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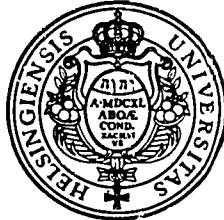
## ABSTRACT

This study investigated the relationship between loneliness, social risk-taking, health-related behavior, and physical and mental health in 91 first-year Finnish university students. Data were obtained from two instruments: the Differential Loneliness Scale (DLS) and the Social Risk-Taking Scale (SRT). The DLS measures individuals' satisfaction with interpersonal relationships in four areas--romantic-sexual, friendships, and familial and community relationships. The SRT assesses the degree of comfort experienced by an individual in a variety of social situations. The results indicated a moderate relationship between the DLS, the SRT scales, and a self-rated loneliness measure on the one hand and a mental health index on the other. Social psychological variables were found to be more closely linked to mental health than physical health, and the relationships were generally stronger for females than for males. (Author/JD)

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## RESEARCH BULLETIN 64

### Vello Sermat and Debra A. Grant AN EXPLORATION OF THE INTERPERSONAL RELATIONSHIPS, HEALTH-RELATED BEHAVIOR AND PHYSICAL AND MENTAL HEALTH OF FINNISH UNIVERSITY STUDENTS

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Vello Sermat and Debra A. Grant

An exploration of the interpersonal relationships, health-related behavior and physical and mental health of Finnish university students  
29 pp.

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Abstract

The present study investigated the relationship between loneliness, social risk-taking, health-related behavior and physical and mental health in first year Finnish university students. In addition, validation data were obtained for the Differential Loneliness Scale and the Social Risk-Taking Scale. Social psychological variables were found to be more closely linked to mental health than physical health, and the relationships were generally stronger for females than for males.

Descriptors: mental health, physical health, interpersonal relations, health behavior

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## 1. INTRODUCTION

Numerous publications have stressed the importance of social contact for mental and physical well-being (Berscheid & Peplau, 1983; Cassel, 1976; Cobb, 1976; Dohrenwend & Dohrenwend, 1974; Gottlieb, 1983; Leavy, 1983; Lynch, 1977; Miller & Ingham, 1976; Peplau & Perlman, 1982; Silver & Wortman, 1981). The relationship between the quality of social environment and physical and mental health has been documented (Silberfeld, 1978, 1980). For example, research on loneliness and social isolation has found some evidence of a relationship between interpersonal relationships and individual well-being. (Hartog, Audy & Cohen, 1980; Lynch & Convay, 1979; Peplau & Perlman, 1982; Perlman, Gerson & Spinner, 1978; Sadler & Johnson, 1980; Sermat, 1978; Weiss, 1973). The present study attempted to relate satisfaction with different kinds of social relationships and willingness to take risks in interpersonal situations to physical and mental health.

The Differential Loneliness Scale (DLS) was designed to measure individuals' satisfaction with their interpersonal relationships in four specific areas: romantic-sexual relationships, friendships, familial relationships and relationships with larger groups or the community.

The reliability and validity of this scale has been demonstrated in previous research (Sermat, 1981; Schmidt & Sermat, 1983). The Social Risk-Taking scale (SRT) was originally developed to assess the degree of comfort experienced by an individual in a variety of social situations (Sermat, 1980, 1981). Preliminary work with this scale has demonstrated a high degree of reliability and some degree of validity.

These questionnaires were administered to a sample of Finnish university students at the time of their annual health examination. As part of this examination, students complete a health questionnaire which covers a wide range of physical and psychological symptoms, health-related behaviors and personal satisfaction and well-being. Saari (1979) has reported evidence of the usefulness of this questionnaire in preventative mental and physical health care.

The present investigation attempted to relate students' responses on the health questionnaire the DLS and SRT scales, as well as a self-report measure of loneliness. On the basis of previous research, it was expected that the DLS, SRT scales and self-related loneliness would be related to mental health and that all of these variables would predict physical symptoms. In addition, it was predicted that health-related behavior would be correlated with physical symptoms.

A secondary goal was to provide validation for these social psychological measures. Specifically, a significant relationship was expected between the DLS and questions on the Finnish student health questionnaire dealing with opposite sex, family and peer relationships. Similarly, a positive relationship was expected between the SRT scales



and measures on the Finnish questionnaire dealing with self-evaluation in social situations. Due to the exploratory nature of the present study, more specific hypotheses were not formulated.

