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Running Head: SOCIAL SUPPORT, STRESS, AND ILLNESS

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Abstract

Social Support has been shown to be one important factor in the link between stress and illness. In this study, the role of social support is examined in light of the two different categorizations of social support: quality and quantity. High quality and high quantity social support groups were hypothesized to be correlated with lower illness levels. In an attempt to explore the relative merits of the main effect and the buffering hypotheses, the relative role of social support to stress and illness was examined. There was a significant correlation between quality of social support and illness levels. Quantity of social support played a minor role in predicting illness levels. Finally, social support was significantly linked to mental health scores such that under low stress the level of support did not have an effect on health levels, but under high stress individuals who had high social support were healthier than individuals with low social support.

The Role of Social Support in Mediating Stress and Illness

Illness is ubiquitous to the human experience. The search for the causes and cures of diseases has been going on for as long as recorded history. More recently, the field of health psychology has come into existence to answer some of these questions. Health psychology is a field which investigates the psychological factors that contribute to the onset and course of disease and in applying psychological knowledge to disease prevention and health promotion (Carroll, 1992). One of the main concepts in health psychology is the relationship of psychological stress to illness (Carroll, 1992). From the investigation of the correlation between stress and illness came the idea that there is a correlation between social support and stress and that social support may have a mediating effect on the stress-illness relationship (Cohen and Wills, 1985).

Many researchers have found that high levels of stress have been positively correlated with high illness levels. Early studies in this area have shown that there is an increased likelihood of disease following a quantifiable life stressor (Dohrenwend &Dohrenwend, 1974 in Friedman and Booth-Kewley, 1987). Stressful life events have been suggested as necessary but not sufficient causes of illness and are implicated in the onset of diseases (Holmes and Rahe, 1967).

While there is no clear definition of the pathway from high stress to disease, one logical place to begin looking is the immune system, the body's natural defense system. The normal immune system recognizes foreign substances and acts to neutralize them by a variety of methods utilizing B and T lymphocytes (Marieb, 1995). There are three important aspects to the immune system: it is specific to particular foreign substances, it is systemic,

and it retains the ability to continue to attack a previously encountered pathogen (Marieb, 1995). Several researchers have found evidence to support the idea that stress impairs some portion of the immune system, thus leading to a greater vulnerability to disease (Dean and Lin, 1977; Jemmott and Locke, 1984; Friedman and Booth-Kewley, 1987). Work with the herpes virus and stress levels has shown that these changes in immune responses can be associated with common stressors in an otherwise healthy environment (Glaser, Kiecolt-Glaser, Speicher, and Holliday, 1985). More specifically, one research study found that changes in B lymphocytes are related to stress levels (Kiecolt-Glaser, Speicher, Holliday, and Glaser, 1984).

Another possible link between stress and illness suggested by Jemmott and Locke (1984) is that changes in behavior that result from levels of high stress may impair the immune system and prevent its full functioning. For instance, high stress levels may cause a person to eat less, which in turn may affect his or her susceptibility to illness (Jemmott and Locke, 1984). Other behaviors that have been suggested as intervening variables between stress and illness include changes in sleeping patterns or drug use (Jemmott and Locke, 1984).

A third type of moderating variable in the pathway between stress and illness, and the one investigated in depth in the current study, is the social support of the individual. Social support networks have been defined as the friends and social contacts on whom one can depend for help and support (Bernstein, Clarke-Stewart, Roy, Srull, and Wickens, 1994). In one study, strong social relationships were associated with lower mortality rates after a myocardial infarction (Berkman, 1995). This may have been because of the

intervention by the patient's social support network. For example, it has been found that activity with a social support network encourages a patient to continue active coping effort for a chronic illness (Scheier and Bridges, 1995), and patients may decide to seek treatment for their illnesses based on the recommendations of their social group (Dracup, Moser, Eisenberg, Meischke, Alonzo and Braslow, 1995).

Because both stress and social support have been correlated independently with illness levels, it is important to consider the means by which these two factors relate to illness. Investigators have put forth two different theories that link stress, social support, and illness. First, the Main Effect theory (Cohen and Wills, 1985) states that individuals with strong social support groups will have fewer physical and mental heath problems than those with weaker social support. Thus, it is the quality of the social support group which is important (Cohen and Wills, 1985). As seen in Figure 1a, social support affects health regardless of the level of stress of the individual. Support for the main effect hypothesis comes from several studies summarized in Cohen & Wills (1985) that demonstrate that high integration, or embeddedness in the social network is associated with lower illness levels.

The second theory is the buffering hypothesis. This states that social support acts as a buffer and helps to decrease the appraisal of stressful events so that they are perceived as less threatening. In addition, social support may decrease the number of immune system and behavioral changes that result from stress, thus helping to prevent illness (Cohen and Wills, 1985; Dean and Lin, 1977). Buffering can be defined as any intervening effect of social support between stressors and health (Lin, Woelfel, and Light, 1985). As

shown in Figure 1b, according to the buffering hypothesis, the social group does not directly impact the stress, rather it helps to moderate the stress experienced by the individual by affecting stress appraisal, immune responses and coping behaviors. The impact of the social group on the individual is indirect; social support is a resource available to the individual to help them cope with a stressful issue (Schafer, 1992).

