THE LIFE ATTITUDES SCHEDULE AND THE RELATIONSHIP BETWEEN
HEALTH-RELATED ACTIONS AND DEPRESSION:
A 90-DAY TEST-RETEST WITH COLLEGE-AGED FEMALES

by

Laura Alice Stock
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The Life Attitudes Schedule and the Relationship between Health-Related Actions and Depression: A 90-Day Test-Retest with College-Aged Females

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Laura Alice Stock

Approved by the Master's Thesis Committee:

Dr. Richard Langford, Major Professor

Dr. James Dupree, Committee Member

Dr. Mary Gruber, Committee Member

Dr. LouAnn Wieand, Committee Member

Donna E. Schafer

Dean for Research and Graduate Studies
Abstract

This study was an attempt to understand the relationship between health-related positive and negative actions and depression in 106 young adult females, over a 90-day test-retest period. Health-related behavior was defined and assessed using the Life Attitudes Schedule (LAS) (Lewinsohn, Langhinrichsen-Rohling, Langford, Rohde, Seeley, & Chapman, 1995). The LAS is a 144-item self-report questionnaire intended to measure both life-threatening and life-enhancing behaviors, as they relate to depression, suicide, and other risk-taking behaviors.

Results indicated that practicing positive health-related behavior correlated with lower levels of concurrent depression and that practicing fewer or negative health-related behavior correlated with higher levels of concurrent depression. In addition, the initial practice of positive health-related behavior correlated with lower subsequent depression, while initial practice of negative health-related behavior correlated with higher levels of subsequent depression. Also, initial depression correlated with fewer positive and more negative subsequent health-related behaviors. Two health-related action items were significant
predictors of subsequent depression, and initial depression was a significant predictor of three health-related action items. These correlations indicated significant relationships between positive health-related actions and lower levels or subclinical levels of depression. These results are clinically valuable in recognizing the potential effects of health-related behavior on depression and in recognizing the potential effect depression has on health-related behavior.
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Table of Contents

Abstract ........................................................................................................ iii

Acknowledgements ..................................................................................... v

Table of Contents ....................................................................................... vi

Introduction ................................................................................................... 1

The Etiology of Health-Related Behaviors .................................................. 1

Family Influence and Concepts of Health .................................................. 1

Self-Esteem and Health-Related Behaviors ............................................... 5

Gender, Self-Esteem, and Health Perception ............................................. 7

Health-Related Behavior and Depression .................................................. 8

Self-Efficacy, Health-Related Behavior, and Depression ....................... 10

Depression and Gender ............................................................................. 12

Suicide Rates in Adolescents and Young Adults in the United States ....... 15

Suicide and Gender Differences ............................................................... 16

Health-Related Behaviors, Depression, and Suicide ............................ 19
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method</td>
<td>25</td>
</tr>
<tr>
<td>Participant Demographics</td>
<td>25</td>
</tr>
<tr>
<td>Procedure</td>
<td>25</td>
</tr>
<tr>
<td>Assessment</td>
<td>27</td>
</tr>
<tr>
<td>Results</td>
<td>33</td>
</tr>
<tr>
<td>Discussion</td>
<td>47</td>
</tr>
<tr>
<td>Limitations of Research</td>
<td>54</td>
</tr>
<tr>
<td>Directions for Future Research</td>
<td>55</td>
</tr>
<tr>
<td>References</td>
<td>56</td>
</tr>
<tr>
<td>Appendix A</td>
<td>65</td>
</tr>
</tbody>
</table>
Introduction

The Etiology of Health-Related Behaviors

Our society has just recently begun to explore what Gillman and Seligman (1999) term "positive psychology." Positive psychology consists of focusing on the vast array of human strengths, including joy, courage, hope, happiness, and life satisfaction. Most research has been preoccupied with recounting the negative aspects of health-related behavior. The focus of the proposed research will include health-related research of both a positive and negative nature. While there has been a minimal amount of research on health-related behavior and suicide in relation to adolescents and young adults, the peripheral focus has been on variables such as: family beliefs and influences, maternal educational level, an absent parent, two-parent families, modeling, self-esteem, self-efficacy, health perception, social support, and gender.

Family Influence and Concepts of Health

Research has suggested that people practice health-related behaviors according to their conceptions of what it means to be healthy or sick. These beliefs are usually formed within the context of the family (Turk & Kerns, 1985).
Evidence indicates that certain lifelong health attitudes such as denial of pain, resistance to releasing life's responsibilities when ill, and taking possible injury-inducing risks begin in childhood (Mechanic, 1979) and become consistent by middle childhood (Radius, Dillman, & Becker, 1980). This is quite possibly due to the influence of modeling. Modeling appears to correlate with parents' influence on their children's' health behaviors in terms of eating (.31), drinking (.17) and wearing a seatbelt (.30), as compared with conveyance of parents' beliefs and explicit training efforts (Lau, Quadrel, & Hartman, 1990). Nolte, Smith, and O'Rourke (1983a) found that children are almost twice as likely to smoke if both of their parents smoke, and twice as likely not to smoke if neither parent smokes. They also found that the absence of one parent in families of 7th through 12th graders increased the likelihood that these children: perceived smoking as a serious health problem, perceived family and friends as enjoying smoking, smoked regularly, and were overweight. The absence of one parent also decreased the likelihood that the children asked permission to smoke (1983b). Lau and Klepper (1988) found that children from two
non-divorced parents of greater intellectual ability, held health beliefs of the larger society, which the authors deemed to be positive health beliefs.

In a follow-up study, Mechanic (1980) interviewed 93% of the children in his original 1964 study (Mechanic, 1964) and found that parental education, self-esteem, and retrospective reports of parental interest in the child were predictors of these young adults' health and health behaviors. In a related study, Farrand and Cox (1993) also found maternal educational level to be an influencing factor in children's motivation, self-esteem, and health perception.

Mothers appear to have a major influence on the family perception of health care, health-related behaviors, and illness, according to a study done by Findlay, Smith, Graves, and Linton (1969). They found that familial adjustment with children with chronic diseases was governed by maternal feelings of guilt, protectiveness, obsessive attention, and denial. Waxman and Stunkard (1980) found that in four families with one obese and one nonobese child, each no more than two years apart and between the ages of 4.5 and 13, mothers served their obese child larger portions than their nonobese child and more often. In a related study, Kleges et al. (1983) report that in 14 families with overweight
children, encouragements to eat ($r = .81$), offers of food ($r = .51$), and food
prompts ($r = .82$) were significantly correlated with the child's relative weight
and more likely to occur in these families than in families with children within the
normal weight range. This research, demonstrating the correlation between
mothers' maintenance and promotion of increased consumption by their
children and their children's obesity, indicates the high level of maternal
parent-child (grades 6 through 10) pairs and found that parents' efficacy beliefs
(the belief that one can produce desired results) concerning personal hygiene
behavior and seat belt use affected parents' behavior, which then influenced
their children's efficacy beliefs ($r = .52$) for both personal hygiene behavior and
seat belt use. For personal hygiene behavior, children's efficacy was highly
correlated with children's behavior ($r = .86$). In addition, for seat belt use,
parental behavior influenced children's behavior ($r = .40$). Hartman (1984) also
found parental behavior to have a substantially stronger relationship to
children's behavior than parental training efforts.
In a related study using 100 children and their parents, Oppitz (1998) found that children's and parents' measures of fitness were significantly correlated. The children's blood cholesterol correlated positively with their parents' blood cholesterol, as well as with their parents' body weight, body mass index, skinfold sum, and their parents reported number of physical symptoms, including high blood pressure and heart murmur. The parents' degree of exercise discomfort correlated positively with the children's body weight and skinfold sum. Children of nonsmoking parents also exhibited more knowledge of fitness and nutrition than children with parents who smoked. In addition, children with higher food intakes of protein and fat and lower intakes of carbohydrates had parents who reported eating greater quantities of food.

