

Research Article

Cultural Differences in the Impact of Social Support on Psychological and Biological Stress Responses

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ABSTRACT—*Social support is believed to be a universally valuable resource for combating stress, yet Asians and Asian Americans report that social support is not helpful to them, resist seeking it, and are underrepresented among recipients of supportive services. We distinguish between explicit social support (seeking and using advice and emotional solace) and implicit social support (focusing on valued social groups) and show that Asians and Asian Americans are psychologically and biologically benefited more by implicit social support than by explicit social support; the reverse is true for European Americans. Our discussion focuses on cultural differences in the construal of relationships and their implications for social support and delivery of support services.*

People facing a stressful event often turn to those who care for them, seeking information, consolation, and assurance. Sometimes this support seeking can assume an explicit form of seeking advice or pouring out one's emotions, whereas at other times social support may be implicit, as when people are reminded that they belong to a network of mutually sustaining roles and obligations. Social support, whether implicit or explicit, is a valuable means by which a person can reduce the negative impact of stress (Cohen & Wills, 1985; Seeman, 1996; Taylor, 2007; Thoits, 1995).

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Recent studies on culture and social support indicate that compared with European Americans, Asians and Asian Americans are less willing to seek explicit social support for dealing with their stressful events (Taylor et al., 2004) and are less benefited by social support (Kim, Sherman, Ko, & Taylor, 2006). These studies show that Asians and Asian Americans are more concerned about the potentially negative relational implications of seeking social support than are European Americans. The research reported in this article examined whether Asians and Asian Americans benefit more from implicit social support, both psychologically and biologically, than from explicit social support (involving active disclosure and explicit transactions of support seeking). We also examined the relative effectiveness of implicit and explicit social support among European Americans to see whether active disclosure and sharing is an important aspect of the beneficial effects of social support.

CULTURE AND SOCIAL SUPPORT

Research in cultural psychology shows that different cultures hold different models of the self and its relationship with others (Adams, 2005; Adams & Plaut, 2003; Markus & Kitayama, 1991). The independent view of the self that is prevalent in individualistic Western cultures holds that a person possesses a set of self-defining attributes and takes actions that are oriented toward expressing personal opinions and beliefs and achieving personal goals (Markus & Kitayama, 1991; Markus, Mullaly, & Kitayama, 1997). This view can affect experiences in relationships (Adams & Plaut, 2003). Relationships are based on the assumption that they are chosen freely and with relatively few obligations (Miller, Bersoff, & Harwood, 1990). In this relationship context, a person is encouraged to explicitly signal per-

sonal needs and actively draw on social relationships for meeting them (Kim et al., 2006).

In contrast to the Western view of the self, the interdependent view that is prevalent in collectivistic Asian cultures holds that the self is primarily a relational entity interdependent with others (Markus & Kitayama, 1991; Markus et al., 1997). In these contexts, social relationships, norms, and group solidarity are more fundamental to social behavior than an individual's needs. This interdependent view of the self holds that a person is a flexible connected entity who is bound to others, conforms to relational norms, and responds to group goals by seeking consensus and compromise. Therefore, personal beliefs and needs may be seen as secondary to norms and relationships (Kim & Markus, 1999; Markus et al., 1997). In these cultures, relationships are based on the assumption that they are less voluntary and more "given," and thus convey a greater sense of mutual obligation than in individualistic cultures (Miller et al., 1990). In this relationship context, a person is expected to avoid bringing his or her personal problems to the attention of others to enlist their help because such an act can undermine harmony or make inappropriate demands on the social group (Kim et al., 2006).

In previous research (Taylor et al., 2004), we showed that the cultural meaning of social support affects people's willingness to draw on their social networks for help during stressful times. Asian and Asian American students reported drawing on social support significantly less for coping with stressful events than did European American students, a pattern that was especially true for Asian nationals and first-generation students. Furthermore, a subsequent study showed that relational concerns (e.g., a desire to maintain group harmony and concern that sharing problems would result in poor evaluation by other people) fully mediated the relation between culture and the nonuse of social support for coping with stress.

