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Associative stigma experienced by mental health professionals in China and the United States

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Abstract

Purpose "Associative stigma" is the negative stereotyping of mental health service providers who treat people with serious mental illness. The Clinician Associative Stigma Scale (CASS) has been validated in a US sample but not in other nations, e.g., in China which has been found to have substantially higher levels of stigma towards people with mental illness than the US.

Methods The 19-item CASS was translated into Chinese and administrated to 665 mental health professionals working in psychiatric hospitals in Southern China. Confirmatory factor analysis (CFA) was used to compare the factor structure with that found in the US sample. Socio-demographic correlates of CASS scores and comparison with US data were conducted using regression models and *t* test.

Results CFA showed a good model fit (GFI = 0.911 and RMSEA = 0.068) for the four factors found in the US study: (1) discomfort with disclosing about working with serious mental illness, (2) stereotypes about professionals' own poor mental health, (3) stereotypes about unpleasantness of working with people with serious mental illness, and (4) stereotypes about lack of treatment effectiveness. Total CASS score and subscales concerning stereotypes about providers' mental health and about unpleasantness of working with such patients were significantly lower in China than in the US (both $P < 0.001$), but stereotypes concerning professional ineffectiveness were higher in China.

Conclusion Associative stigma was lower in China than in the US, possibly reflecting the cultural dominance of respect for educated professionals over stigma towards people with serious mental illness.

Keywords Associative stigma · Mental illness · Mental health · Professionals · Clinician Associative Stigma Scale

Introduction

Stigma is a concept initially described by Erving Goffman over 50 years ago, that refers to the widespread experience of negative stereotyping, negative labeling, and/or active discrimination against people with serious mental illness based on biased but socially normative perceptions [1]. Stigma has been widely demonstrated, with varying degrees of intensity, in virtually every human society [2]. Individuals with serious mental illness not only perceive stigma directed towards them from the general population (public stigma) but may also tend to internalize these negative attitudes as "self-stigma". Stigma adds to the adverse effects of illness [3, 4], by incurring low self-esteem, reluctance towards seeking help and reduced adherence to treatment [3, 5, 6].

It has been observed that stigma not only affects attitudes towards people with mental illness themselves, but, as Goffman noted, can also spread to persons closely associated with them, such as family members, friends, and, as recently recognized, professionals providing mental health services [7, 8]. Many studies have demonstrated that family members of people with mental illness experienced shame,

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hostility, diminished self-esteem and reduced social status on the basis of their close relationships to kin diagnosed with serious mental illness [9]. It has more recently been demonstrated, empirically, that mental health clinicians also experience a similar "associative" stigma, presumably based on the same social processes as those that adversely affects patients and their families, although the mechanisms that spread such stigma have not been articulated [8, 10].

Studies have reported that both direct sigma towards patients and, to a lesser extent, associative stigma towards family members and providers are common in developed countries [11, 12] and that mental health professionals may also hold negative attitudes towards individuals with mental illness [13, 14] and may endorse maintenance of social distance from the types of people they serve professionally [15, 16]. Most recently, research efforts have begun to document the presence of "associative stigma" among mental health providers, e.g., psychiatrists, nurses, social workers, psychologists and mental health counselors. An important step forward has been the development of the 19-item Clinician Associative Stigma Scale (CASS) recently validated and used to demonstrate the experience of associative stigma among mental health service providers in the US. Psychometric data on the CASS have demonstrated its internal consistency and convergent validity with other indicators of stigma [17].

Studies have also demonstrated extensive mental illness-related stigma in the developing world, with notable variation across countries, and in particular showing high levels of social distancing in China [4, 18, 19]. The more recent research on associative stigma, however, has not yet been extended to the developing world. It has been suggested that psychiatry is viewed far less positively than other medical disciplines among Chinese medical students [20], and that medical graduates were less interested in psychiatry than other specialties [19]. We hypothesized, on the basis of these data, that mental health clinicians in China are more strongly affected by associative stigma than those in the US, although this has not yet been the subject of cross-cultural research with the CASS or any other measure.

