

**THE HARDINESS AND NEGATIVE AFFECTIVITY CONFOUND
AS A FUNCTION OF A DEFENSIVE COPING STYLE**

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Abstract

In recent years, the growing interest in personality hardiness as a mediating variable in the stress-illness relationship has been paralleled by a growing concern that hardiness scales inadvertently measure negative affectivity (NA). Individuals who are high in NA tend to exaggerate somatic concerns and have frequent psychosomatic complaints, although their actual health does not differ from that of others. Additional research has indicated that individuals with a defensive coping style who tend to report little NA have elevated autonomic and psychophysiological activity (e.g., blood pressure, heart rate). This study explored the hardiness and NA confound in both high and low defensive coping groups using a new third-generation cognitive hardiness scale that has shown to be associated with both objective and subjective measures of health status in previous studies. In the present study, four groups of subjects (N=122) between the ages of 60 and 70 were pretested and retested 3 months and one year after participating in an 11 day intensive preventive health promotion program for the elderly. As part of a battery of psychological and biological variables, measures of cognitive hardiness, NA, defensiveness, and psychological distress (SCL-90) were obtained. For the total sample, hardiness uniquely contributed to predictions of somatic symptoms and incrementally to interpersonal sensitivity and interpersonal paranoia (cynical mistrust) when controlling for NA in multiple regression analyses. In high defensive coping groups, NA significantly contributed to predictions of psychological distress, whereas hardiness significantly contributed to predictions of cynical mistrust in low defensive groups. These findings suggest that the hardiness is a unique construct associated with specific aspects of psychological health and that the hardiness and NA confound is more pronounced for individuals with a defensive coping style.

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INTRODUCTION

Considerable research suggests that work and life stress contribute, albeit modestly, to physical health and psychological well-being (e.g., Cohen, Tyrrell, & Smith, 1991; Taylor, 1990; Monroe, 1983; Rabkin & Struening, 1976; Dohrenwend & Dohrenwend, 1974). One approach to understanding this small, but consistent, association between stress and health status has been to explore the role of mediating variables that directly and indirectly influence the stress-illness relationship.

The construct of personality hardiness has generated considerable interest within the health psychology and behavioral medicine literature as a possible moderator of the stress-illness relationship (Kobasa 1979; Kobasa 1982a, 1982b; Kobasa, Maddi, & Courington, 1981; Kobasa, Maddi, & Kahn, 1982c). Personality hardiness is typically conceptualized as a multi-dimensional construct consisting of internal locus of control (vs. powerless), commitment to work and life activities (vs. alienation), and perception of life changes and demands as a challenge (vs. threat). Results from a growing body of retrospective and prospective studies have explored the association between personality hardiness and illness with other known stress mediators including Type A behavior (Contrada, 1989; Kobasa, Maddi, & Zola, 1983; Schmied & Lawler, 1986; Rhodewalt & Agustdottir, 1984; Nowack, 1986); social support (Ganellen & Blaney, 1984; Kobasa & Puccetti, 1983), and exercise and health habits (Kobasa, Maddi & Puccetti, 1982d Roth, Wiebe, Fillingim, and Shay 1989; Wiebe & McCallum, 1986; Nowack, 1991). However, some recent studies, have failed to replicate the predicted association between hardiness and health status (Funk & Houston, 1987; Schmied & Lawler, 1986).

Hardy individuals may experience less illness because it directly leads to adaptive coping responses (e.g., health enhancing lifestyle habits, optimistic explanatory styles, improved social support systems) ameliorating the potential negative effects of stress on overall health status. There is limited support for

the hypothesis that hardy individuals perceive stressful work and life events as more controllable and positive than individuals low in hardiness (Allred & Smith, 1989; Rhodewalt & Agustdottir, 1984; Rhodewalt & Zone, 1989; Dolan, Sherwood, & Light, 1992). In these studies, high hardy individuals responded to high stress conditions with more positive self-statements than did low hardy individuals. High hardy individuals tended to be more positive in high stress situations than in low stress situations, whereas low hardy individuals were more positive in low stress situations than in high stress situations. Such hardy appraisals may lead to adaptive cognitions that are associated with lower psychophysiological reactivity to a wide variety of stressors at work and home.

