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## Somatic and Depressive Symptoms in Female Japanese and American Students: A Preliminary Investigation

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### Abstract

The present study examined the relationship between common somatic symptoms and depression in samples of Japanese and American college students. Fifty Japanese and 44 American women completed the Beck Depression Inventory (BDI) and rated 56 somatic-distress items for 7 days. Japanese had higher levels of somatic distress than Americans. ANOVA of somatic distress by BDI-level revealed that the High BDI Japanese group reported 26 somatic symptoms (including stomach ache, dizziness, and shoulder pain) with significantly higher means when compared with the low BDI group. High BDI Americans had a significantly higher mean for joint pain compared to the Low BDI group. The importance of the body in transcultural psychiatry is explored, and implications for primary and mental health care are discussed.

### Keywords

cross-cultural comparison; emotional depression; Experience Sampling Method; Japanese culture; somatization

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Major depression currently ranks as the fourth leading cause of illness-related disability affecting the world's population and by 2020 is projected to rank second (National Institute of Mental Health [NIMH], 1998), with women being disproportionately affected (Mental Health Determinants and Populations, 2000). The percentage of patients reported to have unexplained physical symptoms ranges from 10 to 20% in primary care clinics in the US (Cassano & Fava, 2002; Elderkin-Thompson, Silver, & Waitzkin, 1998). However, in international studies in primary care, the majority of patients with depression report only physical symptoms (45 to 95%, average 69%), with 11% denying depressive emotions upon direct questioning (Simon, VonKorff, Piccinelli, Fullerton, & Ormel, 1999).

The body is an important symbolic and experiential aspect of emotion. In a study of interactions between Chinese physicians and their patients, Ots (1990) found that both physicians and patients related internal organs to emotions, and carefully attended to bodily sensations. For example, the physicians saw the liver as the cause of headaches, epigastric pain, hypertension and anger, while they understood the heart to be a cause of anxiety, uncertainty and fear. In a sample of Koreans with depression, Pang (1998) found that patients described emotions, bodily sensations and internal organs in a holistic and symbolic way. These Korean elders experienced physical distress as one with emotional distress; depression was described as a symptom cluster that included anger, physical pain and social discord.

Previous research has also documented the importance of physical symptoms in the Japanese expression of distress (Kawanishi, 1992; Kirmayer, 1993; Lock, 1987; Nakao, Yamanaka, &

Kuboki, 2002; Ohnuki-Tierney, 1984; Okazaki, 1994; Takauchi, Kuo, Kim, & Leaf, 1989; Waza, Graham, Zyzanski, & Inoue, 1999). One study examining the symptoms of depressed Japanese found that physical symptoms co-occurred with depression in 13–15% of patients (Maeno, Kizawa, Ueno, Nakata, & Sato, 2002; Mino, Aoyama, & Froom, 1994). Physical symptoms most often reported in Japanese samples include neck and shoulder pain, headache, and stomach distress (Mino et al., 1994; Waza et al., 1999). Lock (1987) interviewed physicians and middle-class women in Japan regarding the phenomenon of *futeishūso* (non-specific physical complaints). She documented symptoms such as coldness, shoulder pain, palpitations and nervousness. The physicians and patients in her study attributed these symptoms to social discontent, problems with the autonomic nervous system, pelvic inflammatory disease, and a general personality sensitivity. Taken together, these studies demonstrate that the body, society and personal emotions may be closely intertwined in experience and in symbolic representations for some Asian cultures. Understanding the varieties of physical symptoms experienced by culturally diverse patients is vital for accurate assessment and referral of patients with depression.

## Theoretical Framework

‘Culture’ is a macro-level phenomenon that includes the beliefs, values, behavioral practices, and institutions within the social environment or milieu. Culture is internalized as cultural models that act as cognitive templates for perception, directing individual attention toward the relevant internal and external stimuli, including attention to physical and emotional sensations (Holland & Quinn, 1987; Markus, Kitayama, & Heiman, 1996; Moscovici, 1988).

