Four-year Longitudinal Study of Behavioral Changes in Coping With Stress

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Objective: To examine the relationship between stress and coping. **Methods**: Short- and long-term approaches to behavioral change were evaluated in 3 groups (short-term, long-term, control). **Results**: Subjects participating in a 6-week stress-management program designed to develop stress management skills reported temporary decreases in burnout, while subjects receiving additional "refresher" sessions showed decreases in burnout throughout a 4-year period. **Conclusions**: Findings suggest that long-term approaches yield permanent behavioral changes.

Key words: stress, coping, burnout

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During the past several decades, and especially since the terrorist attacks that occurred on September 11, 2001, society has paid considerable attention to evaluating the impact of stressful environments on individuals. Cannon's "fight or flight" metaphor is the most widely known theory to explain the impact of stressful events and recognizes the role that the central nervous and adrenal systems play in response to a stressor.[1] Expanding on Cannon's work, contemporary studies have identified specific physiological changes, which occur in the body, during extended periods of stress. Specifically, the hypothalamo-pituitary-adrenal axis in the brain responds to stress by releasing high concentrations of cortisol into the body. Chronic stress impacts the body by affecting the balance of cortisol levels, and both high and low cortisol levels have been found to correlate with psychological and somatic complaints.[2] Selye first identified the cognitive and behavioral reactions to stress by proposing that when an individual is exposed to a stressful event, he/she responds with a predictable set of reactions.[3] These predictable reactions may or may not be helpful, and prolonged exposure to stressful circumstances can produce long-lasting effects on physical and mental health because of the long-term impact of cortisol on the systems of the body.

Stress is characteristically defined by the behavioral paradigm in terms of stimulus-response connections. Stress can be described as the stimulus or force that, if sufficiently strong, can cause tension in the individual who experiences it. The response is coping or adaptation to the stimulus, which may be successful or unsuccessful.[4] These specific strategies may ultimately account for why one individual becomes ill and another does not, when exposed to an identical stressor.[5] What this basic definition misses, however, is that the relationship between stress and coping cannot be viewed in terms of exclusive attributes, but can be understood by examining the circumstances or context surrounding the events.[6] More specifically, some events, which may be extremely unpleasant at the time, may have no long-term consequences. For example, driving a car in an unfamiliar neighborhood at midnight may

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be a rather frightening experience but this stressful experience is generally brief and has no long-term consequences. Although one could argue that one stressor after another can produce long-term negative effects on an individual, it may be possible that if the individual can effectively deal with the series of stressors, he/she may emerge more resilient and competent than an individual who has encountered little stress during the course of his/her life.

Clearly, effective coping can change a potentially stressful event into a manageable one. For example, one theory of coping (Folkman and Lazarus) involves two general types of coping used to explain how individuals respond to stressors.[7] Problem-focused Coping includes strategies to do something active and constructive about a stressful experience that is perceived as threatening, harmful, or challenging. Emotion-focused Coping is more passive in that it is directed toward gaining emotional control and understanding of the stressful event. Both styles are considered adaptive to the individual. Although most types of stress elicit a combination of both coping strategies, the nature of the event also contributes to the type of coping strategy used, with individuals tending to use Problem-focused Coping with work-related problems and Emotion-focused Coping for problems with personal relationships or health. Similar research on coping with stress has reported that the use of active coping strategies (eg, using a positive orientation, seeking advice, and seeking assistance) is associated with overall wellness and job satisfaction.[8] These theories highlight the notion that coping involves efforts, both action-oriented and intrapsychic, to manage environmental and internal demands.[9] Consequently, coping is a dynamic process between a person and his/her environment, whereby the individual who has a set of resources, commitments, and values interacts with his/her environment, which has its own set of resources, constraints, and demands, to form a coping response. If the individual is going to be successful in managing his/her environment, such coping behavior must be adapted over time as the environment and the person influence each other.

