Original Article:
The Role of Social Support in Mediating Stress and Depression.

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Abstract: As important as it is to fully comprehend the relationship between stress and depression among university students, it is also vital to ascertain the role of perceived social support as an essential psychosocial factor for effectively delimiting the deleterious impact of stress exposure. As such, the current study aimed to examine whether perceived social support functioned as a mediating factor in the relationship between stress and depression among university students. Data was collected from undergraduate students of a public university in Sarawak, Malaysia. Information on demographics, depression, stress and perceived social support were collated through self-report questionnaires. Results revealed significant gender differences for perceived social support, wherein female students reported lower levels of social support compared to their counterparts. Mediation analysis portrayed that the association between stress and depression was partially accounted for, by the mediating role of perceived social support.
Key Words: Stress, Depression, Social Support, Students

Introduction:

In recent years, the higher education sector has witnessed an increasing realization about the significance of mental health among the student population. Mental well-being and mental ill-health are vital facets of college/university life that could either enrich or jeopardize the future of students. Even as opportunities abound for emotional, cognitive and social growth whilst at university,(1) certain aspects of the higher educational experience might cause stress for some students. Although the underlying causes may vary across individuals, a complex matrix of interrelated factors, such as academic, economic, social, environmental and so forth, could provoke considerable stress among students. Whether or not, or the degree to which, these external factors create a stressful situation for individuals relies heavily on their choices, circumstances, and personality.(2)

Stress is a multidimensional concept, which was postulated by earlier researchers to encompass not just physiological phenomenon but also a psychological process.(3) The most widely accepted theory today describes stress to be a particular relationship between the person and the environment, which is appraised by the person as taxing or exceeding his or her resources, and endangering his or her well-being.(4) Because the university environment itself is often considered to be competitive and demanding, it follows that students may possibly be confronted with a myriad of unique challenges and stressful events. Psychological stress could occur when a student perceives that the pressures of these situations might exceed his or her adaptive capability. What's more unsettling is that, perceptions of stress may influence the pathogenesis of physical disease by causing negative affective states (e.g., feelings of anxiety and depression), which then exert direct effects on physiological processes or behavioral patterns thereby influencing disease risk.(5)

Evidence strongly suggests that stressful life events are causal for the onset of depression, although most people do not become depressed even if they experience a negative life event.(6) Consistent with these findings, several studies have likewise noted a relationship between stress and the development of depressive symptoms among college students.(7) According to the Diagnostic and Statistical Manual of Mental Disorders (8) depression is characterized by low mood and loss of interest or pleasure in nearly all activities with a plethora of co-occurring problems such as comorbid anxiety disorders and suicidal ideation. More alarmingly, major depression is considered a severe and life threatening psychiatric disorder, which is predicted to soon become one of the major causes of death worldwide.(9)

Although it cannot be construed that all students who encounter stressful events may exhibit symptoms of major depression, incidence of sub-clinical depression may possibly be more ubiquitous among this demographic group. Key components of sub-clinical depressive symptomatology include feelings of sadness, emptiness, worthlessness and hopelessness, loss of interest in once enjoyed activities, and fatigue.(8) Considering that sub-clinical depression is a risk factor for developing clinical depression (10), the insidious consequences of its depressogenic effect may not bode well for university students. The role of stress and depressive symptomatology, thus, may well be important indicators of psychological functioning and personal wellbeing among students.

One aim of the positive psychology paradigm is to identify factors that promote positive functioning among all people, as well as ascertain factors that protect individuals from developing the most deleterious outcomes when experiencing various types of stress.(11) Numerous studies have indicated that social support is essential for maintaining physical and psychological health, wherein the harmful consequences of poor social support and the protective effects of good social support in mental illness have been well documented.(12) More importantly, social support has been viewed as protective among youth.(13) Hence, understanding the role of social support as a vital psychosocial factor in physical and mental health outcomes is critical to the overall wellbeing of individuals, especially for university students.

