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ORIGINAL PAPER

Influencing Factors on Choosing Psychiatry as a Career: An Exploration in Chinese University Students

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Abstract There is a consistent need of psychiatric professionals in the world including China, and a consistent challenge to recruit more medical students into the psychiatric careers. We aimed to look for factors which have an impact on career-choosing of psychiatry in Chinese university students. We invited 508 non-medical students (NM), 304 medical students without (MO) and 123 medical students with clinical internship experience (MW), to answer a matrix of 43 questions regarding factors influencing career-choosing of psychiatry. Answers to these questions were analyzed through exploratory and confirmatory factor analyses, once the latent factors were identified and structurally-validated, their mean scores in three groups of students were calculated. Five factors with five items each were identified, namely social status inferiority, career importance, practice reward, career preference, and practice stress. NM scored lower than MO and MW did on Social Status Inferiority; NM group scored higher than MO and MW groups did on Career Importance; MW scored lower than NM and MO did on Practice Reward and on Career Preference; Regarding Practice Stress, NM scored higher than MO did, who then in turn, scored higher than MW did. In addition, Practice Stress was positively correlated with

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advice of the medical educators; and Social Status Inferiority and Career Preference were positively correlated with the psychiatry teaching of the medical educators. Raising career rewards, improving social status, and reinforcing psychiatric education might help to recruit more medical students to specialize in psychiatry practicing.

Keywords Psychiatry · Social factors · Career choice · Students · Internship experience

Introduction

According to a report from the World Health Organization (2001), the aggregate point prevalence of mental disorders in adults is about 10 %, and there are over 25 % of people worldwide develop one or more mental disorders during their entire lifetime. These disorders have a significant impact on individuals, families and communities, and accounted for 12.3 % loss of the total disability adjusted life years in 2000, which might increase to 15 % in 2020. For example, there are 350 million people suffering from depression, and about one million having committed suicide every year [1]. Similar things happen in China, for instance, 5201 people from Beijing and Shanghai had participated in a survey from November 2001 to February 2002, and the prevalence of mental disorders within 12 months was 7.0 % [2]. In addition, an investigation conducted by the National Health and Family Planning Commission of China in 2009 had indicated that there were more than 100 million patients suffering from mental disorders, and 16 million from severe ones. Mental disorders ranked the first in the total disease burden in China, accounting for about 20 % [3].

On the other hand, the need of recruiting mental health professionals continues all over the world. In USA, the American Psychiatric Association issued a press release highlighting an ongoing decline in the recruitment of medical students into the psychiatry specialty [4]. In UK, the Royal College of Psychiatrists 2011 Census showed that 3 % of the National Health Service consultant posts in the country were to be vacant [5]. In Canada, only 6.6 % of practicing physicians were trained to be psychiatrists [6], and the situation was unlikely to improve even after the later-on effort of the Canadian Resident Matching Service [7]. In China 2013, there were only 20,655 psychiatrists and 43,788 psychiatric nurses, and a doctor–patient ratio was 1:840 [3]. Moreover, in some countries, medical students have shown less interest in choosing psychiatry as a career. For instance, only 4.5 % of the US medical students, and 6 % of Spanish medical students considered choosing psychiatry as a career [8], while only 1.6 % of Chinese medical students did so [9].

Consequently, investigators have explored on the crucial factors which influence medical students to choose psychiatry as a career. Personality traits, the life-long mental disorders self-suffered such as depression, internal locus of control and social connection problems, might influence students' attitudes towards psychiatry [10]. Having a family member or a close friend once suffering from a mental disorder might also be a factor [11]. Although psychiatry is regarded as a career more interesting and intellectual-challenging than other disciplines, it is often considered as lacking a scientific foundation, and not enjoyable by some medical students [12].

Social cognition about psychiatry also plays a significant role in the career-choosing of medical students. Psychiatric practice is considered as stressful, and psychiatric patients

are thought to be aversive—"anxiety-provoking, unpleasant, untrustworthy and disabled" [13]. Media portrayals of doctors/medicine, past experience of physical and mental illnesses had an effect on the psychiatry-choosing or even specializing [14]. In addition, less financial reward [15–17], and lower social status of the psychiatry specialty judged by the public [18] reduced the career choosing. Further, some psychiatrists encountered an anti-psychiatry bias from their relatives, friends and the public [18]. When referring to their career preferences, medical students are indeed influenced by the judgment from family members or friends [19–22].