Self-Esteem and Health-Related Behaviors

Self-esteem and health perception as children also contribute to practicing health-related behavior. Leventhal, Meyer, and Nerenz (1980) found a positive correlation between self-esteem and health perception. In their study, adults with higher self-esteem were better able to cope with life-threatening situations, such as hypertension and malignant lymphoma, while experiencing fewer
feelings of vulnerability, as evidenced by active, self-regulating, problem solving abilities.

In a study of 87 high school students and 105 college students, Yarcheski and Mahon (1989) found direct, positive correlations between social support and self-esteem ($r = .30$), self-esteem and positive health practices ($r = .42$), and social support and positive health practices ($r = .34$). Path analysis indicated that social support had the largest direct overall effect on self-esteem ($r = .53$), and the largest indirect effect on positive health practices ($r = .39$). Social support was defined as affirmation of esteem and worth, perceptions that one is cared for, and information and instruction in problem solving (Roberts, 1984). The definition of self-esteem included self-regard, self-acceptance, self-worth, and self-image (Wells & Marwell, 1976). Positive health practices were evidenced by high scores on the following health-related practices: exercise, nutrition, relaxation, safety, substance use and prevention. Based on studies with adults, Yarcheski and Mahon (1989) hypothesized that social support is important for self-esteem, and self-esteem is important in the practice of positive health and mental health promotion.
Gender, Self-Esteem, and Health Perception

In a study of 9 and 10 year olds, Farrand and Cox (1993) found a gender difference in self-esteem, as boys reported higher levels of self-esteem than girls. In addition, they found a gender difference in social support, as girls reported experiencing higher levels of social support than boys. They also found gender differences in intrinsic motivation and health perception (e.g., psychosocial issues, physical health, values, energy, and healthiness) (Hester 1984). Health behavior scores were significantly higher for girls, indicating a higher rate of practiced health-related behavior. Girls also tended to report their illness-related symptoms more often than boys, and had a more positive health self-concept than boys regarding: amount of sleep, weight gain and regulation, parental relationships and feelings of health. Health perception was the most consistent variable relating to health behaviors in this study (Farrand and Cox, 1993), specifically consisting of intrinsic motivation, self-esteem, mother's education and family environment, and the child's health/income/ family environment. However, Langhinrichsen-Rohling et al. (1998) used the Life Attitudes Schedule (Lewinsohn et al., 1995) to assess gender differences in
life-enhancing and life-diminishing behaviors, and found that high school girls had higher levels of self-diminishing behaviors (e.g., depressive symptoms) than high school boys.

**Health-Related Behavior and Depression**

Researchers have found positive correlations between depression in the younger population and negative health-related behavior. People with depression tend to practice a higher level of harmful health-related behaviors than people who are not depressed. For example, both males and females aged 24-25 who continued to experience depression from adolescence showed higher rates of cigarette smoking, increased use of prescription tranquilizers (among females), increased participation in deviant activities, and accidents (Kandel & Davies, 1986).

Scott and Cabral (1988) developed a Health-Risk Assessment for teens consisting of 46 questions covering health-related topics, such as diet, smoking, exercise, alcohol and drug use, and preventative practices. There were also two other questions: one concerning moods ("life is or is not worth living") and one concerning stress ("the availability of emotional support from friends or
relatives”). The results indicated that teens who “never” experienced emotional support were more likely to maintain poor health habits (e.g., drinking and smoking) and take more risks (e.g., hitchhiking) than others in the sample. In addition, they had poorer swimming skills than their peers who had emotional support. The teens exhibiting the most negative health behaviors had the highest proportions in all of the risk behaviors (driving or riding under the influence, using alcohol with other drugs, consuming seven plus drinks per week, smoking, not using seatbelts, hitchhiking, exercising under three times per week, inability to swim, and low levels of teethbrushing) except two (motorcycle/moped use and seat belt use). Of the 11,652 teens in the sample, 14.9% who “often” felt that “life was not worth living” smoked more than one pack of cigarettes per day, compared to only 3.8% who “never” experienced these feelings. Overall, the study found that teens who perceive minimal levels of emotional support from friends or family do, in fact, take more risks. Because many at-risk behaviors such as drinking, drug use, and risky driving serve social and personal functions for adolescents, and because there are few
equally functional alternatives to these behaviors, adolescents are unlikely to
cast them aside for healthier behaviors (Jessor, 1991).

Vines and Williams-Burgess (1994) found a negative correlation between
positive health-related behavior and depression. They found that
first-time teenage mothers at-risk for depression exhibited a significant
decrease in depression and an increase in health-related behavior when
involved in a community health nursing program to help mothers take
responsibility for their health care and for their infants' health care.

Nelson and Farberow (1982) studied medically ill patients undergoing
moderate to long-term institutional treatment. They found significant positive
correlations between the occurrence of self-injurious and noncompliant
behaviors, such as drinking alcohol, smoking, overt self-injury, and abuse of
medication, and increased hopelessness, depression, confusion, dissatisfaction
with life, social isolation, and significant loss.

**Self-Efficacy, Health-Related Behavior, and Depression**

Self-efficacy, as defined by Bandura (1977), is the conviction that one can
successfully perform behavior which will produce a desired outcome.
Self-efficacy expectations have been positively correlated with health-related behavior and negatively correlated with depression (Salovey & Birnbaum, 1989; Kanfer & Zeiss, 1983; Mischel, 1982). The presence of depression was shown to correlate positively with the increase of physical symptoms and their discomforts, and to correlate negatively with capable feelings of successfully carrying out health-promoting behaviors in adults (Salovey & Birnbaum, 1989).

In a study of 78 undergraduate students, Kanfer and Zeiss (1983) found that those with depression tended to have lower self-efficacy expectancies in interpersonal functioning compared with people who did not experience depression. Salovey and Birnbaum (1989) also found that adult subjects, who were both healthy and sad, held fewer optimistic expectations about future health than those whose views were healthy and happy. Wright and Mischel (1982) too, discovered that under conditions of failure, undergraduates with a more positive affect tended to develop optimistic expectations about the outcome of the future, and an overall mean satisfaction with their performance that was 20% higher than people with a negative affect. With this in mind, while those experiencing emotional discomfort and therefore increased physical
discomfort might be more likely to seek medical care, they may be less likely to believe they are able to carry out illness-alleviating behaviors, a form of "learned helplessness" toward self-health care. They may then be less apt to perform health-related behaviors or adhere to any kind of treatment, especially if either one involves a high level of activity or participation.

