DOCUMENT RESUME

ED 456 388 CG 031 185

AUTHOR McCarthy, Christopher J.; Lambert, Richard G.; Beard, Michelle; Canipe, Kara

TITLE Examination of Preventive Resources, Life Events, and Coping Strategies.

PUB DATE 2001-08-00

NOTE 48p.; Paper presented at the Annual Meeting of the American Psychological Association (109th, San Francisco, CA, August 24-28, 2001).

PUB TYPE Reports - Research (143) -- Speeches/Meeting Papers (150)

EDRS PRICE MF01/PC02 Plus Postage.

DESCRIPTORS *Adjustment (to Environment); Affective Behavior; College Students; *Coping; Higher Education; *Measures (Individuals); Personality Measures; Stress Variables; Student Adjustment; Validity

ABSTRACT

The Preventive Coping Resources Inventory (PRI) was developed to assess specific coping resources most useful for stress prevention and also applicable to education settings. Undergraduates (N=501) at a large, southwestern university completed the inventory and other measures of adjustment and coping. Exploratory factor analysis revealed five factors that underlay the inventory were perceived control, maintaining perspective, social resourcefulness, humor, and organization. An additional cross-over factor, self-acceptance, was also retained. Evidence for the convergent and discriminant validity of the PRI was provided by theoretically consistent relationships with related constructs such as self-efficacy, general coping resources, and coping strategies. Evidence for its criterion-related validity was supported by hierarchical regression analyses in which scales from the PRI predicted perceived stress levels after controlling for the incidence of negative life events. Suggestions for future research and applications to educational settings are discussed. (Contains 47 references and 6 tables.) (Author/JDM)

RUNNING HEAD: Factor structure of the PRI

Examination of Preventive Resources, Life Events, and Coping Strategies

Christopher J. McCarthy

University of Texas at Austin

Richard G. Lambert

University of North Carolina at Charlotte

Michelle Beard Kara Canipe

University of Texas at Austin

Poster presented at the Annual Meeting of the American Psychological Association, San Francisco, California, August 24 – 28, 2001

Correspondence concerning this article should be addressed to: Christopher J. McCarthy, SZB 262G, Department of Educational Psychology, University of Texas at Austin, Austin, TX 78712. Electronic mail may be sent to chris.mccarthy@mail.utexas.edu.

Abstract

The Preventive Coping Resources Inventory (PRI) was developed to assess specific coping resources most useful for stress prevention and that are applicable to educational settings. An undergraduate sample (N = 501) completed the PRI and other measures of adjustment and coping. Exploratory factor analysis revealed that five factors underlay the inventory: these were labeled perceived control, maintaining perspective, social resourcefulness, humor, and organization. An additional cross-over factor, self-acceptance, was also retained. Evidence for the convergent and discriminant validity of the PRI was provided by theoretically consistent relationships with related constructs such as self-efficacy, general coping resources, and coping strategies. Evidence for its criterion-related validity was supported by hierarchical regression analyses in which scales from the PRI predicted perceived stress levels after controlling for the incidence of negative life events. Suggestions for future research and applications to educational settings are discussed.

Factor structure of the Preventive Resources Inventory

and its relationship to existing measures of stress and coping

A 6.8 magnitude earthquake, originating 30 miles below the earth near Olympia, Washington, rocked the city of Seattle at 10:54 a.m. Wednesday, February 28, 2001. While 400 people suffered mostly minor injuries and billions of dollars in damage occurred, no lives were lost. This stands in stark contrast to the toll exacted by the 7.7 magnitude earthquake that struck Gujarat, India just a month earlier on January 26, 2001: more than 20,000 people were confirmed dead and thousands more were believed to be buried in the rubble of whole towns and villages. Scientists and city planners believe that Seattle was spared mainly because the Olympia quake occurred 33 miles underground. However, efforts by U.S. authorities to ensure that buildings are made to withstand seismic events in the quake-prone West Coast and to educate the public id about what to do during an earthquake also played an important role in minimizing the destruction in Seattle (Harish, 2001). Unfortunately, such efforts were not undertaken in India.

These contrasting events support the old adage that an ounce of prevention is worth a pound of cure, and few would argue that prevention efforts are as important for psychological and emotional well-being as they are for avoiding natural disasters. However, while helping professionals who work in educational settings, such as counseling psychologists and counselor educators, have strong historical and philosophical roots in the prevention of human dysfunction, in practice prevention does not play a prominent role (Conyne, 2000). The reasons for this neglect are numerous, beginning with the fact that most professional training programs more or less follow a medically-oriented remedial model of mental health that emphasizes the individual

treatment of psychopathology (Albee, 2000). This approach is reinforced by accreditation boards that regulate professional training programs as well as the institutions and agencies that provide counseling services where counselors often find themselves employed (Roche & Sadoski, 1996).

Romano and Hage (2000) argued that the search for one all-encompassing approach that has the potential to propel a paradigm shift toward a greater prevention is not realistic. However, they did suggest that two important components for a renewed prevention agenda are (a) greater use of systematic and integrative theoretical models and (b) an increased emphasis on preventive efforts in educational settings that have the potential to reach persons earlier in life. As opposed to treatment settings where a focus on pathology and remediation is typically ascendant, the educational environment offers numerous opportunities for preventive efforts. These include early identification of risk factors, school-based prevention curricula that focus on prevention, and the promotion of life skills that can prevent future problems in living.

Stress significantly affects students in a number of ways, both as a contributing factor (e.g., anxiety, depression, health problems, violence, suicide) and as a symptom (e.g., teenage pregnancy, sexual abuse, parental separation and divorce, fear of AIDS) (Matheny, Aycock, & McCarthy, 1993). However, while it is widely accepted that the ability to cope with stress is an important determinant of academic functioning, the role of prevention in coping has been overlooked (McCarthy, Lambert, & Brack, 1997). There is a need for both (a) clearly specified theoretical models of the role of prevention in coping, and (b) the development of methods for assessing preventive coping. This study assessed the validity of a new instrument designed to measure preventive coping resources, the Preventive Resources Inventory (PRI). Development of the PRI was guided by transactional models of stress first proposed by Lazarus (1966) as well

as subsequent research that identified specific types of coping resources that are most useful for preventing stress.