The next factor influencing on the issue is the medical education itself, especially the attitudes of the medical educators. Students developed more positive attitudes and intentions of choosing psychiatry-career when they were encouraged by their senior psychiatrists [23]. The tendency of choosing psychiatry as a career increases the evaluation grades of psychiatry lectures [24], and the increased intention at this stage of medical training lead to an increased recruitment in this specialty later [25, 26].

However, up to date, there is no comprehensive study clearly showing what contribution patterns of all the above-mentioned factors would be when referring to the psychiatry-choosing as a career in medical students. The data about Chinese medical students in this aspect were even less. In order to measure the above-mentioned factors we have developed, in the current study, a questionnaire-matrix (MATRIX) which covers personal judgments of the preference to psychiatry as suggested previously [12, 14, 27], the importance of psychiatry [28], the reward of psychiatry-practicing [15–17], the pressure of psychiatry-practicing [13], and the social status of psychiatry [18]. In addition, the MATRIX covers two questions for medical students only: (1) "Advice from medical college educators has a great impact on my career-choice", and (2) "My clinical educator often mentions knowledge about psychiatry to me", which measure the educator's influence on the career-choosing of the students [23, 24].

We administered the MATRIX in university students majoring in clinical medicine (with and without clinical internship experience), and in non-medical specialties. We have hypothesized that the three student groups differ on scores of the influencing factors, and the differences are correlated with attitudes of medical educators towards psychiatry.

Methods

Participants

In our study, 508 non-medical students (NM, 279 women; mean age of 19.89 years old with 1.70 SD, age range 17–27 years), 304 medical students without clinical internship experience (MO, 172 women; mean age 20.96 ± 1.54 SD, range 19–21) and 123 medical students with clinical internship experience (MW, 82 women; mean age 23.94 ± 2.02 S.D., range 20–27) were included. There was no significant difference when referring to gender ($\chi^2 = 5.61$, $p > 0.05$) among the three groups, but there was significant difference when referring to age ($F [2, 932] = 235.69$, $MSE = 193845.80$, $p < 0.01$). All students had no history of psychiatric or neurological abnormalities, and also were free from alcohol or drug use at least 72 h prior to participating in the study. The study design was approved by the local ethics committee, and written informed consent has been obtained from all participants.

Measures

In a quiet room, all participants were asked to complete the MATRIX, using a 5-point Likert scale format (1—very unlike me, 2—moderately unlike me, 3—somewhat like and unlike me, 4—moderately like me, 5—very like me). Forty-three items were for all participants (eight items targeting to measure the preference to psychiatry, nine items the importance of psychiatry, nine items the reward of psychiatry-practicing, eight items the pressure of psychiatry-practicing, and nine items the social status of psychiatry); two additional items ("Advice from medical college educators has a great impact on my career-choice", and "My clinical educator often mentions knowledge about psychiatry to me") were also applied to MW students.

Statistical Analysis

Answers to the forty-three question-items were submitted to a Principal Component Analysis first, using the Predictive Analytics Software Statistics, Release Version 18.0.0 (SPSS Inc., 2009, Chicago, IL). Factor loadings were rotated orthogonally by the varimax normalized methods. Items which were loaded less heavily (below 0.30) on a target factor, or cross-loaded heavily (over 0.30) on more than one factor were removed from subsequent analyses one-by-one. The procedure continued until no further item was needed to be removed.

The model fits (components extracted as latent factors) were evaluated by the confirmatory factor analysis for the structural equation modeling using analysis of moment structures (AMOS) version 17.0 (AMOS Development Corp., 2008, Crawfordville, FL). We used the following parameters to identify the model fit: the χ^2/df, the goodness-of-fit, the adjusted goodness-of-fit index, the comparative fit index, the Tucker–Lewis index, and the root mean square error of approximation. Afterwards, the factors and their related items were defined.

Further, a questionnaire was developed based on the results of the exploratory and confirmatory factor analyses. The internal reliabilities (the Cronbach alphas) of the questionnaire factors were then calculated. The mean scale scores of the questionnaire in the three groups of participants were submitted to two-way ANOVA, i.e., group by scale, plus the post hoc Dunnett test. Moreover, in MW students, the correlations between these scales and the two additional items were evaluated by the Spearman rank order correlation test. A p value less than 0.05 was considered to be significant.

