From culture to symptom: Testing a structural model of "Chinese somatization"

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Abstract

"Chinese somatization" has been frequently discussed over the past three decades of cultural psychiatry, and has more recently been demonstrated in cross-national com- parisons. Empirical studies of potential explanations are lacking, however. Ryder and Chentsova-Dutton (2012) proposed that Chinese somatization can be understood as a cultural script for depression, noting that the literature is divided on whether this script primarily involves felt bodily experience or a stigma-avoiding communication strategy. Two samples from Hunan province, China – one of undergraduate students ($n = 213$) and one of depressed psychiatric outpatients ($n = 281$) – completed the same set of self-report questionnaires, including a somatization questionnaire developed in Chinese. Confirmatory factor analysis demonstrated that Chinese somatization could be under- stood as two correlated factors: one focusing on the experience and expression of distress, the other on its conceptualization and communication. Structural equation mod- eling demonstrated that traditional Chinese cultural values are associated with both of these factors, but only bodily experience is associated with somatic depressive symptoms. This study takes a first step towards directly evaluating explanations for Chinese somatization, pointing the way to future multimethod investigations of this cultural script.

Keywords: cultural scripts, culture, depression, somatization, symptoms, values

One of the most widely discussed topics in cultural psychiatry is the somatic expression of psychosocial distress in various cultural contexts. Although the term "somatization" can be used to describe several loosely related phenomena, most cultural work in this area has focused on "presenting somatization": the tendency to emphasize somatic symptoms (e.g., headache) when presenting a putatively psychologi- cal disorder (e.g., depression). This form of somatization can be found worldwide, including in "Western" societies – albeit with considerable cultural variation (e.g., Bridges & Goldberg, 1985; Craig & Boardman, 1990; Kirmayer, 1984; Simon, VonKorff, Piccinelli, Fullerton, & Ormel, 1999). Nonetheless, the tendency to emphasize somatic symptoms of depression has become particularly associated with China. Kleinman's (1977, 1986) pioneering work in cultural psy- chiatry marked the first in-depth investigation of "Chinese somatization," which has been confirmed and refined more recently in direct cross-national comparisons (Dere, Sun, et al., 2013; Parker, Cheah, & Roy, 2001a; Ryder et al., 2008; Zhou et al., 2011). Many explanations have been pro- posed over the years for why Chinese depressed patients appear to have a much greater tendency to emphasize somatic symp- toms compared to Western patients (Parker et al., 2001). Un- fortunately, these explanations have rarely been tested empir- ically (Cheung, 1995).

Normative assumptions around a set of symptoms and

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syndromes can be understood as cultural scripts that help shape both meanings and practices. Cultural scripts guide subjective experience by directing us to what is meaningful – for example, by biasing perceptions and memories towards confirmation of the script, focusing attention on what is thought to be important, and framing interpretations. Cultural scripts also guide behavioral expression by directing purposeful action in relation to this meaningful world, or "acts of meaning" (Bruner, 1990). In any given cultural context, a specific symptom might attract social sup- port, bring shame on the family, provide rapid access to health care resources, be politically threatening, or indeed have any number of different consequences. These realities do not simply provide sufferers with a menu of behavioral options, but rather shape which aspects of the phenomenal field are attended to and then emphasized. Different social worlds draw out different symptoms (Ryder, Ban, & Chentsova-Dutton, 2011; Ryder & Chentsova-Dutton, 2012).

Ryder and Chentsova-Dutton (2012) argue that "Chinese somatization" can be understood as a cultural script for depression. They observe that most of the proposed explanations for somatic symptom emphasis in Chinese relative to Western patients posit either: (a) variation in the actual experience and expression of particular symptoms; or (b) variation in how particular symptoms are understood and discussed with others. Somatization can thus be understood as a particular *experience and expression of distress* (EED), or as a particular *conceptualization and communication of distress* (CCD). The adoption of one or the other of these perspectives points to very different ways of understanding Chinese somatization, and also has broader implications for how cultural variation in psychopathology is understood more generally.

Many earlier explanations of Chinese somatization were EED explanations, and assumed that the phenomenon reflected bodily experience – patients really did exclusively or predominantly present with somatic symptoms. Indeed, the very word "somatization" implies that something other than a purely bodily event is being converted into a somatic experience. Psychoanalytic explanations for somatization assume that somatic symptoms permit expression of psychological conflicts that cannot reach consciousness (Craig & Boardman, 1990). In this view, Chinese somatization is attributable to greater use of an immature defense mechanism. Early linguistic explanations similarly posited a hierarchy of languages in terms of their capacity for emotional expression, with Chinese relatively lacking in a vocabulary for emotions compared to European languages (Leff, 1980). Uncritically reflecting the Western emphasis on mind–body dualism, these explanations assume that psychological experience is somehow better, more sophisticated, more *true* – and that it should be clearly and directly expressed. Chinese mind–body holism, by contrast, is granted a lesser status in this hierarchy (Cheung, 1995).

CCD explanations, by contrast, propose that Chinese somatization involves a set of beliefs about how somatic and psychological symptoms are best understood. These beliefs then lead to communication strategies designed to pursue or avoid particular outcomes. For example, the structure of the Chinese health care system might encourage depressed patients to highlight somatic symptoms in order to gain quicker or better care (e.g., Yen, Robins, & Lin, 2000). Stigma associated with the direct expression of emotional difficulties might lead patients to prefer somatic symptoms for the communication of distress, so as not to appear lacking in proper self-cultivation (e.g., Kleinman, 1982; Yang & Kleinman, 2008). Sufferers might even choose to mention different kinds of symptoms depending on with whom they are talking, with widely varying symptom stories for friends as compared with health care professionals (F. M. Cheung, 1995).

EED explanations of Chinese somatization, whether they characterize the phenomenon as a deficit or not, tend to assume that somatic symptoms dominate the subjective phenomenology of depression in Chinese patients. CCD explana- tions of Chinese somatization, by contrast, tend to assume that patients experience a range of symptoms and then consciously elect to emphasize the somatic ones when speaking with others. Ryder and Chentsova-Dutton (2012) argue this distinction is more artificial than real. While there may be instances when people in specific circumstances make a deliberate choice to disclose or not disclose a given experience, the social world can also deeply shape lived experience. This shaping can take place directly through specific interactions, and is also learned over time as intersubjectively held assumptions about the values, attitudes, expectations, and so on, of others (Chiu, Gelfand, Yamagishi, Shteynberg, & Wan, 2010).