Although Kobasa and her colleagues have offered numerous studies supporting the role of personality hardiness with health status, recent criticisms of the hardiness construct and measures have emerged including which scales of hardiness are most valid, whether hardiness should be treated as a unitary or multi-dimensional construct, whether hardiness moderates the stress-illness relationship, and whether hardiness is independent from other psychosocial constructs such as optimism, positive affect, negative affectivity, neuroticism, and repression (cf., Funk, 1992; Funk & Houston, 1987; Hull, Van Treuren, & Virnelli, 1987; Ganellen & Blaney, 1984; Nowack, 1989).

Several recent criticisms have centered on the validity of the hardiness measures. During the early years of hardiness research, as many as 19 different scales were used to assess this construct. It was not uncommon for authors to modify versions of the initial hardiness scales or to use alternate scales to measure specific dimensions of hardiness (e.g., Nowack, 1986; Kobasa 1979; Kobasa & Puccetti, 1983). An inventory of 71 items became the most widely used measure of Kobasa's initial conceptualization of the hardiness dimensions of commitment, control, and challenge (UHS; Unabridged Hardiness Scale). Second generation measures followed in 1982 (20-item Abridged Hardiness Scale and 36-item Revised Hardiness Scale) and new "third-generation" scales have been recently developed; the 50-item Personal Views Survey (PVS; Hardiness Institute, 1985), the 45-item Dispositional Resilience Scale (DRS; Bartone, Ursano, Wright, & Ingaham, 1989), and the 30-item Cognitive Hardiness Scale (CH; Nowack, 1990, 1991; Greene & Nowack, 1991). The PVS and DRS share similar formats and item contents that provide

separate measures of the three hardiness dimensions. The Cognitive Hardiness scale appears more reliable and like other third-generation scales, contains positively keyed items, unlike previous hardiness scales. A more complete and thorough review of the development of these diverse measures can be found in the recent review of the theory and research of the hardiness construct by Funk (1992).

The diversity in measures of this personality construct makes the body of hardiness research difficult to interpret. As such, differences in health outcomes across hardiness studies may be due to the scales being used, rather than, a true hardiness effect. Recently, Carver (1989) has also raised questions about the nature of the multifaceted hardiness construct raising questions about the most common way to categorize high and low hardiness individuals. Furthermore, recent factor analyses have consistently failed to reproduce separate commitment, control, and challenge components (Funk et al., 1987; Hull et al., 1987). Low intercorrelations between the components are typically found in the hardiness literature (Kobasa, Maddi, & Courington, 1981; Hull et al. 1987; Pierce & Molloy, 1990). These low correlations do not support the view that the personality hardiness as a unitary construct. Although some components of hardiness may prove to ameliorate the effects of stress on health, it is unclear exactly what these components are, and whether they should be considered separately or treated as a single meaningful construct.

One major concern with all self-report measures in health psychology, including hardiness, is whether or not these scales inadvertently measure negative affectivity (NA). Watson and Pennebaker (1989), in a broad review of health psychology research, conclude that self-report measures of health tend to be confounded with a pervasive mood disposition of negative affectivity. NA can be conceptualized as a relatively stable individual difference variable characterized by a tendency to experience aversive physical and emotional states such as depression, anxiety, self-depreciation, irritability, interpersonal sensitivity, and neuroticism. As such, NA appears to be a dispositional tendency to interpret and experience emotional and physical states negatively. Watson and Pennebaker (1989) point out that self-report health scales are likely to have two independent components, one that is subjective and psychological (e.g., NA), and the other that is objective and more clearly health-related. If NA is

significantly associated with physical complaints, the interpretation of this relationship depends on whether the correlation is related to either, or both, of these psychological and objective components. In health psychology research, it is very important to differentiate between health complaint scales, health behaviors (e.g., clinic visits), physiological and medical indicators of health (e.g., blood pressure, immune functioning), and long-term health outcomes (e.g., mortality rates, onset of disease).

Although NA is strongly associated with a wide variety of well-being outcome measures, it does appear to strongly, or consistently, relate to objective measures of illness or actual long-term health status per se. Individuals who are high in NA tend to exaggerate somatic concerns and have frequent psychosomatic complaints, although their actual health does not differ from that of others (Watson & Clark, 1984; Costa & McCrae, 1985; Allred & Smith, 1989). Therefore, the relationship between self-report measures of psychological states (e.g., stress, optimism) and health may be over-estimated, if not spurious, due to the confound between psychological states, NA, and self-report symptomology. As such, NA appears to be a nuisance variable that should be controlled for in all health psychology and behavioral medicine research using self-report measures.