Many studies that have focused on stress have also focused on the concept of burnout because burnout usually results from long-term exposure to stress. Maslach and Jackson identified burnout as a syndrome of emotional exhaustion, depersonalization, and reduced personal accomplishment.[10] Emotional Exhaustion includes feelings of exhaustion and being emotionally overextended with work, Depersonalization involves unfeeling or impersonal reactions toward patients or clients, and Lack of Personal Accomplishment includes feelings of incompetence in one's work. Burnout tends to develop over a long period of time as stressors accumulate.[11] This process of emotional exhaustion and overload is the cornerstone of burnout, and although it is suspected that those who are particularly committed and enthusiastic are at greater risk for burnout, situational factors within the work environment appear to be the major contributors to the syndrome.[10]

One rather common causal hypothesis is the idea that powerlessness may be a major contributing factor in burnout. Further, this connection between powerlessness and burnout is fairly consistent with earlier studies, such as Seligman and Maier's research on learned helplessness and Glass, Reim, and Singer's work on environmental crowding.[12,13] Further studies have identified that role ambiguity, professional self-doubt, worry over fulfilling statutory responsibilities, and poor organizational management are significant sources of stress, with burnout resulting from excessive workloads, role conflict, and lack of social support.[8,14] These studies have suggested that when subjects are placed in conditions that they cannot control, especially when the events have negative consequences, responses include depression, rigidity, and an inability to make plans, the same behaviors exhibited by those experiencing burnout.[15] In addition to negative perceptions and response patterns, research has also identified that chronic burnout is associated with impaired cognitive functioning, memory, and attention.[16] This maladaptive pattern is self-perpetuating because stress leads to impaired cognitive functioning, and impaired cognitive functioning leads to difficulty in managing stress, difficulty in perceiving the world in a positive way, and failure to make good decisions.

With increasingly stressful work situations most individuals regularly experi-

ence high levels of stress. However, it is interesting that many people continue to remain healthy during ongoing, stressful conditions. This is believed to be a consequence of resistance resources that somehow compensate for the potential crippling effects of stressful events, and the construct of personality hardiness is thought to buffer the effects of stress.[8,17] In general, it has been found that hardy individuals are less prone to physical illness, are more willing to accept social support, are more optimistic, are less stressed, are capable of using a wider variety of coping strategies, and are less burned out.[13,18-20] In addition, prior research has demonstrated that hardiness may play a protective role in the management of psychological distress and physical illness.[17-21] In theory, people who are hardy, even if they are under great stress, should not be burned out in their work. More specifically, hardiness may help to buffer the effects of stress and reduce burnout in several ways.[20] First, hardy individuals tend to use active strategies (such as discussing the problem with a friend or family member or writing in a journal to work through the issue). Consequently, they may be more likely to reach out socially, which may help to impact the perception of the severity of the stressful situation, and they may be more likely to ask for help from others when feeling overwhelmed. Second, hardy individuals tend to view stressful situations as an opportunity for challenge and personal growth, while low-hardy persons are inclined to use regressive-coping by avoiding or circumventing potentially stressful experiences. Lastly, hardy individuals may feel more empowered to maintain healthy habits, such as regular exercise, which may act to reduce illness. What is important to the present study is that these coping strategies are likely to lead to a more effective style of handling both serious problems and everyday nuisances. A series of stressful events may lead to a strain reaction, and persistent or chronic strain may lead to exhaustion, psychological distress, and physical illness, which are potential consequences of burnout.[21,22]

A relatively small body of research has been reported evaluating the relationships between hardiness, burnout, and coping mechanisms. This is surprising because hardiness is viewed as a type of coping process, and relationships between hardiness scales and coping mechanism scales would make sense theoretically. In fact, previous studies have demonstrated that hardiness contributes to more positive self-statements, something that is considered to be a type of effective coping strategy. If this is true, it may be possible to teach healthcare providers to develop more functional, adaptive coping styles that effectively manage occupational burnout. If hardiness skills affect one's ability to cope with the experiences of stress and burnout through adaptive coping, then it may be possible to teach individuals to develop strategies that are consistent with the positive techniques associated with hardiness. For example, many studies of stress have focused on the dysfunctional strategies of coping, adopting a deficit approach to problem solving. Howard and John described this approach as asking, "what is going wrong?" with a person's coping strategies.[23] Further, in teaching individuals to manage stress, the more appropriate strategy is to focus on why some people are able to cope successfully with the same kinds of events that defeat other individuals. In other words, individuals who use positive, more adaptive strategies ask the question "what is going right?" in developing effective techniques to cope with stress.[23]