Results

Answers to the 43 MATRIX items were put to the principal component factor analysis first. The analysis disclosed 11 factors with eigenvalues greater than 1, the first 11 factors were 4.21, 4.04, 2.79, 2.33, 1.70, 1.39, 1.23, 1.22, 1.15, 1.05, and 1.04 respectively, which altogether accounted for 51.46 % of the total variance (the first five factors altogether accounted for 35.04 %). The scree-plot showed that there was a clear level-off after the six factor (Fig. 1), we therefore extracted six- and five-factor solutions for further analyses.

With the loading and cross-loading criteria, 26 items were retained for the six-factor solution, while 25 items for the five-factor one. The AMOS fitting models for the two solutions indicated that the parameters for the five-factor solution were better than those of

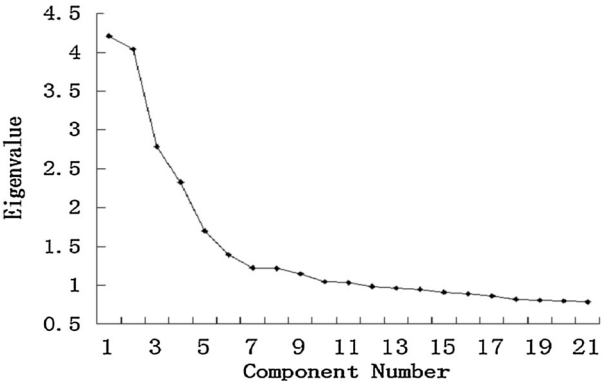

Fig. 1 The screen plot based on answers from 935 participants

Table 1 Fitting parameters of two models of the factors influencing psychiatry-choosing as a career in 935 participants

Model	χ^2/df	Goodness of fit index	Adjusted goodness of fit index	Comparative fit index	Tucker–Lewis index	Root mean square error of approximation
Five-factor	3.40	0.93	0.91	0.86	0.84	0.05
Six-factor	3.45	0.92	0.91	0.84	0.81	0.05

the six-factor model (Table 1). We therefore chose the five-factor solution for the subsequent analyses. The factors (scales) were named as the social status inferiority, career importance, practice reward, career preference, and practice stress. With five items each, these scales displayed satisfactory internal reliabilities (the Cronbach alphas, Table 2), their mean scores in three student groups were also calculated (Table 3). Moreover, the mean scores of "Advice from medical college educators has a great impact on my career-choice" (2.67 ± 1.34), and "My clinical educator often mentions knowledge about psychiatry to me" (2.08 ± 1.20) in MW students were computed.

The two-way ANOVA detected that there were significant differences among the three groups (group effect, $F[2, 932] = 17.17$, $MSE = 287.30$, $p < 0.001$; scale effect, $F[4, 3728] = 629.72$, $MSE = 8294.74$, $p < 0.001$; group × scale interaction effect, $F[8, 3728] = 12.57$, $MSE = 165.589$, $p < 0.001$) when referring to the means of the five scales. The post hoc Dunnett test showed that on Social Status Inferiority, NM scored lower than MO ($p = 0.001$) and MW ($p = 0.001$) did; on career importance, NM scored higher than MO ($p = 0.008$) and MW ($p = 0.002$) did; on practice reward, MW scored lower than NM ($p = 0.001$) and MO ($p = 0.004$) did; on career preference, MW scored lower than NM ($p = 0.008$) and MO ($p = 0.035$) did; on practice stress, NM scored higher than MO did ($p < 0.001$), and MO scored higher than MW did ($p < 0.001$) (Table 3).

In MW group, "Advice from medical college educators has a great impact on my career-choice" was positively related to "Practice Stress" ($n = 123$, $r = 0.21$, $p < 0.05$); "My clinical educator often mentions knowledge about psychiatry to me" was positively related to "Social Status Inferiority" ($r = 0.23$, $p < 0.05$), and to "Career Preference" ($r = 0.23$, $p < 0.05$).