## 2. METHOD

### 2.1. Subjects

Sixty-two female and 29 male Finnish university students completed questionnaires at the time of their annual health examination at the Student Health Centers of Helsinki, Turku and Tampere. This questionnaire is routinely administered to approximately 79,000 students of institutions of higher learning in Finland every year; these annual health examinations are scheduled in alphabetic order by students' last names. Subjects for the study were drawn from among all those who came for the health examination during a two week period. The average age was 21.11 years for women and 21.28 years for men.

### 2.2. Procedure

Students whose answers on the health questionnaire indicated that they were experiencing considerable difficulties in their relationships with peers and with people in general were asked to participate in the study. According to Saari (personal communication, 1983), about 10% of all the Finnish first university students report having such problems, and an eight-year follow-up study has shown that percentage remains fairly stable over subsequent years. The nursing staff at the health

centers attempted to match students in this category with students of the same age and sex who reported on the health questionnaire that their relationships with peers and people in general gave them a great deal of satisfaction. The students in both groups were asked to fill out additional questionnaires, including the DLS, the SRT scales and a self-rated loneliness scale, translated into Finnish.

### 2.3. Measures

2.3.1. General measure of satisfaction. The following item on the Finnish Student Health Questionnaire was used to select the two comparison groups and to obtain some validating evidence for the DLS and SRT scales.

The students were asked to rate on a 5-point scale the extent to which they had problems with the following:

#### Questions

1. To come to grips with my studies.
2. Appearing in front of an audience, such as in giving a presentation.
3. Establishing contact with fellow students and with people in general.
4. Contact with the opposite sex.
5. My own sexuality.
6. Planning for my future.
7. My strengths and abilities.
8. My general state of mood.

The third item was used as the basis for selecting students for the two criterion groups. The first group indicated that they had definite problems in that area, while the second group were those who expressed the greatest degree of satisfaction in establishing contact with others.

2.3.2. Mental health index. The students were asked to indicate on a four-point scale the extent to which they had experienced depression, tension and anxiety during the last half year. They were also asked whether they needed consultation with a psychologist or a psychiatrist. Responses to these four questions were combined into a single index of mental health, with a high score indicating problems.

2.3.3. Physical symptoms. For the purposes of this study, the following items on the Finnish Student Health Questionnaire were chosen as indicators of physical symptoms which might be brought about by psychological stress. "During the past six months, have you been troubled by: (1) continuous fatigue, (2) tendency to be short of breath, (3) continuous cough, (4) headaches, (5) heart palpitations or chest pains, (6) sleeplessness, (7) heartburn, (8) flatulence, (9) strong stomach pains, (10) constipation; pain on elimination. Each item was rated on a 4-point scale from "1 = not at all" to "4 = a lot." The sum total of all these scores was used as an overall index of "physical symptoms."

2.3.4. Health-related behavior. Information about work habits, eating habits, exercise, smoking and alcohol consumption was combined into a single index, with a high score indicating less healthy behavior.

2.3.5. Differential Loneliness Scale (DLS - Student version). The development and psychometric properties of this scale are described elsewhere (Schmidt and Sermat, 1983). The Student version consists of four subscales, each containing 15 items, answered as either "True" or "False". The subscales assess the degree of satisfaction or dissatisfaction the individual is currently experiencing in each of the following types of social relationships: (1) romantic-sexual relationships, (2) friendships, (3) relationships with one's family, and (4) relationships with neighbors, the surrounding community and various groups and organizations. For purposes of abbreviation, the latter subscale is referred to as the GROUPS subscale.

2.3.6. Social Risk-Taking Scale (SRT). The development of this scale and evidence of its validity and reliability are reported elsewhere (Sermat, 1980, 1981). In the present study, two separate 38-item SRT scales were employed, one for males and the other for females. In a sample of Canadian university students, test-retest correlations were .90 for both males and females over a three-month period. There is also some evidence to suggest that the items on these scales are not significantly correlated with social desirability (Van Rooijen, Note 1).