There is little consistency in the definition of social support groups in the literature. Some researchers measure the social support group by marital status (Kessler and Essex, 1982; Thoits, 1982) while others have looked at interactions with relatives or friends (Monroe, Imhoff, Wise and Harris, 1983). Others attempt to integrate categories by studying several groups that they believe make up a social support network, such as family members, work colleagues, and other social groups (Holahan, Moos, Holahan, and Brennan, 1995). Measures of social support often include measurements of quantity, such as observing interaction with neighbors and the amount of community involvement of an individual (Cohen and Wills, 1985), as well as measurements of quality, such as measuring feelings about neighbors (Cohen and Wills, 1985). In addition, researchers disagree as to which variable: quality or quantity, plays a larger role in health. Wilcox (1981), found that the amount of variance in his study of social support and stressful life events was best accounted for by measures which tapped quality of support. Quality of support was also the factor that best altered stress perception in a study by Jackson (1992). However, House, Landis and Umberson (1988) found the risk of mortality increased for persons with a low quantity of social relationships, and Kaniasty and Norris (1995) found that natural disasters

were destructive to social support because of the increased inability of contacting the social support group. Therefore, one way to look at social support as a predictor of stress and illness could be by investigating the differences that quality and quantity of social support play in reducing stress and illness.

In this study, the relationships between social support, stress and illness levels will be investigated by looking at both the perceived quality of the social support groups and the quantity of contact with social support groups. We hypothesize that stress and illness can be predicted by both quantity and quality of social support; we theorize that as both quantity and quality increase, both stress and illness levels will decrease.

In addition, we will be comparing the main effect and buffering models. For the main effect to be supported, we expect that strong social support will be correlated with lower illness levels regardless of the level of stress, as depicted in Figure 2.

For the buffering model to be supported, we expect that strong social support will be correlated with lower illness levels in a high stress condition, but not in a low stress condition. This is because the high levels of stress would serve to activate the illness lowering process; if you have low stress, there is no need to be buffered from it by the social support group. This result is depicted in Figure 3.

Method

Participants

Participants in this study were 37 freshman (24 females, 13 males) at a small Midwestern liberal arts University. The range in age of participants was from 18-19 years (M= 18.46) for males and from 18-21 years (M= 18.43) for

females. Participants received extra credit for their general psychology classes.

Procedure and Measures

Several survey instruments were administered to the participants in group sessions to determine information about social support structures, stress levels, and current medical symptoms. These measures were given to each participant two times during the semester at an interval of between twenty-one and twenty-eight days in an attempt to replicate any findings. Testing did not occur during finals because it is highly likely that all subjects and much of their support groups will be under extreme stress (Duffy and Jones, 1995). Participants were instructed to think of three groups as they completed the measures: Family, a group of Near Friends (within 60 miles of the University), and a group of Far Friends (futher away than 60 miles of the university). The measures given to the participants included:

Demographic Information. Participants were asked to give their name, age, sex and year in school.

Contacts with and Quality of Social Support . Participants were asked to indicate whether their family was near (within 60 miles) or far (further away than 60 miles). They were then asked to estimate the number of contacts (face to face, email, phone, etc.) they had in the average week with their family, near friends, and far friends. However, there were some questions about the reliability of this contact measure because not all participants completed it correctly. Also, participants mentioned that they had difficulty calculating the number of contacts for each group. However this measure was retained for the initial analysis. Finally, participants were asked to rank these three groups as to which group gave them the most social

support, then the second most, and the least social support. The group designated as giving the most social support was identified as the primary social support group.

The Measures of Perceived Social Support from friends and family (Procidano and Heller, 1983) was chosen as a measure of quality of social support because of its ability to be used for all target social support groups: family, near friends and far friends. It has acceptable internal consistency (alpha of 0.90) and test-retest reliability (0.83) (Fischer and Corcoran, 1994).

The Medical Outcome Scale (MOS). The MOS (Stewart, Hays, and Ware, 1988) was chosen because of its short length and its ability to measure multiple aspects of illness. The MOS takes between three and four minutes to complete (Fischer and Corcoran, 1994). Two scales, Health Perceptions and Mental Health, were selected based on their measures of current health perceptions and the approximation of a normal distribution of scores in the current sample. Both scales are multi-item scales with acceptable internal consistency: 0.88 for mental health and 0.87 for health perceptions. (Fischer and Corcoran, 1994). Both scales also tapped aspects of health possibly related to social support, as opposed to looking at health problems associated with acute or chronic injury (e.g. sport injury, paraplegia) which may be less likely to be affected by social support.

Stress Measures. The College-Life Stress Inventory (Brooks/Cole Publishing Co., 1996) is a measure based on the classic work, The Social Readjustment Rating Scale, by Holmes and Rahe (1967). It has been updated to reflect the stressors which most directly affect the college population. This measure was chosen based on its relevancy to the population studied. It is an

event scale of stress which has been slightly modified to also reflect perceived stress. This measure yielded two scores used in the analysis: the number of stressful events a participant had experienced, and a perceived stress score of those events.