This NA confound remains a challenge and an issue in health psychology research. Common approaches for dealing with NA has been to treat it as a nuisance variable and to statistically control for its effects, using measures not contaminated with NA related items, screening subjects who are high in NA, and utilizing prospective study designs. However, the exploration of the association between NA and illness may prove to be fruitful in the long run with limited evidence that individuals high in NA are more vulnerable to stress (McRae, 1990) or even "disease prone" (Friedman & Booth-Kewley, 1987). Even more striking are other research studies linking NA to both immunocompetence and cancer (Watson & Pennebaker, 1989; Derogatis, Abeloff, & Melisaratos, 1979; Jensen, 1984; Taylor, 1990).

In fact, a tremendous body of literature has emerged suggesting that a repressive or inhibited NA coping style has deleterious health consequences (e.g., Schwartz, 1990). Recently, several researchers directly examined an individual difference measure of repressive coping style characterized as a combination of low NA (typically measured by the Taylor Manifest Anxiety Scale) and high social

desirability (MCSD; Crowne and Marlowe, 1964). In general, such individuals have greater mortality rates related to cancer (Jensen, 1964), elevated blood pressure in a non-laboratory setting (Jamner, Shapiro, Goldstein, & Hug, 1991), and greater psychophysiologic activity (Schwartz, 1990; Weinberger, Schwartz, & Davidson, 1979) than do high NA individuals. In these studies, health complaints and negative affect were highest among the high NA individuals. Taken together, it appears that high NA and repressive coping are at least two distinct coping styles characterized by a disposition to either express or avoid psychological distress. These findings strongly suggest that the use of NA and repressive coping markers should be used more frequently in health psychology research so that the influence of these two coping styles can be identified. This approach would appear to be fruitful in future research studies of hardiness, and other measures, which have shown a tendency to inadvertently measure NA.

Recent reviews of the hardiness literature have concluded that hardiness tends to be significantly associated with indicators of NA (Funk, 1992; Allred & Smith, 1989; Hull et al., 1987). However, although hardiness and NA measures overlap, they are not apparently identical. Some studies do indicate that relations between hardiness and well-being could not be replicated when NA was statistically controlled (e.g., Funk & Houston, 1987; Rhodewalt & Zone, 1989; Allred & Smith 1989). In some studies, controls for NA did not eliminate effects for hardiness on outcomes other than physical illness. For example, Funk & Houston in their prospective study found that main effects of hardiness on depression remained after controlling for maladjustment. However, in a recent study with 234 male highway patrol officers (Hills & Norvell, 1991), hardiness significantly contributed incrementally to predictions of self-reported physical symptoms above that of neuroticism and perceived stress. Allred & Smith (1989) found that main effects of hardiness and positive coping statements as well as blood pressure reactivity remained after NA was statistically controlled. Taken together, these findings provide limited support for the argument that personality hardiness may indeed have some direct effects on health status and may not simply be a measure of general maladjustment or negative affectivity.

The present study explored the relationship between measures of psychological distress (SCL-90), negative affectivity (TMAS), defensiveness (MCSD), and a relatively new measure of hardiness (CH;

Nowack, 1990; Nowack, 1991) in a prospective design. Specifically, this study investigated the extent to which this new measure of hardiness is inadvertently measuring NA and whether, or not, this potential confound is mediated by a defensive coping style. Because this third-generation hardiness measure does not rely exclusively on negatively keyed items, and was rationally derived from locus of control (behavioral, affective, cognitive), life/work satisfaction and commitment, and tolerance for change/ambiguity constructs, it was expected that it would less pervasively tap NA. Based on previous research on the repressive coping style, it is hypothesized that the extent to which hardiness overlaps with NA may be a unique function of this dispositional tendency to minimize the experience of negative symptomatology. By definition, a repressed coping style is characterized by low NA and high social desirability, self, and other-deception. Hence, if hardiness is indeed more than just a measure of general maladjustment, it should uniquely contribute to predictions of psychological distress differentially in individuals who express a repressed coping style compared to those who do not. Specifically, it was hypothesized that:

Hypothesis I: Cognitive hardiness (Nowack, 1990) will be significantly associated with measures of NA and psychological distress (SCL-90), but not defensiveness or social desirability (MCSD).

Hypothesis II: Cognitive hardiness will incrementally contribute to predictions of psychological distress after statistically controlling for NA.