Research on stress management and coping in occupational settings has consistently suggested that stress management courses can help employees to more effectively cope with occupational stressors, which leads to a reduction in the incidents of employee burnout. Indeed, effective coping resources are important in organizational settings in which a diverse set of coping skills is necessary.[24] These studies have included individuals employed in mental health settings,[9,25,26] schools,[23,27,28] high security government agencies,[29] hospitals and health care agencies,[15,30,31] HIV/AIDS specialty facilities,[32,33] ambulance personnel facilities,[34] law enforcement agencies,[35] and the information services industry.[36] However, previous research has not determined whether or not these stress management courses have helped individuals make long-term behavioral changes in adaptive coping. Therefore, the purpose of this study is to determine whether participants can be taught to develop permanent lifestyle changes in their coping styles,

which will lead to a reduction in burnout, or whether these changes are simply temporary. Examining the relationships between stress and coping, this study explores both short- and long-term approaches to behavioral change.

Participants

A total of 108 subjects (women, n=59; men, n=49) participated in the study. The subjects were all health care professionals employed in the Philadelphia area who were drawn from classroom and hospital settings. Subjects from the hospital setting were contacted through area hospital directories and through the membership directory of a local chapter of a health care professional organization, and subjects in the classroom setting were practicing health care professionals taking courses to advance themselves in their careers. The type of specific health care occupations varied. However, the subjects clustered into 6 different categories: nursing (n=42), hospital/clinical staff (eg, laboratory/testing specialists; n=24), physicians/surgeons (n=10), health administrators (n=15), psychologists/counselors/social workers (n=9), and health educators (n=8). The mean age of the participants was 38.22 years (sd = 7.60), the mean years participants were in the profession was 10.44 (sd=5.99), and the mean years in present position was 7.87 (sd=6.89). Employment settings included small, medium, and large, teaching and non-teaching hospitals; medical offices; long-term care facilities; wellness centers; public health departments; and public and private health and mental health facilities. There were no limitations for inclusion in the study except that all participants had assumed their present employment position for at least one year. This was done because we wanted to primarily include individuals who were "settled" into their positions rather than those still in the "honeymoon" phase of occupying a new position.

Measures and Procedures

Each of scales used in this research was contained in a packet that was distributed to each subject. Each was regarded as appropriate for use with the present sample, and each has consistently demonstrated acceptable validity and reliability.[37-39] A specific description of each scale can be found by referring to Rowe.[40-42] The mea-

sures included the following: Demographic Characteristics were assessed using a self-report questionnaire that included background information, such as gender, age, marital status, type of education completed, specific occupation, years in present position, and years in the profession. These variables were selected on the basis of previous research.[18,19] Hardiness was appraised using the 30-item Cognitive Hardiness Scale (CHS),[43] which yields scores for the 3 dimensions of hardiness (Commitment, Challenge, and Perceived Control) and includes items such as "Most of life is wasted in meaningless activity." Scores of each of the 3 dimensions can be combined into a total hardiness score, validity and reliability are adequate (r=.80), and the items and scoring are readily available. Anxiety was measured using the State-Trait Anxiety Inventory (STAI) to estimate the emotional state in which a subject may be during the data collection process (ie, "I am worried").[39] Although emotional states, in general, tend to be regarded as temporary, some subjects may exhibit steady anxiety states characterized by chronic tension, apprehension, nervousness, and worry. Stress was identified using the Stress Assessment Inventory (SAI),[38,44] which measures stress and health-risk behaviors of employees and was based upon the Hopkins Symptoms Checklist.[45] The SAI has several subscales. For the purpose of this study, 2 subscales were used. First, the General Stress scale, which measures perceptions of recent life and work stress, measures 6 discrete divisions of daily living (work, health concerns, finances, environment, family, and social concerns), has displayed adequate internal consistency (alpha .68) and test re-test reliability (r=.78), and has been correlated with job burnout, physical illness, immune responsiveness, and absenteeism.[38,44] Second, the Psychological Well-Being scale assesses overall work and life satisfaction, has demonstrated adequate internal consistency (alpha .93), test re-test reliability (r=.86), and criterion-related validity, and includes items such as "I am pleased with my life overall.[38,44] Burnout was assessed using the 22-item Maslach Burnout Inventory (MBI),[8] which yields scores for the 3 subscales of Emotional Exhaustion, Depersonalization, and Personal Accomplishment. The MBI has significantly corre-