Transactional models of stress and the role of preventive coping resources

The dominant models of stress and coping emphasize the importance of subjective evaluations of events in determining whether or not demands will be experienced as stressors (Cox, 1978; Hobfoll, 1988; Matheny, Curlette, Pugh, Aycock, & Canella, 1986). Such transactional models of stress assume that when a potentially threatening event is encountered, a reflexive, cognitive balancing act ensues in which the perceived demands of the event are weighed against one's perceived capabilities for dealing with it. Instances in which the estimated demands exceed one's resources are presumed to result in the stress response. The most influential such model is the one suggested by Lazarus and Folkman (1984). A central construct of this model is cognitive appraisal, which is essentially one's cognitive categorization of an event, its various features, and its significance for one's well-being. Two types of cognitive appraisals, according to Folkman and Lazarus (1988a; 1988b), are: 1.) primary appraisal of whether a specific event represents a threat to the individual, and 2.) secondary appraisal of one's perceived capacity for handling the potential stressor. Events that are perceived as potentially threatening can result in the stress response, which is a set of physiological and psychological changes that occur reflexively whenever coping resources are seriously challenged. Any event perceived to be aversive triggers this response and while a hyper vigilant nervous system was extremely adaptive to our ancestors, modern stressors are mainly psychosocial (Matheny et al., 1986). As such, they can persist for extended periods of time and contribute to a large array of psychological and physical disorders. The harmful effects of stress impact academic functioning as well as other areas of life: academic stress has been referred to as the "invisible disability"

(Hill & Sarason, 1966) and has been estimated to interfere seriously with the academic performance of an alarming 6 to 10 million children a year (Barker, 1987).

Hobfoll (1988a; 1988b) maintained that the focus of stress interventions should be directed mainly to the resource side of the stress equation. He argued that the measurement of coping resources would be more predictive of stressful reactions than the measurement of external demands. Varied definitions of coping resources exist and probably reflect the varied ways in which individuals attempt to deal with a given stressor (Carver, Scheier, & Weintraub, 1989). But several theorists have suggested that prevention should be considered as one important aspect of such resources. For example, Antonovsky (1979) emphasized the importance of "generalized resistance resources" that can be useful in preventing demands from becoming stressors, and Greenglass and Burke (1991) and Ogus (1992) have advanced similar notions. More recently, Aspinwall and Taylor (1997) defined proactive coping as the processes through which people anticipate or detect potential stressors and act in advance to prevent them or lessen their impact.

One of the first efforts to clarify specific types of coping resources that are most useful for prevention was conducted by Matheny et al. (1986). They conducted a comprehensive meta-analysis of the stress literature and based on this review suggested an integrative model of stress and coping that incorporates both attempts to prevent and combat stress. These authors noted that while most research and intervention models are devoted largely to strategies for combating stressors that are already under way, the importance of preventive measures needs to be considered as well. In an initial test of Matheny et al.'s (1986) taxonomy, McCarthy et al. (1997) found a differential role for the impact of preventive and combative types of coping resources on emotions experienced after relationship breakup with adults.

In their study, McCarthy et al. (1997) operationalized each of these constructs (preventive and combative coping resources) with specific coping resource scales from a comprehensive instrument designed to measure a broad range of such resources, the Coping Resources Inventory for Stress (CRIS; Matheny, Curlette, Aycock, Pugh, & Taylor, 1987). McCarthy et al. (1997) found that self-confidence, a resource similar to Bandura's (1982) concept of self-efficacy, was one of the most important predictors of the ability to cope preventively. Other resources identified by McCarthy et al. (1997) as important for preventive coping included self-directedness, defined as the degree to which individuals respect their own judgment as a guide to behavior; and acceptance, which is a set of beliefs and behaviors indicating acceptance of self, others, and the world (Curlette, Aycock, Matheny, Pugh, & Taylor, 1992). Combative resources, which were also operationalized with specific CRIS subscales, included: self-disclosure, which is a tendency to freely disclose one's feelings and thoughts; tension control, defined as the ability to lower arousal through relaxation procedures and thought control; and problem solving, which is the ability to use various strategies to resolve problems (Curlette et al., 1990). These results were replicated with persons taking a new job by McCarthy and Lambert (1999).

Based on this line of research, the transactional model of the stress process identified by Lazarus and Folkman (1984) can be refined to include the role of preventive coping resources (McCarthy et al., 1997; McCarthy & Lambert, 1999). This model is illustrated in Figure 1.

Insert Figure 1 About Here

The stress literature has suffered for decades from imprecision in the use of terms (Seiffge-Krenke, 1995). Therefore, we will next attempt to both explain Figure 1 and

clarify our use of terms. At the left of Figure 1, the numerous points at which preventive resources are hypothesized to influence the experience of potentially stressful events are indicated. Specifically, McCarthy et al. (1997) suggested that preventive coping resources may allow one to control or modify the nature of life demands that are encountered (represented with a dashed line from preventive coping resources to life events), the perceptions that the individual has about these demands once they are encountered (represented with a dashed line from preventive coping resources to awareness of demands), and one's appraisals of their ability to handle these demands (represented with a dashed line from preventive coping resources to appraisal).

Demands refer to requirements imposed by self or others that are potential stressors. As is represented in Figure 1 by the line that connects it to life events, demands may stem from many sources, including role requirements, life changes, hassles, or self-imposed requirements. And as was suggested above, awareness of demands is hypothesized to be influenced by one's preventive coping resources. Persons with sufficient levels of such resources may be less likely to interpret demands as threatening and therefore avoid the stress response altogether (McCarthy & Lambert, 1999).

Figure 1 also shows that awareness of a demand is followed by an appraisal of its potential threat. Folkman and Lazarus (1980) were among the first to distinguish between primary appraisals made about the seriousness of a demand and secondary appraisals of one's coping resources. Appraisals refer to evaluations of the person-environment relationship with respect to potential harm or benefit represented by the demand (primary appraisal) and what if anything can be done to overcome or prevent harm or to improve prospects for benefit (secondary appraisal) (Folkman, Lazarus, Dunkel-Shetter, DeLongis, & Gruen, 1986). Thus, in

Figure 1, primary appraisals are represented as being directed towards demands and secondary appraisals as being directed towards coping resources. Primary and secondary appraisals converge to determine whether the person-environment transaction is regarded as significant for one's well-being and whether it is primarily threatening (containing the possibility for harm) or challenging (having the possibility for mastery or benefit) (Folkaman et al., 1986).

If the primary appraisal about the seriousness and nature of a demand is perceived to be roughly equivalent to, or less than, one's secondary appraisal of their coping resources (represented in Figure 1 as $R \geq D$), demands are viewed as challenges and energize the person for optimal functioning. The obvious benefit of possessing adequate levels of coping resources is that relatively fewer events will be seen as threats, thereby obviating the need for the stress response (Matheny et al., 1986). If, however, the demands are perceived to exceed the person's coping resources ($R < D$), the demands become stressors and trigger the stress response, which is defined as the syndrome of neurological and biochemical changes the body undergoes when confronted with stressors. Chronic elicitation of the stress response can lead to a variety of physiological, behavioral, and psychological stress symptoms. In the long-term chronic stress can be a factor in a host of psycho-physiological disorders, including hypertension (Amigo, Buceta, Becona, & Bueno, 1991), ulcers (Sherman, 1994), immune suppression (Antoni, 1987) and coronary artery disease (Rozanski, Blumenthal, & Kaplan, 1999).