**Depression and Gender**

The rate of depression increases substantially once children reach adolescence (Kandel & Davies, 1986; Albert & Beck, 1975). Recent estimates reveal that one in five adolescents will experience a major episode of depression by the time they graduate from high school (Lewinsohn, Hops, Roberts, Seeley, & Andrews, 1993). Kandel and Davies (1986) conducted a study of 762, 15-16 year old adolescents and found that 21% of the group fell into the depressed range according to the authors' questionnaire. They also found that more teenage girls (23%) experienced moderate to severe levels of depression than teenage boys (10%), and adolescent girls with higher levels of depression tended to continue to be depressed at least up until the age of 25.
Another study involving 150 adolescents aged 14-16 revealed similar proportions of depressed girls to boys; 13.3% of adolescent girls and 2.7% of adolescent boys met the criteria for a major depressive disorder or dysthymic disorder, according to the Diagnostic Interview Schedule for Children and Adolescents and the Diagnostic Interview Schedule for Children and Adolescents-Parent Version (Kashani et al., 1987). In a related study using the LAS (Lewinsohn et al., 1995), Langhinrichsen-Rohling et al. (1998) also found a higher reported rate of depression in college females. In addition, Lewinsohn, Rohde, and Seeley (1996) found that depression, suicidal ideation, and nonfatal suicidal behavior increase during adolescence and remain elevated during young adulthood. Reasons for this increase and elevation may be that chronic depression increases the chance of suicidal ideation, or that suicidal ideation increases the chance of future nonfatal suicide behavior, or that risk of future nonfatal suicidal behavior increases as suicidal ideation intensifies and lasts over time.

Nolen-Hoeksema (1990) found that females are socialized to express their depression by ruminating, which is a more inward style of coping, and may
prolong and increase the severity of depression and interfere with problem-solving. Many males, on the other hand, express a lower level of ruminating, and therefore experience fewer depressive symptoms (Butler & Nolen-Hoeksema, 1994). In a related study (Hazzard & Langford, 1996), females expressed an internalized method of coping, with elevated scores in the death and injury-related thoughts and feelings content domains of the LAS (Lewinsohn et al., 1995) and elevated scores on the CES-D (Radloff, 1977). These findings indicate that increased levels of internalizing behavior relate to longer and increased levels of depression.

In addition, Nolen-Hoeksema (1990) found that females tend to be depressed for longer periods of time, which can lead to feelings of hopelessness and the increased possibility of nonfatal suicide behavior. Cole (1989) found a correlation between hopelessness and suicidal ideation in 17-year-old adolescent females when depression was statistically controlled using both factor and path analysis. Spirito et al. (1993) found that among those engaging in nonfatal suicidal behavior, level of depression had more influence than gender insofar as suicidal intent was concerned.
Suicide Rates in Adolescents and Young Adults in the United States

Lifestyle and health risk behaviors underlying suicide have replaced infection as the major cause of death in adolescents (Blum, 1987). Behind accidents and homicides (National Vital Statistics Reports, 1999), suicide is the third leading cause of death for young people aged 15-24 (Centers for Disease Control, 2000). In 1998, the rate of completed suicides for males ages 15-24 was 18.5 per 100,000, while the rate for females in this age group was 3.3 per 100,000 (National Vital Statistics Reports, 1999). During the past three decades, suicide has increased more than 300% in this age group, primarily within the African-American youth population. In the last ten years, suicide has increased by 50% for African-American males and by 40% for African-American females (Nolen-Hoeksema, 1998). Lewinsohn, Rohde, and Seeley (1996) found adolescent lifetime nonfatal suicidal behavior rates to be 10% for females and 3.8% for males. Among teenagers, 90% of those engaging in nonfatal suicidal behavior do not request medical assistance, which is the primary means of suicide identification (Smith & Crawford, 1986). Smith and Crawford estimate that the number of people engaging in nonfatal suicidal behavior who do not
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seek medical attention is a 10 to 1 ratio compared with those who do, and thus the number of people actually engaging in nonfatal suicidal behavior is unknown.

**Suicide and Gender Differences**

As in depression, there is a large gap between males and females in the area of suicide. Lewinsohn et al. (1993) suggest that although males are more likely to kill themselves, females are much more likely to engage in nonfatal suicidal behavior, at a ratio of approximately 3:1.

Gender differences concerning suicide and nonfatal suicidal behavior rates may be explained by the Cultural Scripts Theory (Canetto & Sakinofsky, 1998), which holds that gender differences depend on culture-specific narratives. Canetto (1991) indicates that in the United States, ones gender dictates culturally acceptable self-destructive behavior. For example, although it is culturally more traditional to associate nonfatal suicidal behavior due to relationship troubles with females in the United States, males in the Canadian military commit suicide 72.7% of the time primarily due to relationship troubles (Sakinofsky et al., 1996). In the United States, Linehan (1973) conducted a
study of 86 male and 112 female college students, and found nonfatal suicidal behavior to be considered more "feminine" than completed suicide, and "feminine" people were expected to engage in nonfatal suicidal behavior more than "masculine" people. Canetto (1991) also speculated that there is an association between "feminine" behavior and more frequent nonfatal suicidal behavior. These expectations may explain why females are overrepresented among nonfatal suicide reports in most Western countries (Canetto & Lester, 1995b; Canetto, 1997b). It has also been hypothesized that female suicide is misclassified due to cultural attitudes about femininity and suicide (Canetto, 1992-1993, 1997a). For example, females frequently use less lethal methods when engaging in nonfatal suicidal behavior (Robbins & Alessi, 1985), which may cause suicidal misclassification as accidental instead of intended.

Neeleman and Wessely (1997) found that for hanging, jumping, and drowning, females were less likely to be rated as intending suicide than men, but the opposite was true for drug overdoses and gas poisonings.

Males tend to complete suicide more often (Lewinsohn et al., 1993) and use more lethal methods than females (Robbins & Alessi, 1985). According to the
Cultural Scripts Theory (Canetto & Sakinofsky, 1998), people usually adopt culturally acceptable self-destructive behavior based on their gender. Males may complete suicide more often because it is culturally considered more "masculine" than engaging in nonfatal suicidal behavior (Canetto & Sakinofsky, 1998; Linehan, 1973; Canetto, 1997). Harry (1983) observed that males who were perceived as being more "feminine" as children were more likely to be suicidal as adults than "masculine" girls. In addition, Remafedi, Farrow, and Deisher (1991) found that gay and bisexual male adolescents scoring high on a scale of traditional femininity were liable to have a history of nonfatal suicidal behavior.