As early as infancy, cultural models direct attention toward the physical and emotional sensations, changes, and experiences that are considered important to acknowledge and elaborate. In this way, cultural models shape how individuals attend to the constantly fluctuating physical and emotional sensations of daily life, as well as those that occur in times of emotional distress. For example, the Japanese have a rich and varied understanding of subtle changes in skin sensitivity, digestive patterns, and tongue characteristics by five years of age (Ohnuki-Tierney, 1984). On the other hand, Americans may focus on ‘happiness,’ and have varied language and attention related to pleasant feelings, or threats to those feelings (Kitayama et al., 2000; Mesquita & Walker, 2003).

Research generally supports the notion that the Japanese cultural model fosters both attention to social context and a well-articulated perceptual orientation toward subtle changes in the somatic experience. On the surface, these two perspectives might seem to be contradictory. However, in societies that focus on interpersonal harmony, the body might be understood as the ‘social body,’ the terrain upon which social norms and expectations are inscribed (Csordas, 1990, 1994; Schepher-Hughes & Lock, 1987). The ‘individual’ is culturally articulated, not so much as a conceptual ideal, but rather as a biological entity in interaction with the somatic and social environment. In cultures such as the Japanese, where there are long-held philosophical-medical beliefs and traditions about the importance of balance with the environment, subtle somatic changes are culturally rendered as central cues to social disharmony. Important symptoms in this cultural model include: the character of pulses and of the tongue, skin sensitivity, digestive changes, and/or neuromuscular weakness or hyper-responsiveness. These symptoms are understood to be interrelated, and are seen as responses to stress, fatigue and social disharmony.

While western assessment instruments for depression ask questions about the absence of pleasant affect, appetite and sleep disturbance, fatigue, and the predominance of negative affect, they may not include relevant symptoms for the Japanese or other Asians (Iwata & Roberts, 1996; Iwata, Roberts, & Norito, 1995; Iwata & Saito, 1991, 1992; Iwata, Saito, &

Roberts, 1994;Iwata et al., 1998), which include abdominal distress, neurological symptoms, and muscular pain. The present study examined the relationship between common somatic symptoms and depression in samples of Japanese and American college students. We hypothesized that: (a) Japanese will have higher somatic distress mean scores than American; (b) Somatic symptoms will be related to depressive symptoms (as measured by the BDI) for the Japanese but not Americans; and (c) Japanese with high depressive symptoms will have more somatic distress compared with their low depressive distress counterparts.

## Method

This research is part of a larger study examining the relationships among culture, the self, distress and depression. This present research used the Experience Sampling Method (ESM; Schwartz & Stone, 1998;Shiffman & Stone, 1998;Stone et al., 1998;Stone, Shiffman, & DeVries, 1999) to gather longitudinal data about somatic distress from a convenience sample of female American and Japanese college students.

## Sample

Forty-four female college students from a large Midwestern University and 50 female college students from a Tokyo Women's University participated in this study. The mean ages of the women in the two samples were similar (Japanese sample  $M = 19.2$  years,  $SD = 0.53$  and American sample  $M = 22.5$  years,  $SD = 4.1$ ). Two of the women in the American sample were married, and were over 40 years old. Ninety-two percent of the American women were under 25 year of age. Ninety percent of the American had no children; none of the Japanese women had children. Around one-third of the women in both groups reported family incomes below or equivalent to U.S.\$60,000; around half of both groups reported family incomes between U.S.\$60,000 and U.S.\$100,000. Finally, the reported ethnic composition of the samples revealed that 90% of the American women identified themselves as White, while the remaining 10% included two Black women, two 'Asian/Pacific Islanders' and one 'Hispanic-Other.' All of the women in the Japan sample identified as Japanese.