As is shown in Figure 1, preventive coping resources are distinguished from those that are mainly combative in nature. Combative coping resources were defined by Matheny et al. (1986) as those drawn upon to alter or mitigate a stressor that is already being experienced. According to transactional models, after the stress response occurs the individual taps their reservoir of combative coping resources in an attempt to find coping strategies that can lessen the

intensity of the stress response and/or have the potential for altering the situation causing stress (Perlin & Schooler, 1978). Coping strategies have been further distinguished in the literature as problem-focused (or active) and emotion-focused (or passive) (Folkman & Lazarus, 1988a). In this framework, problem-focused strategies are conceptualized as those aimed at altering the person-environment relationship by focusing on the stressor itself, whereas emotion-focused coping strategies are aimed at eliminating or lessening one's reaction to the stressor (the stress response) (see Figure 1). However, it should be noted that the above distinction in coping strategies is but one of numerous categorizations which have been suggested in the literature (Seiffge-Krenke 1995).

The model described in Figure 1 demonstrates the importance of preventive resources in several respects. First, good preventive copers may use their capacities to arrange their lives so that negative events and requirements are kept to a minimum. Second, possession of preventive coping resources may allow one to making benign interpretations of life demands whenever possible that mitigate stressful reactions (McCarthy et al., 1997). Third, once demands have been appraised as potentially representing a threat to well-being, the perception that one is able to control events may allow an individual to take proactive steps that minimize negative repercussions (Aspinwall & Taylor, 1997). Each of these mechanisms for preventive coping are predicated on specific coping resources that were incorporated into the development of the PRI, but before describing these results a rationale for the need for such a measure will be presented.

Assessment of preventive coping resources

Only a fraction of the instruments used in the literature measure coping resources (as defined above) and we are aware of none that focus on the measurement of resources useful mainly for the prevention of stress. Early stress instruments, including those developed for

children and youth (Coddington, 1972), were measures of the cumulative effects of life events (Dohrenwend & Dohrenwend, 1974; Holmes & Rahe, 1967; Monaghan, Robinson, & Dodge, 1979; Sarason, Johnson, & Siegel, 1978). Because such measurements ignored the respondent's subjective appraisals, correlations of life events with stress symptoms, such as illness, were quite modest - - usually in the .2 to .3 range (Rabkin & Struening, 1976). While later efforts attempted to take the respondent's perception of major life events into consideration (Derogatis, 1987; Dohrenwend, Krasnoff, Askenasy, & Dohrenwend, 1978), all of these measures only attended to one-half of the stress equation - namely, the measurement of perceived demands.

Other instruments have focused on coping strategies, rather than coping resources (Carver et al., 1989; Folkman & Lazarus, 1988b; McCrae, 1984; Stone & Neale, 1984). As indicated in Figure 1, coping strategies are behaviors that occur after stressors have been engaged (Perlin & Schooler, 1978). While the use of coping strategies can be an important component of adjustment, acquiring and developing sufficient levels of coping resources is important because they are useful before stressors occur and generally serve as the foundation for coping strategies, which in turn are used to lessen or negate the costs of dealing with demands (Wheaton, 1983).

Several instruments have been developed in recent years to measure adult perceptions of coping resources. Moos, Cronkite, Billings, & Finney (1985) developed the Health and Daily Living Form, which measures multi-dimensional aspects of adaptation, including stressors, symptoms, and coping. Hammer and Marting (1988) developed the Coping Resources Inventory to measure five resources, cognitive, social, emotional, spiritual/philosophical, and physical, and reported adequate psychometric properties. Another comprehensive measure of adult coping resources that was described above is the CRIS (Matheny, et al., 1987), which reflects the results

of extensive literature reviews and two meta-analyses (Matheny, Curlette, Aycock, & Junker, 1993). However, such instruments do not necessarily emphasize prevention and indeed some seem specifically designed to measure resilience or hardiness, a definition of stress that emphasizes withstanding stress rather than preventing it (see also Sheridan & Radmacher, 1998).

Overview of the current study

The development of an instrument for assessing preventive coping resources may facilitate the efforts of professionals to promote effective prevention efforts in educational settings. The purpose of this study was to provide evidence for the reliability and validity of the Preventive Resources Inventory (PRI). Three main research questions were addressed: (1) examination of the construct validity of the PRI, (2) exploration of the convergent and discriminant validity of the PRI with related constructs, and (3) investigation of the criterion-related validity of the PRI as a predictor of perceived stress levels and symptomatology. These objectives cover two of the sources for validity evidence described in the Standards for Educational and Psychological Testing (AERA, 2000): validity evidence based on internal structure and validity evidence based on relations to other variables, respectively.

Method

Participants Data were collected from 501 participants taking elective courses at a large, Southwestern university. The sample was 60% female and 40% male; 49.2% were seniors, 18.8 % were juniors, 17.4% were sophomores, and 14.6% were first years (M age = 20.6, SD = 2.07, Range = 18 – 29). Based on self-report, participants were 61% European American, 22% Asian American, 8% Hispanic/Latino, 3.5% African American, and 5.5% described themselves as "Other."

Procedures Participants were recruited from undergraduate educational psychology classes over

the course of two semesters. Those who gave consent to participate in the study were then given a demographics survey and the instruments described below.

Instrumentation

Preventive Resources Inventory (PRI). The Preventive Resources Inventory (PRI) (McCarthy & Lambert, 2001), is a self-report measure that asked respondents to indicate their level of agreement with statements about personal habits relating to the prevention of stress. The responses were on a five point Likert scale ranging from "Strongly Disagree" to "Strongly Agree" and asked participants to describe the extent to which specific prevention related statements described them.

An initial pool of items for the PRI was constructed by the authors using several steps. First, coping resources defined as preventive in nature by Matheny et al. (1986), McCarthy et al. (1997), and McCarthy and Lambert (1997) were identified. Second, a qualitative focus group interview using the Repertory Grid technique (see Lambert, Kirksey, Hill-Carlson, & McCarthy, 1997, for a discussion) was conducted with graduate counseling students involved in coping research in order to identify characteristics and personal qualities of persons judged to be effective preventive copers. A pilot version of the instrument was used in a previous exploratory study by Graham, Furr, Flowers, & Burke (in press) and scores from the instrument were found to have statistically significant correlations with the Spiritual Health Inventory (SHI) ($r = .29$, $p < .01$). The sample for that study consisted of 115 graduate students from a large, southeastern university. The mean age of respondents was 31.9 ($SD = 8.92$); the majority were female (77.4%) and European-American (73.9%). Scores on that pilot version of the PRI also revealed statistically significant differences between participants who were identified by the SHI as spiritual and religious and those who were identified as spiritual only, with an effect size of .43.