Moreover, not all explanations of Chinese somatization take for granted this strong distinction between body and society. Kleinman and Kleinman's (1995) description of how the Cultural Revolution in China deeply shaped the emotional life of the Chinese at that time implies a felt bodily experience that is strategic, without necessarily being consciously strategic. Indeed, the idea that symptoms might be simultaneously somatic and social is present within traditional Chinese thinking. Traditional Chinese medicine (TCM), for example, holistically integrates (a) the structure, physiological functions, and pathological changes of the human body as microcosm with (b) the natural and social worlds as macrocosm (Lu & Wang, 2012). While we are far from the first to propose this sort of holistic integration, our goal is to propose psychological mechanisms, such as attention, through which it can be better understood.

While a growing number of studies have examined depression in different cultural contexts, the mechanisms underlying cultural variation are rarely explored. In one of the few empirical studies of potential explanations for "Chinese

somatization," Ryder and colleagues (2008) evaluated three components of alexithymia. Two of these components explicitly reference difficulties, either in identifying feelings or in describing them. The third one, externally oriented thinking (EOT), is operationalized as a set of beliefs about the importance of an internal focus on emotions versus an external focus on daily life. Only this last component mediated cultural group differences in somatic symptom presentation. Later research further demonstrated that EOT, but not the other two components, is itself associated with measures of cultural values (Dere, Falk, & Ryder, 2012; Dere, Tang, et al., 2013). Taken together, these findings provide the first hints of a path by which culture shapes attentional focus, with implications for symptom presentation.

Expanding on Ryder and Chentsova-Dutton (2012), we propose that Chinese somatization can be understood as a cultural script for depression, one that involves a combination of EED and CCD. Our model of Chinese somatic symptom emphasis in depression places this script at the center, as part of a chain that starts with general cultural values and ends with specific clinical outcomes. Beginning with CCD, we propose that traditional Chinese values involve a worldview in which somatic symptoms are understood as much less socially problematic than psychological symptoms. This understanding is in turn associated with a communication strategy in which open acknowledgement of psychosocial distress is discouraged, especially outside the family. We argue that this way of conceptualizing and communicating about symptoms is one aspect of the Chinese cultural script for serious distress. Turning to EED, we propose that the second aspect of the Chinese cultural script for serious distress involves direct reports of bodily experiences – namely, specific somatic reports in response to specific psychosocial stressors. We believe that this response style in particular predicts a higher likelihood of reporting somatic symptoms.

Cheung and colleagues (1996) developed the Chinese Personality Assessment Inventory to measure personality traits and clinical features deemed particularly relevant to the Chinese cultural context. They included a somatization subscale based on the idea that somatization is both: (a) a contextualized response to emotional distress with implications for social relationships (i.e., EED explanations; Kleinman, 1986); and (b) a process of responding to distress by which negative affect is suppressed, psychological treatments are avoided, and somatic complaints legitimize help-seeking (i.e., CCD explanations; Cheung, 1998; Cheung, Kwong, & Zhang, 2003). Items on this subscale reflect these different processes, raising the possibility that the two proposed aspects of somatization might be teased apart. To our knowledge, no previous research on this subscale has reported on its dimensionality; the complete scale had somewhat weak reliability in the normative sample (Song, Zhang, Zhang, Cheung, & Leung, 1993), although this was improved in a later clinical

sample (Cheung et al., 2003).

The aim of this study was therefore to evaluate the plausibility of our proposed two-aspect Chinese cultural script for somatization and to demonstrate the bridging role of this script in our model of Chinese somatic symptom emphasis in depression. To this end, we tested the following three hypotheses: (a) self-report items measuring somatization tendency can be organized into two correlated but nonredundant Chinese EED and CCD factors; (b) greater endorsement of traditional Chinese values will be positively associated with greater endorsement of the Chinese CCD factor; and (c) greater endorsement of the Chinese EED factor will be positively associated with higher levels of self-reported somatic depression symptoms. We expect that the last hypothesis is specific to somatic symptoms and thus will hold even after controlling for shared variance with psychological symptoms. No specific hypotheses involving associations of EED with values, or CCD with symptoms, were made. As we believe this cultural script for serious distress operates regardless of whether people are formally diagnosed and assessed in a clinical setting, we tested the three hypotheses in both a nonclinical and a clinical sample. Specifically, we assessed samples of undergraduate students and of psychiatric outpatients in Hunan province, China.

Method

Participants

Nonclinical sample. The student sample was recruited from psychology and education classes at Hunan Normal University. Ethical approval for the study was obtained from the institutional review boards at Hunan Normal University and Concordia University. We chose to collect data from first-year undergraduates specifically, in order to minimize exposure to Western models of depression that students might encounter in psychology courses. Instructors administered the survey in two large classes at the same time. Participants provided informed con- sent to participate in a study of "culture, emotions, and thinking styles"; they did not receive payment. All participants completed a paper-and-pencil battery of self- report measures, which took approximately 90 minutes to complete. In addition to the measures used for the current study, the battery included various instruments to assess emotion, cultural values, and cognitive style. All questionnaires were written in standard Chinese (simplified characters) using translations that had originally been prepared for previous studies (i.e., Dere et al., 2012; Ryder et al., 2008).

The final student sample consisted of 55 male and 158 female participants, with a mean age of 19.2 years (range = 17 to 22, *SD* = 0.95). Note that Dere and colleagues (2012) used these same student participants to examine a different set of research questions. All participants were

born in China, reported a Chinese dialect as their mother tongue, and resided in Changsha. Approximately 29% of the participants were predominantly raised in an urban environment whereas 71% were predominantly raised in a small town or rural environment.