The scale consists of items describing hypothetical social

situations and specified courses of action, e.g., "going over and introducing myself to the neighbors if I had just moved into the area where I knew nobody" or "telling my friends about certain opinions or feelings I have, even though I know that these would probably be unpopular with them." The individual is asked to indicate, on a 6-point scale, how comfortable he or she would feel acting in the described manner. A higher score on the SRT scale indicates greater discomfort in social situations. This scale is similar to the measure of assertiveness published by Gambrill and Richey (1975); however, their scale may be confounded with social desirability (Rock, 1981).

2.3.7. Self-rated loneliness. Individuals were asked to indicate on a 10-point scale, ranging from "never" to "always," the extent to which they had experienced loneliness.

### 3. RESULTS

#### 3.1. Effects of satisfaction with peer contact and sex

Analyses of variance were carried out on all of the main measures to test for the effects of sex, satisfaction with peer contact, and the interaction of these two variables. The measures included the DLS and its four subscales, both male and female versions of the SRT scale, self-rated loneliness, the mental health index, and the physical symptoms index.

The results of the analyses of variance showed that the groups with high and low levels of satisfaction with peer contact differed significantly on all of the measures, except the physical symptoms index. Students who were dissatisfied with peer contact had higher levels of self-rated loneliness ( $F(1,77) = 4.50, p < .05$ ), higher incidence of mental health problems ( $F(1,87) = 14.96, p < .001$ ), higher DLS scores ( $F(1,77) = 3.43, p < .001$ ), and higher scores on all of the DLS subscales including friends ( $F(1,85) = 50.87, p < .001$ ), family ( $F(1,85) = 8.10, p < .01$ ), groups ( $F(1,85) = 34.57, p < .001$ ), and the romantic/sexual subscale ( $F(1,85) = 4.50, p < .05$ ). Significantly higher SRT scores were found for both males ( $F(1,27) = 5.72, p < .05$ ) and females ( $F(1,60) = 9.47, p < .01$ ) who were dissatisfied with peer contact. There was also a tendency for those who were dissatisfied with peer contact to have more physical symptoms than those who were satisfied with peer contact, but this tendency did not reach significance ( $F(1,87) = 2.48, p < .12$ ).

Sex differences were observed on the DLS, with males scoring significantly higher than females. However, further analyses of the subscales revealed that the sexes differed significantly only on the romantic sexual subscale, with males having less satisfactory romantic/sexual relationships than females ( $F(1,77) = 4.12, p < .05$ ). No other sex differences and no interactions of sex by peer contact were observed.

### 3.2. Predictors of mental health

The index of mental health was significantly correlated with the

DLS ( $r(88) = .40, p < .005$ ), self-rated loneliness ( $r(81) = .34, p < .005$ ), and the female version of the SRT scale ( $r(59) = .34, p < .005$ ). The relationship between mental health and the male version of the SRT scale approached significance ( $r(27) = .30, p < .10$ ). The subscales of the DLS for friends ( $r(88) = .38, p < .005$ ), family ( $r(88) = .41, p < .005$ ), and groups ( $r(88) = .37, p < .005$ ) were all significant predictors of mental health. The pattern of relationships did not differ substantially between the sexes.

The DLS, SRT scales, and self-rated loneliness were entered into a multiple regression analysis with the mental health index as the criterion variable. The results of the regression analysis for males and females are presented in Tables 1 and 2 respectively. For males, the three social-psychological measures together explained 17% of the variance in the mental health index ( $R(3,25) = .42, n.s.$ ). The DLS was the best predictor of the three variables and accounted for all of the explained variance in mental health. Although the other two variables are correlated with the mental health index, they are also correlated with the DLS and make no independent contribution over and above the DLS (see Tables 1 and 2 pp. 26 - 27).

For females, the DLS, SRT scale, and self-rated loneliness explained 22% of the variance in scores on the mental health index ( $R(3,50) = .47, p < .01$ ). The largest proportion of the explained

variance is attributable to the DLS, which accounted for 18% of the variance in mental health. Self-rated loneliness explained an additional 4% and SRT explained less than 1% of the variance in the index of mental health.