The Global Assessment of Recent Stress (Linn, 1985) is a perceived stress measure. This measure was used to appraise the overall feeling of stress of each participant. Test-retest correlations ranged between 0.69 and 0.92 for the eight items in prior research (Linn, 1985).

Results

General Description of Social Support

Participants in this experiment were asked to rank their family, near friends and far friends as to which group gave them the most social support. The largest group of student participants (45.9%) reported that their family gave them the most social support, while 32.4% of participants reported that their near friends gave them the most social support, and 21.6% believed their far friends were their primary support group. The mean number of family contacts and far friend contacts reported over the average week were 5.16 (SD = 5.88) and 7.17 (SD = 7.17) respectively, while the mean number of near friend contacts was 38.73 (SD = 56.79). A one-way repeated measures ANOVA looking at the differences in the number of contacts with each support group was significant, $F(2, 58) = 9.17$, $p < .001$. While the quantity of support from each of the three groups was significantly different, the perceived quality of support from each group was similar . A one-way repeated measures ANOVA was done to discover whether there was a significant difference in the perceived quality of support from Near Friends (Perceived Social Support M = 15.16, SD = 4.62), Far Friends (Perceived Social

Support M = 15.87, SD = 4.49), and Family (Perceived Social Support M = 14.97, SD = 5.03). This ANOVA was not significant, F (2, 72) = .48, p > .05.

To check for possible gender differences, t-tests were run in order to compare men and women on all ten of the measures given. Women perceived significantly more social support from their near friends than men did: (M females = 16.42, SD = 4.23 vs. M males = 12.85, SD = 4.56) t (35) = -2.38, p < .03, a result that may have been due to chance given the large number of t-tests that were run. Because the differences between gender were significant on only one of the ten measures, the results were collapsed across gender for all subsequent analyses.

Relationship between quantity and quality of support

The quantity of social support, defined as the number of contacts reported, was correlated with the quality of the social support groups as defined by the Perceived Social Support from Friends and Family measures. (See Table 1). Along the diagonal of the table is the comparison of the quantity and quality measures for the same social support group. There was a moderate positive correlation between social support quality and quantity related to the family, indicating that as quality increased, the number of contacts with family increased (r = 0.53) The same pattern was observed when examining social support quality and quantity of both near and far friends, although the correlations failed to attain significance. Off the diagonal, the comparisons illustrate the different measures and different groups, for instance comparing contacts of friends to perceived quality of family support. All of these comparisons were insignificant, with the exception of the negative correlation between the number of near contacts and the perceived social support from family, r (31) = -0.302, p < .05,

suggesting that as the perceived social support from family decreased, the number of contacts with near friends increased.

Correlations between social support quality and quantity with stress and illness.

In line with previous research, social support quality correlated significantly with scores on stress and illness measures. Perceived social support quality from both near and far friends was positively correlated with scores on the health perceptions (HP), $r(37) = 0.536$, $p < .001$, and mental health (MH), $r(37) = 0.434$, $p = .004$ subscales of the Medical Outcome Scale. This suggests that as reported quality of social support increased, so did the health of the participant as measured by the HP and MH scales. Similarly, the perceived social support from near friends correlated significantly with the health perceptions scale, $r(37) = 0.439$, $p = .003$, and with the mental health scale, $r(37) = 0.298$, $p < .04$. Social support from family was not correlated with either the HP or MH scores.

Also in support of previous research, the quality of social support offered by all three social support groups was negatively correlated with the current stress measure, the Global Assessment of Recent Stress (GARS): Family, $r(37) = -0.334$, $p < .03$, Far friends, $r(37) = -0.407$, $p < .01$, and Near friends, $r(37) = -0.294$, $p < .04$. High scores on the GARS indicate higher stress levels; therefore as the perceived quality of the social support group increased, the reported stress level decreased. Correlations between the quality of the three social support groups and the College-Life Stress Inventory were insignificant, but in the same direction as those found with the GARS.

In contrast, the quantity of interactions with the social support group, measured by the number of contacts a participant had with each social support group, was not correlated to either stress or illness measures.

Prediction of Health from Social Support.

Two stepwise multiple regressions were performed to predict each of the medical outcome subscales (Health Perceptions, and Mental Heath). Predictor variables entered on the first step were the three perceived social support quality measures (Perceived Social Support from Family, Near Friends and Far Friends) while the three measures of social support quantity (Number of contacts with Family, Near Friends, and Far Friends) were entered on the second step. The results of the regressions are summarized in Table 2. In the multiple regression with the health perceptions measure at step one, social support accounted for a significant proportion of the variance, R^2 =0.4002, $p < .004$. None of the three quality variables added significantly to the predictive power of the regression when taken individually. At the second step of the regression the value of R^2 increased to 0.463 and remained significant. At the second step, the only measure to contribute significantly to the predictive power of the regression was perceived social support from far friends.