## Measures

**Depressive Symptomology**—We measured current depressive symptomology with the Beck Depression Inventory (BDI; Beck, Steer, & Garbin, 1988). The BDI consists of 21 items designed to measure level of depressive symptomology. Participants rate each item on a 0–3-point scale, with summed scores over 9 indicating mild depression in American samples. The BDI has been shown to have acceptable reliability in a variety of culturally diverse samples, with reliability coefficients ranging from .77 to .89 (Abdel-Khalek, 1998;Bonicatto, Dew, & Soria, 1998;Shek, 1990). For the Japanese, Kojima et al. (2002) found good reliability with Cronbach's alpha = .87, and adequate correlation ( $r = 0.69$ ,  $p = .001$ ) between the total score of the BDI and that of another widely used measure of depression, the CES-D (Kojima et al., 2002). Hasama and Fujii (1989) conducted a study that validated the BDI with a sample of 30 Japanese clinical patients with a diagnosis of Major Depressive Disorder, and an age-matched healthy sample. They determined that, with a cut-off score of 11, the BDI had a sensitivity of 90% to Major Depressive Disorder, a specificity rate of 83.3%, a false positive rate of 17.3%, and a false negative rate of 10%. In our study, the internal reliability of the BDI as assessed by Cronbach's alpha was .79 for the Japanese and .87 for the Americans.

**Somatic Symptomology**—We measured physical symptoms with a modified version of the Pennebaker Inventory of Limbic Languidness (PILL). The PILL is a 54-item self-report checklist designed to measure the frequency of experiencing a variety of common physical symptoms and sensations (Pennebaker, 1982). The PILL has shown a 2-month test-retest reliability range from .79 to .83. For the purposes of this study, the participants were asked to

rate each item on a scale from '1' indicating 'slightly or not at all' to '6' indicating that the item was 'severe.'

We modified the items for the present study in the following ways: Four symptoms were removed; seven items were either revised or collapsed with other items for ease of translation; six depression-specific items were added (no appetite, sleepy, confused, fatigued, tired and dry mouth); and six items were added that have been previously reported as commonly associated with depression in people from some Asian cultures – abdominal cramps, dizziness, lightheadedness, pain in joints, pain in shoulders, weakness and palpitations. This resulted in an instrument with 56 items.

## Procedure

All research instruments were presented in the participant's native language. All symptom items were translated into Japanese, back-translated into English and reviewed by expert Japanese researchers for accuracy and natural Japanese (Werner & Campbell, 1971). Students attending classes in psychology (Japan) and nursing (US) were invited to participate in the study. These women were informed that they could withdraw from the study at any time, and only code numbers identified them. We instructed the women in the use of the diary orally, and provided them with written instructions. The women were then given a packet of 7 diaries, and were asked to complete the diaries for 7 consecutive days. They were instructed to complete the diary at the end of the day, and to reflect on their experiences in the last 24 hours. Completed diaries were returned to a designated location in sealed envelopes.

## Data Analysis

We aggregated the daily scores for the 56 somatic items across the 7 days to obtain mean scores for each item for each woman. In addition, we calculated a mean somatic distress score for each cultural group. We also divided the BDI depressive symptomology scores into three groups (0–8, 9–14, and 15 or higher, respectively).

## Results

The BDI depressive symptomology scores for the Japanese sample ranged from 0 to 39 ( $M = 12.66$ ;  $SD = 7.05$ ). BDI scores for the American sample ranged from zero to 29 ( $M = 8.48$ ,  $SD = 6.55$ ). Independent sample  $t$ -test of the BDI means revealed that the Japanese sample had significantly higher depressive symptomology ( $t(127) = 3.39$ ,  $p = .01$ ) than the Americans. There were no significant correlations between BDI scores and the age of respondents for either cultural group.

Our first hypothesis was that the Japanese will have higher Somatic Distress Mean scores (SDM) scores than the Americans. The SDM scores for the Japanese sample was 1.33 ( $SD = .39$ ). SDM scores for the American sample was 1.2 ( $SD = .18$ ). Independent sample  $t$ -test of the SDM revealed that the Japanese SDM was significantly higher than the American SDM [ $t(92) = 2.07$ ,  $p = .04$ ]. SDM were not correlated with age of respondents in either cultural group.