Table 2 Item loadings on factors influencing psychiatry-choosing as a career in 935 participants

	Factor 1	2	3	4	5
Social status inferiority (0.68)					
Compared with other clinicians, I think psychiatrists have a lower social status	**0.72**	−0.07	0.00	−0.09	0.05
Compared with other clinicians, I think psychiatrists have a lower social acceptance	**0.64**	0.10	0.02	−0.11	0.07
Compared with other clinicians, I think the income of psychiatrists is lower	**0.62**	−0.10	−0.01	0.01	−0.06
I think the working environment of psychiatrists is very poor	**0.51**	−0.09	0.04	−0.07	0.23
I think non-psychiatric doctors have a prejudice against psychiatrists	**0.46**	−0.07	0.07	0.06	0.29
Career importance (0.67)					
Our society should pay more attention to psychiatrists	0.00	**0.68**	0.11	−0.03	0.19
I think the work of psychiatrists is very important	−0.07	**0.65**	0.12	0.05	0.08
I think psychiatry is a frontier discipline with rapid development and broad prospects	−0.13	**0.56**	0.02	0.29	0.08
If one of my relatives or friends has psychological or mental problems, I would recommend him/her to see a psychiatrist	0.04	**0.51**	0.02	0.02	−0.14
Compared with other clinicians, I think psychiatrists are better at communicating with others	−0.04	**0.50**	0.16	0.06	0.23
Practice reward (0.72)					
Salary has a great impact on my career-choice	−0.01	0.01	**0.70**	−0.07	−0.03
Employment environment has a great impact on my career-choice	0.01	0.14	**0.66**	−0.10	0.02
Prospects of occupation development have a great impact on my career-choice	−0.02	0.21	**0.64**	−0.12	0.04
Occupational pressure at work has a great impact on my career-choice	0.00	0.23	**0.59**	−0.06	0.02
Personal security has a great impact on my career-choice	0.01	0.04	**0.55**	−0.07	0.08
Career preference (0.74)					
I will choose to be a psychiatrist if possible	−0.15	0.13	0.05	**0.75**	−0.02
I would get great satisfaction if I worked as a psychiatrist	−0.02	0.18	0.01	**0.72**	0.09
I find psychiatry very attractive	−0.10	0.24	0.03	**0.66**	−0.03
If I had to list top three medical specialties I longed for, psychiatry would be excluded	0.29	−0.12	0.13	**−0.57**	−0.06
I know psychiatry very well	0.22	−0.10	−0.01	**0.54**	−0.21
Practice Stress (0.65)					
Compared with other clinicians, I think psychiatrists are under more pressure	0.03	0.21	−0.07	−0.03	**0.73**
Compared with other clinicians, psychiatrists work much harder	0.07	0.14	−0.08	−0.05	**0.67**
Compared with other clinicians, I think psychiatrists are faced with tenser doctor–patient relationships	0.21	−0.10	0.06	−0.09	**0.56**
Compared with other clinicians, I think psychiatrists are more likely to get involved in legal disputes	0.28	−0.07	0.15	−0.05	**0.47**
I think psychiatrists have very irregular working hours	0.15	−0.03	0.08	−0.01	**0.39**

Factor internal reliabilities are indicated immediately after their names

Bold values are absolute loadings higher than 0.35

Table 3 The scores (mean ± SD) of five factors in non-medical students (NM, n = 508), medical students without internship experience (MO, n = 304), and medical students with internship experience (MW, n = 123)

	NM	MO	MW
Social status inferiority	11.80 ± 3.55	12.69 ± 3.68*	13.07 ± 4.00*
Career importance	20.54 ± 3.18	19.82 ± 3.16*	19.67 ± 3.66*
Practice reward	18.32 ± 3.75	18.24 ± 3.40	17.11 ± 4.01*+
Career preference	12.93 ± 4.27	12.75 ± 4.18	11.80 ± 4.25*+
Practice stress	14.67 ± 3.70	13.36 ± 3.70*	11.25 ± 4.14*+

* $p < 0.05$ versus NM; $^{+}p < 0.05$ versus MO

Discussion

With the structure-validated measures, we have explored the factors influencing psychiatry-choosing as a career in university students. Compared to NM, both MO and MW perceived lower social status, lower career importance of psychiatry, and rated lower practice stress of psychiatry; in addition, MW rated even lower practice reward, less career preference, and lower practice stress. Furthermore in MW, the perceived practice stress was positively correlated with advice of the medical educators, while the social status inferiority and the career preference of psychiatry were positively correlated with the psychiatry teaching of the medical educators. In this case, both our hypotheses have been confirmed.