Hypothesis III: Cognitive hardiness will be most strongly associated with NA (confounded) in individuals with a defensive coping style (i.e., high on the MCSD).

METHODS

PARTICIPANTS & PROCEDURES

The data utilized in this report were drawn from a broader longitudinal study investigating an integrative preventive health promotion project with a group of 122 elderly subjects between the ages of 60 and 70. A more complete description of the design and measures used in this Eldercamp study have been summarized elsewhere (Schwartz, Schwartz, & Eichling, 1992). Subjects for this study were recruited from newspaper ads placed in the greater Tucson area seeking people between the ages of 60 and 70 who were interested in improving their health and "ready to make a change." They received a free 11 day stay at a Tucson health resort in return for participating in a collaborative research study between the health resort and the University of Arizona. Subjects applied for the program and completed a battery of questionnaires, including medical history. Subjects were excluded if their physical or mental health precluded their safe participation in the program.

Subjects were randomly assigned to an experimental and a waiting list control group. Both groups were assessed at time 0 (the pre-measure), 3 months, and 12 months following the experimental subjects receiving the program. After 12 months, the waiting list control received the program. They were assessed again at 3 months and 12 months following their program. A subset of measures were taken immediately following the 11 day program for each group.

Measures included mental/psychological (e.g., optimism, hardiness, SCL-90, stress), social/environmental (social support), and medical/physical (e.g., immune assays, cholesterol and hormone levels, topographic EEG, cardiac stress test, and blood work). The 11 day health promotion program included extensive biopsychosocial activities including daily exercise, stretching, and body mechanic classes, extensive eating, food shopping, and nutritional education workshops, stress management and relaxation training, and a complete medical evaluation and preventive action plan.

Measures

1. **Structured interviews:** The interviews were designed to obtain detailed information about the person and their experiences before, during, and following the program. A structured interview was also given on day 11 when each group finished the program.

2. **Other non-psychological measures included:** a) A medical exam including weight, blood pressure, CBC blood tests; b) Cardiac stress test: A modified Balke protocol was followed resulting in the measurement of metabolic equivalents (METs); c) Nutrition Assessment; d) Immune Assays; e) Blood norepinephrine and insulin levels; f) Physical strength and body composition; g) Topographic EEG; and h) Olfaction thresholds and sensitivity. Psychological tests were given to assess self-perceptions of health behaviors, coping with stress, and symptoms including: 1) Marlowe Crowne Social Desirability (MCSD; Crowne and Marlowe, 1964), Taylor Manifest Anxiety scale (TMAS; 1953), SCL-90 (Derogatis et al., 1976), and the Stress Assessment Profile (SAP; Nowack, 1990, 1991, 1992). In this study, the TMAS was used as a measure of NA and hardiness was assessed by the Cognitive Hardiness scale of the SAP (Nowack, 1990).

The 30-item Cognitive Hardiness Inventory (CH; Nowack, 1990) is composed of both positive and negative attitudes and beliefs about work and life including: (1) Involvement--commitment, as opposed to alienation, to one's work, family, self, hobbies; (2) Optimism--attitudes around viewing life changes as challenges as opposed to threats; (3) Perceived Control--beliefs that one has a sense of control over significant outcomes in work, relationship, and life in general. The inclusion of items that assess both positive and negative indicators of the hardiness construct in the present scale may minimize the conceptual and empirical problems present in the current Kobasa hardiness measures (cf. Funk et al., 1987). Respondents are asked to rate how strongly they agree with specific statements about their beliefs on a 1-5 scale ("strongly agree," "agree," "neither agree nor disagree," "disagree," "strongly disagree"). Sample items include, "My involvement in non-work activities and hobbies provides me with a sense of meaning and purpose," "I am committed to my job and work activities that I am currently pursuing," and "I tend to view most work and life changes, disappointments, and setbacks as threatening, harmful, or

stressful rather than challenging."

This scale has demonstrated adequate internal consistency reliability (alpha .83), adequate test re-test reliability over a period of two-weeks (.95), and criterion-related validity with diverse organizational (absenteeism, job satisfaction) and health outcome measures (job burnout, physical illness, psychological well-being) in several recent retrospective and prospective studies (Greene & Nowack, 1991; Nowack, 1990; 1991; 1990; 1989). The Cognitive Hardiness Scale has also shown construct validity with optimism (LOT; Scheier & Carver, 1985) and the original Kobasa hardiness scales (correlations with optimism, overall hardiness scale, commitment, challenge, and control subscales are .74, -.46, -.42, .05, and -.58, respectively) in two recent unpublished studies (Andrassy, 1992; Greene & Nowack, 1991).