The aims of this study are to: (1) develop Chinese translation of the CASS: (2) determine whether the factor structure of CASS found in the US would be replicated in a Chinese sample, (3) assess associative stigma among Chinese mental health clinicians, (4) identify correlates of associative stigma among Chinese mental health providers and (5) compare measures of associative stigma, using the CASS, between mental health clinicians in China and published data from the US.

Methods

Participants

Participants were recruited from four psychiatric hospitals in the Pearl River Delta Region of China, located in the cities of Foshan, Jiangmen, Dongguan, Zhaoqing. The Pearl River Delta Region, located in Guangdong province, is one of the most economically developed areas in China. Targeted staff included psychiatrists, psychiatric nurses, psychotherapists, medical interns and management staff providing direct or indirect services to people with serious mental illness (e.g., schizophrenia, bipolar disorder, and major depression).

The administrative medical affairs departments at each hospital agreed to take charge of the distribution and collection of the questionnaires. Altogether, 720 printed questionnaires were provided to the four hospitals. Two hospitals, in Jiangmen and Zhaoqing, were each distributed 180 questionnaires with 162 and 160 returned respectively; the hospital in Dongguan was distributed 160 questionnaires, with 145 returned; and the hospital in Foshan was sent 200 with 198 returned. A total of 665 mental health professionals (92.4%) consented to complete the survey. Of these, 16 surveys were excluded due to missing data for over 50% of data points, leaving 649 useable surveys (90.1% return rate) for analysis. Data were collected from February to March in 2018. Written informed consent was attained from each participant, and this study was approved by the ethics committee of Guangzhou Psychiatric Hospital.

Measures

All participants were invited to complete a structured questionnaire, which, first, documented demographic characteristics including gender, age, education, professional background, department (inpatient vs. outpatient), years working in the mental health field, and city of residence. The second part of the survey was a Chinese translation of the 19-item Clinician Associative Stigma Scale (CASS).

The CASS was designed to assess associative stigma experienced by clinicians who work with patients suffering from serious mental illness [17]. Respondents were instructed to consider their specific personal experiences as providers of services to people with serious mental disorders in responding to 19 statements. A four-level response option was coded as follows: (1) if the experience had never or rarely occurred; (2) if it had occurred only once or twice, i.e., sometimes; (3) if it had occurred repeatedly but irregularly, i.e., often; and (4) if it occurred regularly or frequently. Higher total scores thus indicate

greater levels of associative stigma [17]. In the US sample, the CASS demonstrated good internal consistency and was statistically significantly correlated with measures of burn-out and quality of care, demonstrating convergent validity.

Factor analysis demonstrated four factors: (1) discomfort with disclosing about working with serious mental illness, (2) stereotypes about professionals' own poor mental health, (3) stereotypes about the unpleasantness of working with people with serious mental illness, and (4) stereotypes about the lack of professional effectiveness.

It deserves emphasis that the statements all concern pro-vider experiences of other people's impressions of their professional experiences, not the behavior of patients or the providers' own beliefs, and we have modified these labels to emphasize that these are perceptions of external stereotypes. The items in factor three, for example, do not address the problematic nature of patient's behavior, but rather the pre-sumed adverse effect of such behavior on the provider. For example, the statement "people outside of the mental health field remark that the work must be 'scary.'" does not refer to the dangerous nature of patient's behavior, a common per-ception in China [20], but rather it addresses the perception of adversity of the experience of such behavior for providers. To take another example, the statement "When people find out that I work with individuals with serious mental illness, they tell me they could never do that type of work" does not refer to stereotypes about uncontrolled patient behavior but rather to assumptions about provider's ability to tolerate exposure to such behavior. The measure is thus worded to distinguish stigma towards people with serious mental ill-ness from associative stigma towards providers.

For the present study, the full CASS was first translated into Chinese, and then administered to five students studying psychiatry to evaluate the comprehensibility of the Chinese version. The translated version was then back-translated into English for review and editing by a senior American psychiatrist (RR) and the senior Chinese investigator (HH).