The multiple regression with mental health produced a similar pattern of results. After the first step of the regression the results were significant, R^2 = 0.2963, $p < .03$, although the only significant variable to add individually to the predictive power of the regression was social support from far friends. In the second step of the regression more variance was accounted for, R^2 = 0.3971, $p < .10$, although significance was lost.

Main Effect vs. Buffering Hypotheses.

Two 2-way (2x2) factorial ANOVAs were performed to measure the relationships between social support and stress as related to health outcomes. Social support for the ANOVA was defined as the mean score on all three quality measures of social support. (Quantity was not included due to questions about reliability of the quantity measure and a loss of data in cell sizes.) Stress was defined as a sum of all stressful events reported on the College-Life Stress Inventory. Both stress and social support were divided into high and low groups for the analysis, based on a median split.

The means and F values for the ANOVAs are found in Table 3. When the data for health perceptions was graphed as in Figure 4, the pattern of data appears similar to the expectations for the buffering model seen in Figure 3; however there were no significant interactions between social support and stress. There was a significant main effect of social support on the health perceptions measure, $F(1, 36) = 4.77$, $p < .02$. The main effect of stress on the health perceptions measure was not significant.

The interaction between stress and social support on the mental health measure was significant, $F(1, 36) = 5.61$, $p < .03$. This interaction is graphed in Figure 5. The main effects of stress and social support on the mental health measure were not significant.

Time 2 Data

Data was gathered again after a 21-28 day interval from the first testing session in an attempt to verify empirically the results obtained in the first testing session. As shown in Table 4 the general pattern of correlations between the perceived quality of the social support groups and the stress and illness outcome measures remained consistent with the first data sampling. There were, however, a few exceptions. At Time 2, there were no significant

correlations between the GARS stress measure and the perceived social support from any of the three support groups. The correlation between mental health scores and the quality of social support from near friends was maintained, $r(36) = .4994$, $p < .005$, as was the correlation between mental health scores and the quality of social support from far friends, $r(36) = .5209$, $p < .005$. Similarly, a marginal correlation between the health perceptions measure and the quality of near friend social support, $r(36) = .2775$, $p = .051$, provided some support for the significant correlation obtained during the first time period. In addition, near friend contacts were positively correlated with the mental health measure, $r(31) = .3282$, $p < .04$, a result which was not obtained during the first testing session.

The data on the multiple regressions for time two is summarized in Table 5. The quality of social support measures entered in step one accounted for a marginally significant proportion of the variance in health perceptions, $R^2 = 0.2390$, $p < .06$, and a significant proportion of the variance in mental health, $R^2 = 0.6288$, $p < .001$. In support of findings in Time 1, the quality of social support from far friends was the only significant predicting variable on an individual basis.

In step two, the only regression to remain significant was the regression to predict mental health, $R^2 = 0.6812$, $p < .001$. Again, quality of social support from far friends was the predicting variable.

In the two-way (2x2) factorial ANOVAs for Time 2, the ANOVA for health perceptions produced no significant results as seen in Table 3. The graph of the ANOVA for mental health (as seen in Figure 6) again showed the pattern associated with the buffering hypothesis, although the interaction

was not significant. However, the ANOVA for mental health did show a significant main effect of social support $F(1, 35) = 7.59$, $p < .01$.

Discussion

This study was designed to look at the relationship of social support to stress and illness. The main factors that were explored were the quantity and quality of social support groups, and their relationships to the main effect and buffering hypotheses. First, the participants' subjective ratings of quantity and quality of their social support groups helped to determine their primary support group. More participants rated their families as their primary support group than either of their groups of friends, but participants overall had significantly more contact with their near friends than with any other group. Their objective ratings of quality based on the Perceived Social Support measures did not significantly differ between the three support group. Thus, although participants perceive their family to give the most support, overall they received the same quality of support from all social support groups. This finding may be related to the type of institution the participants attended. Since attendance at a private university tends to be more expensive and require more assistance from sources outside the individual, it may be possible that individuals who attend small, private, liberal-arts institutions may have higher quality relationships with their families overall than individuals who attend large, public universities. Individuals who attend larger, public institutions may depend more on their friends than on their families for social support as compared to individuals at small, private institutions.

These findings help to replicate prior research findings between quantity and quality of support, which showed that quantity and quality of

social support were not equivalent but were related. In general, as the quality of the group was perceived as better, the number of contacts with that group increased. This data shows that quantity and quality are not equivalent concepts because of the moderate to marginal correlations between quantity and quality measures for the same social support group. However, these results may be tempered somewhat because of questions about the reliability of the contact measure.

Supporting previous research, perceived quality of social support was positively correlated to scores on health measures, which indicated higher functioning. Thus, better health is related to the greater perceived quality of the social support group. Of particular prominence are the correlations between perceived quality of near friend support and mental health, and between perceived quality of far friend support and mental health. These two correlations were found at both Times 1 and 2 in the current research. In contrast, the quality of family support appeared unrelated to scores on the health measures. Stress was also related to the perceived quality of the social support group; as the perceived quality of the social support group increased, the amount of stress as measured by the GARS decreased. However, at Time 2, stress was not correlated with perceived social support. This result may have been due to participants treating the measure as a general stress measure in the first testing session and as a recent stress measure in the second testing session.