Principal component factor analytic procedures of the scale across diverse samples typically identify seven to eight factors with eigenvalues exceeding 1.0 that account for 51.1 to 55.2% of the explained variance in this variable. The first three factors include items reflecting challenge, control, commitment, and self-efficacy but generally account for no more than 30% of the explained variance in these analyses. The most parsimonious interpretation of these factor analytic results is that the present measure represents a single hardiness construct, rather than, three separate factors, as originally conceptualized by Kobasa (1979).

The Cognitive Hardiness scale has shown some limited evidence of independence of negative affectivity (NA) in a recent unpublished study exploring the psychosocial predictors of burnout and substance use in 897 professional working women (Nowack, 1992). A statistically significant correlation was found between the Cognitive Hardiness scale, stress, and the emotional exhaustion scale of the Maslach Burnout Inventory ($r_s(897) = -.46$ and $-.44$, respectively, both $p_s < .01$). Partial correlation coefficients were also calculated controlling for NA using a measure of psychological distress that has shown a previous association with diverse measures of neuroticism (Nowack, 1990). Although not as strongly associated, the Cognitive Hardiness scale was still significantly correlated with stress and emotional exhaustion ($P_r_s = -.19$ and $-.20$, respectively, both $p_s < .01$) in this sample. These relationships suggest that the Cognitive Hardiness scale is minimally confounded with NA.

RESULTS

The intercorrelations among psychological distress, negative affectivity (NA), and cognitive hardiness are shown in Table 1 below for the total sample, high defensive, and low defensive groups (MC). Defensiveness (MC) is only slightly correlated with NA and cognitive hardiness ($r_s = -.27$ and $.23$, respectively, p 's $< .05$). On the other hand, cognitive hardiness and NA are more modestly intercorrelated with each other ($r = -.47$, $p < .01$). Defensiveness was not significantly correlated with any SCL-90 scales (correlation coefficients not shown). These associations suggest that defensiveness, as measured by the Marlowe Crowne Social Desirability scale, is independent of self-reported psychological distress.

Insert Table 1 About Here

A modest and consistent association was found for the total sample between NA, cognitive hardiness, and psychological distress measures. Individuals who were cognitively hardy reported significantly less psychological distress across all SCL-90 scales. As expected, high NA was also significantly correlated with more psychological distress. These relationships were also replicated in high, but not low, defensive groups (Table 1). However, in low defensive groups cognitive hardiness was significantly correlated with only three SCL-90 scales, interpersonal sensitivity, paranoia, and depression. Similarly, in low defensive groups, NA was significantly correlated with only five SCL-90 scales including obsessive compulsive thoughts, interpersonal sensitivity, depression, paranoia, and psychoticism. These findings suggest that the confound between NA, cognitive hardiness, and psychological distress may be more pronounced in individuals expressing a high, rather than a low, defensive coping style (i.e., in individuals who reported high levels of self- or other-deception on the Marlowe Crowne Social Desirability scale).

A series of stepwise multiple regression analyses were used to explore the relative contributions of cognitive hardiness and NA with each of the SCL-90 scales. In all of the regression analyses, pertinent demographic variables (sex, age) were entered in the first step of the regression analyses followed by NA

and cognitive hardiness, in that order. This step-wise regression method allowed for the determination of the unique contribution of cognitive hardiness above that of NA across all SCL-90 scales. Separate multiple regression analyses were conducted for the entire sample, low, and high defensive groups. The results of these regressions are summarized in Table 2 below.

Insert Table 2 About Here

For the total sample, cognitive hardiness uniquely contributed to predictions of somatic complaints (r^2 change=.06, $F=5.04$, $p < .05$), and incrementally contributed to predictions of interpersonal sensitivity (r^2 change=.05, $F=6.02$, $p < .05$) and paranoia (r^2 change=.09, $F=6.48$, $p < .05$) above that of NA which significantly entered in the first step (Table 2). Cognitive hardiness was significantly associated with psychological distress above that of NA for the selected SCL-90 scales summarized above. These findings provide limited construct validity for the cognitive hardiness scale used in this study.