Statistical analyses

First, confirmatory factor analysis was used to evaluate the similarity of the structure of the Chinese translation of the CASS to that found in the US sample [17]. Model fit was determined using two empirically defined benchmarks: a goodness of fit index (GFI) > 0.90 was indicative of adequate model fit and > 0.95 of excellent fit; while root mean square error of approximation (RMSEA) < 0.08 was used as an additional standard of adequate model fit and RMSEA < 0.06 for excellent fit [21].

Exploratory factor analysis was then used to further dem-onstrate these relationships in the Chinese sample. First, the Kaiser–Meyer–Olkin measure of sample adequacy was shown to be 0.93, well above the recommended value of

0.5 [22], and Bartlett's test of sphericity was found to be significant ($x^2 = 6875.9$, $df = 171$, $P < 0.01$), indicating that the sample was appropriate for factor analysis.

Altogether 19 items had factor loadings greater than 0.4 and a four-factor solution was identified, consistent with the published US factor analysis [17] as found in the confirma-tory factor analysis. Item 19, which did not load on any fac-tor in the US sample did load on factor 2 in this sample but was not included in the subscale construction to keep it consistent with the US measures.

Student's t test and one-way analysis of variance (ANO-VAs) were then used to evaluate the bivariate relationships of associative stigma on the CASS with measures of socio-demographic status and professional background and were followed by multiple linear regression analysis of correlates of associative stigma and its subscales.

Finally, t test was used to compare results from the Chi-nese sample with those from the US and Cohen's d (the dif-ference in means divided by the pooled standard deviation) was used to evaluate the effect size of these differences [23].

Data entry was conducted with Epidata 3.0. All statistical analyses were performed with SPSS 22.0 (IBM, USA). All tests were two-tailed and statistical significance was evalu-ated with an alpha value of 0.05.

Results

Sample

The 649 respondents had a mean age of 31.7 (SD = 8.3), with 424 (65.3%) women and over half reporting comple-tion of a bachelor's degree. Participants primarily included psychiatrists (24.7%) and psychiatric nurses and (64.4%) and had been working in the mental health field for 9.6 (SD = 8.0) years on average, with over eighty percent work-ing on inpatient units. The total score of 19-item CASS was 40.18 ± 12.20 (mean ± SD) (Table 1). The responses fre-quency data to each item of the scale was shown in Table 2.

Factor structure

Confirmatory factor analysis showed a good model fit ($\chi^2 = 577.982$, $df = 146$, GFI = 0.911 and RMSEA = 0.068) for the four factors found in the US study.

Further exploratory factor analysis, conducted for descriptive purposes, was based on a four-factor solu-tion suggested by inspection of the screen plot. The four factors (excluding item 19) were named as follows: (1) discomfort with disclosing about working with serious mental illness (four items, Cronbach's $\alpha = 0.92$), (2) ste-reotypes about professionals' own poor mental health (four items, $\alpha = 0.84$), (3) stereotypes about the unpleasantness

Table 1 Characteristics of 649 mental health clinicians responding to an questionnaire survey about associative stigma

Characteristics	Mean ± SD	N (%)
Gender		
Female		424 (65.3%)
Male		223 (34.4%)
Missing		2 (0.3%)
Age	31.7 ± 8.3	
Education		
Secondary technical school		88 (13.6%)
College degree		211 (32.5%)
Bachelor degree		335 (51.6)
Master degree or above		15 (2.3)
Profession		
Doctor		160 (24.7%)
Nurse		418 (64.4%)
Psychotherapist		13 (2.0%)
Other		56 (8.6%)
Years in the mental health field	9.6 ± 8.0	
Department		
Inpatient		536 (82.6%)
Outpatient		53 (8.2%)
Management		59 (9.1%)
Professional title		
Intern student		38 (5.9%)
Junior		478 (73.7%)
Medium-grade		84 (12.9%)
Senior		44 (6.8%)
Missing		5 (0.8%)
City		
Jiangmen		155 (23.9%)
Zhaoqing		155 (23.9%)
Dongguan		142 (21.9%)
Foshan		197 (30.4%)
Total score of CASS	40.18 ± 12.20	

of working with people with serious mental illness (five items, $\alpha = 0.86$), and (4) stereotypes about the lack of professional effectiveness (five items, $\alpha = 0.80$) (Table 3).