People from different cultures differ not only in their willingness to seek social support, but also in how much benefit they perceive and expect when they ask for social support from people with whom they are close (Kim et al., 2006). Asian American participants considered social support to be less helpful in dealing with a recent stressor than European American participants did, especially when they thought about help from close others, because the potential relational impact of support seeking may matter more when it involves people with whom one is closely interconnected.

IMPLICIT VERSUS EXPLICIT SOCIAL SUPPORT

Numerous studies with multicultural samples have clearly shown the benefits of both perceived and received support from close others (e.g., Collins, Dunkel-Schetter, Lobel, & Scrimshaw, 1993; Dunkel-Schetter, Sagrestano, Feldman, & Killingsworth, 1996; Morling, Kitayama, & Miyamoto, 2003). Thus, it is likely that Asians and Asian Americans utilize social support for coping with stress in culturally appropriate ways that are

different from the Western ways of using social support. Findings from earlier research suggest that Asians' and Asian Americans' concerns with seeking social support center on the disclosing nature of this behavior, because disclosure has the potential to negatively affect relationships (Kim et al., 2006; Taylor et al., 2004). This notion is also consistent with the findings that verbal expression and disclosure tend to be more important and beneficial for European Americans than for Asian Americans (Kim, 2002; Kim & Sherman, 2007).

Accordingly, cultural differences in seeking and using social support point to the need to distinguish between implicit and explicit social support. We define explicit social support as the advice, instrumental aid, or emotional comfort one can recruit from social networks. We define implicit social support as the emotional comfort one can obtain from social networks without disclosing or discussing one's problems vis-à-vis specific stressful events. Implicit support can take the form of reminding oneself of close others or being in the company of close others without discussing one's problems.

This construal of implicit support is similar to "perceived support" (Turner, Frankel, & Levin, 1983; Wethington & Kessler, 1986), which refers to solace and comfort provided through awareness of the existence of a support network, rather than through use of a support network. However, implicit support differs from perceived support in that perceived support includes beliefs that one could draw on people and groups for aid or solace if needed. In our conceptualization of implicit support, we emphasize the absence of explicit disclosure and sharing of the stressful events. Thus, a recipient of implicit social support can enjoy the supportive benefits of being in the company of close others without being concerned about the relational implications of explicitly seeking support.

We conducted an investigation with Asians, Asian Americans, and European Americans to determine if psychological and biological responses to a well-established laboratory stressor would be affected by engaging implicit versus explicit social support. Drawing on the arguments just summarized, we predicted that Asians' and Asian Americans' psychological and biological responses to a laboratory stressor would be benefited more when implicit support was activated than when explicit support was activated; explicit support was expected to aggravate Asians' and Asian Americans' responses to stress. In contrast, we predicted that European Americans, who tend to value verbal expression and sharing of their thoughts (Kim, 2002; Kim & Ko, *in press*; Kim & Sherman, 2007), would benefit more both psychologically and biologically when explicit social support was activated than when implicit social support was activated.

METHOD

Eighty-one undergraduates, 33 males and 48 females ranging in age from 18 through 37 ($M = 19.91$), participated in the study

for credit. Participants included 41 Asians and Asian Americans and 40 European Americans.

Experimental sessions were scheduled between 2:30 and 6:00 p.m. to control for the circadian rhythm of cortisol (Kudielka, Schommer, Hellhammer, & Kirschbaum, 2004).

Participants were asked not to consume dairy products during the 3 hr prior to the session and to abstain from eating and drinking in the 30 min before the session. At arrival, participants filled out a questionnaire that assessed daily activities and general health conditions that might affect basal cortisol level, such as smoking, physical exercise, patterns of sleeping, and intake of caffeine and medications. Participants were excluded if they had an endocrine disorder; a diagnosed anxiety or depressive disorder; an autoimmune, blood, or metabolic disease; any form of cancer; serious allergies or asthma; or a cardiovascular condition. They were also excluded if they were pregnant or had breast-fed in the previous 6 months.

During the session, heart rate (HR) and blood pressure (BP) were assessed automatically every 2 min by a Critikon (Tampa, FL) sphygmomanometer (Dinamap Model 8146). Saliva samples were collected three times in Nunc (Roskilde, Denmark) Cryotubes (4.5 mL) so that cortisol could be measured.