For high defensive groups, cognitive hardiness again was found to incrementally contribute to predictions of interpersonal sensitivity (r^2 change=.07, $F=4.98$, $p < .05$) and paranoia (r^2 change=.09, $F=6.48$, $p < .05$) above that of NA which significantly entered in the first step (Table 2). In the high defensive group, neither cognitive hardiness nor NA significantly contributed to predictions of somatic complaints. In low defensive groups, cognitive hardiness uniquely contributed to predictions of interpersonal sensitivity (r^2 change=.17, $F=7.07$, $p < .05$) and paranoia (r^2 change=.12, $F=4.61$, $p < .05$). NA, but not cognitive hardiness, uniquely contributed to predictions of the SCL-90 scales of obsessive compulsive thoughts, depression, anger/hostility, and psychoticism (Table 2). These findings suggest that in low defensive groups, cognitive hardiness and NA are uniquely associated with different aspects of psychological distress as measured by the SCL-90 in prospective study with elderly adults.

DISCUSSION

Among personal resources relevant to stress resistance, personality hardiness has received a great deal of attention. Although a large body of research on hardiness has accumulated, several fundamental

issues remained unresolved. Some critical issues include the questionable psychometric properties of the original Kobasa hardiness scales, whether hardiness is one or multiple constructs, and a growing concern that hardiness is confounded with measures of negative affectivity (NA). New third-generation measures have been developed based upon earlier personality hardiness scales (e.g., Revised Hardiness Scale, Personal Views Survey, Cognitive Hardiness Scale). These measures tend to contain items that are both positively and negatively keyed, possess relatively high internal consistency reliability, and provide for either individual component or composite hardiness scores. In general, the hardiness and NA confound has not been thoroughly investigated with these new third-generation scales.

Specifically, this study explored the relationship between cognitive hardiness, NA, defensive coping, and psychological distress in a sample of 122 elderly adults participating in a comprehensive health promotion and wellness program. In this study, a new measure of hardiness was utilized that was theoretically derived from the earlier work of Kobasa and associates (Kobasa 1979; Kobasa 1982a, 1982b; Kobasa, Maddi, & Kahn, 1982c; Kobasa, Maddi, & Zola, 1983; Kobasa 1979; Kobasa & Puccetti, 1983; Kobasa, Maddi, & Courington, 1981). This new third-generation hardiness scale (CH; Nowack, 1990) provides for a composite, rather than component, cognitive hardiness score based upon factor analyses, contains both positively and negatively keyed items, and was rationally derived based upon the original hardiness dimensions including locus of control, commitment, and tolerance for change and ambiguity. It has shown to be associated with both subjective and objective measures of health status in several recent studies (Greene & Nowack, 1992; Nowack, 1991).

Based on previous research, it was hypothesized that cognitive hardiness would be strongly associated with self-reported psychological distress as measured by the SCL-90. Furthermore, it was hypothesized that this new third-generation measure of personality hardiness would significantly contribute to predictions of psychological health status above that of NA. As hypothesized, cognitive hardiness was significantly, albeit, modestly correlated with all SCL-90 scales measuring psychological distress, as well as with NA ($r(122) = -.58, p < .01$). However, it is possible that these relationships were spurious due to a possible confound between NA and the particular cognitive hardiness measure employed

in this study. To explore the possible confound between cognitive hardiness and NA, a series of separate step-wise multiple regressions analyses were run with the SCL-90 subscales as the independent variables.

Results from the multiple regression analyses suggest that the association between cognitive hardiness and psychological distress, as measured by the SCL-90, could not entirely be explained by a potential confound of NA. Although NA was uniquely associated with many SCL-90 scales, cognitive hardiness uniquely contributed to predictions of somatic complaints, and incrementally added to the predictions of interpersonal sensitivity and paranoid thoughts SCL-90 scales above that of NA in the regressions with the total sample (Table 2). However, cognitive hardiness did not appear to contribute to predictions of specific SCL-90 scales including anxiety, depression, hostility, obsessive thoughts, and psychoticism above that of NA. These particular SCL-90 scales would appear to be most characteristic of self-reported somatopsychic distress, and most strongly associated with NA in this study. Support for this interpretation comes from both the correlational and regression analyses of high and low defensive groups as seen in Tables 1 and 2.