lated with a variety of health and performance outcomes such as absenteeism, physiological distress, job satisfaction, and organizational commitment.[10] An extensive literature exists evaluating and describing this construct, this widely used measure of burnout, and its impact on employees within the health profession. Coping Style was measured by the Ways of Coping Scale,[38] which measures various ways that people attempt to cope with difficult situations. The items are scored to reflect "adaptive coping" versus "nonadaptive coping". This scale measures positive self-talk, negative self-talk, avoidance, and problem-focus. Items such as "I think about happier times, events and experiences when confronted with problems and frustrations" are viewed as reflecting adaptive coping, whereas items such as "I blame, criticize, and put myself down, for somehow creating or causing my problem" are viewed as nonadaptive coping.

Four hundred forty-eight participants were asked whether they would be interested in receiving "job stress training," and 317 (approximately 71%) expressed an interest. Of those willing, approximately 40% (N=126) were randomly selected and assigned to 3 groups; Experimental 1 Group (n=42), Experimental 2 Group (n=42), and Control Group (n=42). The primary objective in choosing this number was to have 3 groups of an appropriate size so that the instructor could provide quality training during the intervention.

Subjects in each of the 3 groups completed the questionnaire packet previously described prior to the training intervention. Because research has suggested that the variables listed above may impact the relationship between stress and burnout, this was primarily done to determine whether there were differences between the groups on any of the measures prior to training. At the initial phase of the study, an introductory letter (with informed consent and IRB approval), a complete packet of the instruments, and a large envelope were given in person to each subject. The instructions for completing the questionnaires explicitly appeared on each of the instruments; therefore, no further instructions were needed by the individuals distributing the questionnaire packets. These subjects were then asked to complete the packet, place it into the envelope, seal it

to ensure confidentiality, and place the sealed envelope into the designated mailbox provided.

Intervention

After completion of the baseline survey packets, subjects in Experimental 1 Group were exposed to a stress management/adaptive coping training condition, which involved meeting 1 time per week for 90 minutes for a duration of 6 weeks. Sessions were held in the late afternoon/early evening on the same day each week. All participants in Experimental 1 Group received training at the same time as a large intact group. Participants who were normally working during the training were given flextime off from work by their employers to attend the sessions as part of their participation in employee wellness promotion. This was arranged to encourage attendance and minimize attrition. Subjects in Experimental 2 Group were exposed to the same training condition as those subjects in Experimental 1 Group, but in addition were given a 1-hour "refresher" session at 5 months, 11 months, and 17 months. During the 6-week training program, this group received training at the same time as a large intact group (n=42) and met separately from participants in the Experimental 1 Group. The initial refresher session was timed 1 month prior to the 6-month burnout measure to provide an appropriate amount of time for participants to experience ongoing stress and to attempt to cope with stress and burnout before receiving feedback on their strategies at the refresher session. Further, the refresher sessions were spaced 6 months apart to provide time for participants to make more permanent behavioral changes and benefit from the refresher sessions. Subjects in the control group received no training, but completed the questionnaire prior to and post training.

During each session in the 6-week training program, the same master's level stress management instructor who had extensive professional experience in both counseling and teaching trained participants in both groups. The objective of these sessions was to teach the healthcare providers to recognize when there are active solutions to problems that may be dealt with using problem-focused strategies, and to recognize when emotional acceptance of the issue or situ-

ation may be more appropriate, thereby using emotion-focused strategies. For example, when an individual engages in a verbal disagreement with a colleague during an important meeting and is uncomfortable with the outcome, there may be active strategies, such as meeting privately with the other person or discussing the issue with a supervisor, to resolve the conflict. However, if the conflict continues during the private discussion and there is no resolution, the individual may need to turn toward emotion-focused strategies such gaining emotional control over the situation. To do this, the instructor promoted the use of strategies that are considered adaptive (eg, discussing the situation with a friend, writing in a journal, exercising to help reduce overall stress, watching a funny movie, learning how to recognize which issues are important to confront and which ones should be dismissed), which are significantly more functional than nonadaptive strategies (eg, self-blame, harboring negative feelings and resentment, passive hostility, substance use, self-injurious behaviors). Another important component to this program was to teach each individuals when to and how to ask for help, both emotional assistance and work assistance, when feeling overwhelmed by responsibilities. The focus of the sessions was to demonstrate how these strategies are much more productive than regressive-coping, non-adaptive techniques such as rumination, anger, and withdrawal, and to provide an opportunity for the participants to practice more effective strategies.