Procedure

After providing informed consent, participants were fitted with a BP cuff. They provided the first saliva sample after the first HR and BP measurement (baseline measure). To assess baseline psychological stress, we asked participants to rate the degree to which they felt, at the moment, upset and concerned; responses were made on 5-point scales (1 = *not at all*, 5 = *very much*).

Next, participants were read instructions for the Trier Social Stress Task (TSST; Kirschbaum, Pirke, & Hellhammer, 1993) which involves a mental-arithmetic task and a speech task and reliably produces an increase in cortisol levels (Dickerson & Kemeny, 2004). Participants then prepared a speech concerning why they would be a good administrative assistant in the psychology department.

Following the 3-min speech-preparation period, participants were randomly assigned to complete one of three writing tasks. In the *implicit-support* condition, participants were asked to think about a group that they were close to and then to write about the aspects of that group that were important to them. In the *explicit-support* condition, participants were told to think about people to whom they were close and then to write a letter directly seeking advice and support for the upcoming tasks from one of these people. In the *no-support* condition, participants were asked to think about campus landmarks and then to write about the places they would recommend for a campus tour.

After completing the writing task, participants began the laboratory challenge (TSST). In the counting task, they were instructed to count aloud backward from 2,083 by 13s for 5 min under harassing conditions (e.g., the experimenter urged them to

“please go faster”). Immediately following the counting task, participants delivered their 5-min speech.

Participants provided the second saliva sample 25 min after the beginning of the laboratory challenge tasks (postchallenge measure) and the final saliva sample 45 min after the tasks began (recovery measure).

Following the laboratory challenge, participants completed a measure of psychological stress and a demographics questionnaire. Participants rated the degree to which they were feeling, at the moment, agitated, upset, stressed out, and nervous; responses were made on 5-point scales (1 = *not at all*, 5 = *very much*). The demographics questionnaire included questions about age, gender, and ethnicity. After completing these questionnaires, participants were debriefed and thanked for their participation.

Cortisol Assay

Saliva samples were sent to the University of California, Davis (California National Primate Center), to be assayed for cortisol. Prior to assay, samples were centrifuged at 3,000 rpm for 10 min to separate the aqueous component from mucins and other suspended particles. Salivary concentrations of cortisol were estimated in duplicate using commercial radioimmunoassay kits (Diagnostics Products Corp., Los Angeles, CA). Because of the overall lower levels of cortisol in human saliva relative to plasma, assay procedures were modified as follows: (a) Standards were diluted to concentrations ranging from 2.76 to 345 nmol/L; (b) sample volume was increased to 200 μ L; and (c) incubation times were extended to 3 hr. Serial dilution of samples indicates that the modified assay procedure results in a linearity of .98 and a least detectable dose of .548 nmol/L. Intra- and interassay coefficients of variation are 4.27 and 6.52, respectively. Four participants were not included in the cortisol analyses because they did not provide enough saliva for cortisol to be assayed.

RESULTS

Effect of Culture and Support Condition on Psychological Stress Responses

To assess changes in psychological stress, we first standardized the baseline measure of psychological stress (two items; $r = .35$) and the postchallenge measure of psychological stress (four items; $\alpha = .76$). Change scores were calculated by subtracting the baseline scores from the postchallenge scores; thus, higher scores indicate a greater increase in negative emotion. We conducted a 2 (culture: Asian or Asian American vs. European American) \times 3 (social-support condition: implicit vs. explicit vs. control) analysis of variance (ANOVA) to examine participants' change in psychological stress. There was a significant interaction, $F(2, 74) = 3.84, p = .03, \eta_p^2 = .10$ (see Fig. 1).