The concept of social support varies from objective social life (group memberships, family, spouse, etc.) to subjective experience (e.g., emotional support, loneliness).(14) The positive association between social support and wellbeing has been attributed largely to either an overall beneficial effect of support (main- or direct-effect model) or to a process of support protecting persons from potentially adverse effects of stressful events (buffering model).(15) Wethington and Kessler (1986)(16) advocated that, for stress-buffering research, the distinction between perceived and received social support has considerable importance.

They contended that personal coping is strengthened by the perception of support, while actual support is only needed when coping fails.(16) How a person perceives social support, and the resulting belief, is crucial to what benefit may be derived from it.(17) Notably, the primacy of perceived social support has been consistently demonstrated through its positive associations with psychological wellbeing (18-20), as well as correlations with less physical symptomatology in several studies.(21,22)

As important as it is to fully comprehend the relationship between stress and depression among university students, it is also vital to ascertain the role of perceived social support as an essential psychosocial factor for effectively delimiting the deleterious impact of stress exposure. As such, the current study aimed to examine whether perceived social support functions as a mediating factor in the relationship between stress and depression among university students.

Methods
Procedure
Data for the present study was collected through a cross-sectional survey of undergraduate students from a public university in Malaysia. A convenience sampling technique was utilized to recruit students. Following a brief synopsis of the research, all participants were requested to independently complete a self-administered questionnaire, which was distributed during the last 15 minutes of a 2 hour class lecture. Participation was voluntary and applied only to students who were present in class, on the day of assessment. Informed consent was obtained from all participants, and confidentiality was ensured throughout the survey procedure. The study protocol was approved by the University Research Committee.

The self-report English language questionnaire consisted of three components. Socio-demographic aspects of students, such as age, gender and religiosity were included in part 1. The Multidimensional Scale of Perceived Social Support (MSPSS) was incorporated in part 2, and the Depression Anxiety and Stress Scale (DASS-21) items were included in part 3.

Instruments
The MSPSS is a brief measure of subjectively assessed social support.(23) This self-report instrument contains 12 items designed to assess perceived social support from three domains, namely, family (FA), friends (FR), and significant others (SO). Each domain was evaluated using four specific questions, and rated on a 7-point Likert scale ranging from 1 (very strongly disagree) to 7 (very strongly agree). A total score was calculated by summing all of the items, wherein scores range from 12 to 84. Lower scores denoted lower perception of social support, while higher scores implied higher perception of social support. Excellent internal consistency values have been reported for the total score (0.91), as well as for each of the three subscales (0.90 to 0.95). In the present study, internal reliability for the MSPSS was 0.92.

The DASS-21 is a short version of the original 42-item questionnaire designed to measure depression, anxiety and stress (24,25) among respondents. This self-report instrument comprises of 21 items, and has response options on a 4-point Likert-type scale ranging from 0 (Did not apply to me at all) to 3 (Applied to me very much or most of the time). Participants had to indicate the extent to which each statement applied to them over the last week. The questionnaire is separately scored as three 7-item subscales comprising of Depression, Anxiety, and Stress. Based on the manual guidelines, scores from each subscale were summed up and multiplied by two to suit the original 42-items.

The DASS-21 was utilized in this study due to its conciseness, which ensured completion in lesser time. Moreover, excellent internal consistency for the three subscales ($0.80 < \alpha < 0.91$) have been indicated by several studies.(26-29) Nonetheless, to meet the objectives of the current research, only the Stress and Depression subscale scores were incorporated for further analysis. Based on the manual guidelines, the DASS severity ratings for depression, range from normal (0 - 9), mild (10-13), moderate (14-20), severe (21-27), and extremely severe (28+). The severity ratings for stress, range from normal (0-14), mild (15-18), moderate (19-25), severe (26-33), and extremely severe (34+). In the present study, the internal reliability for the depression subscale was 0.77 and the stress subscale was 0.74.

Data Analysis
Statistical Program Social Sciences (SPSS version 23) was used to analyze data in the study. Descriptive statistics were obtained for presentation of sociodemographic data, as well as for means and standard deviations (SD) of the survey scale scores. Cronbach's alpha coefficients (a) were computed to evaluate reliability of the questionnaires. All tests were two-tailed and significance level was set at $p < 0.05$, unless stated otherwise. Prior to conducting primary analyses, the data was examined for outliers and all were found to be within range values. Data was normally distributed, hence no variable transformations were deemed necessary.

