# Stress, Structural Social Support, and Well-Being in University Students

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This paper reports an investigation of the relationship between college students' social support and social interaction and their health and well-being. The authors analyzed data from a telephone survey of 161 students at a large state university to test for stress-buffering and main effects on well-being of four types of structural social support. Frequency of participating in activities with other students was negatively associated with depression symptoms and positively associated with feelings of health and physical fitness. The other support measures (number of friends on campus and whether respondents belonged to groups on campus or had a romantic relationship) yielded less consistent main effects and Stress x Support interactions that were inconsistent with a buffering model. Interpretations that focus on the role of affectively positive social activities in the well-being of college students are discussed.

Many articles in recent years have examined the relationship of social support and social interaction to health and well-being in college students.[1-15] Studies using college students as subjects have conceptualized and measured social support in a variety of ways, producing different patterns of results. In some of the studies of students, social support has shown a main effect on health outcome measures, indicating that support and well-being are positively related, irrespective of an individual's stress level. In other studies, support has shown a "buffering" effect—an interaction in which highly supported individuals evince greater health under stress than individuals low in support—although the two groups do not differ under low stress. These findings are important for testing theoretical formulations of the relationship between so-

cial support and well-being and because of their implications for developing programs to alleviate negative effects associated with the stress of going to college.

One overview of the social support literature has been offered by Cohen and Wills,[16] who distinguished between structural and functional measures of support. Structural measures describe the existence of relationships, assessing, for example, the number of friends living nearby, frequency of visiting, belonging to social or religious organizations, and whether a person was married. Functional measures, on the other hand, "are those that directly assess the extent to which these relationships may provide particular functions." Different researchers have identified specific `components of support (see House[17] for a review). Cohen and Wills classified the components into four categories: social companionship ("spending time with others in leisure and recreational activities"); esteem support ("information that a person is esteemed and accepted"); informational support ("help in defining, understanding, and coping with problematic events"); and instrumental support ("provision of financial aid, material resources, and needed services"). Based on this ability to respond to specific stressors, Cohen and Wills predicted that individual support functions would show buffering effects. In contrast, they predicted only main effects from structural types of social support, citing benefits of belonging to a social network such as stability in one's life. They noted that structural measures do not tap specific functions. Rook,[18] however, recently proposed a somewhat different model in which social companionship would be predicted to show main effects.

Within the realm of studies of college students, those assessing perceived availability of specific functional supports have generally fared well in producing stress-buffering effects.[2-4,11] For a variety of reasons, the picture regarding structural support is much less clear. A few studies in which structural support was assessed exam-

ined only the main effect relationship of support to well-being and did not test for possible buffering interactions.[7,9,14] Although many structural measures were employed in these studies (eg, time per day spent interacting, number of different settings in which interaction took place), those assessing number or frequency of interactions are most comparable to a measure in the present investigation. Overall, frequency measures have not shown salutary main effects on well-being. In the investigation by Reis et al,[14] the number of interactions per day was uncorrelated with the number of mental health-related visits to a university health service. Hays and Oxley[9] also found no correlation between their measure of overall frequency of interaction and either college adaptation or psychological well-being (frequency of a specific type of interaction—getting together with people "to have fun and relax"—did correlate with college adaptation, however). Goplerud[7] found that socially active first-year graduate students reported significantly fewer emotional and health problems than did less active students. Another problem is that items measuring structural support have sometimes been combined with other types of items in arriving at a total social support score. Results based on such a composite are therefore difficult to interpret. Work by Ganellen and Blaney[6] is an example. Their Social Perception Questionnaire (SPQ) "assesses subjects' perceptions of the frequency of and satisfaction with both intimate and casual social contacts." Using total SPQ score as the social support measure, they found a main effect for support, but no interaction of stress and support, with depression as the dependent measure.

One study by Monroe et al[12] tested specific structural supports for both main and interaction effects. Students were asked three questions concerning structural support: "Do you live at home with your family?" "How many people would you call a 'best friend?'" "Do you belong to any social and/or religious groups?" They found a main effect on depression symptoms for living at home and stress-buffering interactions for the number of best friends on all the psychological health measures. Cohen and Wills, however, pointed out that the large number of statistical tests performed by Monroe et al makes it quite possible that the results emerged by chance.[16]

The main purpose of our analyses, therefore, was to build on the data on college students' social relationships, seeking replication wherever possible. Students were asked questions about group memberships, number of close friends at school, and the frequency of their getting together with other students as part of a larger study on stress in college. These items were comparable to those used by some of the researchers mentioned earlier. A fourth support item asked whether students had a romantic relationship. It appears that this type of item has never been used in a study of college students. Based on nonstudent studies, however, Cohen and Wills have noted that "indexes of significant interpersonal rela-

tionships such as marriage sometimes show main effects and/or buffering interactions."