During the first and second sessions, these strategies were presented, and participants were given specific employment-related scenarios. These participants then worked in small groups (6-8 individuals) to practice employing these strategies and then proposed solutions to the larger group. During the remaining 4 sessions, each individual was instructed to bring to the session real-life problems he/she had recently faced in the work environment. With the supervision of the instructor, these small groups continued to develop strategies and solutions to these problems. Attendance was monitored during the 6-week training. Overall attendance rates for the 6 weeks initial training session were: Experimental 1 Group 92.86%, and Experimental 2 Group 91.67%.

Two weeks after the completion of the 6-week program, subjects in each of the 3 groups completed the burnout measure. For consistency of data collection procedures between the 3 groups, a copy of the burnout scale and a large envelope was hand-delivered by a student research assistant to each participant at his/her place of employment. These subjects were then asked to complete the packet, place it into the envelope, seal it to ensure confidentiality and anonymity, and place the sealed envelope into the designated mailbox provided.

Subjects in the Experimental 2 Group received the "refresher" sessions by the same instructor who provided the initial 6-week training program. During the first 30 minutes of each session, a review of the strategies presented during the 6-week training program was provided. The second 30 minutes was used to allow participants to provide actual problem scenarios and ask for feedback from the other participants and the instructor. Attendance was also monitored for the Experimental 2 Group at the 5 months (n=39), 11 months (n=37), and 17 months (n=38) training sessions (overall attendance = 90.48%). Participants in each of the 3 groups completed the burnout measure again at 6 months, 12 months, 2 years, 2½ years, and 4 years. These repeated measures of burnout were timed at regular intervals and spaced appropriately to allow participants to practice newly learned coping strategies and to minimize intrusion into the participants' lives, consequently minimizing attrition. This allowed us to specifically evaluate the differences between participants exposed to both initial coping training and refresher training and participants who received the initial training only. At each of the repeated measures, a copy of the burnout scale and a large envelope was hand-delivered by a student research assistant to each participant at his/her place of employment. These subjects were again asked to complete the packet, place it into the envelope, seal it to ensure confidentiality, and place the sealed envelope into the designated mailbox provided.

RESULTS
Initial Questionnaire Completion
In comparison with the data of the

Table 1
Descriptive Data for Groups Across Time on Emotional Exhaustion, Depersonalization, and Lack of Personal Accomplishment

Emotional Exhaustion		Baseline	2 Months	6 Months	1 Year	2 Years	2 1/2 Years	4 Years
6-Weeks	m	25.92	23.20	23.48	25.93	25.87	25.22	25.41
Group	sd	4.39	4.03	3.95	4.52	4.44	4.17	4.72
Refresher	m	25.60	23.53	22.60	21.87	19.38	20.14	21.27
Group	sd	4.75	4.09	4.60	5.33	4.67	4.55	4.77
Control	m	26.10	25.60	25.49	25.67	25.38	25.17	25.29
Group	sd	4.69	4.60	4.79	5.70	5.41	5.10	4.93
Depersonal-ization		**Baseline**	**2 Months**	**6 Months**	**1 Year**	**2 Years**	**2 1/2 Years**	**4 Years**
6-Weeks	m	7.83	6.95	7.00	7.77	7.58	7.22	7.41
Group	sd	3.86	3.13	2.35	2.01	2.12	2.23	2.04
Refresher	m	7.40	6.73	6.15	5.95	6.87	6.91	6.97
Group	sd	3.46	2.84	2.47	2.26	2.47	2.77	2.91
Control	m	7.35	7.30	7.56	7.79	7.49	7.51	7.63
Group	sd	3.50	3.41	3.43	3.35	3.39	3.44	3.11
Lack of Personal Accomplish		**Baseline**	**2 Months**	**6 Months**	**1 Year**	**2 Years**	**2 1/2 Years**	**4 Years**
6-Weeks	m	37.95	35.10	35.72	37.72	37.67	37.88	37.89
Group	sd	3.75	3.96	3.90	3.81	4.05	3.75	4.01
Refresher	m	37.65	35.33	34.40	33.87	31.21	32.13	31.91
Group	sd	4.21	3.86	4.36	4.98	4.61	4.12	3.98
Control	m	37.90	37.38	37.26	37.46	37.03	36.98	37.20
Group	sd	4.34	4.28	4.45	5.31	5.04	4.96	4.79