Clinical sample. The clinical sample included outpatients at three clinics in Hunan province, China. Two of these clinics were located at hospitals in Changsha and the third was in Huaihua, a smaller center located almost 500 km from Changsha and serving a largely rural catchment area. This sampling strategy facilitated a broader coverage of traditional and modern values, thus enhancing generalizability of results to a broader cross-section of the Chinese adult population. The two Changsha clinics provide care for a wide range of psychiatric diagnoses, especially anxiety, depressive, personality, and somatoform disorders, including neurasthenia. The Huaihua clinic additionally provides care for patients with manic and psychotic disorders. All three clinics treat depressed patients regardless of the specific symptom presentation, minimizing institutional pressure to emphasize somatic or psychological symptoms. Available treatments include psychopharmacological and psychological interventions. Ethical approval for the study was obtained from the Institutional Review Boards at South Central University and Concordia University. The study was conducted in accordance with the Helsinki Declaration, 1989 revision.

Potential participants were included in the final dataset for this study if they: (a) had no history of psychosis, mania, or neurocognitive deficits; (b) were between 18 and 65 years of age; (c) had no missing data on one or more of the measures used in this study; and (d) had one of the core symptoms of depression or neurasthenia (i.e., depressed mood, anhedonia, or persistent fatigue). As in our previous research (e.g., Ryder et al., 2008), formal diagnoses were not assigned due to concerns that insistence on strict diagnostic categories – especially when these categories have been primarily developed in Western settings – could serve to conceal important cultural variations (Kleinman, 1988). As such, the final sample is a heterogeneous grouping of patients suffering from serious distress, with one or more core symptoms of depression combined with other depressive, anxiety, somatoform, and personality symptomatology.

A research assistant approached potential participants in the waiting room of the outpatient clinic. Interested participants then provided informed consent for a study on "culture, personality, and depression." In addition to the measures used for the current study, the battery included various instruments to assess psychiatric symptoms, cultural values and beliefs, and cognitive style. An unstructured clinical interview, the depression module of the Structured Clinical Interview for DSM-IV (First, Spitzer, Gibbon, & Williams, 1997), and a neurasthenia module created for a previous study (Ryder et

al., 2008), were also administered; these instruments were not used in the current study other than for evaluation of inclusion criteria. Interviewers were graduate students in clinical psychology with previous coursework- and practicum-based training in diagnostic interviewing, who received specific training in the study protocol from two of the investigators (Zhu and Ryder). The overall length of the study procedure, including all components, ranged approximately from 120 to 180 minutes. All instruments were written in standard Chinese (simplified characters) using translations originally prepared for previous studies (i.e., Dere, Tang et al., 2013; Ryder et al., 2008).

The final clinical sample comprised 116 men and 165 women, with a mean age of 34 years (range = 18 to 64, *SD* = 11.73), including 165 patients from Changsha and 116 from Huaihua. Note that Dere, Tang and colleagues (2013) used these same clinical participants to examine a different set of research questions. Approximately 33% of participants were raised mainly in an urban environment, but 68% were currently city dwellers, reflecting the massive rural-to-urban migration characteristic of modern China. Regarding treatment, 51% of participants were currently taking psychiatric medication, 45% had previous experience with psychiatric medication, 26% were taking one or more herbal remedies, and 46% had previous experience with herbal remedies. All participants were paid a small remuneration.

Measures

Chinese Personality Assessment Inventory. The Chinese Personality Assessment Inventory (CPAI; F. M. Cheung et al., 1996) is a comprehensive instrument designed to assess personality and psychopathology from a Chinese perspective. Constructs that are familiar to Western psychology are nonetheless assessed using items derived from a thorough understanding of the Chinese cultural context; moreover, some subscales are based on specifically Chinese constructs. The item pool was developed using several sources, including reviews of open-ended self- and other-descriptions, the Chinese academic literature, and descriptions of characters in Chinese novels. Reversing the approach taken with most psychological instruments, the CPAI was developed first in Chinese and then translated into English. Two subscales of the CPAI were used in the current study and are described below.

CPAI-somatization. The Somatization subscale of the CPAI (CPAI-SOM; Cheung et al., 1996) is a 15-item self-report measure with a Yes/No response scale. Based on indigenous theory and clinical observations, and originally developed in the Chinese language, this subscale assesses Chinese cultural beliefs and practices thought to increase the likelihood of emphasizing somatic symptoms when distressed. Although the CPAI somatization subscale was

developed as a unidimensional measure, our inspection of the item content suggested that it might be possible to subdivide the items to separately assess Chinese EED and Chinese CCD. The first author conceptually sorted the items and the last author reviewed the sorting. The first and last authors reached agreement after some discussion, almost all of it centered on the proper classification of Items 3 and 5, and the elimination of Items 14 and 16 due to poor fit with both categories. The final classification, summarizing the content of each item, is presented in Table 1.

CPAI-modernization. The Modernization subscale of the CPAI (CPAI-MOD; Cheung et al., 1996) is a 15-item self-report measure with a Yes/No response scale. As with the other CPAI subscales, CPAI-MOD was developed originally in the Chinese language, based on indigenous constructs. Items measure modern versus traditional values in a variety of domains, including family relationships, materialism, hierarchical order, rituals, and chastity.

Symptom questionnaire. Ryder and colleagues (2008) developed somatic and psycho- logical symptom subscales from a pool of items derived from the Center for Epidemiological Studies Depression Scale (Radloff, 1977), the General Health Questionnaire (Goldberg, 1972; Goldberg & Williams, 1988), and the Chinese Health Questionnaire (Cheng & Williams, 1986). All items were accompanied by a 0 to 3 rating scale. Items selected were those that: (a) were coded by raters as either somatic or psychological; (b) loaded onto their respective factors in each of two factor analyses conducted on Chinese and Euro-Canadian psychiatric outpatients, respectively; and (c) showed adequate measurement equivalence across these two samples. The same 11-item somatic symptom subscale and 17-item psychological symptom subscale were used in the current study as well.

Data Analysis

Based on the theoretical categorization of the CPAI-SOM items into Chinese EED and Chinese CCD previously described, responses to the individual items were first subjected to confirmatory factor analysis (CFA), using M-plus Version 5 (Muthén & Muthén, 2007) with weighted least squares means and variance adjusted estimation (WLSMV). This method was used because individual items on this subscale are binary. Student and clinical samples were tested separately. A two-factor model, with separate but correlated Chinese EED and CCD latent factors, was contrasted with a one-factor model, with the incremental contribution of the former evaluated using a chi-square difference test.