A simple mediation analysis was conducted to assess the effect of perceived social support on the relationship between stress and depression. The analysis was completed in SPSS by utilizing AMOS.(30) The four steps method put forward by Baron and Kenny (31) and Judd and Kenny (32) was used to establish partial or complete mediation. Inferential test for the indirect effect was carried out by a non-parametric, bias-corrected (confidence intervals set at 95%) bootstrapping procedure using 1,000 resamples from the data set.(33) The indirect effect was quantified as the product of path

coefficients *a* and *b* (*a*b*). Path *a* represents the standardized regression coefficient for the path from the predictor variable (stress) to mediating variable (perceived social support); path *b* is the coefficient for the path from the mediating variable (perceived social support) to the criterion variable (depression) controlling for the predictor variable. Furthermore, by comparing the coefficients for the total effect (path *c*) with the coefficients for direct effect (path *c'*), the significance of the indirect effect of the mediator can be determined. Significant mediation is indicated if the *c- c'* difference is larger than zero.

Results
Sociodemographic data
The participants included a total of 254 undergraduate students comprising of 66% females and 34% males. Major proportions (67%) of students were in the lower age group (20-22 years), whilst a minor fraction (33%) was in the higher age group (22-24 years). Composition of the sample by religion indicated that 62% were Muslims, 25% Christians, 11% Buddhists and 2% were Hindus.

Descriptive analyses
The standard deviations, means and t-test results indicating the gender differences in stress, depression and perceived social support levels, has been depicted in Table 1. Statistically significant gender differences were not detected for stress and depression. However, significant gender difference was found only for perceived social support, wherein female students reported lower levels of social support compared to their counterparts.

Table 1: Differential analysis in perceived social support					
		Mean	SD	t-value	p-value
Gender and Stress	Male	11.95	6.69	0.05	>0.05
	Female	12.00	6.52		
Gender and Depression	Male	6.11	5.35	0.92	>0.05
	Female	6.80	5.81		
Gender and Social Support	Male	5.29	1.88	3.13	*p* < 0.05
	Female	4.50	1.93		

Mediation analysis
Figure1 represents the results of AMOS output. A detailed analysis of the mediation steps which were utilized to establish partial or complete mediation within the present study has been delineated here onwards.

Step 1: Indicated that the causal variable was correlated to the outcome variable. The regression equation which was performed by utilizing depression as the criterion variable and stress as the predictor, showed a direct correlation (r=.72, p=.000). Moreover, significance of the relationship between the two variables was also confirmed. Subsequently, the regression of stress on depression, ignoring the mediator, was also significant, ß=.724, t (252) =16.65, p=.000.

Step 2: Path *a* was estimated and tested in this step, wherein the mediator variable was essentially considered as an outcome variable. The regression equation which was performed by utilizing social support as the criterion variable and stress as the predictor, showed a direct correlation (r=-.33, p=.000). Besides, significance of the relationship between the two variables was also confirmed. Afterwards, the regression of stress on the mediator (criterion variable), was likewise found to be significant, ß=.34, t (252) =5.67, p=.000.

Step 3: Path *b* was estimated and tested in this step, wherein it was demonstrated that the mediator variable affected the outcome variable. In this step, depression was the criterion variable in the regression equation, and stress as well as social support were the predictors. The correlation was significant (r=-.42, p=000). Thereby, step 3 of the mediation process

showed that the mediator, controlling for stress, was significant ß=.20, t (251) =4.57, p=.000.