The second hypothesis was that the somatic symptoms will be related to depressive symptoms (as measured by the BDI) for the Japanese but not Americans. Correlational analysis of the BDI and the SDM revealed that that the Japanese somatic distress mean scores were significantly and highly correlated with BDI scores ( $r = .57$ ,  $p < .001$ ), but the correlation for Americans was weak and nonsignificant ( $r = .19$ ,  $p = ns$ ). Next, we used regression analysis to determine the amount of variance in the BDI scores that could be accounted for by the somatic mean. This analysis revealed that 31% of the variance of the Japanese BDI scores

could be explained by the somatic distress scores, while only about 1% of the variance of the American BDI was explained by those scores.

The third hypothesis was that the Japanese with high levels of depressive symptoms would have more somatic distress compared with their low depressive-symptoms counterparts. To test this hypothesis, we first used ANOVA to analyze the differences between the somatic distress means by the three BDI groups for the Japanese and the American women. This analysis revealed that the High and Low BDI group somatic means were significantly different for the Japanese ( $p = .002$ ) but not for the Americans (see Table 1).

Next, we used ANOVA to determine the specific somatic symptoms that co-occur with high levels of depressive symptomology for each culture group. Table 2 shows the specific symptom means for the low and high BDI groups for the Japanese women (we omitted means for the middle BDI group).

The Japanese women had 26 symptoms that had significantly higher means for the High BDI group ( $N = 16$ ) compared with the Low BDI group ( $N = 14$ ). Seven gastrointestinal symptoms had higher means for the High BDI group when compared to the Low BDI group. These symptoms included heartburn, stomach ache, abdominal cramps and pain, indigestion, dry mouth, and no appetite. The High BDI Japanese also had higher means for eight neurological symptoms when compared with their Low BDI counterparts, which included weakness, lightheadedness, dizziness, faintness, numbness, headache, fatigue and tiredness. The High BDI Japanese had significantly higher means for six musculoskeletal symptoms than the Low BDI group, which included pain in the joints, stiff joints, pain in the shoulders, cold hands and feet, chills, hot flashes and red face. In addition, the High BDI Japanese had significantly higher means for four EENT symptoms than the low BDI group, which included being out of breath, sore throat, congestion and runny nose. Finally, the High BDI Japanese had significantly higher means for one skin symptom (pimples) than the low BDI group.

The American women had only one symptom (joint pain) whose mean was higher for the High BDI group ( $N = 27$ ) ( $M = 1.04$ ,  $SD = .15$ ) than the low BDI group ( $N = 8$ ) ( $M = 1.29$ ,  $SD = .36$ ).

## Discussion

This study showed that the high BDI Japanese women had numerous and varied somatic symptoms, some of which have not been included in common somatic symptom inventories. One important caveat is that while these scores were significantly different between the high and low depressive symptomology groups, they may not be clinically significant. Establishing clinical significance would require determining what somatic symptoms relate to functional impairment or a major mental illness, or what symptoms, at what level of severity, would prompt women to seek help. These concerns notwithstanding, the symptoms revealed in the High BDI Japanese sample will likely be familiar to primary care and mental health practitioners treating highly distressed Japanese women. In a decade of anthropological field research, the first author in this study has noted many of these symptoms in highly distressed Japanese in both the US and Japan.

This study used the BDI as a measure of depressive symptomology, although we were aware that it may not capture all of the important symptoms of distress for the Japanese. We used this instrument because there have been reliability and validity studies in Japan, and we believe that the BDI captures *at least some* of the distress that may be important for Japanese samples. Our study found that the Japanese women had higher depressive symptom scores than the Americans. However, research has shown that the tendency to avoid endorsement of both strong negative and positive emotions may systematically inflate depression scores for Asians

(Iwata et al., 1998). We speculate that the higher BDI scores for the Japanese might be related to this cultural bias.