## METHOD

### Subjects and Procedure

Our subjects were 161 undergraduate students at UCLA who agreed to be interviewed over the telephone. The school registrar provided the researchers with a systematic sample of student names (first names and last initials only) and phone numbers. Students who wished to protect their privacy were indicated on the registrar's records, and their phone numbers were not given to us. Out of 330 students who had provided accurate telephone numbers, 161 (49%) were interviewed. Thirty-two of the original 330 (10%) refused to participate, 132 (40%) could not be reached during the study (out of town, not home), and 5 (1%) could not be interviewed because of a language problem with the student's family or answering party. Although the response rate may be a cause for concern, it should be noted that the time for interviewing was limited to 2 weeks and that the response rate among students contacted was generally favorable. This led us to believe that most of those not reached probably would have responded. The age range of the final sample was 17 to 66 years; 55% were women, and 45% were men. The class breakdown was 24% freshmen, 20% sophomores, 34% juniors, and 21% seniors (1% were miscoded). Thirty-five percent of the sample were members of racial or ethnic minority groups. These characteristics are comparable to the characteristics of the undergraduate population at UCLA, which officials list as 52% women, 48% men; 30% freshmen, 22% sophomores, 34% juniors, and 14% seniors; and 42% members of racial or ethnic minorities. Interviews were conducted by undergraduate students in a psychology survey methods course, using UCLA's Computer Assisted Telephone Interviewing (CATI) system.[19]

We do not know how respondents may have differed from nonrespondents. When a potential subject refused to be interviewed, we did not collect information that could permit such a comparison. One speculation is that the nonrespondents were more social and mobile than the respondents, thus making them less likely to be available for an interview. That the response rate was not higher is ultimately an arbitrary factor because of time limitations; it is not a systematic error.

### Measures

**Stress.** We used two indices of stress. One was the 4-item version of the Perceived Stress Scale (PSS)[20,21] adapted for telephone interviews. The PSS is a global measure of perceived stressfulness in a person's life over the last month. Cohen et al[21] reported a coefficient alpha internal consistency reliability estimate for the short-form PSS of .72. The coefficient alpha for this instrument in the present study was .68.

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Instead of the item "In the last month, how often have you felt confident about your ability to handle your personal problems?" that normally appears in the short-form PSS, the present survey asked, "In the last month, how often have you felt that you were on top of things?" This item is part of the full PSS. We also coded responses differently in our investigation. Normally, the alternatives are scored from never = 0 to very often = 4; we used a range from 1 to 5.

The other stress index measured academic stress (AS) and was constructed from 6 items written by students in the survey research course. Respondents indicated their degree of agreement or disagreement with the following statements: (a) "My grades or GPA (grade point average) are a source of constant concern and worry for me"; (b) "UCLA is very difficult academically"; (c) "The competition at UCLA is very stressful for me"; (d) "Doing well at UCLA is under my control"; (e) "I get very anxious about tests and exams when I have to take them"; (f) "School and course work create a lot of time pressures for me." With the exception of item (d), which was reverse scored, items were scored as follows: strongly agree = 4, somewhat agree = 3, somewhat disagree = 2, strongly disagree = 1. These items were summed, yielding an index with a coefficient alpha of .72 for this sample.

**Social support.** We employed 4 single-item support measures. They were: (a) "Do you belong to any social group at UCLA, for example, fraternities, sororities, athletic teams, or clubs?" (yes = 1, no = 0); (b) "Some students at UCLA have friends on campus while others have friends primarily off campus. How many close friends at UCLA would you say you have?" (none = 0 to more than 10 = 4); (c) "How often do you do things with other UCLA students such as study together, get together for fun, or go out on a date?" (never = 1 to all the time = 5); (d) "Do you have a romantic relationship at present, that is, someone you might call a boyfriend or girlfriend?" (yes = 1, no = 0).