The hypotheses that quantity of social support was correlated with stress or health were not supported by our data. Again, this may be related to the potential unreliability of our contact measure.

Although quantity alone was not correlated with stress or health, it did play a role in predicting scores on the health measures when combined with the quality measures. As shown by the multiple regressions, perceived quality of social support had the most significant role in predicting illness levels, although quantity did add somewhat to the predictive power of the regression. This study supports the previous research (Jackson, 1992; Wilcox, 1981) which has found that quality is a more significant factor in health outcomes than quantity.

In the main effect theory, social support is a mediating factor on illness regardless of the level of stress, while in the buffering theory, social support mediates illness only in the condition of high stress. The three significant ANOVAs all have the pattern which supports the buffering hypothesis, although there was only one significant interaction. Thus while the significant data would tend to support the main effect hypothesis because of the lack of interactions between stress and social support, the graphical representation of the data appears to support the buffering hypothesis. This is because while at low stress, the levels of social support are similar in relationship to illness, at high stress health remains relatively constant for the individuals with high social support, but decreases for individuals with low social support. This apparent contradiction could most likely be resolved with a larger sample size.

Current limitations of this study include a small $\underline{n}$ and unreliable contact measure. The certainty of these results could be greatly improved with a larger group of participants and a better measure of quantity of contact with the social support group. Future research might address these issues in an attempt to ascertain how quantity and quality of social support

are related and which model (main effect or buffering) more accurately describes the actual influence of social support on illness.

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Table 1
Correlations between Quality of Perceived Support and Quantity of Support

	Quality of Perceived Social Support		
	Family	Near Friends	Far Friends
Quantity of SS (# of Contacts)			
Family	.5290	-.0505	.1548
	(37)	(37)	(37)
	$p < .001^{*}$	$p < .39$	$p < .19$
Near Friends	-.3022	.2774	.1842
	(31)	(31)	(31)
	$p < .05^{*}$	$p < .07^{+}$	$p < .17$
Far Friends	.1120	-.1255	.1613
	(36)	(36)	(36)
	$p < .26$	$p < .24$	$p < .18$

Significant results: * $p < .05$, $^{+}$ $p < .10$
Note: n varies across groups due to missing data for the contact measure.

Table 2.
Results of stepwise Multiple Regression to determine predictors of illness.

Health Perceptions

Predictor Variable	R	R^2	Adjusted R^2	β	p
Step 1:Social Support	.633	.400	.331		.004*
From Family				-.134	.393
From Near Friends				.332	.087+
From Far Friends				.382	.054+
Step 2: Social Support & Contacts	.680	.463	.323		.017*
Social Support from Family				-.088	.660
From Near Friends				.323	.113
From Far Friends				.455	.031*
Contacts with Family				-.184	.355
With Near Friends				-.161	.364
With Far Friends				-.092	.588

Mental Health

Predictor Variable	R	R^2	Adjusted R^2	β	p
Step 1:Social Support	.544	.296	.215		.026*
From Family				.030	.858
From Near Friends				.128	.534
From Far Friends				.455	.036*
Step 2: Social Support & Contacts	.630	.397	.240		.050+
Social Support from Family				-.104	.625
From Near Friends				.138	.512
From Far Friends				.545	.016*
Contacts with Family				.115	.582
With Near Friends				-.262	.167
With Far Friends				-.273	.136

Significant results: * $p < .05$, + $p < .10$

Table 3: Means and F values for 2-way (2x2) ANOVAs

	Group Means			
	Low Stress		High Stress	
Medical Outcome	Low Support	High Support	Low Support	High Support
Health Perceptions	68.50	77.50	48.33	79.00

Main Effect of Stress: $F(1, 36) = 1.89$, $p < .20$
Main Effect of Social Support: $F(1, 36) = 8.23$, $p < .01$*
Stress x Social Support Interaction: $F(1, 36) = 2.37$, $p < .13$

Mental Health	73.60	70.50	54.22	73.20

Main Effect of Stress: $F(1, 36) = 3.48$, $p < .08$
Main Effect of Social Support: $F(1, 36) = 3.17$, $p < .09$
Stress x Social Support Interaction: $F(1, 36) = 5.61$, $p < .03$*

	Group Means			
	Low Stress		High Stress	
Medical Outcome	Low Support	High Support	Low Support	High Support
Time 2				
Health Perceptions	78.75	77.22	65.56	76.00

Main Effect of Stress: $F(1, 35) = 1.23$, $p < .28$
Main Effect of Social Support: $F(1, 35) = 0.60$, $p < .45$
Stress x Social Support Interaction: $F(1, 35) = .93$, $p < .34$

Mental Health	64.75	69.33	54.67	76.00

Main Effect of Stress: $F(1, 35) = 0.65$, $p < .81$
Main Effect of Social Support: $F(1, 35) = 7.59$, $p < .01$*
Stress x Social Support Interaction: $F(1, 35) = 2.95$, $p < .10$

Table 4
Correlations between Quality and Quantity of Social Support with Outcome Measures.