The total scale scores and subscales were subsequently constructed summing scores from the same items as used in the US sample.

The mean total score of the CASS was 40.18 (SD = 12.20, range 19–74), and had good internal consistency (alpha = 0.93). The sample had an average total score above the mid-point of 38 for the scale, suggesting experiences of associative stigma at least "sometimes," on average.

Correlates of associative stigma

There was significant difference across professions ($F = 3.241$, $P = 0.022$) with doctors having higher scores than others, primarily nurses. There was also a significant difference in total scores between departments ($F = 4.992$, $P = 0.007$) with professionals working on inpatient units having higher scores than professionals in outpatient clinics. No significant differences were found for gender or education background.

To evaluate the independent association of correlates of associative stigma, multiple linear regression analysis was conducted for the total score and the four-factor scores of the CASS (Table 4). Older respondents ($\beta = 0.098$, $P = 0.017$) and workers in the inpatient department (outpatient vs. inpatient, $\beta = -0.125$, $P = 0.002$) had higher CASS total scores than others. Factor 1 (discomfort with disclosure) was specifically associated with being older ($\beta = 0.152$, $P < 0.001$) and working in the inpatient department, $\beta = -0.095$, $P = 0.017$ for outpatient). Factor 2 (provider mental health problems) was negatively associated with higher education levels (Master degree or above vs. Technical school, $\beta = -0.108$, $P = 0.014$) and profession (e.g., doctor vs. nurse, $\beta = 0.166$, $P < 0.001$). Factor 3 (adverse responses to patient behavior) were greater with older age ($\beta = 0.125$, $P = 0.002$) and working in the inpatient department (e.g., $\beta = -0.099$, $P = 0.013$ for outpatient); and factor 4 (treatment ineffectiveness) with working in the outpatient department ($\beta = -0.097$, $P = 0.014$).

Comparison of CASS score between China and the US

Comparison of the total CASS scores between the sample from China and the US showed the average total score for the samples from China were lower than those from the US at 40.18 ± 12.20 for the Chinese sample and 44.80 ± 9.00 for the US ($t = -23.07$, $P < 0.01$), with a moderate effect size of −0.42 (Table 5).

No significant differences were found in factor 1 (discomfort with disclosure) ($P = 0.28$) with a small effect size = −0.07. In contrast, in factor 2 (stereotypes about professional's mental health), professionals in China experienced significantly less associative stigma than those from the US, with a bigger difference than in any other factor as reflected in an effect size difference of −1.48. Similarly, in factor 3 (negative stereotypes about responses to people with mental illness), Chinese respondents also scored lower than their US counterparts, with a moderate effect size difference of −0.44. Finally, in factor 4, (negative stereotypes about professional effectiveness), in contrast, Chinese providers scored moderately higher than those from the US ($P < 0.01$) with a moderate effect size = 0.42.

Table 2 Responses frequency to items on the Clinician Associative Stigma Scale by 649 Chinese mental health professionals