The distinction between these two groups conceptually is that those who have both religious and spiritual attributes tend to have greater social connections to organized groups (Graham et al., in press). Following these initial steps to develop the PRI, a total of 80 items were written for the present study.

Perceived Stress Scale (PSS). The PSS is a 14-item index designed to measure the degree to which situations in one's life are appraised as stressful (Cohen, Kamarck, & Mermelstein, 1983). Scale instructions ask respondents to report the degree to which they felt or thought certain things over the last month. The authors report coefficient alphas for scores on the scale between .84 and .86 in three different samples. Test-retest reliability over 2 days was .85 and over six weeks in a smoking cessation sample was .55. In this study, Cronbach's alpha for scores on the PSS was .84. Cohen et al. (1983) assessed the concurrent validity of scores from the PSS with two samples of college students and one sample of enrollees in a smoking cessation program and found correlations ranging from .52 to .76 between scores on the scale and reported depressive and physical symptomatology, social anxiety (a range of .37 to .48) and utilization of health services (.20).

Social Connectedness Scale (SCS). This 14-item scale (Lee & Robbins, 1995; Lee, Draper, & Lee, in press) measures the degree of interpersonal closeness that an individual experiences in his or her social world. The SCS was created from a factor analysis of items measuring belongingness. In the test validation sample composed of 313 college students, coefficient alpha was .91 for internal consistency and .96 for test-retest reliability calculated over a two-week interval. The validity of the SCS was supported with statistically significantly correlations with self-esteem, academic performance, and other measures of personality using an

undergraduate sample (Lee & Robbins, 2000). The internal consistency reliability using the data from this sample was .91.

Multidimensional Coping Inventory (COPE). – the COPE is a 50 –item multidimensional coping inventory designed to assess the different ways in which people respond to stress (coping strategies) (Carver et al., 1989). Fives scales (of four items each) measure distinct aspects of problem-focused coping strategies (active coping, planning, suppression of competing activities, restraint coping, seeking of instrumental social support), five scales measure aspects of emotion-focused coping strategies (seeking of emotional social support, positive reinterpretation and growth, acceptance, denial, turning to religion) and three scales measure what might be termed "ineffective" coping strategies (focusing on and venting of emotions, behavioral disengagement, mental disengagement). Additionally, scales measure such dimensions as the use of humor to cope with stress.

Carver et al. (1989) report coefficient alphas for the various COPE scales ranging from .45 to .92 and test – re-test reliabilities ranging from .42 to .89 among a college student sample. The coefficient alpha reliabilities for this sample ranged from .51 to .94. Evidence for the criterion related validity of the instrument was also found by Carver et al. (1989) with correlations between the various COPE scales and theoretically relevant personality dimensions.

Life Experiences Survey (LES). The LES is a 57-item self-report measure that allows respondents to indicate events they experienced during the past year (Sarason et al., 1978). The LES items were chosen to represent life changes frequently experienced by the average person and calls for respondents to rate separately the desirability and impact of events that they experienced. They are thus asked to indicate those events experienced during the past year and to rate the perceived impact of the event on their life at the time of the occurrence on a 5-point

scale (from "extremely negative" to "extremely positive"). Using scoring procedures described by Sarason et al. (1978), only events rated as extremely negative or moderately negative were used in this study. Sarason et al. (1978) report test re-test reliabilities for this "negative life change" scale ranging from .56 to .88 using two samples of undergraduates. Sarason et al. (1978) also found that the negative life change score was related to a number of stress-related dependent measures. Coefficient alpha for the total score using the data from this sample was .72.

The Hopkins Symptom Checklist – 21 (HCL-21): This 21-item instrument is designed to measure symptom distress. The three scales are: General feelings of distress, Somatic distress, and Performance difficulty (Green, Walkey, McCormick & Taylor, 1988). A total distress score can also be calculated and therefore was used in this study. The 21-item HCL was derived through factor analysis from a longer inventory using samples of patients, nurses and college students in both America and New Zealand. A fourth sample was used to assess the instrument's reliability and Cronbach's alphas were: Performance difficulty .85, Somatic distress .75, General feelings of distress .86, total distress score .90. The Cronbach's alphas from this sample were: Performance difficulty .81, Somatic distress .84, General feelings of distress .85, total distress score .91.

Coping Resources Inventory (CRI): The CRI is a 60-item self-report measure of a person's coping resources (Hammer & Marting, 1987). The CRI covers five domains of resources: Cognitive (COG), Social (SOC), Emotional (EMO), Spiritual/Philosophical (S/P), and Physical (PHY). The CRI yields scale scores for each of these domains as well as a Total Resource score. Participants respond to statements on a 4-point Likert scale (never or rarely, sometimes, often, and always or almost always).

The Cognitive scale addresses an individual's optimism about life and sense of self-worth. An example from this scale is, "I feel as worthwhile as anyone else." The Social scale measures how much the person feels a part of social networks that he or she can count on in times of stress and includes items such as, "I am part of a group, other than my family, that cares about me." The Emotional scale refers to an individual's ability to accept and express emotions. An item on this scale is, "I can cry when sad." The extent to which an individual is influenced by values from religion, traditions, or personal philosophy is addressed in the Spiritual/Philosophical Scale. Items on this scale include, "I know what is important in life." The Physical scale covers an individual's health-promoting behavior and includes items such as, "I exercise vigorously 3-4 times a week." The authors report Cronbach's Alpha values ranging from .71 to .84 for the five scales using adult and college student samples and .91 for the Total Resources score with moderate positive intercorrelations ($\underline{r}$ = .60 - .69) among the Social, Cognitive, and Emotional scales were found. In the current study, the coefficient alpha values for the scales ranged from .77 to .91 while the value for the data from the Total Resources score was .95.

Self-Efficacy Scale (SES). The SES is a 30-item instrument designed to assess general expectations of self-efficacy that are not tied to specific situations or behavior (Sherer, Maddux, Mercandante, Prentice-Dunn, Jacobs, & Rogers, 1982). The SES consists of two subscales, general self-efficacy and social self-efficacy. Sherer et al. (1982) report coefficient alphas of .86 for the general scale and .71 for the social scale with a sample of undergraduate students. For this sample the values were .84 for the general scale and .66 for the social scale. Evidence for the criterion-related validity of the SES was suggested by its ability to discriminate among those who scored higher and lower in past vocational, educational, and monetary goals (Sherer et al.,

1982). In that study, the SES also demonstrated construct validity with statistically significant correlations in predicted directions with measures of ego strength, interpersonal competency, and the Rosenberg Self-esteem Scale.