	Time 1				Time 2			
	HP	MH	GARS	Stress	HP	MH	GARS	Stress
Quality of SS								
Family	.007	.067	-.334*	-.200	.050	.176	-.093	-.091
Near Friends	.439*	.300*	-.294*	-.209	.278+	.500*	0.78	-.204
Far Friends	.536*	.434*	-.407*	-.246+	.182	.521*	-.043	-.204+
Quantity of SS (# of Contacts)								
Family	-.098	.081	-.096	-.057	-.021	.119	-.094	-.091
Near Friends	.066	-.070	.061	.067	.286+	.328*	-.274+	-.270+
Far Friends	-.044	-.105	-.004	.115	.238+	.143	-.246+	-.022

Significant results: * $p < .05$, + $p < .10$
Note: n=37for all time 1 measures except near and far friend quantity. n= 36 for near friend quantity at time 1 and all time 2 measures except for far friend quantity. n=31 for all far friend quantity measures.
n varies across groups due to missing data for the contact measure.

Table 5
Results of stepwise Multiple Regression at Time 2 to determine predictors of health .

Health Perceptions

Predictor Variable	R	R^2	Adjusted R^2	β	p
Step 1:Social Support	.489	.239	.154		.056+
From Family				-.157	.426
From Near Friends				-.063	.766
From Far Friends				.577	.020*
Step 2: Social Support & Contacts	.584	.342	.177		.094+
Social Support from Family				-.154	.464
From Near Friends				-.166	.492
From Far Friends				.593	.024*
Contacts with Family				-.152	.423
With Near Friends				.264	.203
With Far Friends				.159	.424

Mental Health

Predictor Variable	R	R^2	Adjusted R^2	β	p
Step 1:Social Support	.793	.629	.588		.00001*
From Family				-.164	.237
From Near Friends				.097	.510
From Far Friends				.792	.00001*
Step 2: Social Support & Contacts	.825	.681	.601		.0001*
Social Support from Family				-.239	.111
From Near Friends				-.061	.713
From Far Friends				.888	.00001*
Contacts with Family				.015	.910
With Near Friends				.278	.059+
With Far Friends				-.104	.454

Significant results: * $p < .05$, + $p < .10$

Figure Caption

Figure 1a. The Main Effect hypothesis: Social support has a direct influence on illness.

Figure 1b. The Buffering hypothesis: possible interaction points for social support in the relationship between stress and illness.

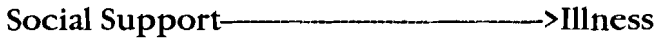

Figure 1a. The Main Effect hypothesis.

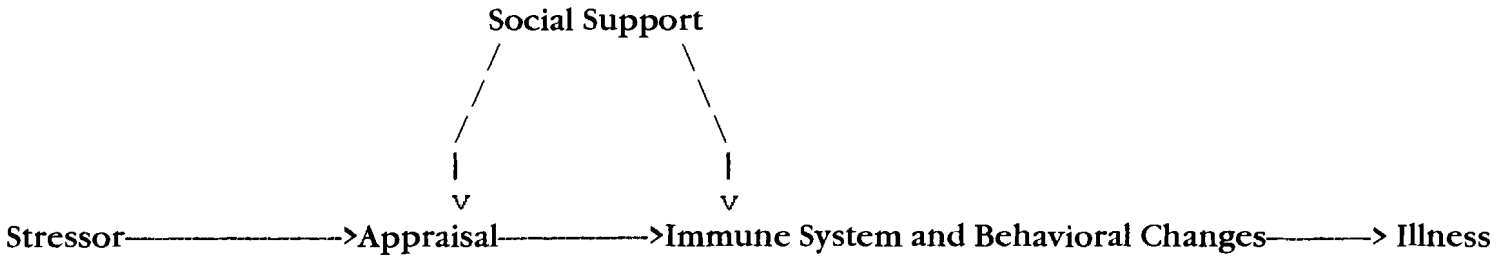

Figure 1b. The Buffering hypothesis.

Figure 2: Depiction of Main Effect of Social Support on Health levels.