Defensiveness, as measured by the Marlowe-Crowne Social Desirability scale (MC; Crowne et al., 1964), typically represents a coping style characterized by an orientation away from threatening information and a denial or minimization of distress and negative emotions. The MC scale was originally intended to measure the tendency of individual to respond in a socially desirable manner in order to gain approval from others. Defensiveness was originally conceptualized as a deliberate strategy to present oneself in a positive light. More recently, however, MC is considered to represent a unique and stable individual difference variable that is more reflective of self-deception, other deception, and defensive coping (Schwartz, 1990). The present conceptualization of defensiveness is that of a self-enhancing strategy in which the individual is unaware of unpleasant affect and cognitions and does not tend to report them. This self- and other-deception reinterpretation of defensiveness implies that self-reports are an accurate reflection of what the individual knows about his/her emotions, cognitions, and behavior. Some evidence exists suggesting that such cognitive "illusions" might even have adaptive consequences in the face of work and life stress (Taylor & Brown, 1988). Although measures of social desirability are

commonly used in self-report research, much evidence exists suggesting that the MC scale is itself an individual difference variable that should be studied in its own right (McRae & Costa, 1983; Schwartz, 1990). Hence, it appears that the MC scale may be significant importance in the delineation of a specific coping styles related to well-being.

Repressive coping, a defensive style defined as high scores on the MC combined with lower self-reported NA, has been shown to be associated with a wide variety of outcomes including greater autonomic reactivity and enhanced cardiovascular and somatic responses to stress (Weinberger et al., 1979; Jamner et al., 1991; Warrenburg et al., 1989). The inclusion of a measure of defensive coping in this study allowed for the exploration of the potential cognitive hardiness and NA confound in groups of individuals who are likely to respond in a deceptive and socially desirable manner. In general, individuals expressing high defensive coping scores on the MC might be characterized as those most likely to minimize somatopsychic complaints. Hence, if cognitive hardiness and NA were confounded, we would expect to see the same relationships between these variables and self-report measures of health status in both high and low defensive coping groups. However, step-wise multiple regression findings suggest that in low defensive groups (i.e., less self- or other-deception), cognitive hardiness and NA uniquely and differentially predicted specific aspects of psychological distress measured by the SCL-90 (Table 2). The most parsimonious interpretation of these findings is that NA is most problematic for self-reported complaints in individuals most prone to deny or minimize somatopsychic distress and that the cognitive hardiness scale used in this study makes a unique contribution to predicting psychological health status above that of NA. These findings have would appear to have implications for future research studies using both old and new third-generation hardiness scales. Future hardiness research utilizing self-report measures of health complaints should routinely include measures of both defensiveness and NA to explore the role played by these particular individual difference variables.

Together, these findings provide partial support for the construct validity of the hardiness measure (CH; Nowack, 1990) used in this study. It would appear that this particular cognitive hardiness scale indeed contains two independent components, one that is more subjective and psychological (i.e.,

confounded with NA), and the other that is objective and more clearly health-related. It is interesting to note that the particular SCL-90 subscales of interpersonal sensitivity (e.g., "Feeling others do not understand you", "Feeling that people are unfriendly or dislike you", "Feeling very self-conscious with others", "Feeling inferior to others", "Your feelings being easily hurt") and paranoia ("Feeling that most people can not be trusted", "Feeling uneasy when others are watching or talking about you, "Feeling that others will take advantage of you if you let them", "Feeling others are to blame for most of your troubles") uniquely predicted by the cognitive hardiness scale contain items that might be characterized as a social self-consciousness, interpersonal impression management, and preoccupation with the behavior of others. Together, these two related SCL-90 subscales ($r(122) = .59, p < .01$) might best be conceptualized and described as a type of "cynical mistrust." As such, hardy individuals measured by this scale appear to be more trusting of others, less likely to be interpersonally cynical, and more in control of their behavior, thoughts, and feelings with and around others. In light of recent findings between diverse measures of cynical mistrust, hostility, and coronary heart disease (Taylor 1990; Jamner et al., 1991; Friedman & Booth-Kewley, 1987), it might be interesting to speculate that hardy individuals, assessed with the cognitive hardiness scale used in this study, might prove to be more resistant to coronary heart disease due to a tendency to experience less cynical mistrust in the face of work and life stress. In general, recent studies suggest that hardy individuals tend to perceive stressful work and life events as more optimistic, positive, and controllable than individuals low in hardiness (Allred & Smith, 1989; Rhodewalt & Agustdottir, 1984; Rhodewalt & Zone, 1989). Future longitudinal and cross-sectional research is required to adequately explore the true relationship between cognitive hardiness, the development of coronary heart disease (CHD), and its association with diverse measures of anger, hostility, and cynical mistrust.