### 3.3. Predictors of physical symptoms

The expected relationships between the physical symptoms index and the DLS ( $r(90) = .12$ ) and self-rated loneliness ( $r(85) = .15$ ) did not reach significance. The SRT scale for females was significantly related to physical symptoms ( $r(62) = .23$ ,  $p < .04$ ) and the relationship between physical symptoms and the male version of the SRT approaches significance ( $r(29) = .23$ ,  $p < .12$ ). Unexpectedly, inadequate health-related behavior was not related to physical symptoms for the overall sample ( $r(91) = .13$ ,  $p < .11$ ), although further analysis revealed that these two variables were related for females alone ( $r(62) = .26$ ,  $p < .02$ ). The mental health index was strongly related to the physical symptoms index ( $r(89) = .51$ ,  $p < .001$ ), with the relationship between these two variables being attributable females ( $r(60) = .64$ ,  $p < .001$ ) rather than males ( $r(29) = .24$ , n.s.)

These five variables were put into a multiple regression equation to predict physical symptoms. The results of the multiple regression analysis for males and females are presented in Tables 3 and 4 respectively. For males, the five measures accounted for 10% of the variance in the physical symptoms index ( $R(5,23) = .32$ , n.s.). Mental health index was the best predictor, accounting for slightly less than 6% of the variance. The DLS and SRT scale together explained just less



than 5% of the variance, however, the direction of the effect for the DLS was the opposite of what was anticipated. Once mental health was controlled, the DLS became negatively associated with physical symptoms. Health-related behavior and self-rated loneliness did not make any contribution over and above the other three predictor variables. None of the beta weights in the equation reach statistical significance, which may be attributed in part to the small sample of males (see Tables 3 and 4 pp. 28 - 29).

The pattern of results differed somewhat for females. The five measures accounted for 44% of the variance in the physical symptoms index ( $R(5,48) = .67, p < .01$ ). Again the mental health index was the best predictor of symptoms, accounting for 41% of the variance. The DLS accounted for an additional 2% of the variance, but again the effect of this variable was in the opposite direction to what was predicted. The SRT scale explained the remaining 1% of variance. Although health-related behavior was significantly correlated with the physical symptoms index, it was correlated with the mental health index ( $r(58) = .35, p < .01$ ) and made no independent contribution in explaining physical symptoms over and above mental health. In the regression analysis for females, only the beta weight for the mental health index was significant.

Although the overall symptoms index was not strongly related to the

three social psychological measures, several specific symptoms were related to these measures. Continuous fatigue was related to self-rated loneliness ( $r(85) = .31, p < .01$ ), but further analysis revealed that the relationship held true for females only ( $r(56) = .36, p < .01$ ). Breathing difficulties were related to both the DLS ( $r(90) = .28, p < .01$ ) and SRT scale ( $r(91) = .31, p < .01$ ), a pattern found to be consistent across sexes. Headaches were negatively related to self-rated loneliness ( $r(85) = -.21, p < .05$ ), but this relationship was largely attributable to females ( $r(56) = -.24, p < .05$ ). Furthermore, headaches were negatively related to the DLS, but for females only ( $r(61) = -.22, p < .05$ ). Chest pains were related to all three measures - the DLS ( $r(90) = .23, p < .01$ ), self-rated loneliness ( $r(85) = .18, p < .05$ ), and SRT scale ( $r(91) = .21, p < .05$ ), but this relationship was largely attributable to males with correlations of .27 ( $n=29, p < .10$ ), .38 ( $n=29, p < .05$ ), and .26 ( $n=29, p < .10$ ) for the DLS, self-rated loneliness, and SRT scale, respectively. In addition, flatulence in males was negatively related to all three measures - the DLS ( $r(29) = -.33, p < .05$ ), self-rated loneliness ( $r(29) = -.31, p < .05$ ), and SRT scale ( $r = -.31, p < .05$ ). Contrary to this pattern, SRT scores for females were positively related to flatulence ( $r(62) = .21, p < .05$ ).