Item	Never		Rarely		Some-times		Often	
	N	%	N	%	N	%	N	%
1. I have heard people outside of the mental health field express the view that mental health professionals don't know what they are doing/can't really help	303	47	198	31	111	17	37	6
2. I have heard people outside of the mental health field express the belief that mental health professionals are to blame when people with serious mental illness harm themselves or others	216	33	255	39	126	19	52	8
3. I have heard people state or joke that work with people with serious mental illness is a job that doesn't require much skill	221	34	222	34	128	20	78	12
4. I have heard people state or joke that work with people with serious mental illness is a job that no one would want to do if they had the choice	116	18	196	30	184	28	153	24
5. I have heard other people say that the work I do is useless	278	43	189	29	112	17	70	11
6. I have heard other people say that the work I do is easy/could be done by anyone	231	36	202	31	133	21	83	13
7. When I have met a new person at a social gathering, I am reluctant to discuss my work with people with serious mental illness	241	37	190	29	121	19	97	15
8. When I am with other mental health professionals who do not work with people with serious mental illness, I am reluctant to discuss my work with this population	254	39	205	32	112	17	78	12
9. When I am with friends who work outside of the mental health field, I am reluctant to discuss my work with people with serious mental illness	256	39	177	27	123	19	93	14
10. When I am with relatives who work outside of the mental health field, I am reluctant to discuss my work with people with serious mental illness	250	39	184	28	119	18	96	15
11. When I tell them about the work that I do, people outside of the mental health field express concern for my safety related to my work with people with serious mental illness	105	16	184	28	152	23	208	32
12. When I tell them about the work that I do, people outside of the mental health field express that it must be sad because people with serious mental illness don't improve in treatment	152	23	269	41	171	26	57	9
13. When I tell them about the work that I do, people outside of the mental health field remark that the work must be "scary."	72	11	141	22	187	29	249	38
14. When people find out that I work with individuals with serious mental illness, they tell me they could never do that type of work	129	20	212	33	162	25	146	23
15. In media depictions that I have encountered, mental health professionals are depicted as engaging in unethical behavior (for example, sexual relationships with clients)	382	59	170	26	69	11	28	4
16. In media depictions that I have encountered, mental health professionals are depicted as having personal psychological problems	330	51	208	32	84	13	27	4
17. I have heard people state or joke that mental health professionals help others because they do not want to confront their own psychological problems	382	59	176	27	74	11	17	3
18. When I tell someone about the work I do, they ask me if I am analyzing them during conversations	193	30	266	41	138	21	52	8
19. I have heard people state or joke that mental health professionals must be "crazy."	259	40	221	34	105	16	64	10

Discussion

This study examined associative stigma experienced by over 600 professionals working in four psychiatric hospitals in Southern China using a Chinese translation of the recently developed Clinician Associative Stigma Scale. Confirmatory factor analysis supported the same four-factor solution found in the original US study. Correlates of associative stigma were examined both within the Chinese sample and in a comparison with a US sample.

Regression analysis of respondent characteristics within the Chinese sample showed that the total severity of associative stigma, as well as on several subscales were greater among both older providers and those working in inpatient units. Greater levels of education, in contrast, were

associated with less associative stigma on the factor concerning providers' mental health.

Comparison with data from the US showed that total scores on the CASS were significantly lower in China suggesting that US mental health professionals experience more associative stigma than those in China. This was not initially expected as stigma towards people with mental illness is generally lower in the US than in China [19]. There was notable variability among the factors with Chinese professionals scoring significantly lower than US professionals in factor 2 (poor mental health of professionals) and factor 3 (aversive experiences in response to patient behaviors), while, in contrast, they scored higher on stigma related to the perceived ineffectiveness of treatment. In understanding these results, it is important to remember that the CASS

Table 3 Factor loading of items on the Clinician Associative Stigma Scale and Cronbach alpha among Chinese mental health professionals

Item	Factor 1	Factor 2	Factor 3	Factor4
Item08	**0.84**	0.164	0.211	0.185
Item09	**0.838**	0.171	0.275	0.189
Item10	**0.834**	0.18	0.256	0.172
Item07	**0.787**	0.169	0.208	0.26
Item17	0.153	**0.827**	0.047	0.233
Item16	0.163	**0.814**	0.139	0.106
Item15	0.152	**0.753**	-0.01	0.18
Item19	0.154	**0.666**	0.266	0.209
Item18	0.058	**0.585**	0.348	0.166
Item13	0.182	0.137	**0.832**	0.204
Item11	0.223	0.061	**0.782**	0.165
Item14	0.277	0.228	**0.724**	0.217
Item12	0.271	0.333	**0.571**	0.214
Item04	0.279	0.057	**0.553**	0.456
Item03	0.15	0.173	0.187	**0.731**
Item01	0.128	0.171	0.149	**0.722**
Item02	0.111	0.148	0.12	**0.633**
Item06	0.212	0.223	0.282	**0.602**
Item05	0.369	0.279	0.214	**0.581**
Cronbach's alpha	**0.922**	**0.838**	**0.86**	**0.796**

