical professionals is not supported to engage in the transformation of medical achievements will lead to the formation of their pressure that society does not expect them to engage in the transformation of medical achievements.

Likewise, salient control beliefs is related to the perceived behavior control in the present study (P8). The strong control beliefs generated by medical professionals stimulated by the government, organization and role models improve their perceived behavior control of engaging in the transformation of medical achievements; However, the imperfect policies and laws make them develop weak control beliefs, which leads them to form weak perceived behavior control about engaging in the transformation of medical achievements.

The attitudes, subjective norms and perceived behavioral control formed under the influence of the salient beliefs are closely related to medical professionals' intention engaging in the transformation of medical achievements (P9, P10, P11). The favorable attitudes of medical professionals contribute to the high intention of engaging in the transformation of medical achievements among medical professionals, and vice versa. Similarly, the strong subjective norms and perceived behavioral control are positively medical professionals' intention engaging in the transformation of medical achievements, and vice versa.



**Fig. 1.** The proposed conceptual framework

To sum up, a complete conceptual framework is formed, which initially reveals the influencing mechanism and process of external stimulus on medical professionals' psychological cognition and intention toward engaging in medical transformation. On the one hand, the support from governmental policies and organizational policies, as well as social needs, can stimulate medical professionals to develop positive salient beliefs, attitudes, subjective norms and perceived behavioral control, thereby enhancing their intention to engage in the transformation of medical achievements. On the other hand, the imperfect policy and legal system, as well as societal values that discourage

medical professionals from engaging in the transformation of medical achievements, also contribute to the development of negative perceptions among medical professionals. Consequently, they are deterred from engaging in the transformation of medical achievements. Besides that, the form of medical professionals' cognition is also influenced by their gender and individual previous experience.

## **5. Conclusion**

To explore the effects of external and personal factors on medical professionals' intention to engage in the transformation of medical achievements, a conceptual framework is proposed under the context of China by integrating the stimulus-organism-response theory and theory of planned behavior, drawing upon prior relevant studies.

This framework reveals the influencing mechanism and process of external stimulus (governmental, social, and organizational factors) and personal factors (gender and previous experience) on medical professionals' psychological cognition and intention engaging in medical transformation, and finds external stimuli can both positively and negatively affect medical professionals' intention engaging in the transformation of medical achievements. In addition, this framework also suggests that gender and individual previous experience play an important role on the formation of medical professionals' cognition of engaging in the transformation of medical achievements.

With the findings, our study makes several theoretical contributions and managerial implications. Firstly, this study is one of the first studies to integrate the stimulus-organism-response theory and elements of the theory of planned behavior to explore the relationships between external stimuli, personal factors and medical professionals' psychological cognition as well as intention of engaging in the transformation of medical achievements, which provides a comprehensive theoretical perspective and detailed explanation to better understand the process and mechanisms how external stimulus affect medical professionals' psychological cognition and intention toward engaging in medical transformation. As a result, the conceptual framework makes up for the lack of attention paid to medical professionals in previous studies, paving the way for future research in this realm.

Secondly, the novelty of this study lies in considering gender and individual previous experience as the regulating factors for external stimuli and individual cognitive formation. This approach differs from previous studies that analyzed the direct influence of personal factors on behavioral intention [3], allowing for a better understanding of why different individuals respond differently to external stimuli.

Thirdly, the findings of this study maybe provide a reasonable explanation for why Chinese medical professionals are not enthusiastic about engaging in the transformation of medical achievements at present. It is likely that medical personnel's negative cognition caused by external stimulus (Inadequate laws and policies, unsupported social values, etc) exceeds the positive cognition brought by external stimuli (economic incentives, supportive policies, etc), which leads them to generate low intention for engaging in the transformation of medical achievements.

Furthermore, this study will enable hospital managers and policymakers to better understand how laws and policies affect medical professionals' cognition, and then to their intention engaging in the transformation of medical achievements. It will help hospital managers and policymakers to know how they should inspire medical professionals' positive cognition and high intention by improving and restructuring the existing regulations and policies or laws, which is helpful for advancing the develop of transformation of medical achievements in China.

Although this paper presents a comprehensive conceptual framework, it still has a few limitations. Firstly, this study is exploratory research, and the proposed conceptual framework in this study requires further validation through empirical testing with larger samples. Additionally, in the future, the moderating effect of other personal factors such as age, personality, and professional title can also be further investigated.

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