Canetto (1992-1993, 1994, 1995) has suggested that because nonfatal suicidal behavior is culturally considered unmasculine, males tend towards underreporting this experience in order to avoid social stigma. These cultural beliefs may also affect how researchers, who are less familiar with and less skilled at detecting suicidality in males, distinguish suicidal ideation (Canetto, 1992-1993, 1994, 1995). This may be especially true for male researchers
because males in general are critical of and uncomfortable around suicidal males (Dahlen & Canetto, 1996).

In line with Cultural Scripts Theory (Canetto & Sakinofsky, 1998), Clark et al. (1990) found that males displayed more "masculine" traits by scoring higher on a factor labeled "foolhardiness," defined as a preoccupation with danger and death-defying behavior, designed to impress others. In a related study, Langhinrichsen-Rohling et al. (1998) used the Life Attitudes Schedule (Lewinsohn et al., 1995) to assess expression of suicidal behavior, and found that males reported more risky and injury-related behaviors and fewer positive health-related behaviors than females.

Health-Related Behaviors, Depression, and Suicide

The relationship between health-related behavior and depression is important in searching for avenues to preventing suicide in today's youth.

Research (Robbins & Alessi, 1985; Weissman, 1974; Clifton & Lee, 1976; Mazza & Reynolds, 1998; Rao, Weissman, Martin, & Hammond, 1993) has shown positive correlations between risky health-related behavior, depression, and suicide.
Substance abuse in depressed adolescents appeared to increase the risk of nonfatal suicidal behavior and add to the risk of a medically serious nonfatal suicidal act in a study done by Robbins and Alessi (1985). They also found that alcohol abuse was significantly correlated with suicidal ideation in institutionalized adolescents, aged 13-18. Weissman (1974) too, demonstrated that the use of alcohol and drugs was involved in a greater number of nonfatal suicidal behaviors. In addition, Clifton and Lee (1976) discovered a correlation of .28 between self-destruction and suicide proneness in undergraduates.

Mazza and Reynolds (1998) found correlation coefficients ranging from .25-.40 between depression, hopelessness, and suicidal behavior for female high school students. Students were assessed twice over a one-year period on measures of depression, hopelessness, major negative life events, daily hassles, social support, and suicidal ideation. Over the one-year time period, changes in depression and hopelessness were significantly correlated with changes in suicidal ideation, indicating that depression and hopelessness are factors in suicidal ideation with females.
Longitudinal research has established that depression and recurrent depressive disorders in adolescents are affiliated with significant risk for suicide. Rao et al. (1993) conducted a follow-up study on 281 out of the original 447 adolescents accepted for an initial screening for depression and anxiety at New York State Psychiatric Institute, between 1978 and 1984. In the follow-up study, there were seven suicides exclusively out of the depressed group over a 10-year period. In each case, the first period of depression occurred before or around puberty, while the suicides occurred in late adolescence or early adulthood. Interviews with the subjects' families revealed that the subjects experienced an extensive course of illness, indicating that people with recurrent depressive disorders are at a higher risk for suicide. In a related study, 73 adolescents diagnosed with Major Depressive Disorder (MDD) exhibited a high rate of suicide (7%), an increased risk for their first nonfatal suicidal act (five-fold), an increased risk of MDD in adulthood (two-fold), an increase in psychiatric and medical hospitalization, and a reduction in functioning in work, social, and family life when followed into adulthood (Weissman et al., 1999). In addition, Brown, Beck, Steer, and Grisham (2000) did a longitudinal study
consisting of 6,891 outpatients with psychiatric diagnoses and found a 1% suicide rate (49 suicides). In the general population, the suicide rate is currently less than 1% (Hoyert, Kochanek, & Murphy, 1999). In addition, 96% (47 patients) of the 49 patients who committed suicide had some diagnosis of a mood disorder (Brown et al., 2000). Fifty-five percent (27 patients) had engaged in prior nonfatal suicidal behavior, while 67% (33 patients) had been previously hospitalized in a psychiatric setting. The authors did not find gender to be a risk factor for suicide, and found the leading method of suicide to be overdosing instead of gunshot wounds (27%), the method used most in the general population (59%) (Hoyert et al., 1999). This study strongly indicated recurrent depression, hopelessness, and high levels of suicidal ideation as risk factors for suicide. Caution should be used in generalizing from inpatient to outpatient populations, because there have been considerable risk factor differences found between the two groups. For example, inpatients have a much higher rate of suicidal ideation and nonfatal suicidal behavior than outpatients (Black, Warrack, & Winokur, 1985).
Purpose

The purpose of this study was to explore the relationship of health-related actions to depression in young adult females. Health-related actions were defined using the health-related content domain of the LAS, which is comprised of items assessing health, wellness, illness, and lack of self-care (Lewinsohn et al., 1995). Depression has been indicated in numerous studies as a primary factor in suicide, and so was used here as an indicator of suicide proneness. The larger purpose of this study was to determine whether or not young adult females engaging in more health-promoting behaviors experienced lower depression scores and overall lower suicide proneness, as defined by the LAS (Lewinsohn et al., 1995).

Hypotheses:

Hypothesis 1: There will be a significant negative correlation between females’ LAS positive health-related action scores and their CES-D scores at Time 1.

Hypothesis 2: There will be a significant negative correlation between females’ LAS positive health-related action scores and their CES-D scores at Time 2.
Hypothesis 3: There will be a significant negative correlation between females’ Time 1 to Time 2 LAS positive health-related action change scores and females’ Time 1 to Time 2 CES-D change scores.

Hypothesis 4: There will be a significantly larger cross-lagged correlation between females’ Time 1 positive health-related action and Time 2 depression scores, than the cross-lagged correlation between females’ Time 1 depression and Time 2 positive health-related action scores.

Hypothesis 5: Individual health-related action items at Time 1 will be predictive of depression scores at Time 2.

Hypothesis 6: Depression scores at Time 1 will be predictive of individual health-related action items at Time 2.
Method

Participant Demographics

The female subjects for this study were elicited from a student population at Humboldt State University who were enrolled in introductory psychology courses. There were a total of 106 females. The mean age of these females was 19.25 years, with a standard deviation of 4.12. The median family income for the sample was $40,000-$49,000 per year. There were 84 Caucasian females, 10 Hispanic females, 5 Asian females, 4 Native American females, and 3 females from other ethnic categories.

Each subject was tested using the 144-item version of the Life Attitudes Schedule (Lewinsohn et al., 1995). Due to the low numbers of minority students on this campus, generalization of the results is limited to the ethnicity, age, and income of the population from which these participants were gathered.

Procedure

Data for this study were collected by Humboldt State University research assistants as part of a 90-day test-retest of the LAS. The University Institutional Review Board (IRB) Human Subjects Committee reviewed these procedures.
and approved them (IRB Approval 97-6). The current researcher became interested in using these 90-day test-retest data (T1 and T2) for the current study.