normative samples described in each of the instruction manuals for the above scales, the present sample of health care professionals (n=126) was slightly more hardy (m=81.41, sd=10.44) than the normative sample (M=76.21, SD=12.87) and comparable in perceived stress (present sample, m=61.97, sd=9.67; norm, M=59.52, SD=11.03) and anxiety (present sample, m=34.27, sd=9.16; norm males, M=35.72, SD=10.40 and norm females, M=35.20, SD=10.61).

Pearson product-moment correlations identified no significant relationship between any of the demographic variables and burnout. However, as seen in Table 2, significant correlations were found between each of the other variables and burnout.

Intervention

Separate analyses were conducted on each of the 3 burnout subscales because it is recommended that the scores of the subscales not be combined. Separate one-way analyses of variance revealed no differences between the 3 groups prior to training on emotional exhaustion [$F(2,123) = .06$, ns], lack of personal accomplishment [$F(2,123) = .64$, ns], depersonalization [$F(2,123) = .05$, ns], and coping [$F(2,123) = .01$, ns]. Of the original 126

Table 2
Pearson Correlation Coefficients Between All Measures and Burnout Subscales

	Emotional Exhaustion	Depersonalization	Lack of Personal Accomplishment
Demographics			
Gender	.01	.10	.05
Age	.01	-.08	-.11
Years in Present Position	.09	.01	.02
Years in Profession	.01	-.06	-.08
Variables			
Commitment	-.38**	-.32**	-.33**
Control	-.27**	-.28**	-.28**
Challenge	-.32**	-.27**	-.34**
Hardiness	-.38**	-.35**	-.37**
Stress	.53**	.36**	.35**
Anxiety	.43**	.30**	.39**
Coping	-.47**	-.34**	-.38**

P<.01**

participants, 13 did not complete the 2½-year measures resulting in a total of 113 participants (Experiment 1, n=38; Experimental 2, n=39; Control, n=36) and an attrition rate of 10.31% for the 2½ year follow-up. Of the original 126 participants, 18 (13 from the 2 ½-year measures and 5 additional participants) did not complete the 4-year measures for a total of 108 participants (Experiment 1, n=37; Experimental 2, n=37; Control, n=34) and an overall attribution rate of 14.28% from baseline to the end of the 4-year study. Descriptive data are reported in Table 1.

Effects of Training Over Time on Emotional Exhaustion

A 3 (Group) x 7 (Time) repeated-measures analysis of variance on the emotional exhaustion scores demonstrated a significant Group x Time interaction effect $[F(10,834) = 17.09, P<.001]$ and a Between-subjects effect using time as the factor $[F(2,105) = 4.98, P<.01]$. Tukey HSD tests identified that at the baseline measure no differences between the 3 groups existed. However, at 2 months and 6 months, Control Group scores were significantly higher than those of the 2 experimental groups, and at 1 year, 2 years, 2½ years, and 4 years scores of the Experimental 2 Group (subjects receiving both the six week training and refresher sessions) were significantly lower than those in the Experimental 1 and Control Groups, which did not differ (all P's<.001).

Effects of Treatment Over Time on Depersonalization

A 3 (Group) x 7 (Time) repeated-measures analysis of variance demonstrated a significant Group by Time interaction effect $[F(10,834) = 3.23, P<.01]$. However, no Between-subjects effect using time as the factor was observed $[F(2,105) = 1.39, ns]$. Tukey HSD tests identified that at baseline, 2 months, 2 years, 2½ years, and 4 years no differences between the 3 groups existed. At 6 months (P<.05), the Control Group scored significantly higher than the Experimental 2 Group, however scores between the 2 experimental groups and scores between the Experimental 1 and Control Groups did not differ. At 1 year (P<.01) scores of the Experimental 2 Group were significantly lower than the Experimental 1 and Control Groups, which did not differ. Results also showed a Within-subjects effect using time as the factor $[F(6,834) = 2.94, P<.05]$. In the Experimental 1 and Control Groups, Tukey HSD tests identified no significant differences between baseline and any of the follow-up measures on depersonalization.