Bold values indicate best loading score for each identified factor

Total Cronbach's alpha: 0.925

Factor 1: discomfort with disclosure; Factor 2: stereotypes about professional's mental health; Factor 3: negative stereotypes about people with mental illness; Factor 4: negative stereotypes about professional effectiveness

measures clinician perceptions of responses to their work among members of the general public. Although there is considerable evidence that social distance from people with mental illness is greater among health professionals from China than in the US [18–20], public stigma towards people with serious mental illness is not the same as normative responses to the professionals who work with them. This is the central distinction between stigma, as generally conceived, and associative stigma. The pronounced stigma towards people with mental illness in China thus does not seem to extend as strongly to highly educated doctors and nurses, themselves. These highly educated professionals are perhaps perceived through the lens of Confucian Chinese culture which is highly respectful of education, social position and social status [24]. We, in fact, found less associative stigma among more highly educated doctors than nurses. Sensitivity to the issue of "losing face" may also moderate the experience of associative stigma among Chinese mental health professionals who might not want to acknowledge negative stereotypes directed at them even if they existed [25–27]. The fact that Chinese mental health professionals do not experience themselves as being subject to devaluation as either suffering from mental illness themselves (the measure that most starkly differentiates US and Chinese responses) or as working in an exceptionally unpleasant and degraded environment may reflect the differentiation in Chinese culture between respect for professional education and authority as well as maintenance of "face," and the ready stigmatization of people with serious mental illness. Reciprocally, there is an extensive US survey literature that has documented a relatively low level of trust in health care

Table 4 The regression analysis of risk factors of total score and factor scores of CASS among mental health clinicians in four cities of China

Variable	Total score		Factor 1		Factor 2		Factor 3		Factor4	
	β	P	β	P	β	P	β	P	β	P
Age	0.098	0.017*	0.152	<0.001**			0.125	0.002**		
Education (vs technical school)										
College degree					0.044	0.447				
Bachelor degree					−0.08	0.205				
Master degree or above					−0.108	0.014*				
Profession (vs. doctor)										
Nurse					−0.166	<0.001**				
Psychotherapist					−0.037	0.349				
Other					−0.219	<0.001**				
Department (vs. inpatient)										
Outpatient	−0.125	0.002**	−0.095	0.017*			−0.099	0.013*	−0.097	0.014*
Other	−0.078	0.056	−0.051	0.206			−0.039	0.344	−0.044	0.26
R^2	0.023		0.026		0.051		0.021		0.011	

Factor 1: discomfort with disclosure; Factor 2: stereotypes about professional's mental health; Factor 3: negative stereotypes about people with mental illness; Factor 4: negative stereotypes about professional effectiveness

*$P < 0.5$; **$P < 0.01$

Table 5 The comparison of associative stigma among mental health professionals between China and America

	China ($N=649$) Mean ± SD	America ($N=472$) Mean ± SD	t	P	Effect size
Total score	40.18 ± 12.2	44.8 ± 9	− 23.07	< 0.01	− 0.42
Factor 1	2.08 ± 0.95	2.14 ± 0.87	− 1.07	0.28	− 0.07
Factor 2	1.78 ± 0.68	2.76 ± 0.62	− 19.9	< 0.01	− 1.48
Factor 3	2.59 ± 0.84	2.93 ± 0.65	− 6.41	< 0.01	− 0.44
Factor 4	2.1 ± 0.73	1.82 ± 0.58	5.68	< 0.01	0.42

Factor 1: discomfort with disclosure; Factor 2: stereotypes about professional's mental health; Factor 3: negative stereotypes about people with mental illness; Factor 4: negative stereotypes about professional effectiveness

providers in the US as compared to other Western countries [28, 29]. It is perhaps this reduced trust and respect of authorities in the US that accounts for the far more robustly negative responses of US providers who feel more stigmatized as suffering from mental illness themselves, and from the stressful experiences of working with people with serious mental illness. In contrast, the one area of stigma where Chinese respondents gave higher associative stigma scores than their US counterparts was in the perception of treatment effectiveness. This may reflect a reality that psychiatry in China has only recently made state-of-the-art treatments available on a large scale. Alternatively, it may reflect the shadow of the stigmatizing belief, stronger in China than in the US, that people with serious mental illness cannot be restored to health. The contrasting results of CASS data from the US and China highlight the different effects of culture on stigma and on associative stigma, as Chinese culture seems to more strongly stigmatize patients, but less strongly stigmatize providers.