Anonymity of participants remained intact throughout each stage of this study. Participants' names did not appear on any materials collected during testing. All completed test materials were kept in a locked cabinet in the psychology office at Humboldt State University. Participants were given instructions and information concerning voluntary participation and confidentiality. Research assistants followed a standard procedure outlined to guarantee uniform collection of data. The subjects were also debriefed after their participation in the study. The subjects completed the survey in a classroom during regularly scheduled class hours.

All research assistants were graduate students enrolled in the Master's Psychology program at Humboldt State University.
Assessment

Life Attitudes Schedule (LAS):

Lewinsohn et al. (1995) developed the Life Attitudes Schedule (LAS), a 96-item self-report measure designed to define suicide-related behaviors along a continuum of life-threatening and life-enhancing behaviors. The 144-item version of the LAS used for this research consists of the original 96 items plus 48 items taken from five other scales: the Center for Epidemiologic Studies-Depression Scale (Radloff, 1977), the Beck Hopelessness Scale (Beck, Weissman, Lester, & Trexler, 1974), the Marlow-Crowne Social Desirability Scale (Crowne & Marlow, 1960) and the Infrequency Scale (Jackson, 1984).

The LAS consists of four content domains along a continuum measuring both positive and negative scales concerning thoughts, feelings or actions: overtly suicidal and death-related (DR), illness and health-related (HR), risk and injury-related (IR), and self-related (SR). This study used the health-related action content domain. Health-related positive action items consist of four questions: “I exercise regularly,” “I maintain a healthy balance between work and play,” “I try to eat foods that are good for me,” and “when I consult a doctor,
I always follow his or her instructions closely.” Health-related negative action items also consist of four questions: “I often skip meals,” “I have gone on occasional drinking sprees,” “I have taken a drug (not prescribed) or drank so much that I couldn’t remember what happened,” and “I have tried different kinds of illegal drugs.”

Positive health-related action items were scored with either a 0 for false answers or a 1 for true answers. The scores were then summed across the four items. Scores ranged from 0 to 4, with higher scores indicating more positive actions. Negative health-related action items were also scored with either a 0 for false answers or a 1 for true answers. The scores were then summed across the four items. Scores ranged from 0 to 4, with higher scores indicating more negative actions. The overall health-related action item category was scored by recoding true answers to 0 and by recoding false answers to 1 for positive health-related action items. The negative health-related action items remained as they were. Scores were then summed across the eight items. Overall health-related action item scores ranged from 0 to 8, with higher scores indicating more negative and less positive health-related actions.
There are three scales in the LAS: thoughts, feelings, and actions scales. The LAS scale used for this study was the action scale. A high score on any of the three negative scales for thoughts, feelings, and actions, or an overall high score indicates a higher level of suicidal behavior. Each scale has a mean of 50 and a standard deviation of 10. Scores within one standard deviation of the mean (i.e., 41-59) are considered "nonclinical." Scores one standard deviation above the mean (i.e., T scores of 60-69) depict "subclinical elevation." Scores two plus standard deviations above the mean (i.e., T scores of 70 plus) are seen as "clinically elevated." A client with scores in this range should be evaluated for suicide risk immediately.

Each of the four content domain subscale items (death-related, health-related, injury-related, and self-related) and total scores are highly correlated with suicidal ideation and past nonfatal suicidal behaviors in adolescents and young adults, while correlating only moderately with depression and hopelessness.

The LAS has been found to be both reliable and valid in assessing one underlying construct of suicide proneness along a continuum of life-enhancing
and life-threatening behaviors. Test-retest correlations for the three behavior
types averaged .77, while test-retest correlations for the four content domains
had a mean of .77. Mean Time 1-Time 2 correlation was \( r = .62 \), while item
correlations with the LAS total score were \( r = .37 \). The internal consistency of
the total LAS score and the four subscale scores was .92 and the one-month
test-retest reliability averaged .83.

Center for Epidemiologic Studies-Depression Scale (CES-D):

The CES-D is a 20-item self-report scale designed to measure current levels
of depression in the general population. These items were selected from items
on previously validated depression scales. Some examples of items are: "I felt
that everything I did was an effort," "I was happy," and "I could not get going."
The items are scored so that higher number values represent higher
depression. The CES-D has a high correlation of .70-. 80 with other measures
of depression (Radloff, 1977). It has also been used effectively with the
Beck Hopelessness Scale:

The Beck Hopelessness Scale (Beck, Weissman, Lester, & Trexler, 1974) is a 20-item true-false scale used to measure positive and negative degree of hope about the future. The scale is scored by adding the responses of pessimism for each of the 20 items. This inventory has an internal consistency of .93.

Marlow-Crowne Social Desirability Scale:

The Marlow-Crowne Social Desirability Scale (Crowne & Marlow, 1960) consists of 33 items designed to measure the extent to which a subject gains approval by responding in a culturally acceptable and correct manner. It correlates significantly with the Edwards Social Desirability Scale (.35) and has an internal consistency of .88. Items include, "I sometimes feel resentful if I don't get my own way," and "I have never intensely disliked anyone." Subjects in this study will be given a shorter form of the scale, which consists of 6 items. This shorter version has a reliability coefficient of .54 with adolescents (Andrews, Lewinsohn, Hops, & Roberts, 1993).
Infrequency Scale:

The Infrequency Scale (Jackson, 1984) is a validity scale comprised of five items identifying aspects of behavior that are very common or very uncommon in the general population. The scale is designed to highlight non-purposeful, random or careless responses to items, which are then discarded. A raw score of four or above indicates errors either in scoring or responding to the questions.
Results

Analyses

Pearson correlations were used to establish the direction and strength of the relationship between LAS health-related action scores and CES-D depression scores at Time 1 (T1) and at Time 2 (T2). The researchers also used Pearson correlations to investigate the correlation between health-related action change scores and depression change scores, to determine whether depression scores decreased (T1 to T2) in subjects whose health-related action scores increased (T1 to T2) and vice-versa. Forward stepwise regression was conducted to investigate relationships between specific health-related action items and depression. Health-related action items (T1) were investigated as predictors of depression scores (T2), and depression scores (T1) were investigated as predictive of health-related action items (T2). T1 scores were compared to T2 scores, using paired t-tests, in order to assess any overall changes across time. Test-retest reliabilities were also assessed for the LAS health-related action scores and the CES-D depression measure by finding the correlation between their T1 and T2 scores.
Correlations between Health-Related Action Scores and Depression

Hypothesis 1 stated that there will be a significant negative correlation between females’ LAS positive health-related action scores and their CES-D scores at Time 1. The results for Hypothesis 1 indicated a significant negative correlation between females’ positive health-related action scores (T1) and their depression scores (T1), $r (104) = -0.329$, $p < .001$. There was also a significant positive correlation found between negative health-related action scores (T1) and depression scores (T1), $r (104) = 0.315$, $p < .001$. In addition, there was a significant positive correlation between overall health-related action scores (T1) and depression scores (T1), $r (104) = 0.433$, $p < .001$ (see Table 1).