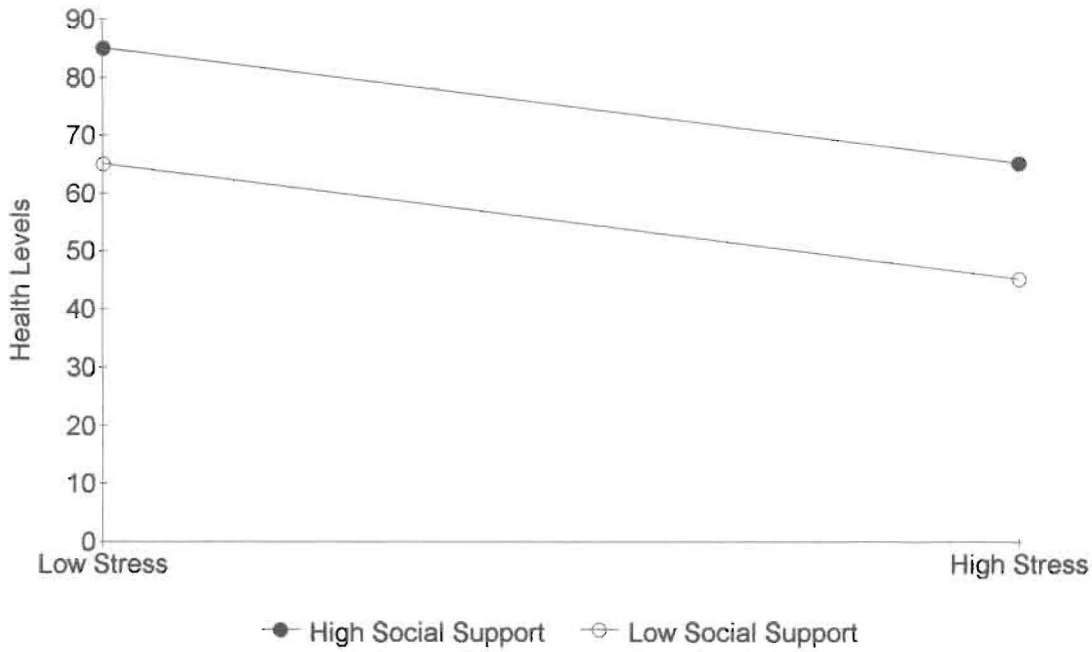
90
80
70
60
50
40
30
20
10
0
Health Levels
Low Stress
High Stress
High Social Support
Low Social Support

Figure 3: Depiction of the Stress x Social Support Buffering Interaction.

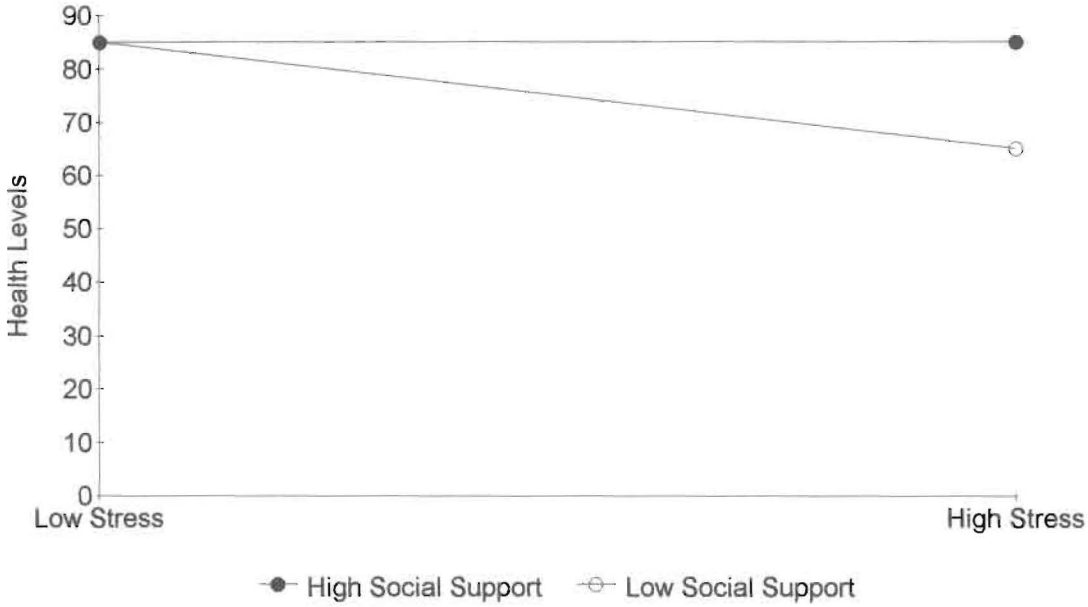
90
80
70
60
50
40
30
20
10
0
Health Levels
Low Stress
High Stress
High Social Support
Low Social Support