Analysis.

To answer research question one, responses for the 80 items on the PRI were analyzed using principal components analysis with varimax rotation in an attempt to identify the underlying dimensions of the instrument and to establish construct validity. To answer research question two, a multi-trait multi-method matrix was formed in an effort to demonstrate convergent and discriminant validity coefficients for the PRI and related measures. Finally, to answer research question three, four hierarchical linear regression models were used to examine whether the PRI scores were associated with measures of perceived stress, performance difficulty, feelings of distress, and overall symptomatology once total negative life events were accounted for.

Results

Research Question 1

When the original 80 items written for the PRI were subjected to principal components analysis with varimax rotation, there were items that did not fit into any reasonable factor solution. When these results were taken in combination with item analyses and the feedback from the pilot studies, it was determined that 20 items presented ambiguities and interpretation difficulties for respondents and were dropped from the instrument. In subsequent factor analyses, several items were identified that loaded across multiple factors. Analyses performed once these items had been dropped revealed five dimensions that were labeled Perceived

Control, Maintaining Perspective, and Social Resourcefulness, Organization, and Humor. This solution accounted for 46.83% of the variance in the items.

In determining the number of factors to extract, scree plots wre used that graphically display the relationship between eigenvalues and factors. The cutoff point for factor extraction is placed at the elbow of the graph. Typically, the elbow is located where the rate of change in eigenvalue variances drops precipitously, resulting in a consistency of negligible eigenvalue variances for subsequent factors. This five-factor solution, using a core set of 50 items, presented a pattern to the factor loadings that closely resembles simple structure. Table 1 displays all the items loading on these five factors. All items loaded at .4 or above on only one factor with the exception of a few items which loaded on only one factor, however with loadings greater than .39, not .40.

Some of the items that were not included in this solution were retained in a cross over scale that was labeled Self-Acceptance. These items were not among the problematic subset of 20 items that was dropped altogether and were considered theoretically important to the overall instrument. When the correlations between these items and the factors were examined, they were correlated moderately with all of the factors, but not highly with any one factor and they loaded across several factors when they were systematically reintroduced into the factor analysis solution. Furthermore, these items did follow a conceptual theme. Items such as "I know who I am" and "I lead a well rounded life" as representative of the set of items labeled Self-Acceptance. They relate to the general attributes of balance and acceptance across many areas of life and therefore it is seemed understandable that they might relate to various factors in this solution. The total scale score was named Preventive Resources and uses information from the 50 items that load on the five factors as well as the 10 additional Self-Acceptance items.

It is useful to examine the content of the items that had the highest loadings as a way of illustrating the construct that is measured by each factor. The item with the strongest loading on the Perceived Control factor is "I can handle most things" and illustrates the construct well. The item which loads highest on the Maintaining Perspective factor is "I am able to avoid causing myself stress by keeping things in perspective" and also illustrates the general thrust of the construct. "I have mutually supportive relationships" is the key item for Social resourcefulness and also has the highest loading. On the humor scale, all the items contain similar content. "I use humor to keep difficulties from becoming stressful" has the highest loading are examples. Finally, "I stay organized" illustrates the Organization factor well and has the highest loading on the factor.

For both the factors and the scale retained as a crossover scale, total scores were formed by taking the mean response across the items. Coefficient alpha reliability coefficients were calculated for each scale. Table 2 displays these values along with the distributional properties of the scores from this sample. This distributional information can be used as a guideline to judge the relative position of the scores of individuals who are members of a population similar to the one from which this sample of college students was drawn. For the information from this sample, Perceived Control, comprised of 14 items, yielded an alpha of .909, Maintaining Perspective, comprised of 14 items, yielded an alpha of .870, and Social Resourcefulness, comprised of 14 items, yielded an alpha of .873. The Self-Acceptance cross over scale yielded a coefficient alpha from this sample of .708 with 10 items, while Organization, four items, had an alpha equal to .743, and Humor, four items, showed an alpha of .810. The total score, Preventive Resources, comprised of 60 items, yielded an alpha for this sample of .949.

Research Question 2

A multi-trait multi-method matrix (Campbell & Fiske, 1959) was formed in an effort to demonstrate convergent and discriminant validity coefficients between the factors on the PRI and the other measures used in the study. These other measures were used to represent constructs, and while they were hypothesized to be related to preventive coping, they were not seen as measuring the exact same construct as the preventive coping resources measured on the PRI. Specifically, comparisons were conducted with measures of self-efficacy (the SES), interpersonal functioning (the SCS), coping strategies (the COPE), and general coping resources (the CRI). The SES measure gives scale scores for both General and Social Efficacy and the SCS was used as a measure of social functioning. As was indicated in the discussion of Figure 1 presented earlier, both coping resources (measured by the CRI) and coping strategies (measured by the COPE) were hypothesized to be constructs related to preventive coping. The COPE scales were included as a way of measuring a similar construct to preventive coping with a different method and measure and combinations of specific COPE scales (those related to Problem Focused, Emotion Focused, and Ineffective Coping Strategies) were included as a way of measuring the strategies employed by individuals once a specific stressor has been encountered. It was predicted that the correlations between specific scales on the PRI and the other measures of similar constructs would be higher than other correlations found in the matrix.

This predicted pattern of relationships was observed and can be seen in Table 3 by looking across the rows of the table. For example, the Perceived Control factor correlated .481 with General Efficacy and .488 with Cognitive Coping Resources. Maintaining Perspective correlated at .535 with General Efficacy, .431 with Emotional Resources, and .515 with Cognitive Coping Resources. While Social Resourcefulness correlated .449 with Social Efficacy

and .545 with Social Connectedness, it correlated .607 with Emotional Resources and .613 with Social Resources. Self-Acceptance correlated at .494 with General Efficacy and .553 with Cognitive Coping Resources. All of these correlations, particularly between the factors and scales of the PRI and the Coping Resources scores, represent concurrent validity coefficients and are examples of convergent validity. The total score, Preventive Resources, correlated highly across several measures such as General Efficacy ($\underline{r}$ = .547), Social Connectedness ($\underline{r}$ = .522), Emotional Resources ($\underline{r}$ = .537), Cognitive Resources ($\underline{r}$ = .603), and Social Resources ($\underline{r}$ = .558).

Table 3 also contains many examples of discriminant validity. For example, the PRI scales do not correlate very highly with the Ineffective Coping Strategies, with none of the coefficients having an absolute value greater than .215 and many having statistically significant negative relationships with the Ineffective Coping Strategies. By following down the columns of the table, it can be seen that the highest correlations between the PRI factors and scales often fall as would be predicted. . For example, Social Resourcefulness correlated at .613 with the Social coping resources scale from the CRI while no other correlation values with CRI scales exceeded .465. The PRI Social Resourcefulness scale was correlated at $\underline{r}$ = .545 with the Social Connectedness Scale, while no other value in that column except the total score exceeded .456.