Hypothesis 2 stated that there will be a significant negative correlation between females’ LAS positive health-related action scores and their CES-D scores at Time 2. The results for Hypothesis 2 indicated a significant negative correlation between females’ positive health-related action scores (T2) and their depression scores (T2), $r (103) = -0.338$, $p < .001$. There was also a significant
Table 1

Correlations between T1 Scores on Health-Related Actions and Depression, T2 Scores on Health-Related Actions and Depression, and Change Scores on Health-Related Actions and Depression

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>CES-D Time 1</th>
<th>CES-D Time 2</th>
<th>CES-D Change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hypothesis 1</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LAS Time 1:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health-related positive actions</td>
<td>$r = -0.329^{**}$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health-related negative actions</td>
<td>$r = 0.315^{**}$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall health-related actions</td>
<td>$r = 0.433^{**}$</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hypothesis 2</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LAS Time 2:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health-related positive actions</td>
<td>$r = -0.338^{**}$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health-related negative actions</td>
<td>$r = 0.255^{**}$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall health-related actions</td>
<td>$r = 0.369^{**}$</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hypothesis 3</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LAS Change:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health-related positive actions</td>
<td>$r = -0.126$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health-related negative actions</td>
<td>$r = 0.035$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall health-related actions</td>
<td>$r = 0.120$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .05.  **p < .01.  ***p < .001.
positive correlation between overall health-related action scores (T2) and
depression scores (T2), $r (103) = .369$, $p < .001$ (see Table 1).

Hypothesis 1 and the results of Hypothesis 1 refer to current use of positive
health-related actions and depression, while Hypothesis 2 and the results of
Hypothesis 2 refer to subsequent use of positive health-related actions and
depression.

Hypothesis 3 stated that there will be a significant negative correlation
between females' Time 1 to Time 2 LAS positive health-related action change
scores and females' Time 1 to Time 2 CES-D change scores. The results for
Hypothesis 3 indicated small and nonsignificant correlations in the predicted
direction. The negative correlation between females' T1 to T2 positive
health-related action change scores and their T1 to T2 depression change
scores was not significant, $r (102) = - .126$, $p > .05$. Neither the negative
health-related action change scores from T1 to T2 nor the overall health-related
action change scores from T1 to T2 correlated significantly with depression
change scores, $r (102) = .035, p > .05$, and $r (102) = .120, p > .05$, respectively (see Table 1).

Hypothesis 4 stated that there will be a significantly larger cross-lagged correlation between females' Time 1 positive health-related action and Time 2 depression scores, than the cross-lagged correlation between females' Time 1 depression and Time 2 positive health-related action scores. The results for Hypothesis 4 indicated only a slightly stronger correlation between depression (T1) and positive health-related action scores at (T2), $r (104) = -.287, p < .01$, than between positive health-related action scores (T1) and depression (T2), $r (103) = -.267, p < .01$ (see Table 2). There were also only slightly stronger correlations between depression (T1) and negative health-related actions (T2), $r (104) = .338, p < .001$, than between negative health-related actions at (T1) and depression (T2), $r (103) = .223, p < .01$ (see Table 2). Also, there were slightly stronger correlations between depression (T1) and overall health-related actions (T2), $r (104) = .394, p < .001$, than between overall health-related actions (T1) and depression (T2), $r (103) = .330, p < .001$ (see
Table 2

Cross-Lagged Correlations for Health-Related Action Scores (T1) and Depression (T2), and for Depression (T1) and Health-Related Action Scores (T2)

<table>
<thead>
<tr>
<th>Hypothesis 4</th>
<th>CES-D Time 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAS Time 1:</td>
<td></td>
</tr>
<tr>
<td>Health-related positive actions</td>
<td>$r = - .267$</td>
</tr>
<tr>
<td>Health-related negative actions</td>
<td>$r = .223$</td>
</tr>
<tr>
<td>Overall health-related actions</td>
<td>$r = .330^{***}$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hypothesis 4</th>
<th>CES-D Time 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAS Time 2:</td>
<td></td>
</tr>
<tr>
<td>Health-related positive actions</td>
<td>$r = - .287^{**}$</td>
</tr>
<tr>
<td>Health-related negative actions</td>
<td>$r = .338^{***}$</td>
</tr>
<tr>
<td>Overall health-related actions</td>
<td>$r = .394^{***}$</td>
</tr>
</tbody>
</table>

* $p < .05$. ** $p < .01$. *** $p < .001$. 
Table 2). The depression (T1) and health-related action (T2) correlations and their cross-lagged health-related action (T1) and depression (T2) correlations were not significantly different from each other.

Multiple Regression for Health-Related Action Items and Depression

Hypothesis 5 stated that individual health-related action items at Time 1 will be predictive of depression scores at Time 2. Stepwise regression analysis was used in Hypothesis 5 to determine a health-related action item subset of predictor variables of T1, T2, and change scores in depression. Four health-related action items (T1) correlated significantly with current depression (T1). The items included "I often skip meals," $r (104) = .414, p < .001$, a nonaffirmative answer on "I maintain a healthy balance between work and play," $r (104) = -.379, p < .001$, a nonaffirmative answer on "I try to eat foods that are good for me," $r (104) = -.257, p < .01$, and "I have taken a drug (not prescribed) or drank so much that I couldn't remember what happened," $r (104) = .194, p < .05$. (see Table 3). The stepwise multiple regression analysis selected three T1 health-related action items as significant combined predictors.
Table 3

Correlations and Standardized Regression Coefficients for Each of the LAS Health-Related Action Items (T1) as Predictors of Current CES-D Depression (T1).

<table>
<thead>
<tr>
<th>LAS Health-Related Action Item</th>
<th>Correlation Coefficient (r)</th>
<th>Standardized Regression Coefficient (Beta)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I maintain a healthy balance between work and play</td>
<td>-.379***</td>
<td>-.321**</td>
</tr>
<tr>
<td>2. I try to eat foods that are good for me</td>
<td>-.257**</td>
<td>-.125</td>
</tr>
<tr>
<td>3. When I consult a doctor, I always follow his or her instructions closely</td>
<td>-.208*</td>
<td>-.082</td>
</tr>
<tr>
<td>4. I exercise regularly</td>
<td>-.014</td>
<td>.100</td>
</tr>
<tr>
<td>5. I often skip meals</td>
<td>.414***</td>
<td>.375***</td>
</tr>
<tr>
<td>6. I have gone on occasional drinking sprees</td>
<td>.094</td>
<td>-.037</td>
</tr>
<tr>
<td>7. I have taken a drug (not prescribed) or drank so much that I couldn't remember what happened</td>
<td>.194*</td>
<td>.023</td>
</tr>
<tr>
<td>8. I have tried different kinds of illegal drugs</td>
<td>.132</td>
<td>.088</td>
</tr>
</tbody>
</table>

*p < .05. **p < .01. ***p < .001
of depression at T1, \( F(3, 102) = 14.886, p < .001 \). The stepwise multiple regression analysis selected these three items at T1 as predictors of depression at T1: "I often skip meals," beta = .375, \( p < .001 \), a nonaffirmative answer on "I maintain a healthy balance between work and play," beta = -.321, \( p < .001 \), and "I have tried different kinds of illegal drugs," beta = .205, \( p < .05 \) (see Table 3). The multiple correlation between these three items combined and current depression was .552. These predictor items are related to current depression.