To facilitate structural equation modelling (SEM) by reducing the number of variables, items for Chinese EED, Chinese CCD, CPAI-MOD, somatic symptoms, and psychological symptoms were grouped into parcels of two to five items.

In all cases, items from the relevant measure were randomly selected without replacement to construct the parcels. The aim was to ensure that each latent variable would be estimated using three manifest variables. Student and clinical samples were again tested separately with M-plus, but this time using maximum likelihood estimation (ML). ML was used in this case rather than WLSMV because unlike individual items, the parcels could be treated as continuous variables. The SEMs allowed Chinese EED and Chinese CCD to correlate, evaluated links between both of these variables with CPAI-MOD and somatic symptoms, and also controlled for the potential influence of psychological symptoms. This last step was taken to ensure that Chinese EED predicts psychopathology specific to the somatic symptoms of depression.

CFA and SEM analyses require sufficient sample size to ensure the stability of the estimates and sufficient power to detect hypothesized effects. As models get more complex – that is, as they require estimation of more parameters – sample size requirements increase. Bentler and Chou (1987) suggest that at least five participants per free parameter are necessary for confidence in the stability of the estimates. Our most complex model has 41 free parameters, thus requiring at least 205 participants. Both student and clinical samples meet this minimum threshold. Moreover, the smaller student sample ($N = 213$) provides sufficient power (i.e., .80) to detect a small effect size of .15 for the most complex model (Soper, 2014). Power is therefore sufficient to detect even smaller effects for simpler models and/or for the larger clinical sample.

Five fit indices were employed to assess the goodness-of-fit of the CFA and SEM models: model chi-square (χ^2); χ^2/df ratio; comparative fit index (CFI); Tucker Lewis index (TLI); and root mean square error of approximation (RMSEA). Overall fit for these indices was evaluated using the following criteria (Bryne, 1994, 2012; Hu & Bentler, 1999; Ullman, 1996; Yu, 2002): nonsignificant χ^2; χ^2/df ratio acceptable if < 5 and good if < 2; CFI and TLI acceptable if > .90 and good if > .94; and RMSEA acceptable if < .10 and good if < .05. We also examined the 90% confidence interval for the RMSEA when evaluating the SEM models, to determine whether the upper bound falls below the acceptable threshold. M-plus does not generate confidence intervals when using WLSMV, so we could not follow this procedure for the CFA.

Results

Data Preparation

Data were cleaned according to the recommendations of Tabachnick and Fidell (1996). For dichotomous data, items endorsed more than 90% "yes" or 90% "no" were identified as outliers. There were no dichotomous outliers. For the

Table 1

Summary of content for conceptually sorted CPAI-SOM items.

Chinese EED	Chinese CCD
1. Headache when annoyed.	2. Even with friend, doesn't share thoughts.
3. Always feels there's something wrong with body.	4. For psychological problem would rather see doctor than seek therapy.
7. Indigestion because too nervous.	5. Makes mind quicker to take some tonics.
8. After I'm scolded I'm unable to eat.	6. Mental disorder caused by malfunctions in vital organs.
11. When unhappy, shows headache or tiredness instead of talking.	9. Even if extremely anxious doesn't seek professional help.
12. When work is too stressful feels dizzy.	13. Ashamed to suffer from mental disease.
15. When something doesn't work out, heart sinks like a rock.	

Note. This table presents a summary of the content of each item, not the official wording of the item.

continuous data, variables more extreme than +/–3.3 standard deviations from the mean were identified as outliers. The identified outliers were rank-ordered in even increments between the most extreme nonoutlier and the maximum of +/–3.3 standard deviations. Because we used psychological instruments as sources of manifest variables for CFA and SEM, and did not examine mean or total scores from these instruments, reliability estimates were not necessary; moreover, CFA and SEM directly account for measurement error.

Confirming the two-factor model of Chinese somatization

In the student sample, the two-factor CFA model showed good fit: $\chi^2(41) = 47.08$, ns; $\chi^2/df = 1.15$; CFI = .97; TLI = .97; RMSEA = .03. As shown in Figure 1, all observed variables were predicted by the two correlated latent variables. The one–factor CFA model also showed good fit: $\chi^2(42) = 47.58$, ns; $\chi^2/df = 1.13$; CFI = .97; TLI = .97; RMSEA = .03. All observed variables were predicted by the single latent factor. Difference testing of the two chi-squares showed no difference between the two model fits: $\chi^2/_{\text{diff}} = 0.20$, $df_{\text{diff}} = 1$, $p_{\text{diff}} = .66$.

In the clinical sample, the two-factor CFA model showed acceptable fit: $\chi^2(44) = .77.63$, $p < .001$; $\chi^2/df = 1.76$; CFI = .91; TLI = .92; RMSEA = .05. As shown in Figure 2, all observed variables were predicted by the two correlated latent variables. In contrast, the one-factor CFA model did not have good model fit: $\chi^2(45) = 125.34$, $p < .001$; $\chi^2/df = 2.79$; CFI = .79; TLI = .81; RMSEA = .08. All observed

variables were predicted by the single latent variable. Difference testing of the two chi-squares showed a difference between the two model fits: $\chi^2/_{\text{diff}} = 36.32$, $df_{\text{diff}} = 1$, $p_{\text{diff}} < .001$.

Testing the structural model of Chinese somatization

In the student sample, the proposed SEM for Chinese somatization showed good fit: $\chi^2(83) = 149.65$, $p < .001$; $\chi^2/df = 1.80$; CFI = .95; TLI = .93; RMSEA = .06 (90% CI [.05, .08]). As predicted, and as shown in Figure 3, somatic symptoms were positively associated with Chinese EED, after controlling for psychological symptoms. CPAI-MOD was negatively associated with Chinese CCD as predicted, but was also negatively associated with Chinese EED.

In the clinical sample, the proposed SEM for Chinese somatization showed acceptable fit: $\chi^2(83) = 185.47$, $p < .001$; $\chi^2/df = 2.23$; CFI = .93; TLI = .92; RMSEA = .07 (90% CI [.05, .08]). As predicted, and as shown in Figure 4, somatic symptoms were positively associated with Chinese EED, after controlling for psychological symptoms. CPAI-MOD was negatively associated with Chinese CCD as predicted, but was also negatively associated with Chinese EED.