Figure 4. Graph of ANOVA for Health Perceptions Measure

Figure 5: Graph of ANOVA for Mental Health Measure

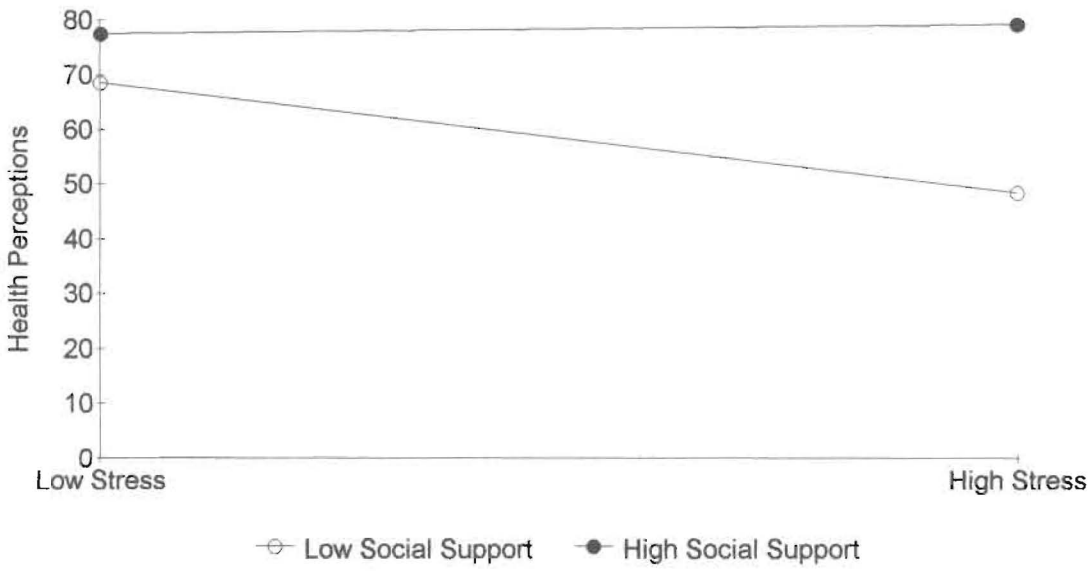

Figure 4. Health Perceptions

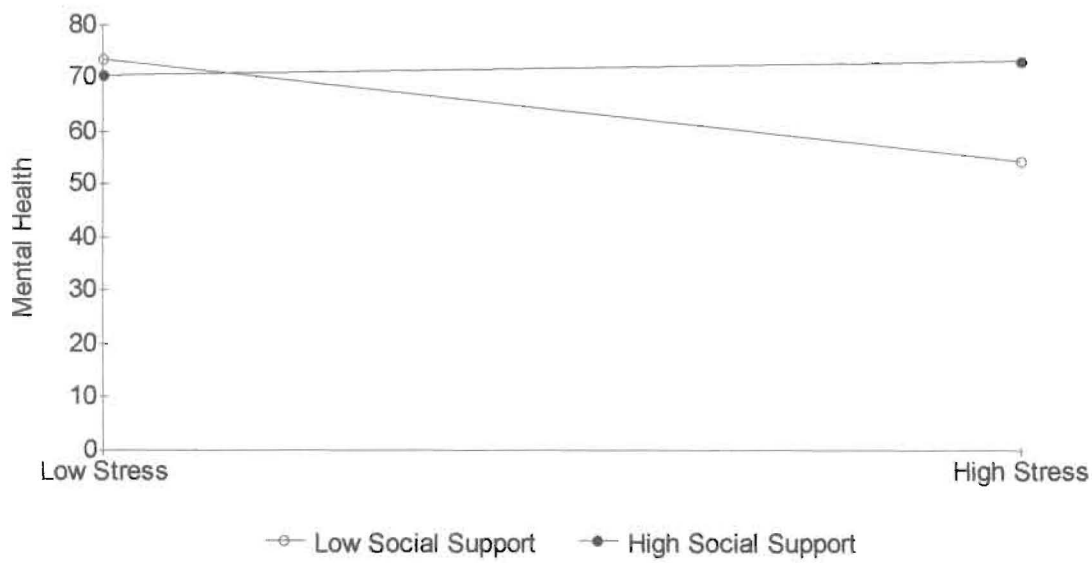

Figure 5. Mental Health

Figure 6: Graph of results from Health Perceptions ANOVA, Time 2.

Figure 7: Graph of results from Mental Health ANOVA, Time 2.

Figure 6. Health Perceptions

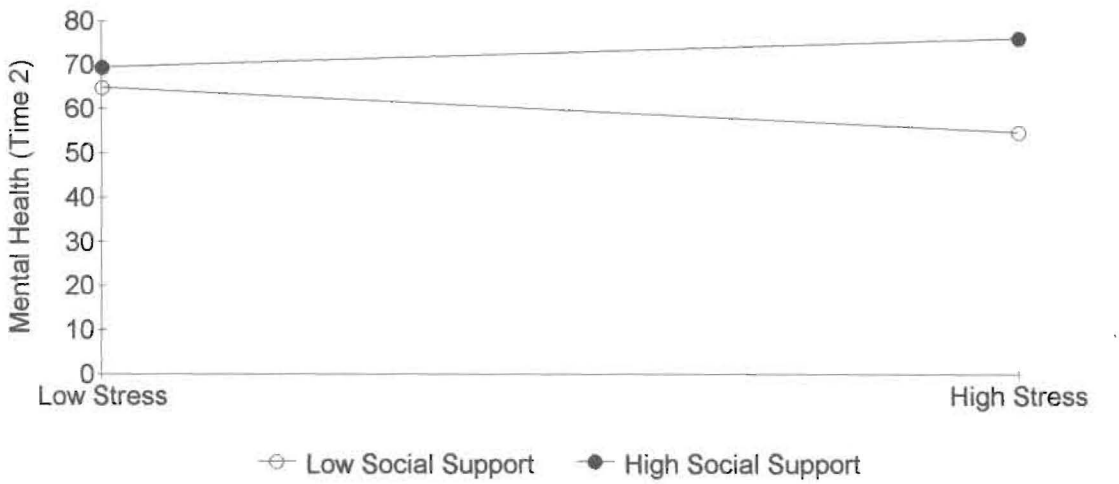

Figure 7. Mental Health