Three health-related action items (T1) significantly correlated with subsequent depression (T2). The items included "I often skip meals," \( r(103) = .244, p < .01 \), a nonaffirmative answer on "I maintain a healthy balance between work and play," \( r(103) = .236, p < .01 \), and "when I consult a doctor, I always follow his or her instructions closely," \( r(103) = -.226, p < .01 \) (see Table 4). The stepwise multiple regression analysis selected two of these items as significant combined predictors of depression, \( F(2, 102) = 5.421, p < .01 \). These two predictor items were: "I often skip meals," beta = .205, \( p < .05 \), and a
Table 4

Correlations and Standardized Regression Coefficients for Each of the LAS Health-Related Action Items (T1) as Predictors of Subsequent CES-D Depression (T2)

<table>
<thead>
<tr>
<th>LAS Health-Related Action Item</th>
<th>Correlation Coefficient (r)</th>
<th>Standardized Regression Coefficient (Beta)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I maintain a healthy balance between work and play</td>
<td>-.236**</td>
<td>-.195*</td>
</tr>
<tr>
<td>2. I try to eat foods that are good for me</td>
<td>-.069</td>
<td>.044</td>
</tr>
<tr>
<td>3. When I consult a doctor, I always follow his or her instructions closely</td>
<td>-.226**</td>
<td>-.165</td>
</tr>
<tr>
<td>4. I exercise regularly</td>
<td>-.125</td>
<td>-.066</td>
</tr>
<tr>
<td>5. I often skip meals</td>
<td>.244**</td>
<td>.205*</td>
</tr>
<tr>
<td>6. I have gone on occasional drinking sprees</td>
<td>.115</td>
<td>.101</td>
</tr>
<tr>
<td>7. I have taken a drug (not prescribed) or drank so much that I couldn't remember what happened</td>
<td>.101</td>
<td>.063</td>
</tr>
<tr>
<td>8. I have tried different kinds of illegal drugs</td>
<td>.125</td>
<td>.177</td>
</tr>
</tbody>
</table>

* p < .05.  ** p < .01.
nonaffirmative answer on "I maintain a healthy balance between work and play," beta = - .195, p < .05 (see Table 4). The multiple correlation between these two items combined and subsequent depression was .310. These predictor items are related to subsequent depression.

There were no significant T1 health-related action predictor items for T1 to T2 depression change scores.

Hypothesis 6 stated that depression at Time 1 will be predictive of individual health-related action items at Time 2. The results for Hypothesis 6 used stepwise regression to explore the relationship of depression (T1) and individual health-related action items (T2). Five health-related action items (T2) correlated with depression (T1). The items included: "I often skip meals," $r (104) = .353, p < .001$, a nonaffirmative answer on "I maintain a healthy balance between work and play," $r (104) = - .317, p < .001$, "I have taken a drug (not prescribed) or drank so much that I couldn't remember what happened," $r (104) = .299, p < .01$, "I have gone on occasional drinking sprees,"
Table 5

Correlations and Standardized Regression Coefficients for Each of the LAS Health-Related Action Items (T2) as Predicted by CES-D Depression (T1)

<table>
<thead>
<tr>
<th>LAS Health-Related Action Item</th>
<th>Correlation Coefficient (r)</th>
<th>Standardized Regression Coefficient (Beta)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I maintain a healthy balance between work and play</td>
<td>-.317***</td>
<td>-.238**</td>
</tr>
<tr>
<td>2. I try to eat foods that are good for me</td>
<td>-.177*</td>
<td>-.115</td>
</tr>
<tr>
<td>3. When I consult a doctor, I always follow his or her instructions closely</td>
<td>-.160</td>
<td>-.061</td>
</tr>
<tr>
<td>4. I exercise regularly</td>
<td>-.054</td>
<td>.166</td>
</tr>
<tr>
<td>5. I often skip meals</td>
<td>.353***</td>
<td>.290***</td>
</tr>
<tr>
<td>6. I have gone on occasional drinking sprees</td>
<td>.203*</td>
<td>.06</td>
</tr>
<tr>
<td>7. I have taken a drug (not prescribed) or drank so much that I couldn't remember what happened</td>
<td>.299***</td>
<td>.220*</td>
</tr>
<tr>
<td>8. I have tried different kinds of illegal drugs</td>
<td>.071</td>
<td>-.050</td>
</tr>
</tbody>
</table>

* p < .05. ** p < .01. *** p < .001.
\( r (104), = .203, p < .05, \) and a nonaffirmative answer on "I try to eat foods that are good for me," \( r (104), = - .177, p < .05. \) The stepwise multiple regression analysis selected three combined items at T2 as significant postdictors of depression at T1, \( F (3, 102) = 6.258, p < .05. \) These three items were: "I often skip meals," beta = .290, \( p < .001, \) a nonaffirmative answer on "I maintain a healthy balance between work and play," beta = -.238, \( p < .01, \) and "I have taken a drug or drank so much that I couldn't remember what happened," beta = .220, \( p < .05. \) The multiple correlation between initial depression and these three subsequent health-related action items combined was .494 (see Table 5).

**Change from Time 1 to Time 2**

The researcher also expected and found the following using paired t-tests:

no significant overall change in health-related positive actions from T1 to T2, \( t (106) = - .092, p > .05, \) no significant overall change in health-related negative actions from T1 to T2, \( t (106) = .108, p > .05, \) no significant overall change in health-related action scores from T1 to T2, \( t (106) = .142, p > .05, \) and no
significant overall change in depression scores from T1 to T2,

\[ r(103) = -0.563, p > 0.05. \]

**Test-Retest Reliabilities**

Pearson correlations for each measure at T1 to T2 revealed moderate test-retest reliability for the LAS positive health-related action measure,

\[ r(107) = 0.567, p < 0.001; \]

high test-retest reliability for the negative health-related action measure, \( r(107) = 0.770, p < 0.001; \)

high test-retest reliability for the overall health-related action measure, \( r(107) = 0.743, p < 0.001, \) and moderate test-retest reliability for the CES-D depression measure,

\[ r(104) = 0.576, p < 0.001. \]
Discussion

Main Conclusions

The purpose of this study was to investigate whether there were relationships between health-related actions and depression over 90 days, in females as measured by the LAS. This study found significant correlations between several health-related action and depression scores. These correlations support 4 out of 6 hypotheses for this study. The specific correlated variables are discussed below.