Discussion

This study represents an initial attempt to test an integrative model of Chinese somatization, which involves both the experience and expression of symptoms, and the conceptualization and communication of symptoms. We began by

Figure 1

Two-factor CFA model for student sample.
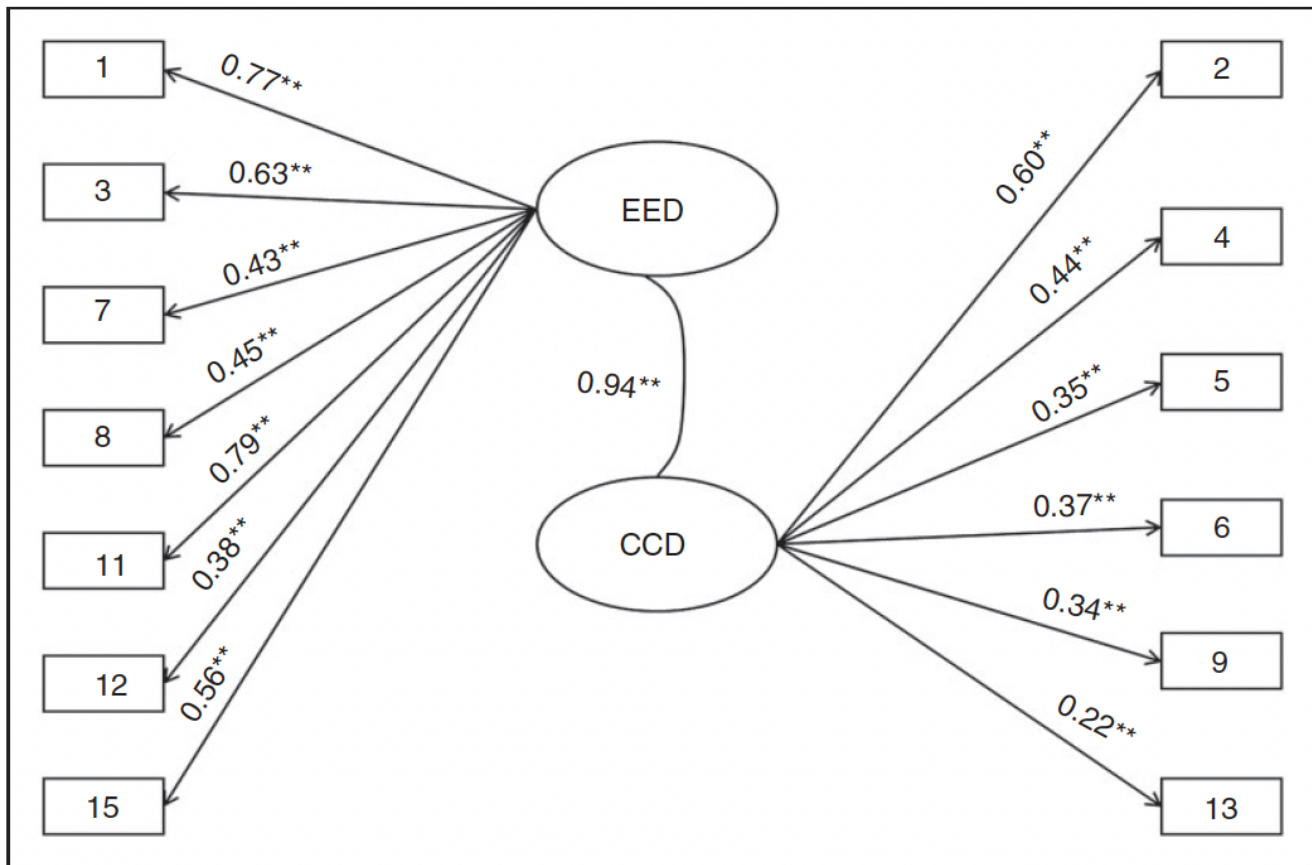
Note. *$p < .05$; **$p < .01$

testing whether an indigenous Chinese measure of somatization tendency could be sub- divided into these two aspects in the form of two correlated factors. Our results showed that although this approach fit the data in both student and clinical samples, there was an incremental advantage to doing so only in the clinical sample. This difference was due to the very high correlation between the two aspects in the student sample compared to the considerably lower correlation in the clinical sample.

While not anticipated, this difference between the two samples may be attributable to differing demographic characteristics: the patient sample was older and had a more balanced sex ratio. For example, it is possible that younger people are less likely to make any distinction between symptom expression and symptom communication, perhaps due to lower levels of concern about stigma. We believe, however, that a more central difference is that the two samples also involved people with markedly contrasting experiences with

depression. For most of the students, many items referred to occasional (e.g., headache when unhappy) or hypothetical (e.g., would be ashamed to have a mental illness) experiences. They would be reporting largely based on a cultural script for distress, one that links these different ideas together into a more or less coherent whole. For the patients, however, the relevance of these same questions would be immediate. Their experience would also be shaped by the cultural script for distress, but with the additional contribution of current illness experience. This explanation, while plausible in our view, awaits empirical investigation.

Our discussion of the differences between student and clinical samples should not overshadow the considerable extent to which our key findings were replicated across samples. This replication bolsters our confidence in findings derived from samples that were close to the threshold for the minimum number of acceptable participants. Moreover, while the utility of subdividing somatization tendency into