Interestingly, somatic distress was strongly correlated with BDI score only for the Japanese sample. The American sample did not report the somatic distress symptoms generally considered features of clinical depression. Of course, our sample size precludes any conclusions in this regard. Depressed adults in acute care psychiatric hospitals are troubled with constipation, sleep and appetite disturbance and fatigue. The lack of higher means in the American High BDI group for the poor sleep, poor appetite and constipation may be because the high BDI group was highly distressed but not clinically depressed. In addition, joint pain has been documented as a somatic complaint in American depressed patients (Cassano & Fava, 2002; Elderkin-Thompson et al., 1998).

We used the western-derived ‘review of systems’ approach to present the findings with full awareness that the Japanese themselves might organize the symptoms quite differently. Further research is needed to determine how Japanese would cluster or group the symptoms uncovered in this study. Based on our understanding of Japanese culture, we speculate that concepts of stress, neurological sensitivities, dietary problems and social disharmony would feature in these clusters, reflecting cultural explanatory models.

This preliminary study used a convenience sample of students in two countries, and does not propose to generalize these findings across these groups, or to the wider populations. While the High BDI American sample was small, this study suggests that this research design may be used to investigate the problematic issue of the relationships among culture, distress and depression. Since we sought to discover whether there might be additional somatic symptoms in women with high depressive symptomology, our preliminary investigation offers intriguing results that we believe warrant using this method in further studies in culturally diverse, representative samples, as well as clinical samples.

## Biographies

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**TABLE 1**  
ANOVA of BDI scores and overall somatic means by culture group

	<i>BDI</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>
Japanese	0-9	16	1.12	.06
	10-15	20	1.33	.20
	< 15	14	1.61	.64
American	0-9	27	1.20	.21
	10-15	9	1.17	1.17
	< 15	8	1.23	.11

TABLE 2

ANOVA of Japanese somatic symptom means by BDI groups

<i>Japanese</i>	<i>Low BDI</i> <i>N = 16</i> <i>Mean (SD)</i>		<i>High BDI</i> <i>N = 14</i> <i>Mean (SD)</i>		<i>Sig.</i>	
<i>Gastrointestinal</i>	Heartburn	1.0	(.00)	1.6	(.92)	.019
	Stomach ache	1.0	(.11)	2.0	(1.16)	.004
	Abdominal cramps	1.0	(.00)	1.4	(.66)	.011
	Abdominal pain	1.0	(.00)	1.5	(.87)	.021
	Indigestion	1.04	(.11)	1.46	(.65)	.008
	Dry mouth	1.05	(.18)	1.63	(1.06)	.039
	No appetite	1.04	(.14)	1.58	(.94)	.033
	Weakness	1.01	(.04)	1.75	(1.20)	.021
	Lightheadedness	1.02	(.05)	1.87	(1.16)	.011
	Dizziness	1.00	(.00)	1.70	(1.02)	.010
<i>Neurological</i>	Faintness	1.02	(.08)	1.94	(1.28)	.010
	Numbness	1.01	(.04)	1.35	(.57)	.014
	Headache	1.03	(.11)	2.17	(1.27)	.001
	Fatigue	1.51	(.61)	2.65	(1.40)	.020
	Tired	2.34	(1.02)	3.36	(.96)	.011
	Pain in joints	1.02	(.07)	1.40	(.65)	.017
	Stiff joints	1.03	(.08)	1.49	(.65)	.015
	Pain in shoulders	1.33	(.54)	2.18	(1.42)	.024
	Chills	1.07	(.25)	1.78	(1.11)	.015
	Hot flush	1.13	(.19)	1.58	(.65)	.040
<i>EENT</i>	Red face	1.06	(.10)	1.70	(1.20)	.041
	Out of breath	1.09	(.19)	2.03	(1.06)	.002
	Sore throat	1.04	(.14)	1.73	(.95)	.025
	Congestion	1.03	(.11)	1.71	(1.10)	.045
	Runny nose	1.01	(.04)	1.71	(1.14)	.038
	Acne or pimples	1.28	(.82)	2.30	(1.53)	.034