With the Experimental 2 Group, Tukey HSD tests showed significant decreases in depersonalization scores between the baseline and 6 months (P<.05) and the baseline and 1 year measures only (P<.05).

Effects of Treatment Over Time on Lack of Personal Accomplishment

Results of the 3 (Group) x 7 (Time) repeated-measures analysis of variance demonstrated a significant Group x Time interaction effect [F(10,834) = 14.66, P<.001] and a Between-subjects effect using time as the factor [F(2,105) = 5.27, P<.01]. Tukey HSD tests identified that at the baseline measure no differences between the 3 groups existed. At 2 months (P<.001) and 6 months (P<.05), Control Group scores were significantly higher than those of the 2 experimental groups, and at 1 year (P<.001), 2 years (P<.001), 2½ years (P<.001), and 4 years (P<.001) Experimental 2 Group scores were significantly lower than those in the Experimental 1 and Control Groups, which did not differ. For the Control Group there were no differences in the scores across time.

DISCUSSION

The purpose of this study was to determine whether stress management training classes designed to increase coping effectiveness produce long-term, permanent behavioral changes, consequently decreasing stress and burnout. Results showed that although there were no initial differences between the 3 groups prior to the 6-week training, at 2 months and 6 months subjects in both experimental groups were significantly less burned out than subjects in the control group. This indicates that short-term approaches to stress management are indeed effective and certainly justified with individuals in crisis. However, at the long-term measures of 1 year, 2 years, 2½ years, and 4 years, only those individuals who received coping strategies "refreshers" reported lower levels of burnout, while those in both the Experimental 1 and Control groups did not. This strongly suggests that individuals who were taught to cope more effectively with stress, through active strategies, such as direct problem solving, and passive strategies, such as emotional acceptance, initially experienced less burnout. However, about 6 months later they no longer continued to benefit from the coping skills training. On the other hand, when the approach was directed toward long-term behavioral changes, participants continued to report improvement in stress coping and burnout, even 4 years after the training program. Further, the results of this study demonstrate that subjects who were taught to develop proactive strategies were more effective in coping with stress, felt a stronger sense of personal accomplishment, and were less emotionally exhausted. These findings are consistent with other studies suggesting that the use of active coping strategies is associated with a reduction in emotional exhaustion,[8] increased job satisfaction,[9] less overall burnout,[23] a decrease in workload strain,[14] and better regulation of basal cortisol concentrations.[2] This highlights the significance of helping those individuals who may have limited coping skills to change the way in which they attempt to cope with difficult situations, and, specifically, to focus on developing more permanent behavioral changes that will generalize to all kinds of stressful situations. Clearly, individuals who develop adaptive coping styles are better equipped to prevent or reduce physical and psychological illness.

Limitations

It is important to note that these results may not generalize to the entire population. First, healthcare professionals regularly encounter unique stressors, including death and dying, that may be somewhat different from the stress encountered by the general population. Second, socioeconomic status of the participants was not addressed. Because current research suggests that the way in which individuals cope with stress and burnout is influenced by socioeconomic status, it would be interesting to see whether or not these results would be similar using various socioeconomic levels. Third, the educational level of the participants was relatively high compared to the overall population of the United States. Because educational level may impact coping mechanisms, it would be important to determine whether these results would be similar using educational level as a covariate in a more educationally diverse sample. Fourth, because men and women typically have different coping styles (eg, women tend to

"vent" and men tend to "fix"), it would be interesting to conduct similar studies that specifically address gender as a factor in creating effective programs to teach coping. Fifth, subsequent research should expand on the current research assessing issues of cognitive impairment and decision making difficulties.[14] Finally, individual personality factors (ie, negative affectivity) may continue to overpower even long-term training in producing long-term behavioral changes. Subsequent studies should be done using personality factors as a covariate. In fact, Pines believes that burnout research and intervention should include greater emphasis on personal factors in additional to contextual factors.[46] Before final conclusions are drawn, future research should explore these issues extensively in both theoretical and clinical terms. ■

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