Some limitations of this study include reliance on self-report outcomes, the generalizability of the results based upon the elderly sample, and inclusion of only one hardiness measure. There are no data at present regarding the generalizability of these results to younger populations. Replication of this study using multiple hardiness and NA measures with diverse objective and subjective health outcomes is strongly encouraged. Such research should be prospective in nature and, if possible, include measures of

both defensiveness and positive affectivity. In general, positive affectivity (PA) reflects general levels of engagement, energy, and enthusiasm (Watson & Pennebaker, 1989). Not only are NA and PA relatively independent dispositions, they appear to have different correlates. PA is strongly related to social interaction but shows little or no relationship with stress and health complaints in contrast to NA (Watson & Pennebaker, 1988). As such, the inclusion of NA, PA, and defensiveness measures might allow for the delineation and role of important coping subtypes in health psychology research.

Future research might also explore the existence of a hypothesized "super-repressor" coping style characterized by high defensiveness, low NA, and high positive affectivity. Such individuals might be characterized be most at risk for illness and disease as a result of their tendency to both minimize negative emotions and enhance unrealistic optimistic "illusions" that contribute to both maladaptive coping responses and heightened autonomic activity in response to work and life stress. This conceptual approach emphasizes the strategy of exploring the complex interplay between patterns of major individual difference variables, rather than, merely investigating the role of how single personality traits affect behavior (Denollet & De Potter, 1992; Weinberger & Schwartz, 1990; Taylor, 1990). Although NA, PA, and defensiveness may not adequately represent the full range of individual differences in personality, they do represent major superordinate traits that have not been adequately explored in most health psychology research.

In summary, these findings provide limited support for the construct validity of the cognitive hardiness scale (CH; Nowack, 1990). Cognitive hardiness was found to be an independent measure of coping style that contributes to predictions of the "cynical mistrust" components of psychological distress above that of NA. Future research should continue to focus on both the psychological and physiological concomittments of this particular third-generation hardiness scale as well as its role in mediating the stress-illness relationship. Furthermore, future hardiness research should routinely include separate measures of NA, PA, and defensiveness to clarify the unique contribution of this construct to health and well-being.

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TABLE 1. Intercorrelations of Hardiness, Negative Affectivity, and Psychological Distress

SCL-90 Scale	Total Sample (N=122)		Low Defensive Group (N=51)		High Defensive Group (N=71)	
	Hardiness	NA	Hardiness	NA	Hardiness	NA
	Physical Complaints	-.24*	.20*	-.24	.14	-.27*
Obsessive Thoughts	-.33*	-.41*	-.27	.33*	-.38*	.48*
Interpersonal Sensitivity	-.46*	.46*	-.46*	.40*	-.44*	.50*
Depression	-.40*	.54*	-.43*	.51*	-.37*	.53*
Anxiety	-.25*	.33*	-.21	.20	-.25*	.42*
Hostility	-.25*	.28*	-.19	.23	-.28*	.28*
Phobic Anxiety	-.09	.15	.10	.01	-.19	.26*
Paranoid Thoughts	-.42*	.42*	-.36*	.35*	-.46*	.45*
Psychoticism	-.35*	.39*	-.24	.35*	-.40*	.39*
Somatic Depression	-.23*	.28	-.21	.26	-.27*	.28*

*p < .05.

TABLE 2. Results of Step-Wise Multiple Regression Analysis with Cognitive hardiness and NA as Independent Variables and Psychological Distress as the Dependent Variable (N-122)

SCL-90 Scale	Total Sample (N=122)		Low Defensive Group (N=51)		High Defensive Group (N=71)	
	Hardiness	NA	Hardiness	NA	Hardiness	NA
Physical Complaints	X					
Obsessive Thoughts		X		X		X
Interpersonal Sensitivity	X ¹	X	X		X ¹	X
Depression		X		X		X
Anxiety		X				X
Hostility		X		X		
Phobic Anxiety						
Paranoid Thoughts	X ¹	X	X		X ¹	X
Psychoticism		X		X		X
Somatic Depression		X				

Note: X=significant r^2 change in the first step of the regression analysis; X¹=significant r^2 change above that of NA in the regression analysis