#### 3.4. Validation of the DLS and SRT scales

The study provided additional information useful for the validation of the DLS and SRT scales. As expected, the DLS was positively correlated with self-rated loneliness ( $r(82) = .51, p < .001$ ), general mood ( $r(88) = .39, p < .001$ ) and the SRT scale for both males ( $r(27) = .67, p$

< .001) and females ( $r(59) = .53, p < .001$ ), and negatively correlated with peer contact ( $r(88) = -.57, p < .001$ ). The friends subscale of the DLS was also significantly correlated with satisfaction with peer contact ( $r(90) = -.61, p < .001$ ) while the correlations between satisfaction with peer contact and the subscales for family ( $r(90) = .28, p < .01$ ), romantic/sexual ( $r(90) = -.22, p < .05$ ), and groups ( $r(90) = -.53, p < .001$ ) were generally lower. The subscale for family was significantly related to satisfaction with relationship with parents ( $r(90) = -.25, p < .01$ ), while none of the other subscales were related to this item. As expected the romantic/sexual subscale was correlated with satisfaction with both one's sexuality ( $r(90) = -.39, p < .001$ ) and contact with the opposite sex ( $r(90) = -.48, p < .001$ ). However, contrary to what was predicted the friends subscale was also significantly related to satisfaction with the opposite sex ( $r(90) = -.53, p < .001$ ) and, to a much lesser extent, satisfaction with one's sexuality ( $r(89) = -.10, p < .05$ ). The groups subscale was also correlated with satisfaction with the opposite sex ( $r(90) = -.47, p < .001$ ).

The male version of the SRT scale was positively related to self-rated loneliness ( $r(27) = .57, p < .01$ ), and negatively related to satisfaction with ability to speak in public ( $r(27) = -.53, p < .01$ ), satisfaction with peer contact ( $r(27) = -.42, p < .025$ ), and satisfaction with contact with the other sex ( $r(27) = -.42, p < .025$ ). For females, SRT scores correlated positively with self-rated loneliness ( $r(54) = .53, p < .005$ ) and negatively with speaking in public ( $r(60) = -.37, p < .005$ ), satisfaction with peer contact ( $r(60) = -.37, p < .005$ ), and satisfaction with contact with the other sex ( $r(60) = -.35, p < .005$ ).

#### 4. DISCUSSION

A major objective of this study was to explore the interrelationships between various social psychological measures, health-related behavior and physical and mental health. The results indicated a moderate relationship between the DLS, the SRT scales and self-rated loneliness on the one hand and the mental health index on the other. The mental health index was the best predictor of physical symptoms, but the DLS and SRT also made a small independent contribution. Health-related behavior was also significantly correlated with physical symptoms of females, but its independent contribution, over and above its relationship to mental health, is minimal. No significant overall relationship was found between the social psychological measures and the index of health-related behavior.

The Differential Loneliness Scale, Social Risk-Taking scale and self-rated loneliness were found to be more closely related to mental health than to physical health. One possible explanation is that the sample consisted entirely of college students. The effects of unsatisfactory interpersonal relationships on physical health may not be apparent for a long time, while their effect on emotional health is likely to be more immediate. Also, the effects of social relationships on physical health may not be direct, but may depend on how the person perceives and evaluates the situation and responds to it. The mental health measure may be a better indicator of the individuals' psychological reactions to their social situation than are any of the other measures.

Another interesting finding is that when mental health is controlled for, the DLS becomes negatively correlated with physical symptoms for both sexes. One possible explanation is that while a certain amount of social involvement is a necessary precondition for mental health, in some cases a relatively high degree of social involvement might be indicative of underlying problems (Grant, Note 2). There may be individuals who are constantly seeking out other people in an attempt to alleviate their own psychological discomfort. Such persons may report both a high degree of involvement with others and a relatively high incidence of physical symptoms.

The finding that health-related behavior was only marginally related to both social variables and physical symptoms is inconsistent with some previous research (Peplau & Perlman, 1982). One explanation may be the age of the sample, since the physical manifestations of an unhealthy lifestyle may not be apparent for many years. Nevertheless, health-related behavior was significantly related to mental health for females. The direction of influence may go both ways: a healthier lifestyle can have a positive effect on the individual's mental health, or a healthier mental state may increase the likelihood that the individual will be more concerned with health-related behavior. In light of the inconsistent findings for males and females, further research on health-related behavior is needed.

Various sex differences were observed in the study. The three social psychological measures were better predictors of both mental and physical health for females than for males. Health-related behavior and mental health were better predictors of physical symptoms for females

than for males, while social risk-taking was a better predictor of physical symptoms for males than for females. One plausible explanation for these findings may be found in the difference in sex role expectations. The cultural expectation for males to be more instrumental and assertive than females may explain why men who are more uncomfortable in taking social risks manifest more physical symptoms. Similarly, the Western culture encourages and rewards emotional expressiveness and sociability in women, and this may account for the relative importance of the social psychological variables for the well-being of women.