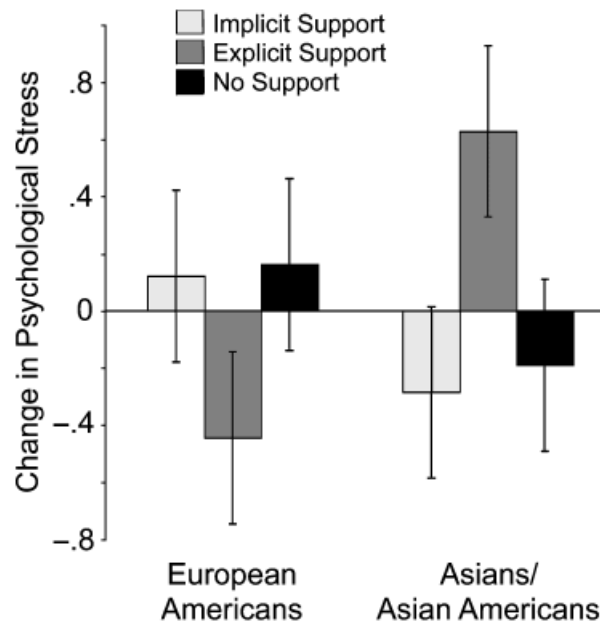


Fig. 1. Change in psychological stress from pretest to posttest as a function of culture and support condition.

To determine if the interaction reflected the predicted patterns, we conducted planned comparisons for each cultural group. We had predicted that Asians and Asian Americans would experience less distress after activation of implicit social support than after activation of explicit social support. Results were consistent with this prediction: Asians and Asian Americans in the explicit-support condition ($M = 0.63$, $SD = 0.86$) experienced more distress than those in the implicit-support condition ($M = -0.28$, $SD = 1.59$) or those in the control condition ($M = -0.19$, $SD = 1.10$). Planned comparisons using the least significant difference test revealed that the difference between the implicit- and explicit-support conditions was significant ($p = .05$), whereas the difference between the explicit-support and control conditions was marginally significant ($p = .09$). There was no difference between the implicit-support and control conditions ($p = .84$; see Fig. 1).

By contrast, European Americans experienced somewhat less psychological distress in the explicit-support condition ($M = -0.44$, $SD = 1.17$) than in the implicit-support ($M = 0.12$, $SD = 0.95$) and control ($M = 0.16$, $SD = 0.96$) conditions. Planned comparisons using least significant differences indicated that the differences among these means were not significant (see Fig. 1).

Effects of Culture and Support Condition on Physiological Stress Responses

We examined HR, systolic BP, and diastolic BP responses to the two laboratory tasks separately and combined. The 2 (culture: Asian or Asian American vs. European American) \times 3 (social-support condition: implicit vs. explicit vs. control) ANOVAs

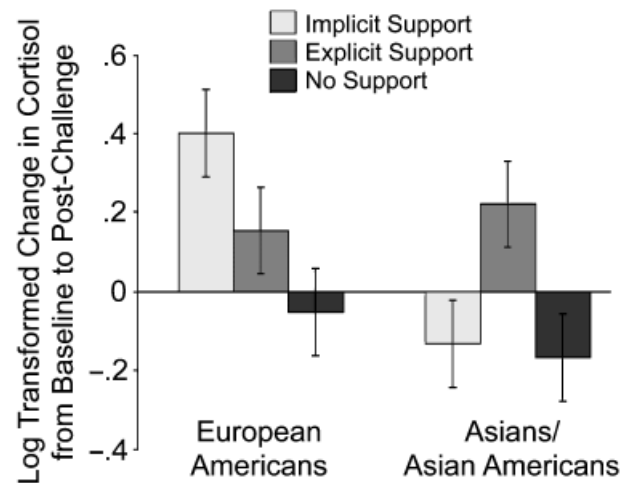


Fig. 2. Change in cortisol from baseline to postchallenge as a function of culture and support condition.

revealed no significant effects for any of the physiological measures.

Effect of Culture and Support Condition on Cortisol Reactivity

Three potential covariates assessed during the screening were significantly correlated with cortisol levels and were therefore included in the cortisol analysis: sex of participant, number of cups of coffee consumed that day, and physical activity reported that day. Cortisol values were log-transformed prior to statistical analyses to normalize the data.

We calculated change scores by subtracting baseline cortisol from postchallenge cortisol and conducted a 2 (culture: Asian or Asian American vs. European American) \times 3 (social-support condition: implicit vs. explicit vs. control) analysis of covariance to examine participants' change in cortisol. There was a significant interaction, $F(2, 65) = 3.66$, $p = .03$, $\eta_p^2 = .10$ (see Fig. 2).