**Health and well-being.** We constructed two indices based on previously used items to assess health and well-

being and also used a single-item measure written by class students. The first index was based on the Center for Epidemiologic Studies–Depression Scale (CES–D),[22] which in its full version has 20 items. The present 3-item version asked respondents how often they felt lonely, felt that they "could not shake off the blues even with help from family or friends," and felt depressed or sad. Separate items in the original CES–D assess how often the respondent felt depressed and sad. In addition to slight wording changes, the present items differed from the original in using 1 month as the time frame; the original used 1 week. Each of the 3 items was scored from never = 1 to very often = 5, and the items were summed. Coefficient alpha for this index was .70. Because this is a modified version of the CES–D, we will refer to it as the CES–D/M. The second index assessed perceived satisfaction and consisted of 2 items asking respondents how often in the past month they had felt "satisfied or happy with yourself" and with "your life as a whole." Scoring was the same as for the CES–D/M items. These 2 items were based on similar questions used by Andrews and Withey[23] and had a coefficient alpha of .72.

The single-item measure attempted to tap physical health. Subjects were asked how often in the past month they had felt "healthy and physically in good shape." Responses were scored the same way as the CES–D/M and satisfaction items.

## RESULTS

### Preliminary Analyses

Table 1 is a correlation matrix for the continuous variables used in the study (all significance levels in this article are two tailed). One methodological requirement for testing a buffering model, according to Cohen and Wills, is a significant relation between stress and symptomatology. They write that "such a relation suggests that there is minimally adequate measurement and range of scores for these factors within the sample,"[16] a requirement that our data clearly met.

Academic stress was positively associated with depression symptoms and negatively associated with satisfac-

**TABLE 1**
**Correlation Matrix for Continuous Measures**

| Variable | AS | PSS | Friends | Frequency | CES–D/M† | Satisfaction |
|---|---|---|---|---|---|---|
| Academic Stress (AS) | | | | | | |
| Perceived Stress Scale (PSS) | .492*** | | | | | |
| Friends on campus | .026 | −.110 | | | | |
| Frequency of interaction | −.085 | −.160* | .559*** | | | |
| CES–D/M† | .311*** | .578*** | −.130 | −.223** | | |
| Satisfaction | −.401*** | −.666*** | .080 | .087 | −.557*** | |
| Health | −.164* | −.354*** | .126 | .198* | −.335*** | .321*** |

†CES–D/M = modified version of the Center for Epidemiologic Studies–Depression scale.
*p < .05; **p < .01; ***p < .0001.

tion (both $ps < .0001$); it was also negatively associated with physical health, although this relation was weaker than the others, $r(159) = -.164$, $p < .05$. Global perceived stress correlated with the well-being measures in the same, expected directions, with all three coefficients significant at the level of $p < .0001$.

Another important issue pointed out by Cohen and Wills concerns a possible confounding of stress and support measures.[16] For example, they indicate that conflictual experiences or breakups with significant others would be likely to produce both a higher stress score and a lower support score for an individual. One way to evaluate this potential problem, they suggest, is to examine, post hoc, the correlation between stress and support measures. If the measures are uncorrelated, this issue would not seem important.[16] The figures in Table 1 also show the correlation coefficients relating the stress measures and two of the support measures, which indicate that stress and support were largely independent. Of the four coefficients, only one showed even a relatively weak association: for perceived stress and frequency of doing things with other students, $r(158) = -.160$, $p < .05$. Furthermore, in analyses that are not shown, we found that the two groups did not differ significantly on either of the stress measures for each of the dichotomous support variables (belonging to groups and having a romantic relationship).

Finally, the data in Table 1 present a preliminary analysis of the two kinds of structural social support as they relate to well-being. Frequency of doing things was negatively related to depression symptoms, $r(158) = -.223$, $p < .01$, and positively related to physical health, $r(158) = .198$, $p < .05$. The more a student engaged in activities with other students, the lower the tendency to feel depressed and the greater the tendency to feel physically healthy and in good shape. The correlation between the frequency and satisfaction measures was positive but nonsignificant, whereas the three well-being measures correlated nonsignificantly with the measure of the number of close friends in the same, expected directions. This set of correlation coefficients appears to offer some support for the notion that frequent social participation with other students has salutary effects on well-being.