The generalizability of the findings is limited by the nature of the sample. The first consideration is the age of the subjects. Longitudinal studies would provide a better understanding of the long-term impact of interpersonal relationships and health-related behavior on physical and mental health. In a younger sample, social relationships may be more related to the incidence of minor daily complaints, rather than to more serious symptoms. A possible alternative research strategy could make use of daily diaries to record minor complaints (Franklin & Brown, 1977; Robbins & Tanck, 1982).

The second issue concerns the generalizability of findings from a Finnish sample. Observation of the Finnish culture suggests that Finnish men, in particular, may be relatively inhibited in expressing their personal problems and feelings, and this may help to explain the weakness of the relationships found among the variables for males in this study. However, in defense of cross-cultural generalization, Rahe (1969), in his cross-cultural comparison of life change scaling

concluded that among 20th century cultures, similarities are more pronounced than differences.

Finally, the method of sample selection resulted in a comparison between two extreme groups: those who were very satisfied with their peer relations, and those who were definitely dissatisfied. Excluded were individuals who were unsure about their relationships with peers and people in general, or who rated themselves as moderately satisfied. Therefore, some of these relationships may not be found in a random sample.

This study represents an advance over some previous work in that more specific measures of social relationships were used. Future studies of this nature would also benefit from more reliable indices of mental health. Furthermore, due to the differential impact of social relationships on physical and mental health, the separation of these variables is essential. Previous research has often combined items related to mental and physical health into a single index (Aro, 1981; Rubenstein & Shaver, 1980).

In this study, individual physical symptoms were in some cases related to social variables in a way opposite to what was expected, and the relationships between the social psychological variables and symptoms differed for males and females. Thus it is necessary to pay particular attention to both specific symptoms and sex differences.

The results of the present study suggest that the relationships between social psychological variables, health-related behavior and emotional and physical health are complex. The importance of social

support for the individual's well-being has received general acceptance, but more theoretical speculation about the underlying processes is needed. The development of more useful models for research of this nature requires a multidisciplinary approach. Professionals from the fields of medicine, psychiatry, psychology, and sociology could perhaps make a greater contribution to this area of research through their collaborative efforts.



Footnote

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Table 1

## Results of Regression Analysis to Predict Mental Health of Males

Predictor	r	Beta	F	R <sup>2</sup> chg
DLS	.42*	.37	1.91	.17
Self-rated Loneliness	.29	.04	.02	.00
SRT	.30	.03	.01	.00
R <sup>2</sup>				.17
df = 1,25				

\* p &lt; .05

\*\* p &lt; .01

Table 2

## Results of Regression Analysis to Predict Mental Health of Females

Predictor	r	Beta	F	R <sup>2</sup> chg
DLS	.42**	.29	3.70	.18
Self-rated Loneliness	.36**	.18	1.42	.04
SRT	.34**	.09	.35	.00
R <sup>2</sup>				.22**

df = 1,50

\* p&lt;.05

\*\* p&lt;.01



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Table 3

## Results of Regression Analysis to Predict Physical Symptoms of Males

Predictor	r	Beta	F	R <sup>2</sup> chg
Mental Health	.24	.23	1.03	.06
SRT	.23	.31	1.02	.03
DLS	.10	-.18	.33	.02
Health Behavior	-.02	.03	.02	.00
Self-rated Loneliness	.09	-.04	.02	.00
R <sup>2</sup>				.10
df = 1,23				

\*p&lt;.05

\*\*p&lt;.01

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Table 4

## Results of Regression Analysis to Predict Physical Symptoms of Females

Predictor	r	Beta	F	R <sup>2</sup> chg
Mental Health	.64**	.69**	28.80	.41
DLS	.14	-.20	2.12	.02
SRT	.23*	.11	.67	.01
Self-rated Loneliness	.19	-.04	.10	.00
Health Behavior	.26*	+.04	.14	.00
R <sup>2</sup>				.44**
df = 1,48				
*p<.05				
**p<.01				

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