On Social Status Inferiority, compared to medical students, NM considered that psychiatry had a higher social status. There has been no plausible explanation for the outcome up to present. The medical students, who were acquainted more with the medical field, might perceived more stigma concerning psychiatry [29, 30]. In MW, advice from medical educators was positively correlated with the inferiority perceiving of psychiatry. Although we failed to trace whether the teaching or mentioning of psychiatry was positive or negative in the MW students, the correlation was in line with the negative attitude (or stigma) towards psychiatry in our current society [31, 32]. Moreover, what we found was in line with the previous results that the teachers played an important role in students' career choosing [23, 33].

The reason behind that NM group considered psychiatry more important than MO and MW groups did might be complicated. The NM, like the general public, might perceive that social stress are becoming bigger and the need of psychiatric help becoming more huge [1, 3]. While in clinics, the degree to which patients are helped effectively and rapidly is crucial and influences psychiatry choosing as a future career [13, 34]. Indeed, without psychiatric therapy, or without help from psychiatric liaison, patients could benefit from other routine therapies in a comprehensive hospital [23, 35].

Regarding the financial reward of practicing, some specialties are certainly more attractive to medical students than psychiatry [36]. However, compared with MW, NM and MO regarded practice reward on their career choice as more important. One reason might be that the internship experience made medical students consider not only practice reward but also other factors, such as the life style, job satisfaction, intelligence challenge, effectiveness of treatment and prospect of career development [12].

On Career Preference to psychiatry, MW scored lower than NM and MO, which was consistent with previous reports that higher grade medical students had lower preference to

psychiatry [37]. One study has shown that students with internship experience had a more negative attitude towards psychiatry. They thought the quality of psychiatric education was lower and they would not choose psychiatry as a career. The correlation between knowledge-teaching from medical educators and the career preference found in our study was in line with the notion that the medical teaching, mentorship and stigma reduction might be effective strategies to increase the enthusiasm of students to psychiatry [38, 39].

When evaluating the pressure of practicing psychiatry, the perceived levels were decreased successively in NM, MO, and MW groups, indicating that the contemporary psychiatric work pressure was not as great as imagined, which was in line with a previous report [39]. As demonstrated in another study, when students knew psychiatry better both theoretically and practically, their view of psychiatrists in general were improved and less likely to be influenced by the negative social pressures [40]. Furthermore, in MW advice from medical educators was positively correlated with perceived stress. It remains unknown whether this correlation was related to the negative comment from medical educators about the current workload of Chinese psychiatrists, which was linked with the lower doctor–patient proportion in China [3].

One should also bear in mind the limitations of the current design. Firstly, we only conducted our study in students, not in junior doctors under specialization or in other medical professionals, more clinical experience comparisons would help to figure out other possible reasons which influences the psychiatry-choosing as a career. Secondly, we did not note the detailed teachings from the medical educators, to what extent a positive or negative teaching was correlated with the psychiatry-choosing remains unsettled. Lastly, besides what we had considered, the cultural or religious factors might also have impact on the decision, as demonstrated previously [14]. Nevertheless, we have demonstrated that the attitudes from society (prejudice and stigma), practicing environment and rewards influenced the psychiatry-choosing, together with the information and attitude from medical educators were influential to medical students. Our study therefore opens a window of how to recruit more medical students into the psychiatry field in China.

Authors' contributions Wei Wang carried out the study concept and design. Jiawei Zhong, Luna Zheng, Xiaoling Chen, Qianqian Gao, and Bingren Zhang participated in the acquisition of data. Jiawei Zhong, Luna Zheng, and Xiaoling Chen participated in the analysis and interpretation of data. Jiawei Zhong, Luna Zheng, Xiaoling Chen and Wei Wang wrote the draft of the manuscript. All authors read and approved the final manuscript.

Compliance with Ethical Standards

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Conflict of Interest Regarding research work described in the paper, each one of our co-authors, JZ, LZ, XC, QG, BZ, and WW, declares that there is no competing interest.

Ethical approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent Informed consent was obtained from all individual participants included in the study.

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