The results of Hypothesis 1 found that at the time of the first test period (T1), there was a significant negative correlation between positive health-related actions and depression, indicating that subjects currently performing health-related behaviors experienced a lower level of current depression than those who did not. This finding is supported by Vines and Williams-Burgess (1994), who also reported finding a negative correlation between teenage mothers’ decrease in depression as they increased their positive health-related behaviors. In addition, Hypothesis 1 found a significant positive correlation between negative health-related actions and depression during T1, indicating
that subjects currently performing higher rates of negative health-related behaviors experienced higher levels of depression. Kandel and Davies (1986) found a similar positive correlation between increased depression in young adults and their participation in high levels of negative health-related behaviors, such as higher rates of cigarette smoking, increased use of prescription tranquilizers, increased participation in deviant activities and accidents. The results of Hypothesis 1 also found a positive correlation between overall (including positive and negative) health-related actions and depression during T1, indicating that a low amount of positive health-related actions and a high amount of negative health-related actions, in combination, relate to depression.

Results of Hypothesis 2 at the second time period (T2) also found a significant negative correlation between positive health-related actions and depression, indicating that subjects performing positive health-related behaviors experienced lower levels of depression. In addition, there was a positive correlation between negative health-related actions and depression at T2, indicating that subjects performing negative health-related behaviors
experienced higher levels of depression. Nelson and Farberow (1982) reported a similar positive correlation between medically ill patients' negative health-related behaviors such as smoking, drinking and self-injurious behaviors with their higher levels of depression. Hypothesis 2 also found a positive correlation between overall (including positive and negative) health-related actions and depression at T2, indicating that a low amount of positive health-related actions and a high amount of negative health-related actions, in combination, relate to depression.

Hypothesis 3 found a small but nonsignificant negative correlation in the predicted direction between positive health-related action change scores and depression change scores over time, meaning that as positive health-related actions increased over time, depression had a slight tendency to decrease over time, and as positive health-related actions decreased over time, depression had a slight tendency to increase over time. The implication that practicing health-related behaviors can affect depression levels is clinically important. The Vines and Williams-Burgess (1994) finding that teenage mothers' depression
decreased as their positive health-related behaviors increased is an example of the importance of these results.

This finding also implies that clinicians can also focus on enhancing positive aspects of health-related behavior when working with clients with depression, versus recounting negative aspects of health-related behavior, which is often the clinical approach to working with clients with depression.

There was also a slightly stronger correlation between current depression and subsequent health-related behavior than between current health-related behavior and subsequent depression, indicating that current depression may be a slightly stronger predictor of subsequent health-related behavior than current health-related behavior is a predictor of subsequent depression. In a similar finding, Salovey and Birnbaum (1989) indicate that the presence of depression correlates negatively with capable feelings of successfully carrying out positive health-related behavior. The results of these two studies imply that people with depression may have difficulty carrying out positive health-related behaviors because they believe they will not be successful in doing so. Whether or not one carries out health-related behaviors has also been connected with
self-esteem, which has been found to be influenced by social support (Yarcheski & Mahon, 1989). Therefore, it might be useful for clinicians to help their clients increase their social support systems in order to decrease their levels of depression.

There were three significant current health-related action item predictors of current depression: “I often skip meals,” a nonaffirmative answer on “I maintain a healthy balance between work and play,” and “I have tried different kinds of illegal drugs.” There were two significant current health-related action item predictors of subsequent depression: “I often skip meals” and a nonaffirmative answer on “I maintain a healthy balance between work and play.” These items could be important in identifying and preventing future depression and potential suicidal behavior and should be considered in treatment planning and intervention.

Results also found that depression at T1 is a predictor of three health-related action items at T2: “I often skip meals,” a nonaffirmative answer on “I maintain a healthy balance between work and play,” and “I have taken a drug (not prescribed) or drank so much that I couldn’t remember what
happened.” This finding is important because it recognizes the potential impact of depression on whether or not one subsequently engages in these health-related behaviors, which could be moderators of depressive responding.

Although there has not been much research conducted in the area of health-related actions and their influence on the effects of depression, these results are consistent with findings of other researchers who have also identified relationships between health-related actions and depression. For example, Scott and Cabral (1988) found a positive correlation between teens feeling that “life was not worth living” and increased rates of smoking. The present study adds to this growing body of knowledge concerning the impact of and relationship between health-related actions and levels of depression.

**Application of Results**

The LAS is a reliable measure of suicidal behavior in young adults (Lewinsohn et al., 1995). In addition, as recognized in the current study, it may be clinically useful for predicting current temporal relationships between health-related behaviors and depression in order to identify pre-suicidal behavior. Individual current health-related action items on the LAS can also
now be used as potential temporal indicators of current and subsequent depression.

This study may also be valuable because it recognizes that negative health-related actions predict higher levels of subsequent depression, and also that positive health-related actions predict lower levels of depression. It would be valuable for counselors to know that a client who is engaging in unhealthy behaviors is at risk for subsequent depression. Counselors in clinical situations have the opportunity to address a client’s negative health-related behavior as predictive of depression in a manner that potentially decreases levels of depression by decreasing negative health-related behavior.

The finding that depression is predictive of subsequent negative health-related actions is also applicable. Those who are depressed are more at risk for subsequent unhealthy behaviors. They may be more likely to skip meals, be unable to maintain a healthy balance between work and play, drink excessively, or take higher doses of drugs with no recall of what happened. Clinical counselors have the opportunity to note that a client with depression who does not engage in positive health-related behavior may be a client whose
self-efficacy and self-esteem might benefit from increased social support, as social support increases self-esteem, which increases use of positive health-related behavior (Yarcheski & Mahon, 1989).

Limitations of Research

Several important limitations of this study must be noted. First, the applicable results are limited to the heterogeneity of the sample, which represents a population of primarily Caucasian, middle-income college females. The generalizability of the findings may also be limited due to the limited sample size of 106. It would be important and of interest to use a larger and more ethnically diverse female sample in future research. Another limitation may be the singular use of self-report measures, as they depend on subjective recollection, which may be unreliable. Using observational data on health-related activities and depressive symptoms may help eliminate this limitation. A last limitation is that of using correlational data, which indicates relational strength and direction, yet does not indicate specific cause and effect relationships between variables.
Directions for Future Research

Despite the limitations, these study results contribute to a growing knowledge base suggesting that there is a predictive relationship between females' health-related behaviors and depression. Future research might be useful to identify the relationship between loneliness, depression, and suicide using a loneliness assessment measure and the LAS, as Scott and Cabral (1988) and Yarcheski and Mahon (1989) indicate that those with fewer support systems were more likely to maintain poor health habits and take more risks.

Another important direction for future research might be to explore death-related, injury-related, and self-related thoughts, feelings, and actions and health-related thoughts and feelings to determine which specific items correlate with depression. This would further increase the effectiveness of the LAS to identify and predict depression and suicide.
References


Appendix A

Life Attitudes Schedule Health-Related Action Items

Positive items:
1. I exercise regularly.
2. I maintain a healthy balance between work and play.
3. I try to eat foods that are good for me.
4. When I consult a doctor, I always follow his or her instructions closely.

Negative items:
1. I often skip meals.
2. I have gone on occasional drinking sprees.
3. I have taken a drug (not prescribed) or drank so much that I couldn't remember what happened.
4. I have tried different kinds of illegal drugs.
Appendix A

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