Figure 2

Two-factor CFA model for clinical sample.
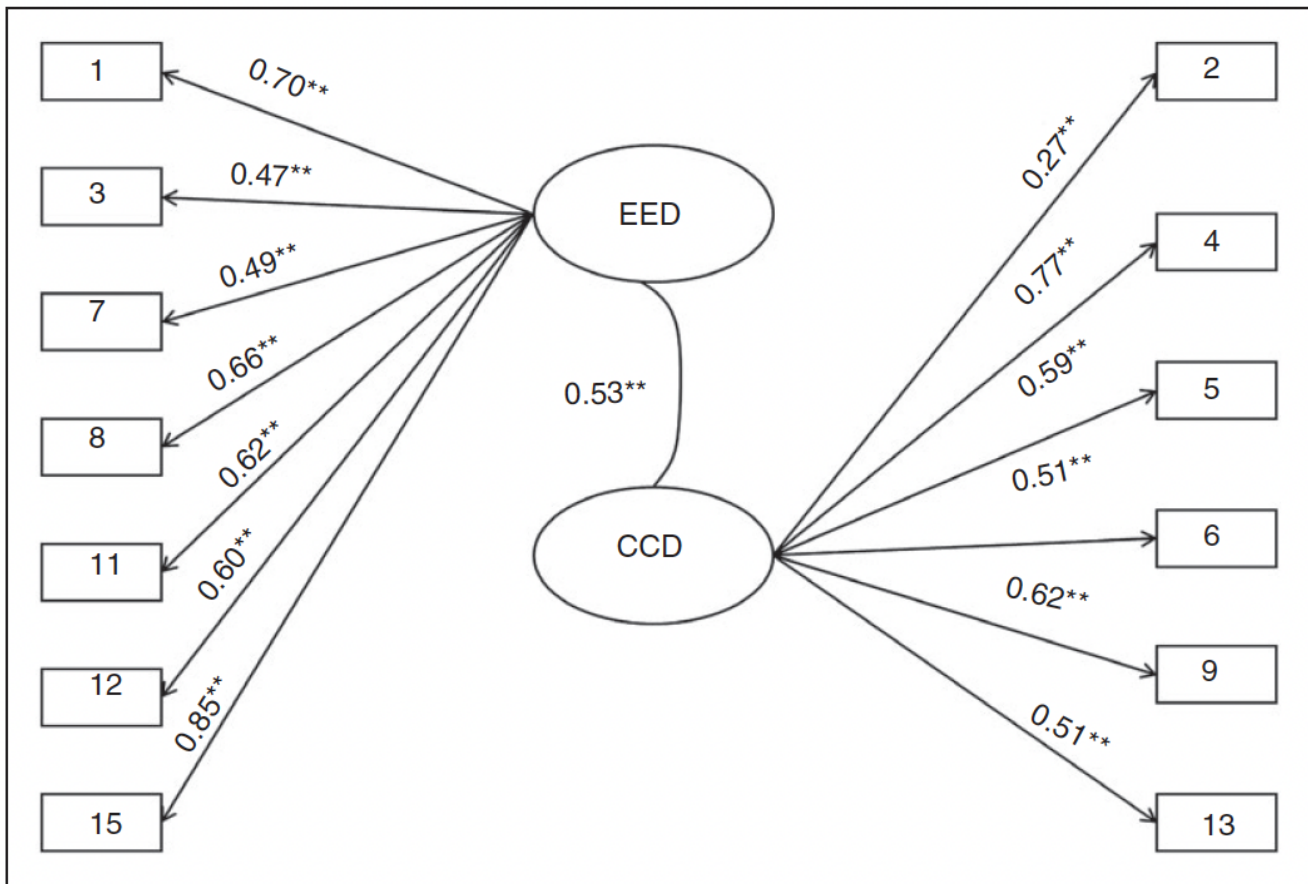
Note. **$p < .01$

two factors in students is not clear from the CFA, the benefits of doing so are demonstrated by the different pattern of associations for each factor, replicated across the two samples. As predicted, the model is consistent with the idea that cultural values are strongly involved in shaping communication strategies around illness. In this case, adhering to traditional Chinese values was associated with caution about communicating psychosocial distress, along with a preference for understanding such distress as primarily due to somatic causes.

We hypothesized an indirect connection between Chinese EED and cultural values via the intercorrelation of EED and CCD, and did not specifically predict that EED would be directly associated with cultural values. This finding nonetheless fits well with the idea that cultural values can directly shape illness experience (Kleinman, 1988; Ryder et al., 2011). Endorsing links between psychosocial stressors and somatic consequences, in turn, was associated with

higher rates of self-reported somatic symptoms. By controlling for psychological symptoms in our model, we have further demonstrated that this association was specific to somatic symptoms.

Our results are consistent with the hypothesis that the Chinese cultural script for somatization of distress can be usefully divided into two interrelated aspects. This pattern of findings is consistent with the model presented by Ryder and Chentsova- Dutton (2012), which sought to break down the distinction between the "actual" expression of somatic symptoms and "strategic choices" about how to talk about symptoms with others. Rather, it appears that distress leads to a range of somatic experiences, and cultural context directs attention to a particular subset of these experiences. The focus on these experiences then promotes their emergence as symptoms (Kirmayer & Sartorius, 2007). Social decisions about how to describe distress or how to seek help are