As a further comparison between the PRI and the related construct of coping strategies, the correlations between the PRI factors and scale and selected individual scales from the COPE were examined. Table 4 shows the correlations between the COPE scales judged to be most relevant to the PRI factors and scales. As predicted, the Humor scale from the PRI correlated at .574 with the Humor coping strategy scale from the COPE. This was the highest correlation in the matrix for the PRI Humor scale. The Maintaining Perspective factor from the PRI correlated at .544 with the Reinterpretation and Growth coping scale as would be predicted given the

similarity of the constructs. Additionally, the Social Resourcefulness scale from the PRI was correlated with the Instrumental Social Support scale from the COPE at $r = .463$.

Research Question 3

Following the comparisons with similar constructs addressed in research question 2, hierarchical linear regression models were next tested as a way to examine whether the PRI scores were associated with measures of perceived stress and psychological distress. Four separate regression models were conducted, using the total perceived stress score from the PSS and the performance difficulty, general distress, and total symptomatology scores from the HCL-21 as criterion variables. In each model, the total negative life events scale from the LES was first controlled for. This first step attempted to control for the variance in perceived stress and psychological distress that could be associated with the variability in the sample with respect to recent life events of a stressful nature. As was described above, in responding to the LES, participants were asked to rate the level of impact that each stressful event had on their life. If a respondent reported that the event had no impact or a positive impact, these events were not included in the score (Sarason et al., 1978).

Before conducting the regression analyses, the correlations between the total Negative Life Events (NLE) scale and the four outcome measures (Total Perceived Stress, Performance Difficulty, General Feelings of Distress, and the Total Hopkins Score) were calculated. Table 5 reports these values. Only the Humor factor score did not show a statistically significant negative correlation with all four of the measures of stress. The magnitude of the other relationships was small to moderate in strength, ranging from $r = .166$ to .503, and were all statistically significant at $p < .05$.

Table 6 reports the standardized beta weights and variance accounted for statistics for hierarchical regression analyses. The second step in each model tested for an association between the PRI total score and the outcome measures after controlling for Total Negative Life Events in the first step of the analysis. The Preventive Resources score was negatively associated with all the outcomes in step two, and accounted for a statistically significant increase ($\underline{r}$ = .049 to .198) in the variance accounted for, after controlling for Negative Life Events, for all of the outcome measures.

Discussion

The factor analysis conducted in this study supported the construct validity of the five hypothesized preventive resources on the PRI, as well as an additional scale needing further research: self-acceptance. The overall pattern of the convergent and discriminant validity coefficients showed that many of the highest correlations in the matrices are exactly as predicted. In general, the factor and scale scores of the PRI correlated higher with coping resources than with other closely related constructs such as efficacy or coping strategies. However, some of the results of the multitrait multimethod analysis (see Table 2) showed mixed support for the convergent validity of PRI scales. Each of these resources has been connected in previous research to prevention efforts. A sense of control over one's life is said to be the most effective buffer between potential stressors and stress symptoms (Antoni, 1987; McCabe & Schneiderman, 1985; Sapolsky, 1994). Efficacious feelings about the self and the ability to maintain perspective with regard to daily events have been described as "anxiety-buffers" in daily life (Greenberg, Pyszcynski, Burling, Simon, Solomon, Rosenblatt, Lyon, & Pinel, 1992). And an impressive body of literature also suggests that one's social network (i.e., social resourcefulness) can mediate the effects of life demands on health and well-being (for reviews,

see Berkman, 1985; Cohen & Wills, 1985). Organizational and planning skills are essential components of daily life in modern society (McCarthy & Lambert, 1999) and the importance of humor as a resource is widely acknowledged, particularly in work settings (Dwyer, 1991; Kahn, 1989).

Due to restrictions in the measures, methods, and population used, caution should be observed before generalizing the results of this study. First, the sample was relatively homogenous with respect to race and educational background. Additionally, participants were recruited from education classes and a more diverse sample would be necessary to generalize the results of this study. Also, caution is warranted in interpreting the results of self-report methodology that may or may not correspond closely with the actual behaviors and strategies used by the study participants in managing stress.

The findings of this study, and its limitations, suggest a number of avenues for future research. Further research is needed to clarify whether the cross over scale, Self-Acceptance, should be included as a dimension of preventive coping resources. As was the case with the preventive resource scales that emerged as factors, some support for the importance of the construct for prevention exists in the literature. Self-Acceptance, as operationalized on the PRI, taps a set of beliefs and behaviors indicating acceptance of self, others, and the world. Such attitudes can lead to more adaptive evaluations of life demands at the appraisal stage (see Figure 1), making it less likely that an individual will unnecessarily escalate to the stress response when it is not called for (Taylor & Brown, 1988).

Additionally, a component of preventive coping called recognition has been suggested by Aspinwall and Taylor (1997) that should be subject to further examination. This construct involves the ability to see a potential stressful event coming, and it depends on an individual's

capability to screen the environment for danger and to be in touch with internal cues suggesting that threats may arise. Aspinwall and Taylor note that there are several factors which seem to influence this construct such as whether one has a future temporal orientation, the extent to which someone is vigilant and yet also able to orient away from negative information, a person's ability to cope emotionally with negative feedback, and the role that an individual's social network can play in alerting the person to possible stressors in the environment. Developing and analyzing a scale that captures this component and then examining its relationship to the PRI would be an interesting area for future research.

Overall, however, our findings suggest that the PRI may provide five meaningful, distinct, and interpretable factors useful for preventive coping: Perceived Control, Maintaining Perspective, Social Resourcefulness, Humor, and Organization. As was noted above, further research is needed to determine if the additional scale of self-acceptance also represents a meaningful factor. Additionally, further exploration is necessary to determine if the scales on the PRI are truly distinct from other coping instruments in measuring resources that are most useful for prevention. This might be accomplished in naturalistic settings in which scores on the PRI are used to predict whether or not individuals are able to prevent stress during times of exposure to life demands such as the transition to a new school setting.