We examined the correlations of frequency of interaction with depression symptoms and with health separately by sex and found the relationship was more pronounced for men. When we compared means for men and women on the measures of belonging to groups, number of friends on campus, frequency of socializing, having a romantic relationship, academic stress, global perceived stress, depression symptoms, satisfaction, and feeling healthy, however, only two significant sex differences emerged. Women were more likely to have a romantic relationship, $t(159) = 2.86$, $p < .01$, and men felt themselves to be healthier, $t(159) = 2.28$, $p < .05$.

Frequency information for the two dichotomous support measures are shown in Table 2, which indicates how the yes and no groups for each variable differed on the

well-being measures. None of the $t$ tests attained the conventional .05 level of statistical significance, although one test came close. Students who belonged to campus social groups scored marginally lower on the CES–D/M index ($M = 6.86$) than did students who did not belong to a group ($M = 7.54$, $p = .06$).

## Hierarchical Regression Analyses

We performed hierarchical regression analyses to test for possible Stress × Support buffering interactions in the prediction of well-being. We chose this analysis because it allowed us to test the relationships between the support and well-being measures, while controlling for stress level, and to test for Stress × Support interactions, while controlling for main effects of stress and support. We carried out 24 sets of regression analyses, 1 for each combination of three variables (well-being, support, and stress). Following an established pattern (see Lefcourt et al[10]), we entered the stress measure for each analysis first in the regression equation, the social support measure second, and the product of the two third. At each step, increments in the squared multiple correlation coefficients ($R^2$) were tested for statistical significance. A significant difference after the support measure was added would indicate a main effect of support; a significant difference after the product term (step 3 v step 2) was added would indicate a significant interaction of stress and support.

These analyses yielded five main effects of social support and five Stress × Support interactions. Three of the main effects reaffirmed correlational results. In all three cases, greater frequency of doing things was associated with greater well-being. Frequency of doing things with other students was a significant predictor of CES–D/M level when we controlled for both academic stress, $F(1, 157) = 7.09$, $p < .01$, increment in $R^2 = .039$, and global perceived stress, $F(1, 157) = 4.11$, $p < .05$, increment in $R^2 = .017$. Frequency of socializing with students was

| TABLE 2 | | |
|---|---|---|
| Frequencies for Dichotomous Support Measures and Group Differences on Well-Being Measures | | |

| Well-Being measure | Belong to campus groups? | |
| | Yes ($n = 71$) | No ($n = 90$) |
|---|---|---|
| CES–D/M† | 6.86 | 7.54 |
| Satisfaction | 7.38 | 7.50 |
| Health | 3.94 | 3.79 |

| Well-Being measure | Have romantic relationship? | |
| | Yes ($n = 79$) | No ($n = 82$) |
|---|---|---|
| CES–D/M† | 7.06 | 7.41 |
| Satisfaction | 7.63 | 7.27 |
| Health | 3.75 | 3.96 |

†CES–D/M = modified version of the Center for Epidemiologic Studies–Depression scale.

also a significant predictor of health, when we controlled for academic stress, $F(1, 157) = 5.69$, $p < .05$, increment in $R^2 = .034$. The other two main effects were nonsignificant in bivariate correlational analyses but attained significance when we controlled for PSS score. Whether the respondent belonged to groups was a significant predictor of satisfaction (people who did not belong to groups reported greater satisfaction, $F(1, 158) = 4.37$, $p < .05$, increment in $R^2 = .015$), and the measure of whether the individual had a romantic relationship was a significant predictor of health (people without a romantic relationship scored higher on the health measure, $F(1, 158) = 4.27$, $p < .05$, increment in $R^2 = .023$).

The five significant Stress × Support interactions to emerge were all interactions of academic stress with support. Academic stress interacted with membership in groups and with number of friends in the prediction of CES–D/M ($Fs = 5.31$ and $4.35$, $p < .05$, increments in $R^2 = .029$ and $.024$, respectively), with membership in ,groups in the prediction of satisfaction ($F(1, 157) = 4.25$, $p < .05$, increment in $R^2 = .022$), and with membership in groups and number of friends in the prediction of health ($Fs = 5.72$ and $4.02$, $p < .05$, increments in $R^2 = .034$ and $.024$, respectively). Final $R^2$ values for the 10 significant multiple regression analyses ranged from .062 (predicting health from academic stress and frequency of doing things with other students) to .458 (predicting satisfaction from global perceived stress and whether the respondent belonged to groups). Although we analyzed all interactions using continuous variables in multiple regression, we did median splits in order to facilitate interpretation of results on the stress and support measures and plotted means within the four groups on the well-being measures (see Figure 1, page 276).