Figure 3

SEM for student sample.
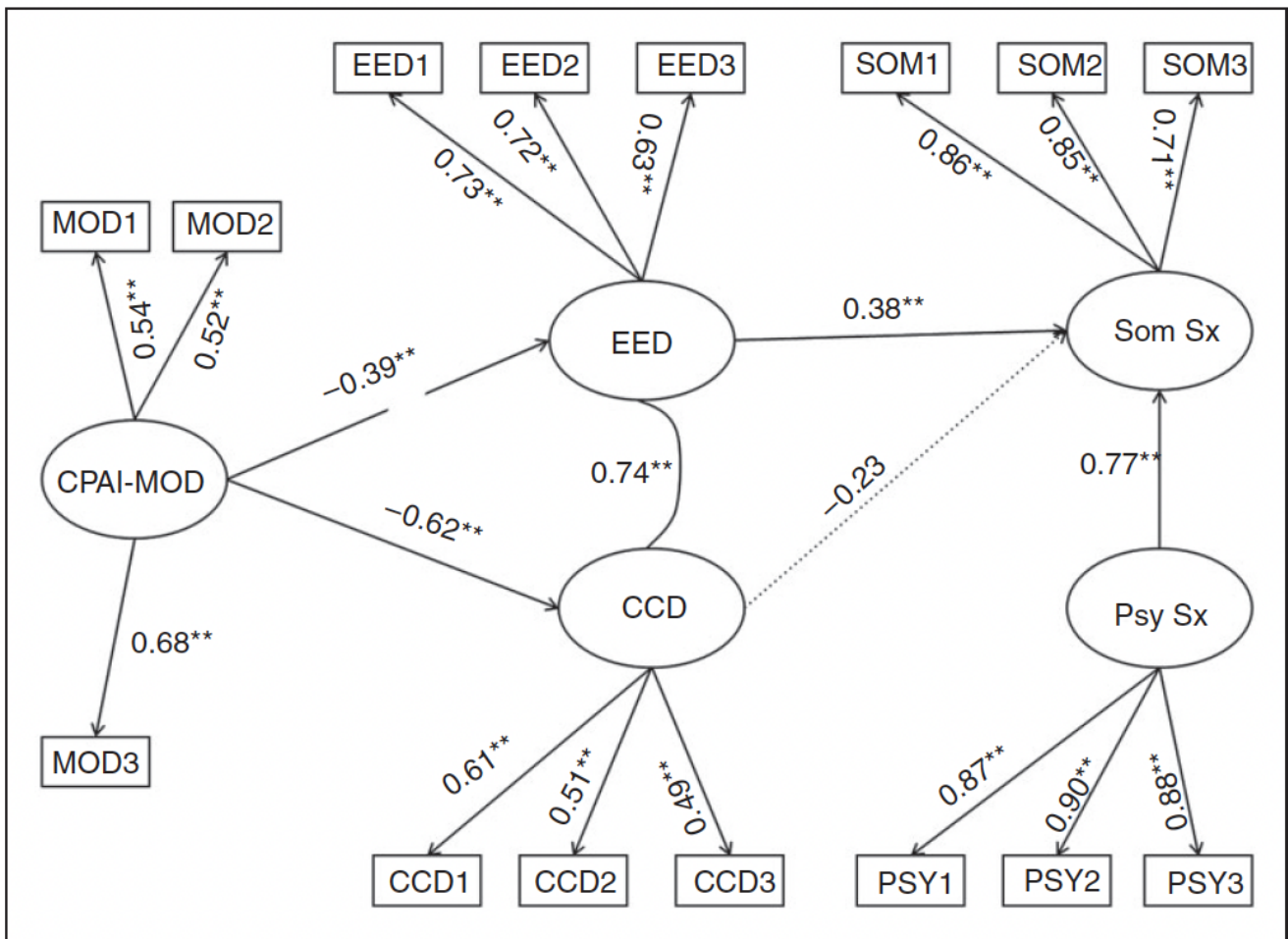
Note. *p < .05; **p < .01

not necessarily consciously adopted strategies, although in some cases they may be. Rather, social processes actually play a role in shaping what experiences warrant attention, and thus what symptoms emerge (Kleinman, 1986; Ryder & Chentsova-Dutton, in press). Future research will be needed, however, to capture the specific ways in which these processes shape symptom presentation.

Our results also demonstrate that both Chinese EED and CCD aspects are culturally shaped, but only EED is directly associated with symptom presentation. This is not to say that CCD is unrelated to clinical outcome. Future research should investigate whether this aspect of the script is related to help-seeking behavior, for example, the length of time taken and the illness severity required before a given patient seeks help from personal networks, TCM, Western biomedicine, and/ or

specifically psychiatric or psychological services. Moreover, there is a need for research in TCM settings to determine whether such patients have different pat- terns of EED and CCD. Such research would also help clarify potential variations in patients who have relied on herbal remedies as opposed to psychopharmacological or psychological interventions.

Future research could be conducted more effectively with an expanded instrument to assess the Chinese somatization script for distress. The current study is limited by its reliance on a single instrument not originally designed for subdivision, with the sets of items corresponding to the two aspects likely too brief to adequately serve as usable subscales. [1] Wider content sampling of the two aspects, with statistical selection of the best items to clearly measure each aspect,

Figure 4

SEM for clinical sample.
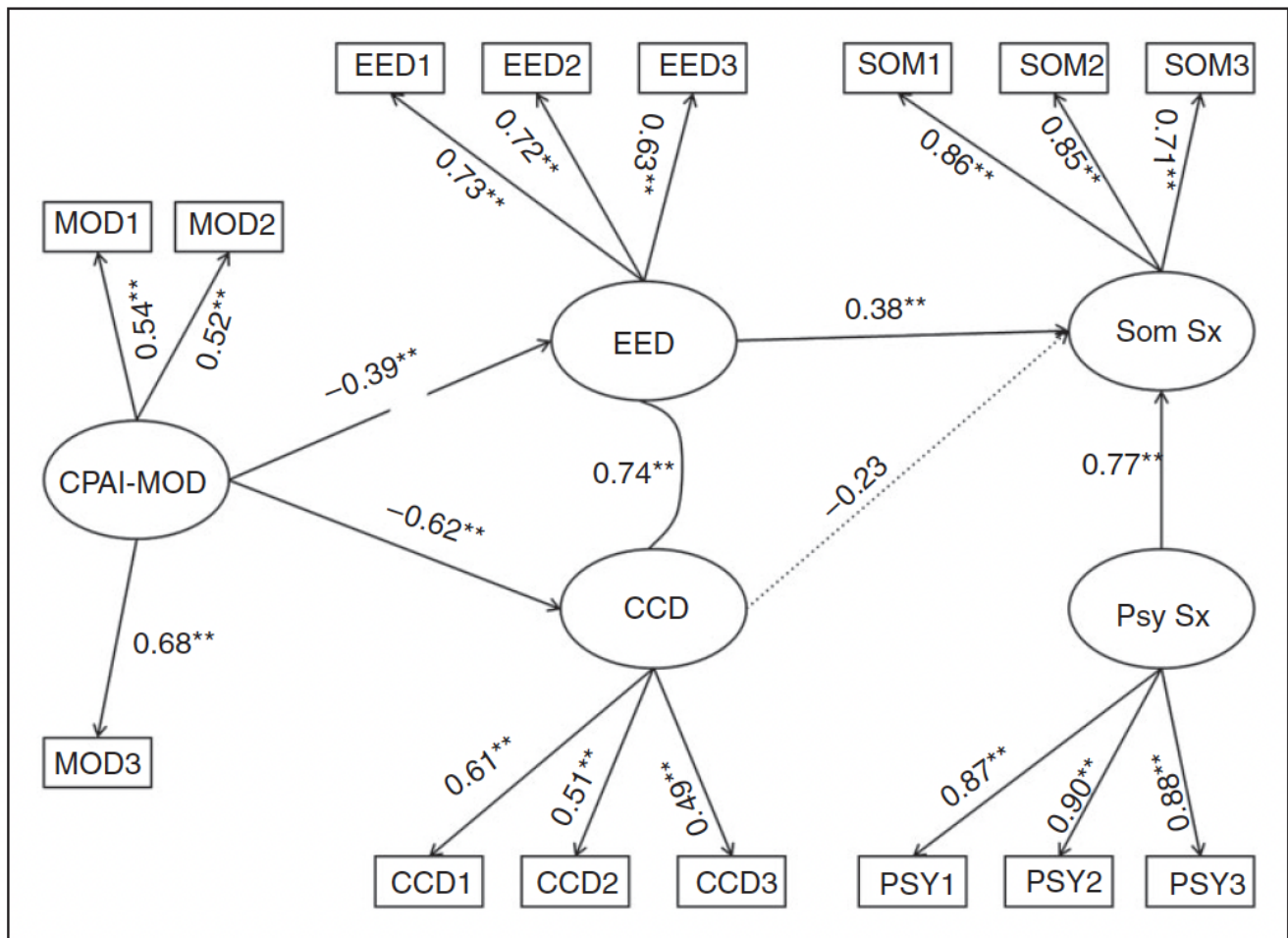
Note. **$p < .01$