As predicted, Asian and Asian American participants in the explicit-support condition ($M = 0.22$, $SD = 0.44$) had higher cortisol responses to the stress tasks than those in the implicit-support condition ($M = -0.13$, $SD = 0.37$) and those in the control condition ($M = -0.17$, $SD = 0.37$). Planned comparisons revealed that the difference between the implicit- and explicit-support conditions was marginally significant ($p = .06$), and the difference between the explicit-support and control conditions was significant ($p = .05$). There was no difference between the implicit-support and control conditions ($p = .98$).

Also as predicted, European American participants in the implicit-support condition ($M = 0.40$, $SD = 0.40$) showed greater increase in cortisol than either those in the explicit-support condition ($M = 0.15$, $SD = 0.48$) or those in the control condition ($M = -0.05$, $SD = 0.37$). Planned comparisons revealed that the difference between the implicit- and explicit-

support conditions was marginally significant ($p = .096$), and the difference between the implicit-support and control conditions was significant ($p = .03$). There was no difference between the explicit-support and control conditions ($p = .29$).

We also examined cortisol recovery by subtracting baseline cortisol from the recovery measure of cortisol. No predictions had been made for recovery, as healthy young adults typically recover from stress tasks quite quickly. Accordingly, these analyses should be considered exploratory. The 2×3 analysis of covariance yielded only a trend toward an interaction, $F(2, 66) = 2.36$, $p = .10$, $\eta_p^2 = .07$. In all conditions, the Asians' and Asian Americans' cortisol levels had returned to baseline by the end of the session (implicit-support condition: $M = -0.15$, $SD = 0.41$; explicit-support condition: $M = 0.11$, $SD = 0.49$; control condition: $M = -0.17$, $SD = 0.63$), $F(2, 32) = 0.43$, n.s. By contrast, among European Americans, those in the implicit-support condition showed significantly less recovery ($M = 0.42$, $SD = 0.39$) than did those in the control condition ($M = -0.09$, $SD = 0.38$; $p = .008$); differences between the implicit- and explicit-support ($M = 0.14$, $SD = 0.71$) conditions and between the explicit-support and control conditions were not significant ($p = .17$ and $.19$, respectively).

DISCUSSION

Our theoretical analysis of cultural differences in seeking and using social support led us to predict that Asians and Asian Americans would be buffered against psychological and biological responses to stress more by implicit social support than by explicit social support and that explicit social support might actually exacerbate their stress. We also predicted that European Americans would benefit more both psychologically and biologically from explicit than from implicit support. Both psychological distress and cortisol responses to the stress tasks showed results consistent with the predictions. Asians' and Asian Americans' psychological and cortisol responses to stress were higher if they had written a letter explicitly seeking help than if they had written about a group important to them (implicit-support condition) or about campus landmarks (control condition); European Americans, by contrast, exhibited somewhat greater psychological distress and cortisol responses in the implicit-support condition, compared with the explicit-support and control conditions.

The results suggest that the culturally inappropriate form of social support (i.e., explicit support for Asians and Asian Americans and implicit support for European Americans) may actually have exacerbated stress. That is, Asians and Asian Americans, who tend to be concerned about potentially negative implications of disclosing their problems to close others (Taylor et al., 2004), reported considerable psychological distress from imagining the use of explicit social support and also exhibited higher cortisol levels in the explicit-support condition. The reverse was true of European Americans, who were more stressed

when they imagined a group they were close to, without the opportunity for disclosure or support seeking.

Previous research (Kim et al., 2006; Taylor et al., 2004) has shown that Asians and Asian Americans report seeking social support less than European Americans, and also expect social support to be less helpful in resolving their stressors. The findings from the present study add direct evidence to these previous self-report studies and suggest that how people gain the psychological and biological benefits of social support in a given cultural context may depend on the cultural emphasis on relationship goals. That is, in a culture in which self-expression and verbal sharing of thoughts and feelings are emphasized and frequently exercised (Kim & Ko, in press; Kim & Sherman, 2007; Mesquita, 2001), a form of social support that includes explicit disclosure may be beneficial and used commonly. In contrast, in a culture in which maintenance of harmonious social relationships is emphasized, a form of social support that does not bring relational "risks" may be more beneficial and more commonly used (Markus & Kitayama, 1991).