Implications for Stress and Coping in Education

While research and counseling interventions focusing on stress have gained widespread acceptance, most interventions focus on remediation after the harmful effects of stress have already occurred (Wagenaar & LaForge, 1994). The stress model advanced by Lazarus and Folkman (1984) (an adapted version of which appears in Figure 1) has gained widespread popularity and led to numerous clinical applications, but avoiding stress altogether is even more

desirable (Aspinwall and Taylor, 1997). Moreover, efforts at preventing stress may require coping resources that are substantially different than those required to combat stress (McCarthy et al, 1997). Once the components of preventive coping resources are identified, bolstering and preserving these resources in a clinical setting could then be possible. In addition to the resources identified in this article, Aspinwall and Taylor (1997) also mention several resources such as time, socioeconomic status, organizational and planning skills, and a social network of family and friends that can contribute to an individual's ability to proactively cope with stress. Hopefully, the results of this study represent a first step in the direction of understanding what comprises preventive coping and how it is differentiated from combative coping. Further development of instruments such as the PRI may give counselors the tools for necessary for designing and evaluating preventive interventions that can be used in populations deemed to be at risk for harmful levels of stress

First, good preventive copers may use their capacities such as social resourcefulness to arrange their lives so that negative events and requirements are kept to a minimum. Second, possession of preventive coping resources such as maintaining perspective may allow one to making benign interpretations of life demands whenever possible that mitigate stressful reactions (McCarthy et al., 1997). Taylor and Brown (1988) have even suggested that such positive evaluations of one's capacities to influence events are both characteristic of normal human thought and important for overall mental health. Third, once demands have been appraised as potentially representing a threat to well-being, the perception that one is able to control events may allow an individual to take proactive steps that minimize negative repercussions (Aspinwall & Taylor, 1997). Each of these hypothesized resources for preventive coping, which will be explained further in section to follow, is represented in Figure 1.

Conclusion

Albee (2000), one of the pioneers of prevention research, points out, "It is accepted public health doctrine that no disease or disorder has ever been treated out of existence" (p. 847). In the current climate of budgetary shortfalls for health care provision there is every reason to believe that both the public and the profession of counseling are waking up to the importance of preventing human problems in living. As evidence of such a professional awakening, a recent issue of The Counseling Psychologist (Prevention , 2000) was devoted to prevention in counseling psychology and a forthcoming issue of the Journal for Specialists in Group Work (Concrete illustrations, in press) will document how groups can be used to reach prevention goals. The results of this study provide evidence that the PRI may be a reliable measure of dimensionally distinct types of coping resources that are useful for preventing stress in educational settings.

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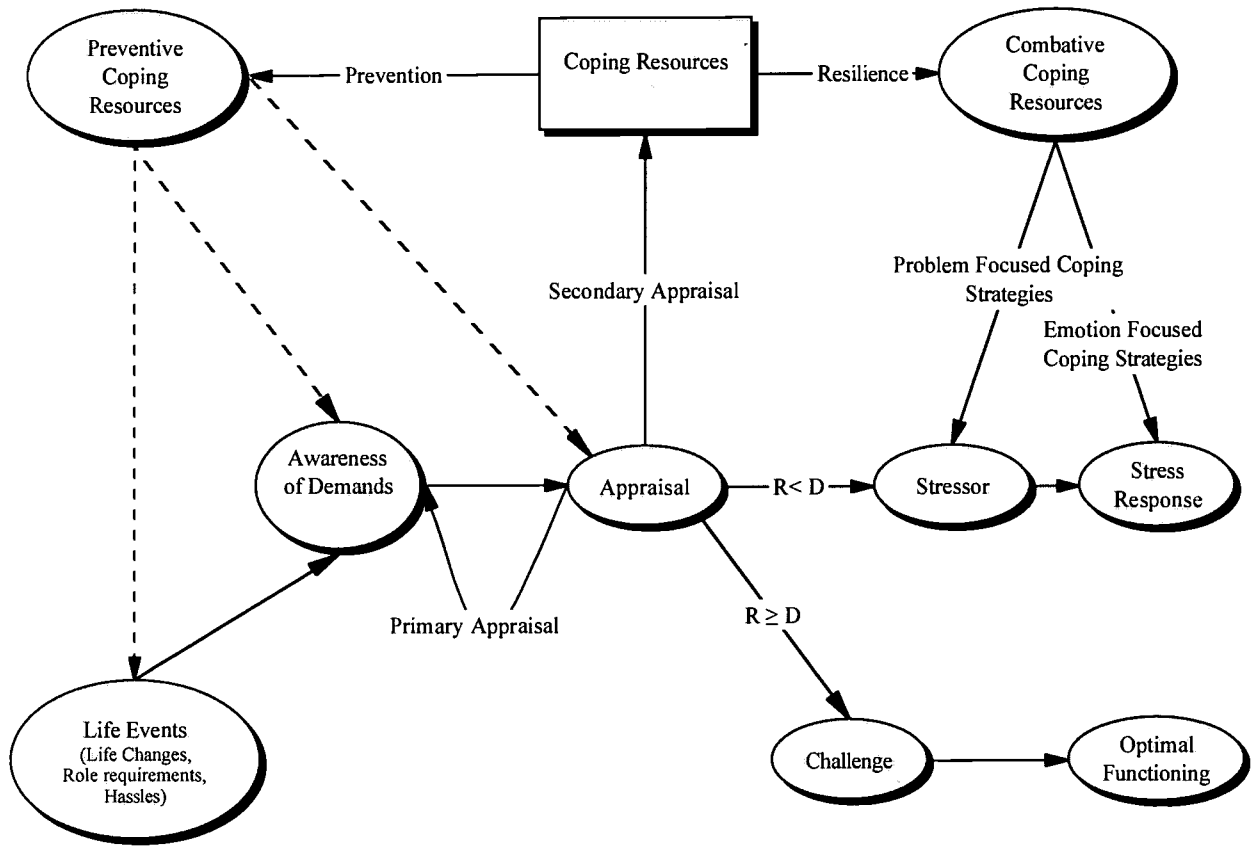
Figure 1

Hypothesized model of prevention in stress and coping.



Note. Dashed lines represent points in the stress process where preventive coping resources might be most relevant.