is needed. A broader item pool would allow more complete coverage of the ways in which psychosocial stress is understood as prompting somatic symptoms and beliefs about how symptoms of distress should be communicated; a broader pool would also provide the opportunity to uncover further subdivisions. For example, in the Chinese CCD subscale, some items reflect consensual explanatory models about psychosocial distress whereas others emphasize the social acceptability and stigma surrounding this distress. This work should be done simultaneously in Chinese and English, and validated in a cross-national study to facilitate future comparative research. Such a measure has the potential to help researchers further unpack the reasons underlying Chinese versus Western variations in depressive symptom presentation.

There is a need, moreover, to move beyond self-report methodologies. The present study relies on questionnaire measures, meaning our results are potentially influenced by response and recall biases. Moreover, although causality is implied by the structure of our models, SEM does not allow determination of causal influence; experimental approaches are necessary. While this study marks an important first step in understanding the Chinese cultural script for depressive symptom presentation, rigorous cultural research demands a range of approaches (Doucerain, Vargas, & Ryder, in press; Ryder et al., 2011). Moreover, theories invoking the idea of a "cultural script" will eventually demand research methods that directly test whether Chinese somatization tendency is indeed best understood in this way. For example, do people who endorse the beliefs and practices consistent with this

script tend to monitor for somatic events in the wake of psychosocial distress? Is there evidence of somatosensory amplification when the script is activated? Studies to address such questions will be crucial to understanding cultural variations in depressive symptom presentation.

Future research will also be necessary to refine our cultural model of symptom emphasis in light of recent findings suggesting that "Chinese somatization" is not observed for all symptoms or syndromes. We previously found that Chinese patients report a greater somatization tendency than Euro-Canadian patients for depression (also using CPAI-SOM), but also that this group difference is reversed when it comes to the tendency to somatize anxiety (Zhou et al., 2011). Similarly, there is now evidence that Euro-Canadian patients have higher rates of reversed somatic symptoms, such as hypersomnia or hyperphagia, compared to Chinese patients. It will be important, moreover, not to neglect "Western psychologization," which seems to be driven primarily by cognitive symptoms rather than depressed mood (Dere, Sun, et al., 2013). Finally, a more global approach needs to be taken to the study of somatization, given evidence that it is far from a Chinese-specific phenomenon (Isaac, Janca, & Orley, 1996; Simon et al., 1999).

One limitation of the present study, and one that would apply to many of the potential directions we are proposing, is that we are relying mainly on data gathered from clinical samples. The advantage of patient samples is that they can be selected for having the symptoms and/or syndromes under study. There is also, however, the problem of "clinic bias": participants end up in clinical studies because they have sought help from those specific services. It is likely that a psychiatric clinic in a hospital setting will draw primarily those patients seeking, or at least willing to try, biomedical interventions. Studies in TCM settings would help to broaden our findings, as would community-based epidemiological surveys. Replication of our core findings in a student sample bolster our argument that these findings extend beyond clinical patients, but student samples should not be understood as representing the general population. Regardless of the methodology used, future studies should investigate the pathways to help seeking followed in Chinese cultural contexts, regardless of whether that pathway ends in biomedical, TCM, or other settings. It will be especially important to determine whether cultural scripts and/or specific symptom presentations have an impact on the pathway that is followed.

Our final recommendation for future research in this area would be to conduct more applied studies, evaluating the impact of this script and its interrelated aspects on clinical practice. For example, in what ways might Chinese-trained clinicians understand certain somatic presentations as representing depression? What are the obstacles faced by clinicians in multicultural settings working with patients of Chinese origin? Proper assessment of depression is complicated by cultural variations in symptom reporting, especially when these variations them- selves are linked to acculturation status and/or Chinese societal norms in rapid flux (Parker, Chan, Tully, & Eisenbruch, 2005; Ryder, Sun, Zhu, Yao, & Chentsova- Dutton, 2012). A major component of treatment success is the degree to which the treatment is comprehensible and acceptable to the client, potentially a major problem in multicultural settings with patients and clinicians from a variety of back- grounds. Assessment of Chinese cultural scripts for depression can help us determine which clients are most likely to respond to standard treatments, and may point to ways of tailoring treatments to the specific beliefs, values, symptom presentations, and communication strategies of Chinese patients (Ryder & Chentsova-Dutton, in press).

Note

1. As this study reports CFA and SEM results, rather than results based on summed item scores, conventional reliability statistics do not apply. In order to evaluate the potential division of the items loading on each aspect into two usable subscales, however, we did look at Cronbach's alpha coefficients for the two subscales across the two samples. Three of the four coefficients were below the acceptability threshold of .70 (range = .52 to .74), confirming our suspicion that the current CPAI-SOM would not yield good estimates of EED and CCD using summed item scores.

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