Step 4: This step basically established that the mediator (social support) completely mediated the X-Y relationship, wherein the effect of X (stress) on Y (depression), whilst controlling for M (path *c'*) should be zero. Thus, step 4 of the analysis revealed that, controlling for the mediator (social support), stress with depression was statistically significant, ß=.66, t (251) =14.81, p=.000.
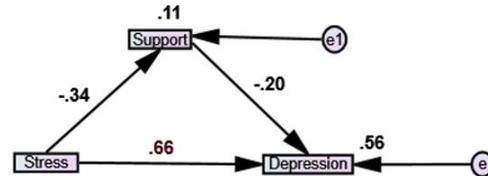
Discussion
Research has supported a strong association between stress and depression, but then, according to Hammen,6 the overarching question still lingering is: Why do some people get depressed following stressful experiences and others do not? The answer may lie in psychobiological models, which recognize the importance of psychological as well as biological factors in the stress process, and also emphasize that the impact of stressors depends not only on the stressors themselves but also on several important mediating factors.(34) These stress mediating factors could be ascribed with either minimizing or magnifying a stressor's impact.(35) In keeping with this perspective, social support may well be a critical psychosocial mediator to explain the underlying mechanisms of the interplay between stress and depression. Most germane to the present study, and especially for university students, was the necessity to understand the pathways through which perceived social support may function to foster stress resilience and reduce the risk for developing depression.

The current research, thus, endeavored to examine the role of social support as a potential mediator in the relationship between stress and depression within a sample of undergraduate students. At the outset, the results firstly revealed statistically insignificant differences between genders for stress as well as depression, which were contrary to expectations. The issue of gender differences in depressive reactions to stress appears to yield greater consensus, with more studies indicating that women are more likely to become depressed in response to stressors than are men.(6) On the other hand, results from the present study depicted a significant gender difference for perceived social support, wherein female students reported lower levels of social support compared to their counterparts. This outcome, too, was dissimilar to other studies which have reported that women, in general, tend to display higher perception of social support than men. For instance, Talwar, Kumaraswamy and Fadzil (36) in their study demonstrated that female students showed higher perception of social support compared to their counterparts. Differences in perception of social support between male and female students in the present study could possibly be attributed to socialization experiences and social roles.

The inferential test findings from the four steps approach of the mediator analysis utilized in the present study indicated that each path of the model was statistically significant. This encompassed the first pathway (path *a*) which included relationship between stress and perceived social support (ß= .34, t (252) = 5.67, p < .000), as well as the second pathway (path *b*) which involved perceived social support and depression (ß = .20, t(251) = 4.57, p < .000). As a final point,

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controlling for the mediator variable, stress with depression was also found to be significant (ß = .66, t (251) = 14.81, p = 0.000).

Results from simple mediation analysis depicted that the association between stress and depression was reduced from total effect (c = .623, SE = .0374, p < .000), but remained significant after including perceived social support into the model (c' = .565, SE = .0383, p < .000). Subsequently, the Sobel test showed partial mediation of the model (z = 3.51, p = .0004). Therefore, it could be inferred that social support partially mediated the relationship between stress and depression. The presence of social support as the mediator produced an indirect effect of 5.8% in this sample. The overall variance explained by this model is 56%. These results were found to be quite similar to a study conducted by Thorsteinsson,(37) where it was likewise reported that social support was a partial mediator of the relationship between stress and depression, even though the overall model fittingly explained 66% of the variance in depression.

In essence, the findings from the current study depicted that the linkage between stress and depression was partially mediated by perceived social support. The mediating role of social support, even if partial, is noteworthy as it revealed possible associations between stress and depression amongst this cohort of students. Although just a postulation, it could be construed that for students who perceived less social support from people close to them, their distress experiences may remain or even worsen, which, in turn, could increase the likelihood of developing depressive disorders.

Studies have shown that perceiving less social support is related to the likelihood of individuals' experiencing psychological distress,(38) and moreover the probability of experiencing depression may be higher among people who lack social support.(39) This is consistent with pre-dispositional models, wherein a number of investigators have posited that low levels of social support contribute to the onset and recurrence of depression, perhaps by increasing the depressogenic impact of stressful life events.(40)

In stark contrast, good social support can provide protection for an individual under stress and has common gaining function on maintaining an individual's good emotional experience.(41) Social support can also provide problem solving strategies to the individual, reduce the importance of the problem, and alleviate the harmful effects of stress experience.(42) These effects can reduce the intensity of the relationship between stress and depression, thereby lowering the degree and generation of depression.

In conclusion, findings from the mediational analysis portrayed that, not only was stress directly related to depression, but that, it was also indirectly related to depression via its effect on perceived social support. More specifically, perceived social support partially mediated the relation between stress and depression.

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