For each interaction, the pattern of means is inconsistent with a buffering model in a number of ways. The two support groups generally differ in well-being under low stress, and the high-support group (belonging to a group or having a high number of friends) is more sensitive to stress level (greater slope) in predicting the outcome measures. In each case, the high-support/low-stress group appears to have the greatest well-being.

## DISCUSSION

The clearest finding to emerge from our investigation was the salutary effect for students of doing things frequently with other students. The frequency measure was negatively related to depression symptoms, both by simple correlation and in regression analyses that controlled for each type of stress measure. Frequency of doing things with other students was also positively associated with feeling healthy and physically in good shape, both by simple correlation and in a regression analysis that controlled for the academic stress measure. The magnitude of these effects was not large, which calls for caution in interpreting the results. These effects did, however, attain conventional levels of statistical significance, and the

findings related to frequency of interacting with other students replicated over two different well-being measures. These are main effects of support; no buffering effects were found.

Given the relatively poor record of measures of frequency of interaction in producing main effects, how might the present results be explained? The quality of the interactions appears to be crucial. Reis et al[14] have written as follows:
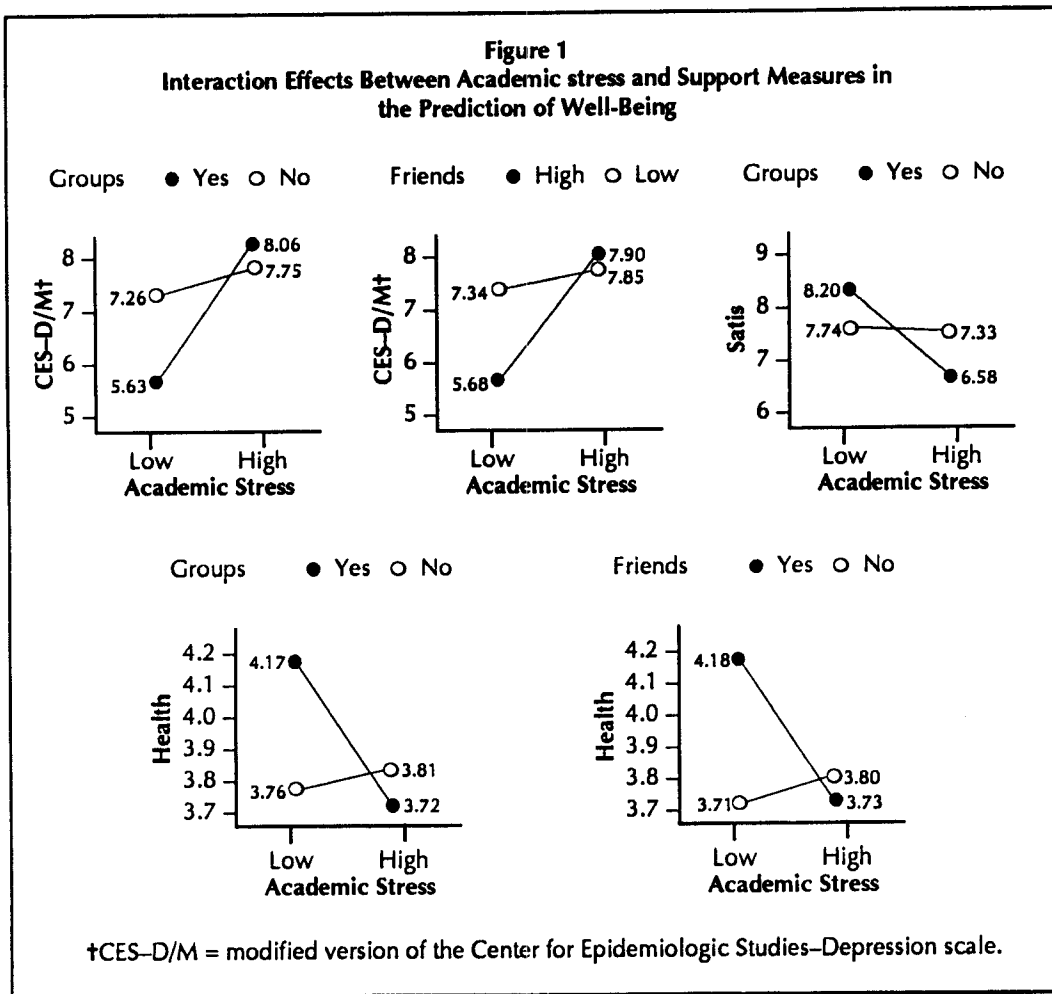
> Much prior research, not to mention nonempirical commentary, interprets the social support–social networks literature as indicating that the more one socializes, the better off one will be. Our research suggests this conclusion misses the mark. Instead, the results point to interaction quality as the primary factor. Good health may be facilitated not by having many interactions, but by affective closeness in those interactions that do occur.