Limitations and Questions

The category "Asian and Asian American" subsumes diverse groups, but our analyses implicitly treated these as one homogeneous group. The sample size was not large enough to compare participants from different Asian cultures, although inspection of the data did not suggest divergent patterns. Degree of acculturation to U.S. society would also be expected to influence the pattern of results, given generational differences in self-reported use of explicit social support (Taylor et al., 2004). Unfortunately, the number of immigrant respondents in this sample was not sufficiently large to allow for meaningful comparisons along this dimension.

The question arises as to the origins of the cultural differences examined here. Clearly they are rooted in culture, but it is an intriguing possibility that they might also be biologically based. People of Asian background are disproportionately likely to have the s/s variant of the serotonin transporter gene (5-HTTLPR), relative to people of European background. The s/s variant has recently been tied to reactivity to the social environment (Taylor et al., 2006), which suggests the possibility of genetic origins of social-support-seeking styles. However, it is also important to note that many cultural differences, including differences in social-support seeking, become smaller as a function of generational status, and disappear by the third generation (e.g., Heine, Lehman, Markus, & Kitayama, 1999; Taylor et al., 2004). Thus, it is possible that the experience of social support has biological bases that interact with culture.

Another question is why the autonomic data did not show the same interaction pattern as psychological distress and cortisol reactivity. Because HR and BP change very rapidly, it is possible that the averaged values did not pick up individual differ-

ences in which aspects of which tasks were experienced as stressful by different participants.

Perhaps surprisingly, participants in the control condition (describing campus landmarks) showed little evidence of stress, regardless of cultural group. There are at least two possible explanations for the fact that the TSST did not produce much stress among those in the control condition. One is that the landmarks task was distracting, and distraction can be a successful coping strategy for managing unavoidable stressors (Suls & Fletcher, 1985). Alternatively, focusing on familiar campus landmarks may have reduced stress by affirming a value important to the students (cf. Creswell et al., 2005; Sherman, Kinias, Major, Kim, & Prenovost, in press).

The fact that European Americans appeared to experience stress in the implicit-support condition might seem inconsistent with previous studies on the effectiveness of perceived social support (Wethington & Kessler, 1986). One crucial difference may be that in the present study, participants were told to think about the importance of a social group, but not in the context of social support. Thus, the implicit-support manipulation may not have provided the comfort often experienced when European Americans combat stress by thinking about those people they could draw on if needed.

The results have implications for the measurement of social support through surveys and questionnaires. Instruments that assess primarily explicit efforts to extract emotional support or tangible aid may be inappropriate for cultural groups that derive their social support largely through implicit means. To be appropriate for multicultural populations, measures of social support should include assessments of implicit as well as explicit support. Given the possibility that means of deriving social support in one culture may be antithetical to the values of another culture, researchers might also examine the factor structure of social-support measures separately for different cultural groups.

Implications and Conclusions

Previous research on Asians' social-support needs has raised concerns as to whether Asians' and Asian Americans' unwillingness to draw on explicit social support potentially deprives them of a valuable resource that is beneficial for well-being and health. For example, the nonuse of supportive services by Asians and Asian Americans has been considered a cause for concern in the United States (e.g., Herrick & Brown, 1998; Matsuoka, Breaux, & Ryujin, 1997). The results of the present study suggest that avoiding explicit social support need not be inherently costly. It appears that the effect of implicit social support for Asians and Asian Americans may be comparable to the effect of explicit social support for European Americans, at least in the tasks used in this study. Thus, the net yield of social support may not be lower for Asians and Asian Americans than for European Americans; the form of social support may simply differ. This finding also underscores the importance of designing

supportive services based on culturally appropriate forms of support.

More generally, the present results clarify the different costs and benefits associated with different forms of social support. Explicit support may yield emotional solace and concrete information relevant to coping, but it can be taxing on important relationships (cf. Bolger, Zuckerman, & Kessler, 2000). Implicit support may not place strain on social relationships, but it may be less effective for obtaining concrete help that could be valuable for dealing with stressors. Future research might profitably explore the development of culturally sensitive interventions that maximize the benefits and minimize the costs of both types of support.

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