Table 1

Factor Structure of the PRI

Item	Preceived Control	Maintaining Perspective	Social Resource.	Humor	Org.
I can handle most things.	0.742				
I can handle stressful situations.	0.713				
I usually succeed at whatever I try.	0.646				
I have strengths which allow me to overcome obstacles.	0.684				
I can trust my own judgement.	0.576				
I know what is best for me.	0.576				
I believe the difficulties I am facing will not last forever.	0.508				
I can solve most of the problems I face.	0.721				
I know how to handle stress.	0.519				
I can learn new tasks.	0.667				
If I fail in one situation, I know I can still succeed in other situations.	0.642				
I am in control of my life.	0.564				
I know how to prepare for stressful situations.	0.581				
I can adapt to change.	0.583				
I know how to pick the right coping strategy for the right situation.		0.450			
I am a flexible person.		0.452			
I can find the bright side of most situations.		0.468			
I know how to keep my options open.		0.552			
I see problems as opportunities to grow and learn.		0.615			
I am able to avoid causing myself stress by keeping things in perspective.		0.643			
I know when I need to "go with the flow" to prevent a situation from becoming stressful.		0.460			
I am able to prevent stress by accepting responsibilities rather than avoiding them.		0.551			
I know how to learn from my mistakes.		0.531			
I know my own limits.		0.504			
I keep failures and difficulties in perspective.		0.548			
I know I can't be all things to all people.		0.405			
I am able to reduce stress in my life by focusing on my values.		0.569			
I am able to reduce stress in my life by focusing on my priorities.		0.561			
I know how to make social situatios more comfortable.			0.391		
I know how to make others feel comfortable.			0.414		
I have friends and relatives who can help me avoid trouble in my life.			0.366		
I have others to call upon when needed.			0.557		
I know how to delegate tasks to others.			0.453		
I form mutually beneficial relationships with others.			0.501		
I am able to divide up tasks with others in a way that benefits others.			0.396		
I have mutually supportive relationships.			0.682		
I accept the input of others.			0.639		
I am able to use constructive criticism.			0.509		
I ask for help.			0.664		
Other people consider me helpful.			0.524		
I can communicate my needs to others.			0.657		
I am able to ask for emotional support.			0.647		
I use humor to put others at ease.				0.745	
My sense of humor helps keep my stress level under control.				0.845	
I use humor to keep difficulties from becoming stressful.				0.853	
I can laugh at myself.				0.456	
By organizing and planning my day, I am usually able to keep my daily demands under control.					0.596
I usually don't create stress for myself by putting things off.					0.672
I am able to reduce my daily demand level by planning ahead.					0.665
I stay organized.					0.700

Note. N = 501. Factor loadings less than .4 are not displayed except when they are the highest loadings.

Table 2
Properties of the PRI Factor and Scale Scores

Measure	Number of Items	Coefficient Alpha	Mean	Standard Deviation	Percentiles 25th	50th	75th
Perceived Control	14	0.909	4.042	0.498	3.786	4.071	4.357
Maintaining Perspective	14	0.870	3.759	0.510	3.429	3.786	4.036
Social Resourcefulness	14	0.873	3.924	0.508	3.643	4.000	4.214
Humor	4	0.810	3.937	0.701	3.500	4.000	4.500
Organization	4	0.743	3.421	0.766	3.000	3.500	4.000
Self-Acceptance	10	0.708	3.804	0.471	3.500	3.800	4.100
Preventive Resources	60	0.949	3.860	0.419	3.617	3.883	4.083

Note. N = 501.

Table 3

Multitrait Multimethod Matrix for PRI and Comparison Measures

Construct	Efficacy		Social	Coping Strategies			Coping Resources				
Measure	General	Social	Social Connect.	Problem Focused	Emotion Focused	Ineffective Coping	Emotional	Spiritual	Physical	Cognitive	Social
Perceived Control	0.481	0.232	0.351	0.274	0.109	-0.215	0.340	0.210	0.202	0.488	0.383
Maintaining Perspective	0.535	0.327	0.424	0.388	0.304	-0.164	0.431	0.388	0.291	0.515	0.445
Social Resourcefulness	0.391	0.449	0.545	0.409	0.381	0.025	0.607	0.378	0.214	0.520	0.613
Humor	0.106	0.242	0.307	0.157	0.162	0.058	0.216	0.149	0.133	0.255	0.289
Organization	0.392	0.192	0.257	0.282	0.181	-0.104	0.339	0.225	0.286	0.305	0.265
Self-Acceptance	0.494	0.317	0.456	0.343	0.239	-0.153	0.419	0.322	0.311	0.553	0.465
Preventive Resources	0.547	0.393	0.522	0.419	0.309	-0.135	0.537	0.381	0.311	0.603	0.558

Note. All correlations greater than .087 are statistically significant at $p = .05$ for $n = 501$.

Table 4.

Correlations with Selected Coping Strategies Subscales

Measure	Reinterp. & Growth	Active Coping	Planning	Instrumental Soc. Supp.	Humor
Perceived Control	0.336	0.270	0.330	0.125	0.160
Maintaining Perspective	0.544	0.340	0.398	0.266	0.137
Social Resourcefulness	0.415	0.289	0.354	0.463	0.202
Humor	0.281	0.078	0.127	0.140	0.574
Organization	0.240	0.226	0.335	0.216	-0.002
Self-Acceptance	0.429	0.289	0.376	0.209	0.158
Preventive Resources	0.507	0.345	0.432	0.322	0.234

Note. All correlations greater than .087 are statistically significant at $p = .05$ for $n = 501$.

Table 5

Correlations between PRI factors and Measures of Stress

Outcome Measure	Perceived Control	Maintaining Perspective	Social Resource.	Humor	Organization	Self-Acceptance	Preventive Resources
Total Perceived Stress	-0.472	-0.491	-0.345	-0.147	-0.295	-0.439	-0.503
Performance Difficulty	-0.319	-0.224	-0.166	0.007	-0.272	-0.301	-0.289
General Feelings of Distress	-0.353	-0.340	-0.302	-0.069	-0.213	-0.355	-0.382
Total Hopkins Score	-0.343	-0.293	-0.237	-0.025	-0.257	-0.343	-0.345

Note. All correlations less than -.087 are statistically significant at $p = .05$ for $n = 501$.

Table 6

Results of Hierarchical Regression Models Using Negative Life Events and PRI Scores to Predict Stress Symptoms

Outcome Measure	Step 1		Step 2		
	Negative Life Events	r^2	Negative Life Events	Preventive Resources	r^2 Change
Total Perceived Stress	0.337	0.114	0.245	-0.454	0.198
Performance Difficulty	0.351	0.123	0.304	-0.226	0.049
General Feelings of Distress	0.295	0.087	0.226	-0.335	0.108
Total Hopkins Score	0.353	0.125	0.294	-0.284	0.077

Note. All beta weights are standardized. $P < .001$ for all beta weights and r^2 values.

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Author(s): Christopher J. McCarthy (1), Richard G. Lambert (2), Michelle Beard (1), Kara Campe (1)
Corporate Source: (1) University of Texas at Austin (2) U. of N. Carolina-Charlotte
Publication Date: Poster presented at APA Conference Aug. 24-28, 2001

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Signature:	Printed Name/Position/Title: Christopher J. McCarthy, Ph. D., Associate Professor
Organization/Address: U. of Texas at Austin - Dept. of Educational Psychology SZB 262G Austin TX 78712	Telephone: (512) 471-4409 / Fax: (512) 475-7641
	E-mail Address: chris.mccarthy@mail.utexas.edu / Date: 9/20/01

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