Unlike the measures of frequency of interaction in the earlier studies that assessed all interactions, the measure in the present study probably cued the subjects to respond in terms of particular types of interactions, in this case, interactions with peers (and possible sources of social comparison). The item asked, "How often do you do things with other UCLA students such as study together, get together for fun, or go out on a date?" Presumably these kinds of experiences are helpful or enjoyable to students. Our results converge with those of Hays and Oxley,[9] who found that a measure that asked how frequently the subject got together with various people "to have fun and relax" correlated positively with adaptation to college. These results are also very much in line with Rook's[18] recent research on the importance of social companionship and her finding that it produced main effects on well-being.

This all suggests that affectively positive activities with other students are likely to be associated with greater well-being, irrespective of students' stress levels. Of course, the alternative causal direction to that implied throughout this paper—namely, that healthier and less depressed students are more likely to participate in activities with other students—cannot be ruled out. On the basis of this study, it is impossible to untangle these possibilities, but it is probably some of each.

In order to apply this finding, college administrators might promote positive interactions of the type we have discussed. For example, they could encourage students to hold informal study sessions with classmates or to participate in the recreational activities often organized by dormitories. Experiences such as these were probably a major factor in the relationships we obtained between reported frequency of interaction with other students and positive health outcomes.

Two of the other support measures, belonging to groups and having a romantic relationship, were also associated significantly with students' well-being. In a regression analysis that controlled for global perceived stress, belonging to groups was marginally associated with lower depression symptoms but was also significantly associ-

**Figure 1**
**Interaction Effects Between Academic stress and Support Measures in the Prediction of Well-Being**

†CES–D/M = modified version of the Center for Epidemiologic Studies–Depression scale.

ated with lower satisfaction. Being in a romantic relationship was associated with lower health when we controlled for global perceived stress. Women, we found, were more likely than men to be in a romantic relationship and scored lower than men on the health measure; indeed, the association between being in a relationship and lower reported health was more pronounced for women. In addition to being potentially beneficial, belonging to groups or having a romantic relationship certainly can create difficulties for some students. This factor may have contributed to these inconsistent findings. It should also be noted that all of the social support measures consisted of single items, thereby lowering reliability. Using single items and shortened versions of established instruments was necessary, however, to keep the telephone interview to a reasonable length. In any case, frequency of interacting with other students appears to be more important for well-being than belonging to groups or having romantic relationships. This is consistent with the results of Monroe et al,[12] who found that group membership was not associated with their outcome measures.

Five significant interaction effects emerged, but none was consistent with a buffering pattern. A relatively consistent pattern of means did characterize the interaction effects, though the high-support/low-stress group repeat-

edly appeared to be better off than the other three groups. In a college population, the best of all worlds would appear to involve low levels of stress and high levels of social support. One might claim that social support is beneficial only under low levels of stress, but given the bulk of the literature, this seems unlikely.

In sum, frequently doing things with other students was shown to be an important form of social support for respondents because it was negatively related to depression symptoms and positively related to feeling physically healthy and in good shape. Social companionship, studied by some researchers as a structural aspect of social support and by others as a functional aspect, appears to be a very important construct in its own right.[18] Further research might include surveys of college students to assess which activities are considered to be most enjoyable and which of these are considered particularly easy or difficult to initiate as well as studies evaluating the effectiveness of programs promoting social activities. Researchers might also examine how personality characteristics of individual college students, such as "social exploration preference"[24] and "interpersonal competence,"[25] and environmental characteristics, such as schools' "exploration climate,"[24] relate to the students' participation in social activities and to their health and well-being.

## INDEX TERMS

stress, social support, emotional well-being, college students

## NOTE

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