It was also notable that within the Chinese sample, older professionals, those with less education, and those who worked on inpatient units experienced higher levels of associated stigma than others. Previous studies have also shown that greater levels of education are associated with less mental illness-related stigma [20]. The finding that professionals who worked in inpatient settings experienced greater levels of associative stigma than those working in outpatient department suggests that the exposure of inpatient professionals to more severe levels of illness than outpatient clinicians increases their experience of associative stigma. Although differences in associative stigma cross-nationally seem not to be affected by the higher levels of patient stigma in China, within the Chinese context, those who work with more seriously ill patients do seem to experience more severe associative stigma, most likely reflecting a spillover effect from the greater stigma associated with more severe illness.

It is also notable that the sample of mental health providers in this study was mostly composed of psychiatrists and nurses, while, in contrast, they constituted a much smaller part of the US sample [17]. Thus, the specific professions represented in the Chinese sample have a higher level of education than in the US sample and thus may be more respected and, for that reason, less subject to associative stigma.

The availability of both intra-national and cross-national comparisons is a major strength of this study. Within China, professionals treating more stigmatized patients do seem to experience greater levels of associative stigma. However, cross-nationally the higher levels of stigma towards mental illness in China, observed in other studies (18–20), do not seem to lead to higher levels of associative stigma, because the more dominant cultural value seems to be the tradition of respect for well-educated, high status professionals which results in generally lower levels of associative stigma than in the US., although we acknowledge that factors other than nationality, both measured and unmeasured, may well have influenced these results.

Several methodological limitations require comment. First, one can never be sure that expressions in one language are or can be adequately or accurately translated into another. Especially in this survey which focused on respondent perception of how other people view them, nuances of expression may be imperfectly translated. We used standard methods of translation and back translation to minimize the risk of mis-translation, to the extent possible. Second, the survey only involved four psychiatric hospitals, all from the Pearl River Delta Region of Southern China and the majority of respondents worked on inpatient units. While the sample size is substantial, its representativeness of the experience of associative stigma throughout China is uncertain. Third, respondent ages and numbers of years of experience working in the mental health field were higher in the US than the Chinese sample, and limited information about professional titles or specific work settings was available for the US sample. These factors may also have biased the comparison of responses from the US and China. In addition, there were more psychiatrists and nurses in the Chinese sample than in the US sample and this difference in the mix of professionals may

have biased responses towards finding lower relative levels of associative stigma in China. On the other hand, this mix of professionals may accurately reflect the greater reliance on less extensively trained professionals in providing service to people with serious mental illness in the US. As noted above, both measured and unmeasured factors other than nationality may well have influenced these results. Additional studies are needed to increase confidence in these results. A final limitation concerns the response categories in the original questionnaire. A literal reading of "rarely" which was coded as 1 could be considered to be slightly different in some cases than "once or twice" which was coded in the more frequent category, 2 and might have led to some confusion among respondents.

In spite of these limitations, this study found that mental health professionals in the Pearl River Region of China did not uncommonly experience associative stigma, especially older professionals, less educated professionals and those working in inpatient programs. Nevertheless, levels of associated stigma, overall, were unexpectedly lower in China than in the US reflecting a previously unappreciated discrepancy between stigma towards patients with serious mental illness, which is stronger in China than in the US, and quite different and competing norms of respect for educated providers, which attenuate associative stigma making it weaker in China than in the US.

The present study showed that the CASS is a practicable measure of associative stigma, even across cultures. Associative stigma is a phenomenon of great potential importance for recruitment and retention of health professionals into care of people with serious mental illness, a current goal of the Chinese health ministry [30]. Further cross-cultural study of associative stigma may facilitate the development of interventions that can minimize stigma among both people who receive mental health care and those who provide it, thus improving the prospects for social integration of people with serious mental illness and social appreciation of the work of their providers.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflicts of interest.

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